NASA Procedural Requirements

NPR 8553.1A
Effective Date: March 22, 2005
Expiration Date: March 22, 2010

COMPLIANCE IS MANDATORY

NASA Environmental Management System (EMS) w/Change 2 (04/26/2006)

Responsible Office: Environmental Management Division

Table of Contents

Change History

Date	Description
04/26/2006	Correction made to footnote in Chapter 1, paragraph 1.2.12 (a). Part 4, NASA Center EMS Guidance, of Appendix Z added.
04/07/2005	Appendix Z, Parts 1, 2, and 3 added to provide additional guidance for the following: NASA Internal EMS Review, NASA Environmental Management System Checklist, and NASA EMS Self -Declaration

Preface

P.1 Purpose

This NASA Procedural Requirement (NPR) describes NASA's Environmental Management System (EMS). An EMS is a system that (1) incorporates people, procedures, and work practices in a formal structure to ensure that the important environmental impacts of the organization are identified and addressed, (2) promotes continual improvement including periodically evaluating environmental performance, (3) involves all members of the organization as appropriate, and (4) actively involves Senior Management in support of the environmental management program. The purpose of the Agency EMS is to have a single overall Agency approach to managing environmental activities that allows for efficient, prioritized program execution.

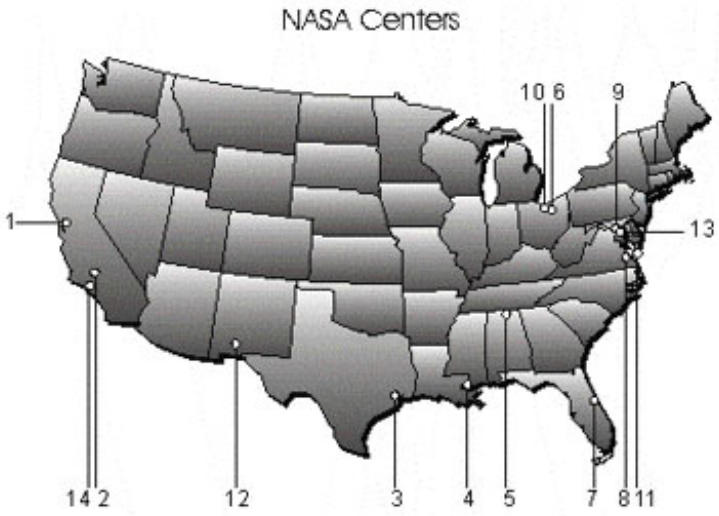
This NPR provides overall direction for NASA EMS documentation, Headquarters-level documentation, and Center-level documentation. Applicable NASA-wide documentation, NASA Policy Directives (NPD), and NPR comprise minimum EMS performance criteria. Center EMS implementation activities may add content to reflect Center-specific needs. This NPR is intended to function in conjunction with the NASA Safety and Health Program, including risk management and loss-prevention priorities.

P.2 Applicability

a. This NPR is applicable to NASA Headquarters and NASA Centers, including Component Facilities, and to contractors to the extent specified in their contracts and tenants as specified in tenancy agreements.
b. The scope of the EMS at each Center consists of management defined: activities, products, and services applicable to the EMS, over which the Center has control and/or influence (Chapter 1.1 includes information on related responsibilities). The NASA EMS scope includes the following NASA Centers (including Headquarters) and Component Facilities:

1. Ames Research Center.
2. Dryden Flight Research Center.
3. Johnson Space Center.
4. Stennis Space Center.
5. Marshall Space Flight Center.
6. Glenn Research Center.
7. Kennedy Space Center.
8. Langley Research Center.
9. Goddard Space Flight Center.
10. Glenn Research Center, Plum Brook Station.
11. Goddard Space Flight Center, Wallops Flight Facility.
12. Johnson Space Center, White Sands Test Facility.

13. Headquarters.
14. Jet Propulsion Laboratory (to the extent specified in its contract, see Chapter 1.1.f).



1. Ames Research Center
2. Dryden Flight Research Center
3. Johnson Space Center
4. Stennis Space Center
5. Marshall Space Flight Center
6. Glenn Research Center at Lewis Field
7. Kennedy Space Center
8. Langley Research Center
9. Goddard Space Flight Center
10. Glenn Research Center, Plum Brook Station
11. Goddard Space Flight Center, Wallops Flight Facility
12. Johnson Space Center, White Sands Test Facility
13. Headquarters
14. Jet Propulsion Laboratory

c. The scope of the Headquarters EMS includes --

1. Headquarters operations, not affecting Center operations.
2. Headquarters activities and programmatic decisions affecting Center operations.

d. d. Centers shall fully transition from conformance with requirements of NPR 8553.1 dated May 6, 2002, to those of this document, no later than two (2) years from its effective date.
e. e. Centers shall conform to applicable EMS review and EMS self-declaration or external recognition program requirements of this NPR no later than December 31, 2005.

P.3 Authority

a. 14 CFR, subpart 1216.1, Policy on Environmental Quality and Control.
b. NPD 8500.1, NASA Environmental Management.

P.4 References

a. 5 U.S.C. 552, Freedom of Information Act, as amended.
b. 16 U.S.C. 470, National Historic Preservation Act, as amended.
c. 42 U.S.C. 2473(c)(1), Section 203(c)(1) of the National Aeronautics and Space Act of

d. 1958, as amended.
e. 42 U.S.C. 4321 et seq., National Environmental Policy Act of 1969, as amended.
f. 42 U.S.C. 11011-1105, Emergency Planning and Community Right to Know Act.
g. Executive Order 11988, Flood Plain Management, May 1977, as amended.
h. Executive Order 11990, Protection of Wetlands, May 1977, as amended.
i. Executive Order 12898, February 11, 1994, Federal Actions to Address
j. Environmental Justice in Minority Populations and Low-Income Populations.
k. Executive Order 13148, April 21, 2000, Greening the Government Through
l. Leadership in Environmental Management.
m. 14 CFR, Part 1206, Availability of Agency Records to Members of the Public.
n. 48 CFR, Subpart 23.10, Federal Acquisition Regulation, Federal Compliance with
o. Right-To-Know Laws and Pollution Prevention Requirements.
p. NPD 1001.1, NASA Strategic Plan (includes NASA Vision and Mission).
q. NPD 1000.3, The NASA Organization, as amended.
r. NPD 1210.2, NASA Surveys, Audits, and Reviews Policy.
s. NPD 1440.6, NASA Records Management.
t. NPD 2800.1, Managing Information Technology.
u. NPD 5110.32, Procurement.
v. NPD 8710.1, Emergency Preparedness Program.
w. NPD 8820.2, Design and Construction of Facilities.
x. NPR 1000.2, NASA Strategic Management Handbook.
y. NPR 1400.1, NASA Directives System.
a`. NPR 1441.1, Records Retention Schedules.
aa. NPR 1450.4, Handling Congressional Correspondence and Information Concerning Congressional Activities.
ab. NPR 7120.5, Program and Project Management Processes and Requirements.
ac. NPR 8570.1, Energy Efficiency and Water Conservation Technologies and Practices.
ad. NPR 8580.1, Implementing The National Environmental Policy Act and Executive Order 12114.
ae. NPR 8621.1, NASA Procedural Requirements for Mishap Reporting, Investigating, and Record Keeping.
af. NPR 8715.2, NASA Emergency Preparedness Plan Procedural Requirements.
ag. NPR 8715.3, NASA Safety Manual.
ah. NPR 8830.1, Affirmative Procurement Plan for Environmentally Preferable Products.
ai. Agency Self-Declaration Protocol for Appropriate Federal Facilities, Office of the Federal Environmental Executive, September 10, 2003.
aj. Environmental Excellence for the Twenty First Century, May 1994.
ak. Guide for Freedom of Information Act Requesters, 2004.
al. ISO 14001: Environmental Management Systems - First edition, Specification with Guidance for Use, International Organization for Standardization (ISO), 1996, and Second Edition, Requirements with Guidance for Use, International Organization for Standardization (ISO), 2004.
am. ISO 19011: Guidelines for Quality and/or Environmental Management Systems Auditing, International Organization for Standardization (ISO), 2002.
an. NASA Environmental Justice Strategy, March 1995.
ao. National Environmental Performance Track, Program Guide, EPA 240-F-01-002, March 2003, as amended.

P.5 Cancellation

NPR 8553.1, NASA Environmental Management System (EMS), dated May 6, 2002.

/S/
James L. Jennings
Associate Administrator for
Institutions and Management

Chapter 1. Roles and Responsibilities, and EMS Definitions

1.1 Roles and Responsibilities

The role of the NASA Headquarters Environmental Management Division is to implement applicable requirements of NPD 1000.3, The NASA Organization, related to Agencywide environmental issues and initiatives, and NPD 8500.1, NASA Environmental Management.

Additional detail on Roles and Responsibilities is provided in applicable Chapters of this NPR and Appendix A.

a. The Assistant Administrator for Infrastructure, Management and Headquarters Operations, as the senior Agency official responsible for providing executive and functional leadership for environmental management, is responsible for--

1. Ensuring that the Headquarters EMS Representative has the responsibilities and authority needed to implement and maintain the Headquarters EMS across Mission Directorates and Mission Support Offices.
2. Periodically reviewing the Headquarters EMS for status and viability, and leading the assessment, analysis, and preparation of environmental matters to be considered by the NASA Operations Council. (See Chapter 6, Management Review, for details.)
3. Monitoring implementation of recommendations of the NASA Operations Council related to the Headquarters EMS across Mission Directorates and Mission Support Offices.
4. Self-declaration of the Headquarters EMS or participation in an external EMS recognition program. (See Chapter 6, Management Review, for details.)

b. NASA Headquarters Environmental Management Division is responsible for --

1. Establishing and maintaining NASA environmental policy, requirements and guidance.
2. Defining and maintaining NPR 8553.1, NASA Environmental Management System.
3. Establishing and maintaining guidance on the NASA Environmental Management System (see Appendix Z, Parts 1, 2, and 3).
4. Providing guidance on independent self-declaration assessments (see Appendix Z, Part 3).
5. (5) Establishing and maintaining guidance on participation in external EMS recognition programs (see Appendix Z, Parts 1 and 3).

c. The Center Director is responsible for --

1. Implementing NASA Environmental Policy and Requirements.
2. Defining the scope of the Center EMS.
3. As applicable, delegating Component Facility environmental management responsibilities to

an appropriate Component Facility NASA Authority and optionally designating an individual to assume Center Director responsibilities for the EMS at Component Facilities
4. Assigning roles and responsibilities for the Center EMS Representative.
5. Providing the authority needed for the EMS Representative to implement and maintain the Center EMS.
6. Providing resources for the effective operation and maintenance of the Center EMS.
7. Periodically reviewing the Center EMS for status and viability. (See Chapter 6, Management Review, for details.)
8. Self-declaration of the Center EMS or participation in an external EMS recognition program no later than December 31, 2005. (See Chapter 6, Management Review, for details.)
9. Reporting to NASA Headquarters Environmental Management Division on EMS progress and metrics as requested.

d. Each NASA Center is responsible for -

1. Determining the applicability of this EMS to its contractors, to satisfy EMS-related requirements of Executive Order 13148 (and applicable Federal Acquisition Regulations). When a determination is made that the EMS is applicable, the NASA officials responsible for the contracts shall ensure that a requirement for implementing this EMS is incorporated into all such contracts no later than the time of the next recompetition of the contracts.
2. Determining the applicability of the EMS to its tenants to satisfy EMS-related requirements of Executive Order 13148, subject to the limitations of tenancy agreements. When a determination is made that the EMS is applicable, Center Management shall ensure that EMS requirements for tenants are incorporated into future tenancy agreements.
3. Working with the Headquarters Environmental Management Division to define the scope of the Headquarters Environmental Management System as it pertains to the Agency and Centers.
4. Reviewing and providing comments to Headquarters Environmental Management Division on NASA environmental information, policy, requirements, and guidance.

e. The Component Facility NASA authority, shall be responsible for implementation of an EMS commensurate with the environmental responsibilities delegated by the Center Director The Component Facility EMS may be separate from, or a subset of, the Center EMS.
f. NASA officials responsible for the contract, in the case of a NASA-owned, contractor-operated facility, shall incorporate a requirement for implementing an EMS, if determined appropriate, into the contract no later than the time of the next re-competition of the contract. The requirement shall, at a minimum, be for an EMS that satisfies the EMS-related requirements of Executive Order 13148 (and applicable Federal Acquisitions Regulations). If the contractor does not satisfy the above requirement for an EMS, then NASA officials have discretion to specify in the contract the conditions pursuant to which the contractor shall choose and administer an EMS. Such conditions may include restrictions as to the type of acceptable EMS and provisions for appropriate NASA authority control or supervision of the EMS desired by Center management.

1.2 EMS Definitions

1.2.1 Acceptable State-Sponsored EMS Recognition Program - an acceptable State-sponsored EMS recognition program, shall involve at a minimum, equivalent requirements to those for EMS Self-Declaration.

1.2.2 Annual EMS Review - a review of a Center EMS following EMS audit principles and techniques.

1.2.3 Competence - a demonstrated ability to apply knowledge and skills (training, education, and experience) defined by the organization as appropriate for all personnel whose work may be associated with a priority environmental impact.

1.2.4 Continual Improvement - the recurring process of enhancing the environmental management system in order to achieve improvements in overall environmental performance in line with NASA environmental policy and the NASA Vision and Mission.

1.2.5 EMS Documentation - EMS documents specified in this NPR (Appendix B).

1.2.6 Document - electronic, written or printed; information, policy, requirement, procedure or guideline that requires regular review or maintenance.

1.2.7 Environmental Management System (EMS) - a system that incorporates people, procedures, resources, responsibilities, and work practices in a formal structure to address the development, implementation, achievement, and review of the environmental policy.

1.2.8 EMS Audit - a systematic, documented, and periodic verification process of objectively obtaining and evaluating evidence to determine whether an organization is conforming to its EMS and for communicating the results of this process to management. The environmental management portion of environmental functional reviews, Center internal annual EMS reviews, and independent self-declaration assessments, are forms of EMS audits.

1.2.9 EMS Core Team - a group of Center personnel that assist with the implementation, maintenance / operation and continual improvement of the Center EMS, with roles and responsibilities defined by Center management.

1.2.10 EMS Record - a record that has been identified as pertaining to the EMS (Appendix B).

1.2.11 EMS Representative - the NASA individual who manages the EMS and is responsible for reporting to Senior Management and NASA Headquarters Environmental Management Division on:

a. EMS Performance.
b. Results of environmental functional reviews, audits, and management reviews.

1.2.12 Environmental Aspects - elements of NASA's activities, products, or services that can interact with the environment. Environmental aspects constitute the elements of NASA's activities, products, or services over which NASA has control and which it can manage. Environmental aspect types include:

a. High priority[1] environmental aspect - an environmental aspect with the most severe risk ranking being high for one or more of its environmental impacts (based on the evaluation of associated impact frequency and severity) as determined by the Risk Ranking Matrix.
b. Medium priority environmental aspect - an environmental aspect with the most severe risk ranking being medium for one or more of its environmental impacts (based on the evaluation of associated impact frequency and severity) as determined by the Risk Ranking Matrix.
c. Low priority environmental aspect - an environmental aspect with the most severe risk ranking being low for one or more of its environmental impacts (based on the evaluation of associated impact frequency and severity) as determined by the Risk Ranking Matrix.
d. Very low priority environmental aspect - an environmental aspect with all risk rankings of very low its environmental impacts (based on the evaluation of associated impact frequency and severity) as determined by the Risk Ranking Matrix.
e. Headquarters environmental aspect - an environmental aspect associated with Headquarters activities and programmatic decisions affecting Center operations.

f. Headquarters high priority environmental aspect - a Headquarters environmental aspect that has been ranked as high by a Headquarters Mission Directorate or Mission Support Office, where appropriate considering impact frequency and severity criteria.

---

[1] Within Federal Government agencies such as NASA, compliance with the National Environmental Policy Act (NEPA) requires that if "major actions" might impose "significant environmental impacts," then measures for mitigating these adverse impacts shall be identified and evaluated. To avoid confusion, the NASA EMS will use the term "priority" instead of "significant" when describing environmental aspects and impacts.

1.2.13 Environmental Aspect Categories - NASA-wide, consistent categories into which all environmental aspects are grouped.

1.2.14 Environmental Compliance Audit - a systematic, documented, and periodic verification process of objectively obtaining and evaluating evidence to review operations and practices related to meeting environmental regulatory requirements and for communicating the results of this process to management. The compliance portion of environmental function reviews and Center reviews of compliance are forms of environmental compliance audits.

1.2.15 Environmental Functional Review - a functional assessment lead by Headquarters Environmental Management Division of environmental management, compliance, and related activities at a NASA Center. Environmental Functional reviews are conducted in accordance with NPD 1210 and are a form of Survey, Audit, and/or Review (SAR) as defined therein.

1.2.16 Environmental Impact - any change to the environment, whether adverse or beneficial, wholly or partially resulting from NASA's activities (past present or future), products, or services. Environmental impacts are changed by the management of environmental aspects. An environmental impact results in or affects --

a. Safety and Health,
b. A natural or cultural resource,
c. A cost to NASA,
d. The NASA mission,
e. Reputation or stakeholder relationship, or
f. An environmental legal/regulatory implication.

1.2.16.1 Environmental impacts may occur as a result of normal, abnormal, or emergency conditions.

a. Normal operating conditions include situations where environmental impacts are expected to occur as a result of regularly planned operations including planned shutdowns, startups, and maintenance.
b. Abnormal operating conditions include situations where environmental impacts occur in association with:

1. Unplanned shutdowns, startups, and maintenance.
2. Temporary installations.
3. Unplanned or unexpected events or changes, which can be reasonably foreseen.

c. Emergency conditions include situations where environmental impacts are associated with a potential emergency as defined by a Center in accordance with NPR 8715.2.

1.2.17 Environmental Objective - an overall environmental goal, arising from the environmental policy, that NASA sets for itself to achieve and which is quantified where practicable.

1.2.18 Environmental Target - a detailed performance requirement, quantified where practicable, applicable to NASA, that arises from the environmental objectives and that needs to be set and met to achieve those objectives.

1.2.19 External EMS Recognition Program - includes any of the following: the International Organization for Standardization's (ISO), ISO 14001, the Environmental Protection Agency's (EPA), National Environmental Performance Track, and/or an acceptable State-sponsored EMS recognition program. While a second edition of ISO 14001 was issued in 2004, the first edition (1996) of ISO 14001 shall continue to be acceptable until withdrawn by ISO.

1.2.20 Independent Self-Declaration Assessment - refers to an assessment of conformance of a Center's EMS to the defined criteria of this NPR by individuals without direct responsibility for the activities being assessed.

1.2.21 ISO 9000 - a series of international quality management system standards developed by quality experts from around the world for use by organizations that either want to implement their own in-house quality systems or to ensure that suppliers have appropriate quality systems in place. The standards were developed under the auspices of ISO, one of the world's principal voluntary standards development bodies.

1.2.22 ISO 14000 - a series of environmental management standards developed by the ISO. The ISO 14000 standards are designed to provide an internationally recognized framework for environmental management, measurement, evaluation, and auditing. The standards are designed to be flexible enough to be used by any organization of any size, in any field. They include the following subjects:

a. Environmental management systems,
b. Environmental auditing,
c. Environmental labels and declarations,
d. Environmental performance evaluation, and
e. Life-cycle assessment.

1.2.23 ISO 14001 Environmental Management Systems - Requirements with Guidance for Use - outlines the requirements for an EMS as developed by and agreed to by the ISO.

1.2.24 ISO 19011Guidelines for Quality and/or Environmental Management Systems Auditing -outlines techniques for developing and managing EMS audit programs and audits and provides recommendations for auditor competence.

1.2.25 Legal and Other Requirements - those requirements that NASA or a Center is regulated to or has committed to meeting. Legal requirements include Federal, State and local laws, regulations, ordinances or policies; Office of Management and Budget circulars; Executive orders; enforceable Agency agreements; contractual obligations; and international obligations. Other requirements include internal standards, voluntary Agency agreements, Presidential initiatives, industry codes or practice, and non-regulatory guidelines.

1.2.26 NASA Online Directives Information System (NODIS) - an Internet application used for creating NASA directives and for automating the coordination/clearance process. Approved NASA directives are maintained in NODIS, enabling users to retrieve, view, and print NASA directives electronically.

1.2.27 National Environmental Performance Track - a United States EPA voluntary public-private

partnership program that encourages continual environmental improvement through the use of environmental management systems, local community involvement, and measurable results.

1.2.28 Noncompliance - a failure to meet NASA or Center legal or other requirements.

1.2.29 Nonconformance - a failure to meet a NASA or Center EMS-specified requirement.

1.2.30 Operational Controls - measures taken: to manage environmental aspects, to mitigate adverse environmental impacts or secure beneficial environmental impacts, and to manage NASA environmental policy and compliance activities. These may include: training, communication, procedures and practices, monitoring and measurement activities, and the installation and operation of physical structures or equipment.

1.2.31 Operational Control Procedures - documented procedures in place: to manage high priority environmental aspects, to mitigate adverse environmental impacts or secure beneficial environmental impacts, and to manage NASA environmental policy and compliance activities.

1.2.32 Record - an electronic, written, or printed object that provides evidence of what was done or has occurred in the past.

1.2.33 Review of Compliance - a review of Center compliance with environmental regulatory requirements following environmental compliance audit principles and techniques.

1.2.34 Self-Declaration - refers to a NASA Center's statement that it is conformant with NASA's EMS self-declaration requirements and the Agency Self-Declaration Protocol for Appropriate Federal Facilities. The Agency Self-Declaration Protocol outlines procedures for Federal agencies that will ensure the credibility of EMS self-declaration as set forth in Executive Order 13148.

Chapter 2. Environmental Policy

NASA Policy on Environmental Quality and Control, 14 CFR, subpart 1216.1, expresses NASA's commitment to the broad statement of national environmental policy expressed by Congress in the National Environmental Policy Act. This policy is available to both the public and the NASA community through web pages including http://www.access.gpo.gov/nara/cfr/cfr-table-search.html The CFR subpart defines NASA policy to protect and enhance the quality of the environment. The policy also establishes broad responsibilities of each NASA employee, NASA organizational element, and appropriate Headquarters and Center organizations and managers.

NASA Policy Directive (NPD) 8500.1, NASA Environmental Management, is NASA's internal environmental policy. This policy is available to both the public and the NASA community through NASA's Web pages and NODIS at http://nodis3.gsfc.nasa.gov/, and is consistent with 14 CFR, subpart 1216.1.

NPD 8500.1 includes a hierarchy of NASA Environmental Strategic Plans, Policy Directives, and Procedural Requirements. NPD 8500.1 also includes a commitment to continual improvement and prevention of pollution. NPD 8500.1 also includes a commitment to comply with relevant environmental legislation and regulations and with other requirements to which NASA subscribes. In addition, NPD 8500.1 establishes more specific responsibilities of each NASA employee, each NASA organizational element, and appropriate Headquarters and Center organizations and managers.

Chapter 3. Planning

3.1 Environmental Aspects and Impacts

3.1.1 Purpose. To identify priority environmental aspects and impacts essential to developing NASA's EMS.

3.1.2 Roles and Responsibilities

3.1.2.1 NASA Headquarters Environmental Management Division is responsible for --

a. Establishing NASA EMS priority environmental aspect risk criteria.
b. Defining the scope of the NASA EMS and supporting the definition of the scope of the Headquarters EMS.
c. Collection and review of environmental information from Centers and providing an overview and recommendations to the Mission Directorates and Mission Support Offices, as appropriate, for use in the Headquarters EMS.3.1.2.2 NASA Mission Directorates and Mission Support Offices are responsible for --

a. As appropriate, applying steps a. through d. in Chapter 3.1.2.3 below, to the activities, products, and services e.g., grants, of the Mission Directorate or Mission Support Office, within the scope of the Headquarters EMS.
b. Reviewing environmental information provided by Centers and, where appropriate, considering environmental impact categories and environmental aspect risk criteria to define Headquarters high priority environmental aspects for the Mission Directorate or Mission Support Office.Working with Headquarters Environmental Management Division to define the scope of the Headquarters EMS.

3.1.2.3 NASA Centers are responsible for --

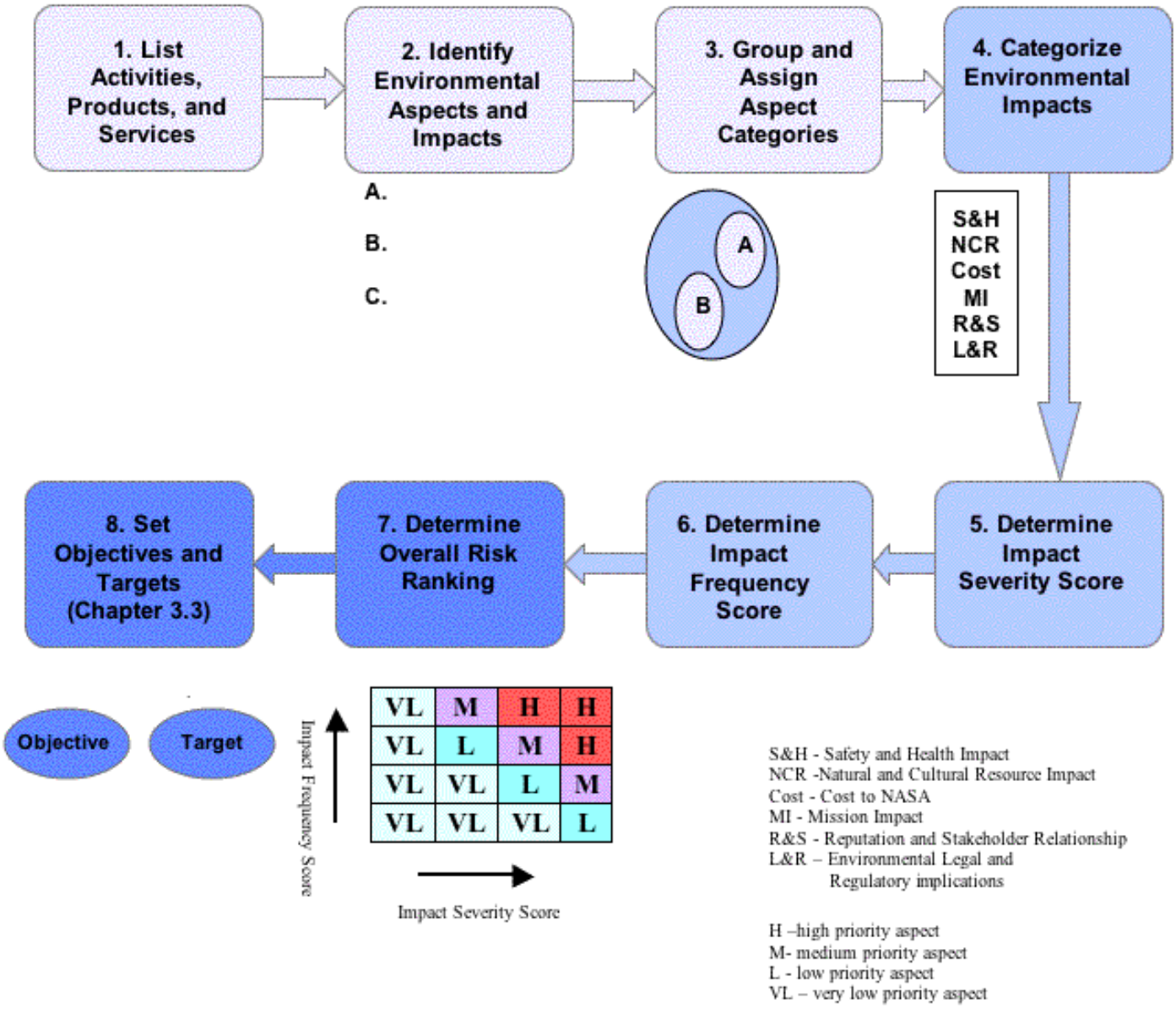
a. Identifying and documenting Center activities (past, present, and future), products, and services within the scope of the Center EMS.
b. Identifying and documenting the environmental aspects and associated environmental impact(s) of the documented activity, product, or service.
c. Applying EMS environmental aspect risk criteria.
d. Periodically reviewing and updating the results of steps a. through c. above.

3.1.3 Requirements

Centers shall follow each of the steps described below. Center employees are expected to apply best professional judgment when applying this process.

The following diagram and notes illustrate the recommended order of steps for this process. Centers may modify the order of steps 1 to 3 but shall complete all steps.

Flow Diagram of Overall Process for Identifying Environmental Aspects and Impacts and Determining High-Priority Environmental Aspects



Flow Diagram Notes:

In steps 1 to 3, a list of environmental aspects is developed and they are grouped into categories.

Once environmental aspects have been categorized, steps 4 to 6 assign applicable impact categories and associated impact severity and frequency.

To establish the level of priority for an environmental aspect, the risk associated with each associated environmental impact is defined in step 7, using a combination of the severity and frequency of the environmental impact.

3.1.3.1 Step 1: List all activities, products and services

Within the scope of its EMS, each Center shall identify all activities, products, and services under its control, as well those activities, products, and services over which it should be expected to have

control pursuant to its mission, based on the nature and scale of its operations.

3.1.3.2 Step 2: Identify environmental aspects and impact(s)

a. Centers shall determine the environmental aspects and impacts associated with the activities, products, and services identified under step 1.
b. Past activities, products, and services with environmental impacts that potentially require management in the present or future shall be considered
c. Environmental impacts associated with activities, products, and services that are planned for the future with a reasonable degree of certainty shall be considered.
d. The identification of present and future environmental impacts shall consider normal, abnormal, and emergency conditions.

1. Abnormal and emergency conditions that can be reasonably foreseen shall be considered.
2. Where separate environmental impacts have been identified based on consideration of normal, abnormal, and emergency conditions, each environmental impact shall be subject to steps 4 through 7 below.

e. Where environmental impacts or their severity or frequency (see steps 4, 5 and 6) vary depending upon different conditions, these variations may need to be considered as separate environmental impacts when conducting risk ranking, or the highest severity and frequency scores may be chosen.

3.1.3.3 Step 3: Group environmental aspects and impacts for manageability and assign environmental aspect categories

a. Where practical, Centers may group environmental aspects and associated environmental impacts to ensure that further analysis is manageable.
b. Each Center shall take the output from step 2, and any grouping that has been conducted, and assign environmental aspect categories as appropriate.

1. Where an environmental aspect and its associated environmental impacts may apply to more than one environmental aspect category, the environmental aspect category shall be selected based on best professional judgment.
2. The Center is free to determine in which category an individual environmental aspect belongs, but may not add or change the following list of twelve (12) environmental aspect categories. Examples of areas included in the environmental aspect categories are provided.

1	**Air Emissions**, including: Stationary and point sources Mobile sources Ozone depleting substances Fugitive emissions
2	**Fuel, oils, and lubricants**, including: Container storage Storage tanks Transformers Hydraulic systems Spill prevention control and countermeasures
3	**Hazardous materials**, including: Hazardous materials storage

	Emergency planning and response Community right-to-know
4	**Hazardous waste**, including: Collection and storage Hazardous waste treatment, storage and disposal facilities Off-site shipment and disposal State regulated industrial or chemically contaminated wastes
5	**Historical, Archaeological, and Cultural Resources**
6	**National Environmental Policy Act**, including: Environmental impacts Noise Environmental justice
7	**Natural resources**, including: Land use and resources Wetlands and floodplains Threatened and endangered species Wildlife Ecosystems Oceans and coastal zones
8	**Remediation/Restoration**, including: Comprehensive Environmental Response, Compensation, and Liability Act sites Resource Conservation and Recovery Act sites Tank sites
9	**Solid waste (non-hazardous),** including: General trash Construction waste Medical waste Solid waste landfills
10	**Sustainability**, including: Energy consumption Encroachment Facility construction, rehabilitation and modification Materials purchasing Water consumption
11	**Toxic substances,** including: Asbestos Lead paint Polychlorinated Biphenyls Pesticides/Herbicides Radioactive materials
12	**Water,** including: Drinking water Groundwater Storm Water Sanitary or Domestic Wastewater

	Sanitary or Domestic Wastewater Industrial Wastewater Eutrophication

3.1.3.4 Step 4: Categorize environmental impacts

a. A high priority environmental aspect is a NASA environmental aspect that shall be managed to --

1. Avoid or prevent a serious adverse environmental impact, or
2. Create a substantial beneficial environmental impact.[2]

---

[2] Within Federal Government agencies such as NASA, compliance with the National Environmental Policy Act (NEPA) requires that if "major actions" might impose "significant environmental impacts," then measures for mitigating these adverse impacts shall be identified and evaluated. To avoid confusion, the NASA EMS uses the term "priority" instead of "significant" when describing environmental aspects and impacts.

---

b. Classify each individual or grouped environmental aspect by assigning associated environmental impacts into, as applicable, one or more of the following six categories:

1. Safety and Health (S&H).
2. Natural and Cultural Resources Impacts (NCR).
3. Cost to NASA (Cost).
4. Mission Impacts (MI)
5. Reputation and Stakeholder Relationships (R&S).
6. Environmental Legal/Regulatory Implications (L&R).

c. Both adverse and beneficial environmental impacts shall be considered within this framework.

Environmental Impact Categories

Note: The six categories described below encompass potential adverse and beneficial environmental impacts. Environmental impact descriptions denoted in the following with a - symbol are considered adverse environmental impacts. Environmental impacts denoted with a + symbol are considered beneficial environmental impacts.

Safety and Health Impacts (S&H)[3]	**Score**
- Potential source of death or disabling injury + Eliminate potential source of death or disabling injury	1
- Potential source of substantial injury/lost time or human health impact + Eliminate potential source of substantial injury/lost time or human health impact	2
- Minor injury or human health impact +Avoid minor injury or human health impact	3
-/+No injury or other health effect	4

Natural and Cultural Resources Impacts (NCR)[4]	**Score**
- Irreparable damage to natural or cultural resources + Prevents irreparable damage to natural or cultural resources + Results in expanded natural or cultural resources	1

- Substantial impact on protected natural or cultural resources + Prevents substantial impact on protected natural or cultural resources + Results in substantial restoration or conservation of/improvements to, protected natural or cultural resources + Substantial reduction of impact on natural or cultural resources + Results in a substantial improvement in sustainability	2
- Minimal impact on natural or cultural resources + Prevents minimal impact/results in minimal conservation of natural or cultural resources + Results in pollution prevention + Minimal reduction of impacts on natural or cultural resources + Results in minor improvement in sustainability	3
-/+ No impact on natural or cultural resources	4

Cost to NASA (Cost)[5]	**Score**
-/+ Net cost or benefit greater then $250,000	1
-/+ Net cost or benefit $100,000 to $250,000	2
-/+ Net cost or benefit $50,000 to $100,000	3
-/+ Net cost or benefit $0 to $50,000	4

Mission Impacts (MI)	**Score**
- Delay in mission-critical activity + Avoids delay in mission-critical activity	1
- No delay, but large cost to avoid delay + Prevents large cost related to avoiding a delay	2
- No delay, but minimal cost to avoid delay + Prevents a minimal cost related to avoiding a delay	3
-/+ No delay, no cost	4

Reputation and Stakeholder Relationship (R&S)	**Score**
- Major increase in negative public inquiries/mandatory meeting attendance + Major decrease in negative public inquiries/mandatory meeting attendance + Major increase in positive public inquiries	1
- Substantial adverse effect on NASA reputation or stakeholder relations + Substantial decrease in adverse effect /substantial positive effect on NASA reputation or stakeholder relations	2
- Minimal effect on NASA reputation or stakeholder relations + Minimal reduction in negative effect/minimal positive effect on NASA reputation or stakeholder relations	3
-/+ No effect on NASA reputation or stakeholder relations	4

Environmental Legal and Regulatory Implications (L&R)[6]	**Score**
- Any fine, consent agreement, unilateral order, or noncompliance with legal and other requirements + Avoids a fine, consent agreement, unilateral order, or noncompliance with legal and other requirements	1
- Notice of violation with no fine + Avoids a potential notice of violation with no fine + Eliminates a regulatory requirement + Results in regulatory relief	2
- Informal notice	3

+ Avoids an informal notice + Reduces a regulatory requirement	
-/+ No regulatory action	4

3 Safety and health relates to safety and health effects for individuals including those performing an environmental function (example: handling of hazardous waste).
4 Natural and cultural resources include, but are not limited to, protected habitats and species, wetlands, and historic and archeological sites. Related impacts include excessive use of raw materials including energy and water or consumption, restoration and conservation of natural resources, or pollution prevention .
5 The cost to NASA is the cost impact of not meeting the environmental requirement. For example, the "cost to NASA" of an oil spill would include the cost of cleaning up the spill and waste disposal, the cost of material replacement and downtime to the Center, and the cost of fines (if any). The benefit to NASA could be a cost avoided or revenue. For example, an avoided cost might be reduced permit fees, and revenue might be proceeds from a recycling program. Net costs or benefits consider compliance or operating costs, as well as revenue offsets.
6 A consequence score of 1 includes both an externally or an internally identified noncompliance (that it is believed would have resulted in a fine if externally identified). A consequence of 2 or 3 recognizes the different degrees of external enforcement intensity that might exist. A reduced regulatory requirement is a requirement that is no longer applicable. An example would be the elimination of the need for a Title V air permit.

3.1.3.5 Step 5: Determine the environmental impact severity score for each category

a. For each environmental aspect, Centers shall use the environmental impact category table provided above to determine the lowest numerical severity score (greatest environmental impact) for each applicable environmental impact category, for each environmental impact.
b. Severity scores shall include the effect of management controls in place to mitigate environmental impacts or secure existing benefits.

3.1.3.6 Step 6: Determine the environmental impact frequency score for each category

a. For each environmental aspect, Centers shall assign a numerical probability-based frequency score to each environmental impact, using the applicable environmental impact categories and the potential frequency of occurrence of the environmental impact.
b. Frequency scores shall include the effect of management controls in place to mitigate environmental impacts or secure existing benefits.
c. Centers shall use the table below (taking into account the historical record of such an incident occurring) to determine the most probable frequency of the scenario occurring.
d. Assign the score that corresponds with the potential frequency of occurrence.

Score	Potential Frequency of Occurrence
1	Minimum of once a year
2	Minimum of once, greater than 1, up to 5 years
3	Minimum of once, greater than 5, up to 10 years
4	Minimum of once in 10+ years

3.1.3.7 Step 7: Determine overall risk ranking level

a. Centers shall determine the priority level of the associated environmental aspect based on the environmental impact severity versus frequency matrix illustrated in the figures below.
b. The overall, risk ranking for each aspect is determined by the risk associated with each environmental aspect, based on the most severe action priority category for its environmental impacts.
c. If contractor personnel conduct steps 1 through 6, the appropriate NASA authority personnel shall review and approve, modify, or reject the data, or request further analysis. The overall, risk ranking, determination shall be made by the appropriate NASA authority.

3.1.3.8 Step 8: Set objectives and targets

Centers shall determine which environmental aspects, associated with activities, products, and services, require objectives and targets as defined in Chapter 3.3.

3.2 Legal and Other Requirements

3.2.1 Purpose. To establish and maintain a procedure to identify all relevant legal and other requirements applicable to the environmental aspects of NASA's activities, products, and services.

3.2.2 Roles and Responsibilities

All roles and responsibilities in this Chapter are specific to relevant legal and other requirements applicable to the environmental aspects of NASA's activities, products, and services.

3.2.2.1 NASA Headquarters Environmental Management Division is responsible for

--

a. Evaluating Federal and State statutes, regulations, ordinances, and Executive orders that might apply to NASA.
b. Regularly updating information on Federal and State statutes, regulations, and Executive orders.
c. Ensuring that legal requirements information is communicated in a timely manner to the appropriate NASA Centers and Mission Directorates and Mission Support Offices.
d. Evaluating NASAwide agreements and commitments.
e. Consulting with the Office of General Counsel, as appropriate, in fulfilling responsibilities under Chapter 3.2.

3.2.2.2 NASA Mission Directorates and Mission Support Offices are responsible for --

a. Ensuring that program and project specific legal and other requirements are considered as appropriate within the Mission Directorate or Mission Support Office.
b. Ensuring applicable legal and other requirements are available to appropriate individuals within the Mission Directorate or Mission Support Office.

3.2.2.3 NASA Centers are responsible for --

a. a. Developing, implementing, and maintaining procedures for the evaluation of legal and other requirements and proposed changes to existing legal and other requirements for applicability to Center activities and operations.
b. b. Evaluating NASAwide and Center agreements and commitments.

c. c. Ensuring applicable legal and other requirements are available to appropriate individuals.
d. d. Providing information identified under step a. to Mission Directorates and Mission Support Offices when requested.
e. e. Consulting with their Office of Chief Counsel, as appropriate, in fulfilling responsibilities under Chapter 3.2.

3.3 Objectives and Targets

3.3.1 Purpose. To set forth requirements for establishing environmental objectives and targets that demonstrate commitment consistent with the intent of NASA environmental policy and the environmental aspects established through the EMS process.

3.3.2 Roles and Responsibilities

3.3.2.1 The Environmental and Energy Management Board is responsible for advising the NASA Operations Council on Agency and Headquarters objectives and targets.

3.3.2.2 NASA Headquarters Environmental Management Division is responsible for developing and maintaining Headquarters and Agency level environmental objectives and targets in support of NASA environmental policy.

3.3.2.3 NASA Mission Directorates and Mission Support Offices are responsible for establishing and documenting, as appropriate, Mission Directorate, Mission Support Office or Center level objectives and targets within the limits of their authority.

3.3.2.4 NASA Centers are responsible for --

a. Establishing and maintaining documented Center objectives and targets consistent with high priority environmental aspects and NASA environmental policy.
b. Managing all other environmental aspects so that they do not become high priority environmental aspects. These do not require EMS defined objectives and targets.

3.3.3 Requirements

a. Objectives and targets shall be established at all appropriate organizational levels as needed for the implementation and maintenance of the EMS.
b. Objectives and targets shall be established to address high priority environmental aspects.
c. The determination of the need for objectives and targets shall be made by the appropriate NASA authority; however, the actual objectives and targets may be suggested by other interested parties.
d. When establishing objectives and targets each Center shall consider--

1. Legal and other requirements.
2. Available technology options and infrastructure.
3. Operational, mission, and mission-related activities.
4. Financial resources.
5. Interests and views of stakeholders.

e. Specific objectives and targets that are technically feasible and economically reasonable shall be established for high priority environmental aspects.
f. If the determination is made that a high priority environmental aspect cannot be addressed with one or more objectives and targets due to being technically infeasible or economically unreasonable, the rationale behind this determination shall be documented.

g. Objectives and targets may be established to address any medium, low, or very low priority environmental aspects that a Center determines it needs to manage or maintain to ensure they do not become a high priority.
h. Objectives and targets shall be reviewed and updated as appropriate.

3.4 Environmental Management Program(s)

3.4.1 Purpose. To establish and maintain Environmental Management Programs (EMPs) needed to manage NASA environmental policy and EMS objectives and targets, with EMPs setting the framework for, as needed, the development of training, communication, documentation, records, operational controls and other procedures and practices.

3.4.2 Roles and Responsibilities

3.4.2.1 NASA Headquarters Environmental Management Division is responsible for establishing and maintaining NASA environmental policy, requirements, and guidance.

3.4.2.2 NASA Mission Directorates and Mission Support Offices are responsible for establishing and maintaining new and/or revised documented EMPs within the limits of their authority.

3.4.2.3 NASA Centers are responsible for establishing and maintaining new and/or revised documented Center EMPs.

3.4.3 Requirements

a. All high priority environmental aspects shall be managed within the limits of technological feasibility and economic reasonableness.
b. Ensure that management controls are in place to: mitigate adverse environmental impacts or secure existing benefits, associated with non-high priority environmental aspects, and prevent those environmental aspects from becoming high priority and manage NASA environmental policy and compliance activities. Controls shall remain in place unless it is determined that they are no longer required.
c. EMPs shall --

1. Designate responsibility for achieving objectives and targets at each relevant function and level of organization.
2. Demonstrate that NASA is addressing its identified objectives and targets.
3. Address major compliance activities if applicable.
4. Identify required resources (technical and financial) to carry out the EMPs.
5. Reflect changes in objectives and targets.
6. Establish the timeframes in which objectives and targets are to be achieved.

CHAPTER 4. Implementation and Operation

4.1 Structure and Responsibility

4.1.1 Purpose. To identify roles, responsibilities, and authorities that will provide an organizational structure for implementing and maintaining the EMS.

Specific roles, responsibilities, and authorities are provided in applicable Chapters. Appendix A provides a summary of roles and responsibilities.

4.1.2 Roles and Responsibilities

All roles and responsibilities in this NPR are subject to NPD 1000.3, The NASA Organization, which is a primary source of roles, responsibility and authority across NASA and takes primacy over roles and responsibilities documented in this NPR.

4.1.2.1 NASA Headquarters Environmental Management Division is responsible for --

a. Periodically assessing, reviewing, and reporting on the condition of the NASA EMS.
b. Seeking continual improvement opportunities for the NASA EMS.
c. Providing guidance and support for the Headquarters EMS.

4.1.2.2 NASA Mission Directorates and Mission Support Offices are responsible for --

a. Determining the EMS requirements applicable to the Mission Directorate or Mission Support Office
b. Allocating resources for the effective operation and maintenance of the EMS.
c. Establishing, implementing, and maintaining EMS requirements.
d. Periodically assessing, reviewing, and reporting on the condition of the EMS.

4.1.2.3 NASA Centers are responsible for implementing NASA environmental policy and this NPR.

4.1.2.4 Center EMS Representatives are responsible for --

a. Ensuring the implementation and maintenance of Center EMS requirements.
b. Documenting and communicating roles, responsibilities, and authorities to facilitate effective implementation of the Center EMS.
c. Requesting resources for the effective operation and maintenance of the Center EMS.
d. Exercising the authority necessary to implement and maintain the Center EMS.
e. Establishing a Center EMS Core Team, or other means able to accomplish an equivalent function, with assigned roles and responsibilities.
f. Periodically assessing, reviewing, and reporting on the condition of the Center EMS.

4.2 Environmental Training - Awareness and Competence

4.2.1 Purpose. To identify training requirements needed to ensure and maintain awareness and competence for the EMS.

4.2.2 Roles and Responsibilities

4.2.2.1 NASA Centers are responsible for establishing and maintaining procedures for --

a. a. Determining EMS training needs.
b. b. Conducting training as required at each relevant level and function of the organization.
c. c. Verifying and recording that the necessary EMS training has occurred.

4.2.2.2 NASA Centers, Mission Directorates and Mission Support Offices are responsible for ensuring that all employees are aware of the existence of NASA environmental policy and its applicability to their work.

4.2.3 Requirements

a. Employees engaged in activities associated with EMS environmental aspects or compliance activities, shall receive appropriate training, as determined by the Center under Chapter 4.2.2.
b. Training records shall be maintained in accordance with Chapter 5.3.
c. Employees shall be aware of the following areas, as appropriate, based on activities they are engaged in (Note: These may be accomplished by formal awareness training or as a part of the employee's on-the-job training requirements):

1. Adverse environmental impacts and beneficial environmental impacts associated with the high priority environmental aspects of their work, that they may affect, and the benefits of improved environmental performance, and
2. Requirements of the EMS applicable to their work, and awareness of consequences associated with their deviation from these requirements.

4.3 Communication

4.3.1 Purpose. To establish procedures for internal and external communication related to environmental aspects and the EMS.

4.3.2 Roles and Responsibility

4.3.2.1 NASA Mission Directorates and Mission Support Offices are responsible for --

a. Internal communication at various organizational levels, including Centers.
b. Following existing communications procedures (or creating new procedures as necessary) in communicating with internal and external parties.

4.3.2.2 NASA Centers are responsible for --

a. Internal communication to various organizational levels.
b. Receiving, recording, and responding to relevant communications from external parties.
c. Following existing communications procedures (or creating new procedures as necessary) in communicating with internal and external parties.
d. Choosing if they will restrict external communications regarding high priority environmental

aspects to within Freedom of Information Act limits, as specified by the Guide for Freedom of Information Act Requesters located at http://www.hq.nasa.gov/office/pao/FOIA/guide.html.

e. Documenting applicable EMS requirements within contracts no later than the time of the next recompetition.
f. Communicating applicable EMS requirements to tenants, subject to the limitations of tenancy agreements.

4.3.3 Reference documents with communication requirements include --

a. 5 U.S.C. 552, Freedom of Information Act, as amended.
b. 14 CFR, Part 1206, Availability of Agency Records to Members of the Public.
c. 16 U.S.C. 470, National Historic Preservation Act, as amended.
d. 42 U.S.C. 4321 et seq., National Environmental Policy Act of 1969, as amended.
e. 42 U.S.C. 11011-1105, Emergency Planning and Community Right to Know Act.
f. Center Emergency Preparedness Plans.
g. Center Spill Prevention, Control and Countermeasure Plans.
h. Executive Order 11988, Flood Plain Management, May 1997, as amended.
i. Executive Order 11990, Protection of Wetlands, May 1997, as amended.
j. Executive Order12898, February 11, 1994, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.
k. NASA Environmental Justice Strategy, March 1995.
l. NPR 8580.1, Implementing The National Environmental Policy Act and Executive Order 12114.

4.4 EMS Documentation and Document Control

4.4.1 Purpose. To establish and maintain procedures for EMS documentation and document control, including maintenance.

4.4.2 Roles and Responsibilities

4.4.2.1 NASA Headquarters Environmental Management Division is responsible for establishing and maintaining NASAwide EMS documentation.

4.4.2.2 NASA Centers are responsible for --

a. Establishing and maintaining Center EMS documentation.
b. Establishing and maintaining Center EMS document control procedures.
c. Determining if they will use established quality management system conformant document control procedures, or other filing systems for the control of EMS documents.

4.4.3 Requirements

a. Specific document control procedures shall ensure the --

1. Periodic review and update of EMS documents as necessary.
2. Removal of obsolete EMS documents.

b. Obsolete EMS documents that are retained for legal and historical reasons shall be archived per NPD 1440.6, NASA Records Management, NPR 1441.1, NASA Records Retention Schedules, and NPD 2800.1, Managing Information Technology.
c. EMS documents and documented procedures shall be --

1. Legible.
2. Dated (with dates of revision).
3. Readily available in locations where essential operations occur.
4. Identifiable.
5. Maintained in an orderly manner.
6. Retained for a specified period.

d. Electronic or hardcopy versions of EMS documents under the Center EMS Representative's control shall meet the requirements of step c above.
e. EMS documents that are subject to document control include, but are not limited to --

1. NASA environmental policy.
2. This NPR.
3. EMS documents and documented procedures required by this NPR (see Appendix B).

f. f. Compliance documents are not subject to EMS document control requirements but shall be maintained according to external requirements and shall be readily available.

4.5 Operational Controls

4.5.1 Purpose. To develop, implement, and maintain operational controls and operational control procedures for activities associated with high priority environmental aspects, to manage all other environmental aspects to keep them from becoming high priority as needed, and to manage NASA environmental policy and compliance activities.

4.5.2 Roles and Responsibilities

4.5.2.1 NASA Mission Directorates and Mission Support Offices are responsible for --

a. Operational controls and operational control procedures associated with Headquarters high priority environmental aspects.
b. Operational controls to prevent associated Headquarters environmental aspects from becoming Headquarters high priority environmental aspects.

4.5.2.2 NASA Centers are responsible for --

a. Operational controls and operational control procedures associated with high priority environmental aspects.
b. Operational controls associated with non-high priority environmental aspects, in place to prevent those environmental aspects from becoming high priority.
c. Implementing and conforming to EMS procedures.

4.5.3 Requirements

a. Procedures developed under Chapter 4.5.2 shall --

1. Stipulate specific operating and maintenance criteria, and
2. Be communicated to tenants as appropriate.

b. Centers shall document applicable procedures within contracts no later than the time of the next recompetition.
c. Operational controls and operational control procedures associated with non-high priority

environmental aspects, in place to prevent those environmental aspects from becoming high priority, shall remain in place unless it is determined that they are no longer required.

4.6 Emergency Preparedness and Response

4.6.1 Purpose. To address potential incidents and their attendant adverse environmental impacts, NASA Centers shall have emergency preparedness and response procedures.

4.6.2 Roles and Responsibilities.

NASA Centers are responsible for implementing emergency preparedness plans, procedures, and requirements.

4.6.3 Requirements

a. Employees shall be provided with training as appropriate, based on activities they are engaged in, on emergency preparedness and response requirements:

1. Associated with environmental aspects and impacts identified in Chapter 3.1, and
2. As externally required under legal and other requirements.

b. Procedures to meet emergency preparedness training, planning, procedures, and requirements may be contained within Center Emergency Preparedness Program Plans; Integrated Contingency Plans; Center Spill Prevention, Control and Countermeasure Plans; or Pollution Prevention Plans.

4.6.3.1 Reference documents with emergency preparedness and response requirements include, NPR 8715.2, NASA Emergency Preparedness Plan Procedural Requirements.

Chapter 5. Checking and Corrective Action

5.1 Monitoring and Measurement

5.1.1 Purpose. To perform periodic monitoring and measurement of the EMS.

5.1.2 Roles and Responsibilities

5.1.2.1 NASA Mission Directorates and Mission Support Offices are responsible for, as appropriate, establishing and maintaining documented procedures to track, monitor, and measure the key characteristics of operations associated with EMS objectives and targets and associated with Headquarters high priority environmental aspects.

5.1.2.2 NASA Centers are responsible for, establishing and maintaining documented procedures to track, monitor, and measure the key characteristics of operations associated with EMS objectives and targets and EMS high priority environmental aspects.

5.1.3 Requirements. Equipment used for monitoring shall be appropriately calibrated and calibration records maintained.

5.2 Nonconformance, Corrective, and Preventive Action

5.2.1 Purpose. To establish and maintain a procedure for defining responsibility and authority for identifying, handling, and investigating nonconformances.

5.2.2 Roles and Responsibilities

NASA Centers are responsible for establishing procedures to identify and track nonconformance and corrective action. Center quality management system procedures may be used.

5.2.3 Requirements

a. a. Preventive and corrective actions shall be appropriate to the magnitude of the environmental impact.
b. b. Action shall be taken to mitigate any environmental impacts caused by a nonconformance and provide for both initiation and completion of corrective and preventive action.

5.3 Records

5.3.1 Purpose. To provide evidence of ongoing operations and maintenance of the EMS.

5.3.2 Roles and Responsibilities

NASA Centers are responsible for --

a. For EMS records, conformance with this NPR, and applicable NASA records requirements including: NASA NPD 1440.6, NASA Records Management, NPR 1441.1, Records Retention Schedules, and NPD 2800.1 Managing Information Technology, and
b. Retaining records of compliance activities in accordance with legal and regulatory guidelines.

5.3.3 Requirements

a. A records retention matrix for EMS records shall be established and maintained.
b. Environmental records shall be legible, identifiable, and traceable to an activity, product, or service.
c. Environmental records shall be maintained and stored in a manner that --

1. Allows for their ready retrieval, and
2. Protects them from loss, damage, or deterioration.

d. A list of records that have been identified as pertaining to the EMS is provided in Appendix B.
e. Compliance records are not subject to EMS record requirements but shall be maintained according to external requirements and shall be readily available.

5.4 EMS Audit

5.4.1 Purpose.

To assess conformance to this NPR's requirements using EMS auditing techniques, and environmental compliance using compliance auditing techniques, as appropriate through:

a. NASA Headquarters Environmental Management Division - led environmental functional reviews,
b. Independent self-declaration assessments of Center EMSs, and
c. Center-led internal:

1. Annual EMS reviews, and
2. Reviews of compliance with local environmental regulations.

5.4.2 Roles and Responsibilities

5.4.2.1 NASA Headquarters Environmental Management Division is responsible for --

a. Providing guidance on Center-led internal annual EMS reviews of conformance with this NPR's requirements and EMS performance (see Appendix Z, Parts 1 and 2).
b. Establishing oversight and evaluation of Center operations through EMS audits, performance metrics, or other means to ascertain that appropriate environmental, compliance, and management techniques are used.
c. Providing functional oversight and conducting environmental functional reviews to ensure that environmental activities are conducted in accordance with statutory, regulatory, and fiduciary responsibilities including the requirements of this NPR.
d. Establishing and maintaining programs and procedures for environmental functional reviews.
e. Establishing and maintaining the NASA Environmental Management System Checklist (see Appendix Z, Part 2).

5.4.2.2 NASA Centers are responsible for --

a. Supporting Headquarters Environmental Management Division-led environmental functional reviews as necessary to ensure that Center programs, projects, facilities, systems, and operations comply with all environmental requirements.
b. Establishing and maintaining programs and procedures for internal annual EMS reviews and internal reviews of compliance with local environmental regulations.
c. Internal, annual EMS reviews, in years that Headquarters Environmental Management Division -led environment functional reviews are not conducted.
d. At a minimum, in conducting its annual EMS reviews, each Center shall internally review all elements of its EMS for conformance with this NPR, as applicable to its internal sub-organizations, over a 3-year period.
e. Periodic internal reviews of compliance with local environmental regulations. At a minimum compliance with all applicable local environmental regulations shall be reviewed over a 3-year period.
f. If self-declaring their EMS:

1. Annual EMS reviews utilizing the current NASA Environmental Management System Checklist (see Appendix Z, Part 2), as it applies across the Center and to internal sub-organizations.
2. Independent self-declaration assessments every third year. The environmental management portion of a Headquarters Environmental Management Division conducted environmental functional review is a source of an independent self-declaration assessment.

5.4.3 Requirements

a. Headquarters Environmental Management Division -led environmental functional reviews shall be conducted every 3 years.
b. Results of previous environmental functional reviews, shall be considered by Headquarters Environmental Management Division, when conducting environmental functional reviews.
c. Results of previous Headquarters Environmental Management Division -led environmental functional reviews, independent self-declaration assessments, Center-led annual EMS reviews and reviews of compliance with local regulations shall be considered, as appropriate, by Centers when conducting EMS reviews and reviews of compliance with local environmental regulations.
d. Results of annual EMS reviews, self-declaration assessments, and reviews of compliance with local environmental regulations and environmental functional reviews shall be provided to Center Senior Management.
e. Headquarters Environmental Management Division and Center auditing procedures shall address auditor competence.

Chapter 6. Management Review

6.1 Purpose

To involve Senior Management in the review and evaluation of the EMS to ensure that it continues to be suitable, adequate, and effective.

6.2 Roles and Responsibilities

NPD 1000.3, The NASA Organization, includes the Charters of the NASA Operations Council and the Environmental and Energy Management Board.

6.2.1 The NASA Operations Council is responsible for periodically reviewing the NASA EMS for status and viability.

6.2.2 The Environmental and Energy Management Board is responsible for periodically reviewing and advising the NASA Operations Council on the status and viability of the NASA EMS.

6.2.3 NASA Headquarters Environmental Management Division is responsible for --

a. Reporting to the Environmental and Energy Management Board on the results of environmental functional reviews and on the status and viability of the NASA EMS.
b. Establishing and documenting the management review.

6.2.4 Center Directors are responsible for --

a. Periodically reviewing the Center EMS for status and viability.
b. When applicable, making an annual EMS self-declaration that the Center EMS conforms to applicable requirements of this NPR, is in place, and is viable.

6.2.5 Center EMS Representatives are responsible for --

a. Reporting to the Center Director and NASA Headquarters Environmental Management Division on the results of Center-led annual EMS reviews and the status and viability of the Center EMS.
b. Reporting to the Center Director on the results of independent self-declaration assessments, as applicable.
c. Reviewing and updating (as necessary) Center objectives and targets.
d. Reviewing the determination(s) of technical feasibility and economic reasonableness where it was decided not to set objectives and targets to address high priority environmental aspects.

6.3 Requirements

The NASA EMS management review shall utilize environmental functional reviews to determine any necessary changes to environmental policy and to identify opportunities for continual improvement of the EMS.

Chapter 7. Metrics

7.1 Purpose

To evaluate the success of the EMS and NASA's attainment of its environmental compliance objectives.

7.2 Roles and Responsibilities:

7.2.1 NASA Headquarters Environmental Management Division, in consultation with the Environmental and Energy Management Board, is responsible for establishing --

a. Metrics for evaluating NASA's attainment of its overall environmental objectives.
b. Metrics for evaluating the status and viability of the EMS.

7.2.2 NASA Headquarters Environmental Management Division is responsible for -

Reporting metrics through the Environmental and Energy Management Board, NASA Operations Council, Government Performance and Results Act process, or other means as established by the Environmental and Energy Management Board.

7.2.3 NASA Centers are responsible for --

a. Corrective actions addressing nonconformances identified as a result of evaluating and reporting of metrics.
b. Reporting metric results to NASA Headquarters Environmental Management Division.

7.3 Requirements

Metrics shall be documented and reported in accordance with a schedule as established by NASA Headquarters Environmental Management Division.

Appendix A: Summary of Roles and Responsibilities Matrix

A.1 Headquarters Responsibilities

a. The NASA Operations Council is responsible for -

1. Periodically reviewing the NASA EMS for status and viability (paragraph 6.2.1).

b. Environmental and Energy Management Board is responsible for --

1. Advising the NASA Operations Council on Agency and Headquarters objectives and targets (paragraph 3.3.2.1).
2. Periodically reviewing and advising the NASA Operations Council on the status and viability of the NASA EMS (paragraph 6.2.2).
3. For establishing (in consultation with NASA Headquarters Environmental Management Division) metrics: for evaluating NASA's attainment of its overall environmental objectives and for evaluating the status and viability of the EMS (paragraph 7.2.1).

c. The Assistant Administrator for Infrastructure, Management and Headquarters Operations, as the senior Agency official responsible for providing executive and functional leadership for environmental management, is responsible for--

1. Ensuring that the Headquarters EMS Representative has the responsibilities and authority needed to implement and maintain the Headquarters EMS across Mission Directorates and Mission Support Offices (paragraph 1.1.a.1).
2. Periodically reviewing the Headquarters EMS for status and viability, and leading the assessment, analysis, and preparation of environmental matters to be considered by the NASA Operations Council (paragraph 1.1.a.2).
3. Monitoring implementation of recommendations of the NASA Operations Council related to the Headquarters EMS across Mission Directorates and Mission Support Offices (paragraph 1.1.a.3).
4.) Self-declaration of the Headquarters EMS or participation in an external EMS recognition program and when applicable, making an annual EMS self-declaration that the Headquarters EMS conforms to applicable requirements of this NPR, is in place, and is viable. (paragraphs 1.1.a.4 and 6.2.4.b).

d. The role of the NASA Headquarters Environmental Management Division is to --

1. Implement applicable requirements of NPD 1000.3, The NASA Organization, related to Agencywide environmental issues and initiatives, and NPD 8500.1, NASA Environmental

Management (paragraph 1.1).

e. NASA Headquarters Environmental Management Division is responsible for --

1. Establishing and maintaining NASA environmental policy, requirements, and guidance (paragraphs 1.1.b.1 and 3.4.2.1).
2. Defining and maintaining NPR 8553.1, NASA Environmental Management System (paragraph 1.1.b.2).
3. Establishing and maintaining guidance on the NASA Environmental Management System (paragraph 1.1.b.3).
4. Providing guidance on independent self-declaration assessments (paragraph 1.1.b.4).
5. Establishing and maintaining guidance on participation in external EMS recognition programs (paragraph 1.1.b.5).
6. Establishing NASA EMS priority environmental aspect risk criteria (paragraph 3.1.2.1.a).
7. Defining the scope of the NASA EMS and supporting the definition of the scope of the Headquarters EMS (paragraph 3.1.2.1.b).
8. Collection and review of environmental information from Centers and providing an overview and recommendations to the Mission Directorates and Mission Support Offices, as appropriate, for use in the Headquarters EMS (paragraph 3.2.1.c).
9. Evaluating Federal and State statutes, regulations, ordinances, and Executive orders that might apply to NASA locations (paragraph 3.2.2.1.a).
10. Regularly updating information on Federal and State statutes, regulations, and Executive orders (paragraph 3.2.2.2.b).
11. Ensuring that legal requirements information is communicated in a timely manner to the appropriate NASA Centers, Mission Directorates and Mission Support Offices (paragraph 3.2.2.1.c).
12. Evaluating NASAwide agreements and commitments (paragraph 3.2.2.1.d).
13.) Consulting with the Office of General Counsel, as appropriate, in fulfilling responsibilities under Chapter 3.2 (paragraph 3.2.2.1.e).
14. Developing and maintaining Headquarters and Agency level environmental objectives and targets in support of NASA environmental policy (paragraph 3.3.2.2).
15. Periodically assessing, reviewing, and reporting on the condition of the NASA EMS (paragraph 4.1.2.1.a).
16. Seeking continual improvement opportunities for the NASA EMS (paragraph 4.1.2.1.b).
17. Providing guidance and support for the Headquarters EMS (paragraph 4.1.2.1.c).
18. Establishing and maintaining NASAwide EMS documentation (paragraph 4.4.2.1).
19. Providing guidance on Center-led internal annual EMS reviews of conformance with this NPR's requirements and EMS performance (paragraph 5.4.2.1.a).
20. Establishing oversight and evaluation of Center operations through EMS audits, performance metrics, or other means to ascertain that appropriate environmental, compliance, and management techniques are used (paragraph 5.4.2.1.b).
21. Providing functional oversight and conducting environmental functional reviews to ensure that environmental activities are conducted in accordance with statutory, regulatory, and fiduciary responsibilities including the requirements of this NPR (paragraph 5.4.2.1.c).
22. Establishing and maintaining programs and procedures for environmental functional reviews (paragraph 5.4.2.1.d).
23. Establishing and maintaining the NASA Environmental Management System Checklist (paragraph 5.4.2.1.e).
24. Reporting to the Environmental and Energy Management Board on the results of the environmental functional reviews and on the status and viability of the NASA EMS (paragraph 6.2.3.a).

25. Establishing and documenting the management review (paragraph 6.2.3.b).
26. In consultation with the Environmental and Energy Management Board, establishing metrics for: evaluating NASA's attainment of its overall environmental objectives and for evaluating the status and viability of the EMS (paragraphs 7.2.1.a and 7.2.1.b).
27. Reporting metrics through the Environmental and Energy Management Board, NASA Operations Council, GPRA process, or other means as established by the Environmental and Energy Management Board (paragraph 7.2.2).

f. NASA Mission Directorates and Mission Support Offices are responsible for --

1. Applying steps a. through d. in Chapter 3.1.2.3, as appropriate, to the activities, products, and services, e.g., grants, of the Mission Directorate or Mission Support Office, within the scope of the Headquarters EMS (paragraph 3.1.2.2.a).
2. Reviewing environmental information provided by Centers and, where appropriate, considering environmental impact categories and environmental aspect risk criteria to define Headquarters high priority environmental aspects (paragraph 3.1.2.2.b).
3. Working with Headquarters Environmental Management Division to define the scope of the Headquarters EMS (paragraph 3.1.2.2.c).
4. Ensuring that program and project specific legal and other requirements are considered as appropriate within the Mission Directorate or Mission Support Office (paragraph 3.2.2.2.a).
5. Ensuring applicable legal and other requirements are available to appropriate individuals within the Mission Directorate or Mission Support Office (paragraph 3.2.2.2.b).
6. Establishing and documenting, as appropriate, Mission Directorate, Mission Support Office or Center level objectives and targets within the limits of their authority (paragraph 3.2.2.3).
7. Establishing and maintaining new and/or revised documented EMPs within the limits of their authority (paragraph 3.4.2.2).
8. Determining the EMS requirements applicable to the Mission Directorate or Mission Support Office (paragraph 4.1.2.2.a).
9. Allocating resources for the effective operation and maintenance of the EMS (paragraph 4.1.2.2.b).
10. Establishing, implementing, and maintaining EMS requirements (paragraph 4.1.2.2.c).
11. Periodically assessing, reviewing, and reporting on the condition of the EMS (paragraph 4.1.2.2.d).
12. Ensuring that all employees are aware of the existence of the environmental policy and its applicability to their work (paragraph 4.2.2.2).
13. Internal communication at various organizational levels, including Centers (paragraph 4.3.2.1.a).
14. Following existing communications procedures (or create new procedures as necessary) in communicating with internal and external parties (paragraph 4.3.2.1.b).
15. Operational controls and operational control procedures associated with Headquarters high priority environmental aspects (paragraph 4.5.2.1.a).
16. Operational controls to prevent associated Headquarters environmental aspects from becoming Headquarters high priority environmental aspects (paragraph 4.5.2.1.b).
17. As appropriate, establishing and maintaining documented procedures to track, monitor, and measure the key characteristics of operations associated with EMS objectives and targets and associated with Headquarters high priority environmental aspects (paragraph 5.1.2.1).

A.2 Center Responsibilities

a. Center Directors are responsible for --

1. Implementing NASA Environmental Policy and Requirements (paragraph 1.1.c.1).
2. Defining the scope of the Center EMS (paragraph 1.1.c.2).
3. As applicable, delegating Component Facility environmental management responsibilities to an appropriate Component Facility NASA Authority and optionally designating an individual to assume Center Director responsibilities for the EMS at Component Facilities (paragraph 1.1.c.3).
4. Assigning roles and responsibilities for the Center EMS Representative (paragraph 1.1.c.4).
5. Providing the authority needed for the EMS Representative to implement and maintain the Center EMS (paragraph 1.1.c.5).
6. Providing resources for the effective operation and maintenance of the Center EMS (paragraph 1.1.c.6).
7. Periodically reviewing the Center EMS for status and viability (paragraphs 1.1.c.7 and 6.2.4.a).
8. Self-declaration of the Center EMS or participation in an external EMS recognition program no later than December 31, 2005 and when applicable, making an annual EMS self-declaration that the Center EMS conforms to applicable requirements of this NPR, is in place, and is viable (paragraphs 1.1.c.8 and 6.2.4.b).
9. Reporting to NASA Headquarters Environmental Management Division on EMS progress and metrics as requested (paragraph 1.1.c.9).

b. The Component Facility NASA Authority shall be responsible for --

1. Implementation of an EMS commensurate with the environmental responsibilities delegated by the Center Director. The Component Facility EMS may be separate from the Center EMS (paragraph 1.1.e).

c. NASA officials responsible for the contract at a NASA-owned, contractor-operated facility -

1. Incorporate a requirement for implementing an EMS, if determined appropriate, into the contract no later than the time of the next recompetition of the contract. The requirement shall, at a minimum, be for an EMS that satisfies the EMS-related requirements of Executive Order 13148 (and applicable Federal Acquisitions Regulations). If the contractor does not satisfy the above requirement for an EMS, then NASA officials have discretion to specify in the contract the conditions pursuant to which the contractor shall choose and administer an EMS. Such conditions may include restrictions as to the type of acceptable EMS and provisions for appropriate NASA authority control or supervision of the EMS desired by Center management (paragraph 1.1.f).

d. Center EMS Representatives are responsible for --

1. Ensuring the implementation and maintenance of Center EMS requirements (paragraph 4.1.2.4.a).
2. Documenting and communicating roles, responsibilities, and authorities to facilitate effective implementation of the Center EMS (paragraph 4.1.2.4.b).
3. Requesting resources for the effective operation and maintenance of the EMS (paragraph 4.1.2.4.c).
4. Exercising the authority necessary to implement and maintain the Center EMS (paragraph 4.1.2.4.d).
5. Establishing a Center EMS Core Team or other means able to accomplish an equivalent function with assigned roles and responsibilities (paragraph 4.1.2.4.e).
6. Periodically assessing, reviewing, and reporting on the condition of the Center EMS

(paragraph 4.1.2.4.f).
7. Reporting to the Center Director and NASA Headquarters Environmental Management Division on the results of Center-led annual EMS reviews and the status and viability of the Center EMS (paragraph 6.2.5.a).
8. Reporting to the Center Director on the results of independent Self-Declaration assessments as applicable (paragraph 6.2.5.b).
9. Reviewing and updating (as necessary) Center objectives and targets (paragraph 6.2.5.c).
10. Reviewing the determination(s) of technical feasibility and economic reasonableness where it was decided not to set objectives and targets to address high priority environmental aspects (paragraph 6.2.5.d).

e. NASA Centers are responsible for --

1. Determining the applicability of this EMS to the Center's contractors, to satisfy EMS-related requirements of Executive Order 13148 (and applicable Federal Acquisition Regulations). When a determination is made that the EMS is applicable, the NASA officials responsible for the contracts shall ensure that a requirement for implementing this EMS is incorporated into all such contracts no later than the time of the next recompetition of the contracts (paragraph 1.1.d.1).
2. Determining the applicability of the EMS to the Center's tenants to satisfy EMS-related requirements of Executive Order 13148, subject to the limitations of tenancy agreements. When a determination is made that the EMS is applicable, Center Management shall ensure that EMS requirements for tenants are incorporated into future tenancy agreements (paragraph 1.1.d.2).
3. Working with the Headquarters Environmental Management Division to define the scope of the Headquarters Environmental Management System as it pertains to the Agency and Centers (paragraph 1.1.d.3).
4. Reviewing and providing comments to Headquarters Environmental Management Division on NASA environmental information, policy, requirements, and guidance (paragraph 1.1.d.4).
5. Identifying and documenting Center activities (past, present, and future), products, and services within the scope of the Center EMS (paragraph 3.1.2.3.a).
6. Identifying the environmental aspects and associated environmental impact(s) of the documented activity, product, or service (paragraph 3.1.2.3.b).
7. Applying EMS environmental aspect risk criteria (paragraph 3.1.2.3.c).
8. Periodically reviewing and updating the results of steps a. through c. of Chapter 3.1.2.3 (paragraph 3.1.2.3.d).
9. Developing, implementing, and maintaining procedures for the evaluation of legal and other requirements and proposed changes to existing legal and other requirements for applicability to Center activities and operations (paragraph 3.2.2.3.a).
10. Evaluating NASAwide and Center agreements and commitments (paragraph 3.2.2.3.b).
11. Ensuring applicable legal and other requirements are available to appropriate individuals (paragraph 3.2.2.3.c).
12. Providing information identified under step a. of Chapter 3.2.2.3 to Mission Directorates or Mission Support Offices when requested (paragraph 3.2.2.3.d).
13. Consulting with their Office of Chief Counsel, as appropriate, in fulfilling responsibilities under Chapter 3.2 (paragraph 3.2.2.3.e).
14. Establishing and maintaining documented Center objectives and targets consistent with high priority environmental aspects and NASA environmental policy (paragraph 3.3.2.4.a).
15. Managing all other environmental aspects so that they do not become high priority environmental aspects. These do not require EMS defined objectives and targets (paragraph 3.3.2.4.b).

16. Establishing and maintaining new and/or revised documented Center EMPs (paragraph 3.4.2.3).
17. Implementing NASA environmental policy and this NPR (paragraph 4.1.2.3).
18. Establishing and maintaining procedures for determining EMS training needs (paragraph 4.2.2.1.a).
19. Establishing and maintaining procedures for conducting training as required at each relevant level and function of the organization (paragraph 4.2.2.1.b).
20. Establishing and maintaining procedures for verifying and recording that the necessary EMS training has occurred (paragraph 4.2.2.1.c).
21. Ensuring that all employees are aware of the existence of the environmental policy and its applicability to their work (paragraph 4.2.2.2).
22. Internal communication to various organizational levels (paragraph 4.3.2.2.a).
23. Receiving, recording, and responding to relevant communications from external parties (paragraph 4.3.2.2.b).
24. Following existing communications procedures (or create new procedures as necessary) in communicating with internal and external parties (paragraph 4.3.2.2.c).
25. Choosing if they will restrict external communications regarding high priority environmental aspects to within Freedom of Information Act limits, as specified by NASA at http://www.hq.nasa.gov/office/pao/FOIA/guide.html (paragraph 4.3.2.2.d).
26. Documenting applicable EMS requirements within contracts no later than the time of the next recompetition (paragraph 4.3.2.2.e).
27. Communicating applicable EMS requirements to tenants, subject to the limitations of tenancy agreements (paragraph 4.3.2.2.f).
28. Establishing and maintaining Center EMS documentation (paragraph 4.4.2.2.a).
29. Establishing and maintaining Center EMS document control procedures (paragraph 4.4.2.2.b).
30. Determining if they will use established quality management system conformant document control procedures, or other filing systems for the control of EMS documents (paragraph 4.4.2.2.c).
31. Operational controls and operational control procedures associated with high priority environmental aspects (paragraph 4.5.2.2.a).
32. Operational controls associated with non-high priority environmental aspects, in place to prevent those environmental aspects from becoming high priority (paragraph 4.5.2.2.b).
33. Implementing and conforming to EMS procedures (paragraph 4.5.2.2.c).
34. Implementing emergency preparedness plans, procedures and requirements (paragraph 4.6.2).
35. Establishing and maintaining documented procedures to track, monitor, and measure the key characteristics of operations associated with EMS objectives and targets and EMS high priority environmental aspects (paragraph 5.1.2.2).
36. Establishing procedures to identify and track nonconformance and corrective action. Center quality management system procedures may be used (paragraph 5.2.2).
37. For EMS records, conformance with this NPR, and applicable NASA records requirements including: NASA NPD 1440.6, NASA Records Management, NPR 1441.1, Records Retention Schedules, and NPD 2800.1 Managing Information Technology (paragraph 5.3.2.a).
38. Retaining records of compliance activities in accordance with legal and regulatory guidelines (paragraph 5.3.2.b).
39. Supporting Headquarters Environmental Management Division -led environmental functional reviews as necessary to ensure that Center programs, projects, facilities, systems, and operations comply with all environmental requirements (paragraph 5.4.2.2.a).
40. Establishing and maintaining programs and procedures for internal annual EMS reviews and internal reviews of compliance with local environmental regulations (paragraph 5.4.2.2.b).
41. Internal, annual EMS reviews, in years that Headquarters Environmental Management Division -led environment functional reviews are not conducted (paragraph 5.4.2.2.c).

42. At a minimum, in conducting its annual EMS reviews, each Center shall internally review all elements of its EMS for conformance with this NPR, as applicable to its internal sub-organizations, over a 3-year period (paragraph 5.4.2.2.d).
43. Periodic internal reviews of compliance with local environmental regulations. At a minimum compliance with all applicable local environmental regulations shall be reviewed over a 3-year period (paragraph 5.2.2.2.e).
44. If self-declaring their EMS, annual EMS reviews utilizing the current NASA Environmental Management System Checklist as it applies across the Center and to internal sub-organizations (paragraph 5.4.2.2.f.1).
45. If self-declaring their EMS, independent self-declaration assessments every third year. The environmental management portion of a Headquarters Environmental Management Division conducted environmental functional review is a source of an independent self-declaration assessment (paragraph 5.4.2.2.f.2).
46. Corrective actions addressing nonconformances identified as a result of evaluating and reporting of metrics (paragraph 7.2.3.a).
47. Reporting metric results to NASA Headquarters Environmental Management Division (paragraph 7.2.3.b).

APPENDIX B: Documents, Procedures, and Records

B.1 Agency Level

a. EMS Documents and Documented Procedures

1. NASA NPDs and NPRs (paragraph P.4).
2. Objectives and Targets (paragraph 3.3).
3. Operational Control procedures associated with Headquarters high priority environmental aspects (paragraph 4.5).
4. Procedures to track, monitor, and measure the key characteristics of operations associated with EMS objectives and targets and associated with Headquarters high priority environmental aspects (paragraph 5.1).
5. Metrics (paragraph 7).

b. EMS Procedures (written or non-written)

1. Environmental functional review procedures (paragraph 5.4).
2. Guidance on the NASA EMS (paragraphs, 1.1, 3.4 and 4.1).
3. Guidance on Center internal EMS reviews (paragraph 5.4).
4. Guidance for Centers self-declaring their EMS (paragraph 1.1).
5. Guidance on participation in external EMS recognition programs (paragraph 1.1).

c. EMS Records

1. Results of Headquarters Environmental Management Division -led environmental functional reviews (paragraph 5.4).
2. Management review results (paragraph 6).
3. Metrics reports (paragraph 7).

B.2 NASA Centers

a. EMS Documents and Documented Procedures

1. Objectives and targets for high priority environmental aspects (paragraph 3.3).
2. Environmental management programs (paragraph 3.4).
3. Roles, responsibilities, and authorities for implementation of EMS (paragraph 4.1).
4. EMS procedures applicable to tenants (paragraph 4.3).
5. Operational Control procedures associated with high priority environmental aspects

(paragraph 4.5).
6. Procedures to track, monitor, and measure the key characteristics of operations associated with EMS objectives and targets and associated with high priority environmental aspects (paragraph 5.1).
7. Metrics (paragraph 7).

b. EMS Procedures (written or non-written)

1. Identification of applicable State, local, facility-specific, and permit-driven legal and other requirements (paragraph 3.2).
2. Communications procedures (paragraph 4.3).
3. EMS training procedures (paragraph 4.2).
4. EMS documentation and document control (paragraph 4.4).
5. Operating procedures for activities associated with EMS high priority environmental aspects (paragraph 4.5).
6. Emergency preparedness (paragraph 4.6).
7. Nonconformance and corrective action tracking (paragraph 5.2).
8. EMS internal audit procedures (paragraph 5.4).

c. EMS Records

1. Activities, products and services, aspects, impacts and risk ranking matrix results (paragraph 3.1).
2. EMS training records (paragraph 4.2).
3. Compliance activity records in accordance with legal and other requirements (paragraph 5.3).
4. Calibration and maintenance records (paragraph 5.1).
5. Results of tests of emergency response procedures (paragraph 4.6).
6. Results of, independent self-declaration assessments, Center-led annual EMS reviews and reviews of compliance with local regulations (paragraph 5.4).
7.) Communication with external parties (paragraph 4.3).
8. Decisions made with regard to external communication of high priority environmental aspects (paragraph 4.3).
9. Changes in the documented procedures resulting from corrective and preventive action (paragraph 5.2).
10. Management review results (paragraph 6).

APPENDIX C: Table of Acronyms and Abbreviations

CFR	Code of Federal Regulations
EMP	Environmental Management Program
EMS	Environmental Management System
EPA	Environmental Protection Agency
S&H	Safety and Health; environmental impact category
H	High; action priority category
HQ	Headquarters
ISO	International Organization for Standardization
L	Low; action priority category
L&R	Environmental Legal/Regulatory Implications; environmental consequence category
M	Medium; action priority category
MI	Mission Impacts; environmental consequence category
NCR	Natural and Cultural Resources Impacts; environmental consequence category
NEPA	National Environmental Policy Act
NODIS	NASA Online Directives Information System
NPD	NASA Policy Directives
NPR	NASA Procedural Requirements
R&S	Reputation and Stakeholder Relationships; environmental consequence category
VL	Very Low; action priority category

APPENDIX Z. Part 1. NASA Internal EMS Review Guidance

Z1.1 Introduction

a. Part 1. NASA Internal EMS Review Guidance (Part 1) is intended to serve as general guidance to Centers on satisfying the requirements for an internal EMS Review process.
b. Part 1 provides information on the NASA EMS review process. The use of a Standard Operating Procedure (SOP) for EMS reviews (sample provided in Part 1, Attachment Z1.1) and the application of the NASA Environmental Management System Checklist and Forms (see Appendix Z, Part 2), in order to satisfy the Center EMS review requirements of NPR 8553.1 is the focus of Part 1.
c. Part 1 is not intended to replace or provide comprehensive content on the actual practice of conducting EMS and management system reviews, audits or assessments. Formal training in the practice is recommended for participants on EMS review teams and is commercially available generally ranging from 1 to 3 days in length for internal audit / review programs and up to 5 days (40 hours) in length for the development of accredited lead auditors / reviewers.

Z1.2 Center EMS Review Drivers

a. NPR 8553.1A requires Centers to conduct annual internal EMS reviews. This section discusses EMS review drivers for NASA in general and those that may vary depending on the Center.

Z1.2.1 Executive Order 13148

a. Executive Order 13148 (EO) requirements stipulate that an appropriate EMS framework will be used. All common EMS frameworks (government and private sector) include a form of review function. The review function evaluates if the EMS is conforming to the high level requirements that the EMS it is based on (at NASA, NPR 8553.1) and the detailed requirements that have been developed

with the implementation of the EMS (at NASA, Center developed: EMS procedures, and other requirements and commitments).

b. The EO requirements also state that; once established the EMS audit process shall include performance measures. The EMS review process guidelines outlined in Part 1, along with use of the content from NPR 8553.1 Appendix Z, Part 2, provide Centers with an EMS performance measurement process.

---

7 Executive Order 13148, Greening the Government Through Leadership in Environmental Management Sec. 401. ãWithin 24 months of the date of this order, each agency shall implement environmental management systems through pilot projects at selected agency facilities based on the Code of Environmental Management Principles for Federal Agencies and/or another appropriate environmental management system framework.à

8 Executive Order 13148, Greening the Government Through Leadership in Environmental Management Sec. 401. ãOnce established, environmental management system performance measures shall be incorporated in agency facility audit protocolsà.

Z1.2.2 International Organization for Standardization (ISO)

a. NPR 8553.1 was designed to ensure that NASA's EMS is consistent with ISO 14001:1996, which requires periodic EMS audits. In the ISO community it is common practice to conduct annual internal reviews of EMSs.

b. ISO 19011 [9] establishes detailed guidance on the process of management system auditing. This extends from audit program design and implementation, to audit team members.

c. The International Accreditation Forum (IAF), which sets standards for national bodies accrediting ISO 14001 registrars, has published guidance [10] on the relationship between ISO 14001 management system conformity and regulatory compliance (the guidance has been included in Part 1, Attachment Z1.2). Clarity in the distinction between Center EMS reviews and Center compliance reviews is discussed further in Z1.3.3 below.

---

9 ISO 19011: Guidelines for Quality and/or Environmental Management Systems Auditing, International Organization for Standardization (ISO), 2002.

10 The International Accreditation Forum (IAF), The Relationship Between ISO 14001 Management System Conformity and Regulatory Compliance, White Paper TC-30-04, 2004.

Z1.2.3 Self Declaration

a. Guidance for Centers that have decided to self-declare their EMS is provided in

Appendix Z, Part 3. These Centers use the NASA Environmental Management System Checklist and Forms provided in Appendix Z, Part 2.

Z1.2.4 External EMS Recognition Programs

a. As noted above, ISO 14001 is an external recognition program that requires an internal audit process. The National Environmental Performance Track Program (NEPT), State Programs and other recognition programs require some form of EMS assessment, audit or review. NEPT has developed a checklist specific to the program. [11]
b. Many external recognition programs use EMS assessment, audit or review requirements as the primary means of ensuring the EMS meets program criteria.
c. When a Center participates in an external EMS recognition program, it will need to understand the specific and ongoing requirements for EMS assessment, audit or review.

---

11 Performance Track independent Assessment Protocol (http://www.epa.gov/performancetrack/ind_assessment.htm#current).

Z1.3 EMS Review Process

a. The EMS review process is comprised of a series of key components. The combination of program development, implementation, ongoing review and improvement and the competence of reviewers are needed for an effective review program.
b. An EMS review process does not require detailed or separate procedures for these areas. Part 1, Attachment Z1.1 provides a sample procedure to cover these areas.
c. In order to avoid confusion with other forms of evaluation, the term "review", as opposed audit or assessment, is used by NASA to describe the process of determining the level of conformance of a Center EMS to requirements. The review process is based on auditing principles and practices.
d. In developing, implementing, staffing and improving an EMS review process, consider the use of Center experience beyond the environmental office.

Z1.3.1 Developing an EMS Review Process

Z1.3.1.1 When developing an EMS review process, consider:

a. The objectives of the program:

1. Satisfying NPR 8553.1 requirements.
2. Continual improvement of the EMS through identification of areas of success

and the identification of opportunities for improvement.
3. Demonstration of EMS conformance for self-declaration or external recognition programs.
4. Demonstration of the EMS for external stakeholders.

b. The extent of the program:

1. The scope of the review.

i. Over 3 years all elements of the EMS that apply to each Center sub-organization must be covered (see Z1.3.2 below).
ii. The environmental program limits of the Center EMS. How has the Center delineated the extent of the scope of the EMS in areas that may be a part of other management programs (e.g., hazardous materials management, OSHA requirements that apply to environmental functions)?
iii. Points of distinction between EMS review and compliance review (see Z1.3.3 below).

2. Frequency of review. Annual reviews are required, but depending on the size or complexity of the Center, a staggered review program that reviews the EMS in different Center sub-organizations over a 3-year timeframe might be more appropriate.
3. Review criteria. For self-declaration assessments, Appendix Z, Part 2 is the required minimum. As noted above in Z1.2.4, the requirements of any external recognition programs the Center participates in also need to be considered.
4. Results and findings from previous Center EMS reviews, and other sources that resulted in corrective or preventative actions, NASA Headquarters Environmental Management Division environmental functional reviews and third party or stakeholder input on the Center EMS.
5. Changes that have occurred or which are anticipated at the Center that may affect the EMS.

c. Program organization, responsibilities and resources:

1. The roles of the Center Environmental Office and other supporting groups (e.g. the quality management system office, institutional and infrastructure functions versus program functions and support contractors).
2. How the program is administered and led.
3. Resources considerations (human, technical and financial).

i. EMS review training, initial and ongoing. The program may need a periodic "refreshing of the ranks" to sustain itself.
ii. Availability of trained review staff and balancing the need for current and active reviewers with reviewer fatigue concerns. For larger Centers, the staffing level required to review all Center sub-organizations with an annual program (even if a sampling strategy is used over 3 years).
iii. Availability of added technical expertise as needed for specialized areas. For

example, the Center Environmental Office and its support contractor may be able to maintain a desirable level of competency, independence and objectivity (see Z1.3.4 below for added discussion in this area) when reviewing operational areas at the Center. However, a different source of reviewers may be needed for review of the activities of the environmental office and its support contractor. Other sources of perspective may also be needed when considering the EMS review program itself.

iv. Use of contractor support, third parties or integrated teams (part contractor, part civil servant).

v. Travel time requirements where multiple locations exist.

d. Review program procedures and their implementation:

1. As with all procedures, striking the appropriate balance between detail to ensure a successful program and the need to provide program flexibility to allow for innovation and professional judgment. ISO 19011 and formal management system audit training programs provide a high level of detail that is useful to consider in the development of review procedures, but it is not necessary or potentially advisable to develop procedures of detail beyond Part 1, Attachment Z1.1. Too much detail can unduly restrict flexibility of approach.
2. Review program procedure(s) should be a reflection of how the EMS review process needs to operate in order to ensure that the Center's goals for continual improvement in environmental performance and the EMS are assisted by the review.
3. The review program procedure(s) should cover, to a degree, all of the major topic areas in this Appendix. The preparation for and follow up after the review are as important for success as the selection of the review criteria and the actual process of review.
4. Implementation of EMS reviews generally follow a series of steps such as:

i. Appointing the review team leader.
ii. Defining the objectives, scope and criteria for the review.
iii. Selecting the review team.
iv. Initial contact with the organizations that are the subject of the review.
v. Review of documentation. Review background (e.g., previous review findings) and material provided by the organizations.
vi. Preparation of a review plan. How will the EMS review procedure(s) work for the specifics of the organizations being reviewed?
vii. Delegation of tasks and responsibilities to the review team members.
viii. Preparing working documents.
ix. Conducting the opening, periodic and closing meetings.
x. Working with guides and observers.
xi. Collecting and verifying information.
xii. Preparing findings.
xiii. Out briefings with senior management when appropriate.

xiv. Preparing draft review reports, soliciting clarifications, conducting review follow-up and issuing finalizing reports.
xv. Record keeping.

e. Follow up after the review:

1. How will findings be relayed to management of the organization being reviewed, senior management and incorporated into Center EMS management review processes? While NPR 8553.1 requires reporting to senior management and to the Center Director, it is up to the Center and EMS Representative to determine if and how the internal EMS review will be integrated with compliance review processes, and other ongoing environmental program reporting.
2. Will reporting be findings only, or are recommendations for corrective and preventative action and continual improvement of the EMS desirable? This is another area of defining the scope of the review. The process of developing corrective and preventive actions includes determination of route causes. Reviewers may be able to assist in root cause determination, but the extent of this role (if any) should be clearly defined.
3. How will review records be maintained? The means of verification of findings and FOIA considerations need to be considered. Draft reports and follow up may be best treated separately from final reports.
4. When will a finding be considered closed? Is provision of a plan to resolve a finding sufficient, provided that it has been entered into an acceptable corrective action process? Or, is documentation of resolution required?

Z1.3.2 Review Frequency

a. Centers are free to determine how they will review all elements of their EMS for conformance with NPR 8553.1, as applicable to internal sub-organizations, over a 3-year period. Considerations include:

1. While a Center is not required to conduct an annual EMS review if a Headquarters Environmental Management Division (EMD) environmental functional review (EFR) is conducted that year, this does not mean that areas of the Center, which EMD visits during the EFR, are exempted from the 3-year internal review cycle. The EFR is a high level review that does not necessarily conduct a comprehensive review of all the applicable NASA and Center level EMS requirements that apply to the organizations that are visited.
2. Centers are responsible for ensuring that for each sub-organization across the Center, a determination has been made as to which EMS elements (and therefore the actual clauses of NPR 8553.1 and any Center developed EMS requirements) apply. With this determination in mind, the details of how the Center will review conformance with applicable requirements should be scheduled.
3. A common approach to review programs is to develop a sampling strategy so

that each year a combination of applicable EMS elements and / or combination of sub-organizations are reviewed. For example, documentation and its management in general could be reviewed across many organizations at the same time, or all applicable EMS elements could be reviewed one organization at a time over 3 years.

4. Try not to think of the EMS review program as a once a year event. Adapting the program to slow versus busy times for different organizations can help to reduce the stress on review teams and the organizations being reviewed. Co-ordination with other environmental review and monitoring programs can assist as well.
5. Areas of weakness in the EMS, one time or ongoing, may be cause to increase the review frequency for an organization. This may also occur for a group of organizations, if for one or more elements there is more widespread concern.

Z1.3.3 EMS Reviews and Compliance Reviews

a. While both EMS reviews and compliance reviews occur, they have distinct and separate processes and purposes. Both require a number of the some skills and knowledge but there are also distinctions that need to be maintained. This is why the guidance noted in Part 1, Attachment Z1.2 was developed. This guidance specifically targets certification bodies, but the guidance on how to separate EMS audits from compliance audits is applicable to internal EMS reviews and compliance reviews. Reviewers need to be cognizant of when they conducting an EMS review versus a compliance review.
b. A EMS review considers compliance issues as an indicator of systemic weakness, and the review seeks to understand if the failure to comply is a possibly a result of EMS element problems: (for example: a failure to communicate policy commitments, lack of awareness, failure to identify a change in requirements or their applicability to an environmental aspect or impact, problems with resources allocation, ineffective operational controls).
c. When conducting EMS reviews the review process and the review team should have clearly defined how to approach any observed or potential areas of non-compliance.

Z1.3.4 Competency, independence and objectivity

a. Confidence and reliance in the EMS review process depends on the competence of the review team. The team typically consists of a lead reviewer, other reviewers, associated technical experts and guides.
b. The lead reviewer should meet minimum requirements, even if operating as a lead working towards accreditation under the watch of another more experienced reviewer. Lead reviewers need to be able to take the procedure(s) that have been developed as the framework for an EMS review and apply them in the execution of the review program.

c. The review team supports the lead reviewer and the technical experts and guides support the team.
d. No strictly defined "formula" exists for the ideal EMS reviewer. Competency is a combination of education, work experience, training (specific to EMS audit and review, as well general environmental) and review experience. Understanding / appreciation of NASA, the Center and the operational culture is an important dynamic as well.
e. The ideal knowledge and skills for team members needed to conduct effective internal reviews will often be a balancing act. The person with the highest understanding of how a Center organization works and satisfies EMS requirements will generally not be able to provide independent or objective comment. Conversely, a fully independent reviewer may be able to bring fresh perspective and the benefit of lessons learned in other settings, but will have greater difficulty with the context and at times the technology of NASA, which may prove a hurdle they have to overcome. For these reasons, a blend of review team members from different organizations and areas of specialization is a good starting point.
f. Staff and contractor support within the Center Environmental Office will generally not be able to effectively evaluate the parts of applicable EMS elements within the office. In order to identify weaknesses, and opportunities for improvement in the EMS components in the Environmental Office, reviews should consider using non-office resources (e.g., Center staff with no responsibilities tied to the office).
g. The Center Environmental Office will play a role in all elements of the EMS but in keeping with the EMS focus on the actual activities of staff across the Center, detailed execution that results in improved environmental performance is outside most direct Environmental Office activities. Therefore, Environmental Office staff should generally be able to review parts of the EMS outside of the office over which they do not have direct control. For example, if hazardous waste management has been identified as a high priority aspect by the Center, Environmental Office staff may not be able to review the process by which the risk ranking was completed, objectives and targets were set and the environmental management program was created, but the execution of the program outside of the office and across the Center could possibly be reviewed by the office. Or, a NASA on-site contractor that does not provide general environmental support services to the Environmental Office at a Center could provide review of the parts of the Center they otherwise have no contact with.
h. Ongoing review of the EMS review program itself is another area where objectivity and independence needs to be considered. The internal EMS review team cannot objectively review its own practices and performance on an ongoing basis. To obtain an objective review, consider Center resources with audit or review program expertise (e.g., the quality management system office) or an external source (e.g., an EMS representative from another NASA Center that reports to your Mission Directorate). This specific review activity can be conducted independently from other review activities.

i. The evaluation of individual reviewers and as a collective group should also be considered as a specific area that will require a unique approach. Reviewer evaluation should not be treated as a primarily human resources function, but rather with a needs assessment process as is required under NPR 8553.1 Chapter 4.2.

Z1.4 EMS Review SOP

a. The sample EMS review standard operating procedure (SOP) provided in Part 1, Attachment Z1.1 is a refinement of the October, 2000 NASA Environmental Management Division SOP for EFRs. The EFR SOP has been identified as a model for evaluating an EMS by The Office of the Federal Environmental Executive (OFEE) and the Executive Order 13148 Interagency Work Group.[12]
b. The EMS review SOP (as noted above in Z1.3.1) is not intended to define the finer points of execution of an EMS review. It is designed to provide a degree of structure while allowing flexibility. If a Center chooses to use Part 1, Attachment Z1.1 as a model to base its internal EMS review procedure(s) it will need to consider if additional detail will assist in achieving beneficial consistency in the review process.
c. The SOP is based on the assumption that a Center will review applicable EMS requirements at Directorates / sub-organizations at the Center, one at a time with reporting to senior management for the Center on a more periodic basis.
d. The SOP can be adapted with minimal changes to include multiple sub-organizations or an EMS element across multiple sub-organizations.

---

[12] Executive Order 13148, Greening the Government Through Leadership in Environmental Management Sec. 306. ãInteragency Environmental Leadership Workgroup. Within 4 months of the date of this order, EPA shall convene and chair an Interagency Environmental Leadership Workgroup (the Workgroup) with senior-level representatives from all executive agencies and other interested independent Government agencies affected by this order of the date of this order, EPA shall convene and chair an Interagency Environmental Leadership Workgroup (the Workgroup) with senior-level representatives from all executive agencies and other interested independent Government agencies affected by this order.à

Part 1 Attachment Z1.1. Sample: Standard Operating Procedure for Internal EMS Reviews

This Sample Standard Operating Procedure is provided as an example for use a model for Centers to develop Center procedures for internal EMS reviews.

AZ1.1.1 Purpose: The internal EMS review process is designed for two purposes:

a. To provide insight regarding conformance with the NASA Environmental Management System and with planned arrangements (Center defined EMS requirements).
b. To comply with the requirements of Executive Order 13148

AZ1.1.2 Scope:

This procedure will be used by Center personnel in the conduct of internal EMS reviews.

AZ1.1.3 Authority:

a. NPR 8500.1, NASA Environmental Management.
b. NPR 8553.1A, NASA Environmental Management System.

AZ1.1.4 References:

a. NASA Environmental Management Review Checklist.
b. NPD 1210.2, NASA Surveys, Audits, and Reviews Policy.
c. ISO 14001: Environmental Management Systems - First edition, Specification with Guidance for Use, International Organization for Standardization (ISO), 1996, and Second Edition, Requirements with Guidance for Use, International Organization for Standardization (ISO), 2004.
d. ISO 19011: Guidelines for Quality and/or Environmental Management Systems Auditing, International Organization for Standardization (ISO), 2002.
e. Executive Order 13148, Greening the Government through Environmental Leadership.

AZ1.1.5 Revision Information:

a. This document and its revisions shall remain effective for no more than three years from the date of approval/signature.
b. Document History Log

Status	Revision	Effective Date	Comments
Baseline	1.0	Month Day, Year	None

AZ1.1.6 Definitions:

a. Review Plan. An outline that describes the review activities to be conducted.
b. Review Team. Comprised for a lead reviewer and/or additional internal reviewer(s).
c. EMS Audit. A systematic, documented, and periodic verification process of objectively obtaining and evaluating evidence to determine whether an organization is conforming to its EMS and for communicating the results of this process to management. The environmental management portion of environmental functional reviews, Center internal annual EMS reviews, and independent self-declaration assessments, are forms of EMS audits.
d. Center Internal Annual EMS Review. A verification process of objectively obtaining and evaluating evidence to determine whether an organization is conforming to its environmental management system and for communicating the results of the process to management.
e. ISO 14000. A series of environmental management standards developed by the ISO. The ISO 14000 standards are designed to provide an internationally recognized framework for environmental management, measurement, evaluation, and auditing. The standards are designed to be flexible enough to be used by any organization of any size, in any field.
f. ISO 14001 Environmental Management Systems. Requirements with Guidance for Use - outlines the requirements for an EMS as developed by and agreed to by the ISO.
g. ISO 19011 Guidelines for Quality and/or Environmental Management Systems Auditing. Outlines techniques for developing and managing EMS audit programs and audits and provides recommendations for auditor competence.
h. Objective Evidence. Qualitative or quantitative records or statements of fact pertaining to an item or service or to the existence and implementation of an environmental management system component, which are based on observation, measurement, or test which can be verified.
i. Observation. A statement of fact made during an EMS review and substantiated by objective evidence.
j. Planned Arrangements. Are the commitments made by an organization to manage its environmental issues. A periodic review of the EMS is needed to verify that the EMS is properly implemented and that it continues to conform to planned arrangements for environmental management.

AZ1.1.7 Procedure:

AZ1.1.7.1 General

a. Internal EMS Review Frequency

1. The Internal EMS Reviews shall be conducted annually. These all areas of the EMS shall be evaluated at least once as applicable across operating Directorates over the 3-year cycle.
2. On years when a NASA Headquarters Environmental Functional Review (EFR) is conducted, the EFR satisfies the requirement for annual EMS review activity but does not remove the obligation that all operating Directorates must be internally reviewed during the 3-year cycle.
3. The Center Environmental Manager shall maintain the proposed schedule for the visiting Center Directorates, in coordination with EMS review team members. This schedule shall be updated and modified as required.
4. Applicable individuals, groups and/or contractors of the Center may be notified at any time regarding the time in which the Directorate will be reviewed. However, notification should not be earlier than 3 months weeks nor later than three weeks prior to the review.
5. Internal EMS Reviews may be rescheduled due to circumstances beyond the control of the Directorate, such as mishaps or furloughs. The Internal EMS Review should be rescheduled as soon as practical by the Center Environmental Manager and must be approved by the Center Director.
6. On an annual basis, the Internal EMS Review process shall be reviewed and updated as required. Those personnel who are independent of those having direct responsibilities for the EMS Internal Review shall conduct review of the Review process.

b. Criteria

1. The EMS shall be evaluated in accordance with the NASA Environmental Management Review Checklist.
2. The Checklist is constructed with the intent of satisfying:

i. NPR 8553.1A, NASA Environmental Management System.
ii. ISO 14001:1996, Specification with Guidance for Use, International Organization for Standardization (ISO), 1996 and
iii. Other selected EMS standards and programs to which the Center subscribes.

3. The individual sections of the Checklist are intended for use as applicable in preparation for review activity. The Forms are intended for use during the conduct of the review.

c. Reviewers

1. Number of Reviewers

i. The Internal EMS Review team will be represented by 2-4 personnel. Those personnel will be responsible for the overall conduct of the Internal EMS

Review. One of these personnel will be established as the Internal Review Team Leader, and will be responsible for the overall review.

ii. Trained Center employees, or contract personnel, who are independent of those having direct responsibilities for the department or area being assessed, will conduct the Internal Review.

iii. Where resources are available, a Center senior environmental professional shall be added to the team.

- This professional shall be sufficiently independent from the Directorate being assessed to avoid conflicts of interest.
- Consideration for selection of the Center professional should include perceived strengths/weaknesses at the site, as well as the timing of the Internal Review.
- Specific training and other requirements of this procedure regarding the Center professional can be waived by the Review Team Leader with concurrence from the Center Environmental Manager.

2. Training and Experience

i. Review team members shall have applied experience in environmental management.

ii. The Internal Review Team Leader and other team members shall have obtained formal training in EMS Auditing.

d. Resources

1. Where available, digital camera and video camera equipment can provide enhanced documentation.
2. Where reviewers will be expected to enter hazardous areas, the Directorate is required to provide them with the necessary personal protective equipment for that environment, such as safety glasses, safety shoes, respirators, and/or hard hats.

e. Safety Considerations

1. Internal EMS Reviews may involve the sporadic exposure to various hazards in the workplace. The reviewers shall be sufficiently aware of these hazards, through training or other experience, so as to protect themselves from injury or illness.
2. Reviewers are responsible for the use of personal protective equipment as required and/or prudent.
3. At no time shall any reviewer enter an area with uncontrolled hazards (e.g. IDLH[13] environment, permit-required confined space).

---

[13] ãIDLHà describes atmospheric or other conditions, which are Immediately Dangerous to Life and Health, such as oxygen-deficient confined spaces.

AZ1.1.7.2 Review Plan:

a. The EMS Internal Review Team Leader will prepare a Review Plan for distribution to the Review Team.
b. The Review Plan should be flexible in order to permit changes in emphasis based on information gathered during the review, and to permit effective use of resources. The Plan will include the following:

1. Identification of the EMS components to be reviewed
2. Review scope of activities
3. Dates and times for the In-briefing, End-of-Day Briefings (if applicable), and Out-briefing and locations
4. Names of the review team members and component assignments
5. Names of those being interviewed and their contact information
6. Pertinent reference materials such as standards, procedures, forms, and checklists
7. Past review and EFR reports

AZ1.1.7.3 Pre-Review Activities:

a. The Internal Review Team Leader may complete and/or delegate the following activities prior to the Internal EMS Review. Alternatively, these tasks may be completed as part of the "on-site" portion of the review.
b. Scheduling meetings with critical site personnel

1. In-briefing with key Directorate staff
2. Out-briefing with key Directorate staff
3. Other meetings as required by reviewers, or recommended by the key Directorate staff because of perceived scheduling difficulties

c. Review of applicable Directorate documentation, including but not limited to:

1. Relevant Directorate guidance, and procedures documents
2. Specific permits as requested
3. Directorate organizational charts

AZ1.1.7.4 On-Site Review

a. a. In-briefing

1. Conducted by Internal Review Team Leader
2. Attendees include key Directorate staff and the Review Team.
3. Description of purpose and scope of Internal EMS Review, as well as expected products or outcomes
4. Discussion of schedule and activities, as well as any resource needs or issues.

b. Daily Review Activities

1. Internal EMS Review

i. The Internal EMS Review utilizes the NASA Environmental Management System Checklist
ii.) Reviewers will conduct interviews and/or observe operations with personnel to assess various components of the program with respect to the checklist. These personnel include: Directorate Management, Directorate personnel responsible for execution of environmental functions (civil servant and contractor) and Managers and operations personnel in areas of environmental significance. (See Note box on Conducting Interviews)
iii. Reviewers will review relevant documents as necessary to assess the components of the environmental management program within the Directorate. Review of documents will be annotated in reviewer notes with any findings or observations.
iv. Findings, observations, and other notes from the Review will be documented using checklist sheets located in the Environmental Management System Checklist Forms in Appendix Z, Part 2.

b. End-of-Day Briefing: It is at the discretion of the Internal EMS Review Team Leader to decide if it is necessary to conduct end-of-day briefings. The following procedure may be used.

1. Conducted by Internal Review Team Leader
2. Attendees include key Directorate staff and the Review Team
3. Discussion by each reviewer of their activities and findings
4. Discussion of next day's schedule and activities, as well as any resource needs or issues.

c. Preparation of Findings/Observations and Out-briefing

i. Findings/observations of reviewers will be combined and reviewed by the Internal Review Team Leader. This review will consider the accuracy, objective evidence, and authority for each finding.
ii. Classification Categories

- Findings of non conformance with review criteria

- Significant: Can result in a direct and immediate threat to human health, safety, the environment, or the Center's mission -- requires immediate attention
- Policy: Noncompliance with NASA policy, guidance or instruction documents

- Observations

- Positive: Activities that go beyond what is required by a particular environmental standard
- Good Management Practice (GMP): Although not required by regulation, these are recommendations that, if implemented, could help reduce the potential for

enforcement action or improve local environmental programs

- Program Health Indicators
- These indicators are a subjective evaluation of an element or clause by the reviewers. They are provided to aid Directorate and Center management in understanding the gravity [14] of specific findings of non-conformance.
- Program health indicators are provided using a "stop-light" concept within the following guidelines:
- Healthy (green) -- good program, on-track in meeting requirements
- Needs improvement (yellow) -- program does not meet requirements in one or more areas
- Requires immediate attention (red) -- program does not meet major requirements in more than one area

---

[14] It is recognized that a media area could be rated ãhealthyà and still have de minimus findings of non-conformance.

---

iii. If Contract personnel have been solely involved up to this point in the Internal EMS Review, it will be necessary for Center personnel to review the results prior to the Out-briefing.

d. Out-briefing

1. Conducted by the Internal Review Team Leader, with assistance from other team members.
2. Attendees include key Directorate staff and the Review Team
3. Agenda:

i. Purpose and Scope of Review
ii. Environmental Management System Review

- Positive Observations
- Findings
- Program Health Indicators

iii. Future Actions

4. As part of quality assurance for this process, provide the Directorate Management with the opportunity to provide feedback.

AZ1.1.7.5 Post-Visit Activities

a. Internal EMS Review Report

1. Draft

i. The Internal EMS Review Report is structured based on the format provided in EMS Review Report.doc
ii. Provided to Directorate within 4-6 weeks

2. Comments from Directorate

i. Provided to Review Team Leader within 4 weeks

3. Resolution of Directorate Comments

i. Completed within 2 weeks

4. Final Report

i. Final report will request a Directorate action plan within 90 days for any findings, including estimated completion dates and notification of final closure for each finding (Note: Directorates may coordinate action plan with the Center Environmental Office)
ii. Report will be sent to Center Environmental Manager
iii. The Center EMS representative will coordinate the assembly individual Directorate reviews for Reporting to Center Senior Management and the Center Director

b. Follow-through by the Center Environmental Office

1. The Review Team Leader will track all findings until closure is documented by the Center.
2. "Significant Findings" may, at the discretion of the Team Leader be confirmed closed for the Directorate by a secondary targeted visit.
3. The Review Team Leader will compile the EMS records listed below, and enter the records into the Center Document Management System.
4. The EMS Representative shall review all submitted comments on reviews for consideration in the revision of this SOP.

AZ1.1.7.6 Environmental Management System Records

a. The following records are generated in this process, with retention and disposal as identified below:

Record	Action	Location	Retention
In-briefing Presentation Out-briefing Center Comments on Draft Report Final Report Review Critique NASA Environmental Management System Checklist	All records (electronic or hardcopy) are maintained by the Review Team Leader until the end of the specific Review. Once all records are received, they will be compiled into a single final Review record for archival.	Individual records are maintained by the Review Team Leader in their specific filing system. Once compiled, the final Review record shall be archived into the Center Document Management System.	Hardcopy records are maintained by the Review Team Leader until archived into the Center document management system and then destroyed. The final Review Record shall be maintained in the document system for at least 10 years, and shall be disposed only with the documented approval of the Center Environmental Manger.

Signature below indicates approval and authorization for use, as specified within this document.

(Original Signed by) (Month Day, Year)

_____ _____

Effective Date

Part 1 Attachment Z1.2. International Accreditation Forum Issued Guidance

This attachment is a reproduction of the text of the International Accreditation Forum Issued Guidance on the relationship between EMS assessments and regulatory compliance.

	The relationship between ISO 14001 management system conformity assessments and Regulatory Compliance	Issue 1 2004-09-15

AZ1.2.1 Introduction

Since the publication of ISO 14001 in 1996, there have been many examples of organizations improving their level of regulatory compliance as a result of the structure and discipline of an environmental management system (EMS) conforming to the standard. Governmental agencies have also recognized the potential contribution of EMS implementation in some cases by either directly requiring implementation as part of regulatory compliance, offering relaxation of governmental oversight where an EMS is in place or otherwise encouraging their use.

Unfortunately, there has also arisen an expectation that certification of an organization's EMS as meeting ISO-14001 implies that the organization is in full compliance with all legal and regulatory requirements. This has led to concern and disillusionment when some organizations with certified EMSs have experienced environmental incidents or have otherwise been found to be out of legal compliance.

This paper does not seek to develop interpretations of the requirements of ISO-14001 but identifies the requirements of the standard that directly relate to regulatory compliance and explores what a certification assessment should cover in order to support a set of reasonable expectations by stakeholders.

For the purposes of this paper, the term "EMS" will be used to represent an environmental managements system conforming to the requirements of ISO-14001 and "regulatory requirements" will indicate all legal and regulatory requirements related to an organization's environmental aspects and impacts. Clause references in this paper refer to ISO/FDIS-14001:2004.

Deliberate non-compliance (e.g. an organization decides to pay a fine and continue to operate without seeking to address non-compliance) should be considered a serious failure to support the policy commitment to regulatory compliance and should preclude certification or cause an existing ISO 14001 certificate to be suspended, or withdrawn.

Any organization failing to demonstrate their commitment to legal compliance through the elements discussed below should not be certified as meeting the requirements of ISO 14001 by the CRB.

AZ1.2.2 The requirements of ISO-14001 with respect to regulatory compliance:

ISO-14001 requires that an organization "commit" to compliance with all legal and regulatory requirements applicable to its environmental aspects and impacts. It further requires that the organization supports this commitment by identifying applicable

regulatory requirements, determining how these requirements relate to its activities, products and services, evaluate conformity with the identified requirements and take action to correct any nonconformities that exist or occur. The standard also requires that this commitment and the related supporting activities are maintained on an on-going basis.

The specific clauses of ISO-14001 most important with respect to regulatory compliance are the following:

- public commitment to legal compliance (subclause 4.2);
- full detailed identification of legal requirements (subclause 4.3.2);
- how those legal requirements apply to the organization's environmental aspects (4.3.2, 4.4.6, 4.5.1);
- objectives/targets/programs (subclause 4.3.3)
- comprehensive evaluation of legal compliance (subclause 4.5.2);
- corrective and preventative actions where necessary (subclause 4.5.3); and
- management review (subclause 4.6).

AZ1.2.3 How should a certification body evaluate a management system with respect to legal compliance before granting certification and during the maintenance of certification?

Through the certification assessment process, a Certification Body (CRB) should evaluate an organization's conformance with the requirements of ISO-14001 as they relate to regulatory compliance and should not grant certification until conformance can be determined. The CRB should also, through an appropriate follow up program, assure that conformance in maintained during the certification period. The CRB auditors should evaluate the management of compliance based on demonstrated implementation of the system and not rely only on planned or expected results.

The following discussion identifies what should reasonably be expected on the part of the certification body in evaluating the management system with respect to regulatory compliance.

AZ1.2.4 A public commitment to legal compliance (subclause 4.2):

The CRB should determine if the following specific points are demonstrated with regard to the organization's environmental policy statement:

- that there is a policy;
- that it addresses 4.2 of ISO 14001;
- that it is approved by top management;
- that it is publicly available; and
- that it is subject to periodic review of its relevance and appropriateness.

AZ1.2.5 Identification of, and access to, legal requirements (subclause 4.3.2):

The CRB should determine whether the EMS has adequately identified and provides access to the specific applicable legal requirements, in sufficient detail to facilitate development and control of the management system and to enable a satisfactory evaluation of compliance. The CRB should also verify that these regulatory requirements are periodically reviewed in order to identify new and/or changed requirements and to accommodate any changes to the organization, its activities or products.

The CRB should check the completeness and relevance of identified legal requirements but the CRB is not responsible for verifying the identified legal requirements as being the final or definitive list. CRB assessment teams should have sufficient knowledge of the applicable legal requirements that are relevant for the location and environmental aspects of the organization so as to identify significant omissions from their client's identified legal requirements.

AZ1.2.6 How legal requirements apply to the organization's environmental aspects (4.3.2):

The CRB should determine whether the organization understands how each legal requirement applies to its activities, products and services, and that the organization has considered this in establishing and maintaining the management system.

Determination by the CRB that the organization has sufficiently translated legal requirements into suitable EMS elements may come from an onsite walk-around, and by taking examples of significant aspects and following the trail back through the EMS to specific legal requirements. Then in the reverse order, by taking specific legal requirements and assessing how they are actually fulfilled within the normal operation.

The status of compliance may be determined from a number of sources, including reports of specific instances of non-compliance and the items in 4.6 of ISO FDIS 14001 (i.e. results of internal audits, communications including complaints, environmental performance (e.g. results of monitoring and measurement), objectives and targets, corrective and preventative actions, follow up from previous reviews, changing circumstances and requirements (including legal requirements), and recommendations for improvement).

AZ1.2.7 Objectives/targets/programmes (subclause 4.3.3):

The CRB should determine whether objectives and targets set within the EMS take into account legal requirements and that specific objectives and targets have been established as necessary to address any lack of compliance.

Where a significant non-compliance with regulatory requirements occurs, objectives, targets and programmes would normally be the appropriate way to resolve the non-compliances in a controlled and/or managed way.

In any case where the organization is not in full compliance with regulatory

requirements (excluding minor, transitory deviations), in order to be considered in conformance with the standard, the objective of achieving compliance supported by appropriate targets and programs should have been established.

AZ1.2.8 Comprehensive evaluation of legal compliance (subclause 4.5.2):

CRB assessors assess conformance of an EMS to the requirements of a standard. They do not make a comprehensive evaluation of compliance, like a regulatory auditor, to determine the organization's compliance with regulatory requirements.

The CRB should determine whether the organization has established the necessary procedures and has fully evaluated its compliance with each of the applicable regulatory requirements. Part of this determination should consider that persons performing the compliance evaluation have appropriate knowledge of the legal requirements and their application.

The CRB should test the effectiveness of the evaluation through:

- sampling the organization's determination of compliance with examples of specific legal requirements;
- looking for evidence of compliance or non-compliance during other assessment activities (on-site assessments and audit of operational controls, etc.); and
- checking that the organization's evaluation of compliance has covered all of the identified legal requirements.

In some cases, compliance audit information is considered confidential or privileged. However, sufficient data on an organization's compliance with relevant legislation and regulations, gathered during the assessment process, are relevant and necessary to determine whether the organization's systems conform to the standard. "Affirmative statements" from the organization that it is in legal compliance are not sufficient for the purposes of certification.

In the event that certain specific data or other information related to legal or regulatory compliance are not made available to the CRB for review because of an assertion of legal privilege or their proprietary nature, certification should not be granted, or should not continue, unless the CRB can obtain demonstration by objective evidence that the full system requirements relating to legal compliance, covering the applicable section of the standard, have been effectively implemented by sufficiently documented and verifiable means. This would include at least a documented procedure for evaluating legal compliance, objective evidence of its implementation, objective evidence of compliance review by management and objective evidence of implementation of identified corrective and preventive actions.

AZ1.2.9 Corrective and preventative actions where necessary (subclause 4.5.3):

The CRB should determine that the organization has developed an appropriate corrective action procedure(s) and that regulatory non-compliances find expression in

the corrective and preventative actions within the EMS. In the absence of such a connection, the CRB should be concerned about the overall effectiveness of the EMS, and its ability to support the organization's environmental policy, objectives and targets.

If a non-compliance situation is more than a minor temporary deviation, then objectives, targets and programmes may have been established. In any case the EMS should demonstrate the ability to resolve non-compliances in a controlled and/or managed way.

AZ1.2.10 Management review (subclause 4.6):

The CRB should determine whether the organization has included in management reviews the status of legal compliance. This is to ensure top management are aware of the risks of potential or actual noncompliance and have taken appropriate steps to meet the organizations commitment to legal compliance.

AZ1.2.11 Conclusions

ISO 14001 Environmental Management System certification is a tool for the dynamic management and improvement of an organization's environmental performance. It is not a substitute for legal requirements, or legal determinations by a regulator or a court on matters on legal compliance. EMS auditors assess an organizations EMS pursuant the requirements of the standard, they do not provide an evaluation of legal compliance nor are they regulatory inspectors.

Certification of an organization's EMS indicates conformity with the requirements of the ISO-14001. This includes a demonstrated commitment to compliance with applicable legal requirements.

ISO 14001 certification cannot guarantee legal compliance but neither can any certification or regulatory scheme guarantee ongoing legal compliance;

ISO 14001 requires a public commitment to comply with legal requirements. It does not require actual compliance with the law as a pre-requisite to certification, or for maintaining certification;

ISO 14001 certification confirms that there is an effective environmental management system that provides an ongoing foundation and support for an organization's legal compliance.

In order to maintain stakeholder confidence in the above attributes of a certified management system, the certification body must assure that the system demonstrates effectiveness before granting or continuing certification.

The EMS can act as a dialogue tool between regulators and organizations, and become the basis for a trusting partnership, replacing historical adversarial 'them and us' situations. Regulators and the public want to trust organizations with a certified EMS,

perceiving them as being able to constantly and consistently manage their legal compliance. An organization with an EMS certified to ISO-14001 should have the following attributes that would be on interest to regulators, the public and other stakeholders:

- a better knowledge of legal requirements;
- a better and broader knowledge and understanding of their environmental impacts;
- more consistent awareness, training and competence of personnel;
- better use and implementation of this knowledge in its processes;
- availability and consistency of information related to environmental performance;
- management of the risk of legal non-compliance;
- management of the risk to the wider environment;
- the use of structured and systematic corrective and preventive actions;
- more rapid improvement than would be achieved by focusing on legal compliance alone;
- ongoing independent assessment of their management of legal compliance;
- both internal and external methods of assessment and verification of their commitment to legal compliance that provides top management confidence;
- coverage of a wider range of issues than those addressed in specific legal requirements; and
- confidence in the management system to then allow for focus on actual environmental performance.

AZ1.2.12 Additional considerations

Auditor capabilities:

CRB auditors, in addition to basic auditor skills, should have appropriate competence in environmental issues including:

- environmental science;
- environmental management principles;
- environmental management tools;
- environmental laws and regulations
- environmental aspects of operations

Certainly, an auditor, in order to evaluate and EMS does not need to be an environmental scientist or be an expert in the specific industry or product or have detailed knowledge of every conceivable regulatory requirement. However, the levels of knowledge, education, training or experience in these areas should enable the auditor to:

- understand the environmental aspects and impacts of the candidate organization;

- understand how the management system is implemented to control these aspects and impacts and achieve its objectives;
- understand in general terms the applicable regulatory requirements;
- determine whether the EMS is effective in controlling is aspects and impacts

A one-week EMS lead auditor course will not be sufficient to impart this level of knowledge and understanding for someone without any prior environmental exposure. EMS auditor candidates should have some relevant experience in these areas before hire and the EMS lead auditor course should be a means to focus their knowledge toward the audit process.

When and auditor suspects a regulatory non-compliance:

Management system auditors should not perform regulatory compliance audits as part of ISO 14001 audits. Where auditors find suspected regulatory noncompliance issues, they should immediately notify the organization's Management Representative. Suspected regulatory noncompliance issues should be reviewed by the auditors to determine whether the EMS has appropriately identified and addressed them. Specifically:

- Is the organization aware of the condition?
- Has the organization determined whether the condition represents a regulatory compliance issue?
- Has appropriate corrective action been taken to immediately address the condition
- Have any required regulatory notifications occurred

The CRB should identify nonconformity if the EMS has failed to identify or appropriately respond to non-compliance situations.

How the CRB should respond to stakeholder complaints:

When a CRB receives a complaint from a stakeholder about the environmental performance of a certified organization they should:

- Report the complaint to the organization without delay and determine its validity
- Determine whether the EMS has recognized and adequately responded to the complaint or condition
- Determine whether the condition represents a nonconformity to the standard
- Follow up with the complainant to inform them of the outcome (while maintaining appropriate levels of confidentiality with the certified organization
- Take appropriate action where the EMS is found to be out of conformance.

It is the CRB's responsibility to report the complaint to the certified organization and to determine whether the management system continues to conform to the

requirements of ISO-14001.

The organization is responsible for follow up and appropriate response to the complaint and to assure the continued conformance or correction of the system to the requirements of the standard.

The balance between office/paper auditing and on-site evaluation of the implementation of the system in the day to day activities of the organization:

Every EMS assessment involves evaluation of the planning, implementation and effectiveness of the environmental management system. This process requires that the system documentation be reviewed and that records be examined. The effectiveness of the system cannot be evaluated, however, without significant evaluation of its appropriateness and implementation in actual practice.

While the first stage of the assessment involves a determination of the completeness and readiness of the audit for audit, in the vast majority of cases this cannot be realistically evaluated without the auditor's on-site exposure to the facilities, activities and products.

During the second stage of the audit, implementation must be evaluated in terms of how well the EMS controls environmental aspects at their point of occurrence. Further, much of the EMS relies on communication and commitment on the part of all appropriate personnel to the environmental policy, which can only be evaluated through observation of the routine activities of the organization.

The auditor then must strike a balance between paper review and evaluation of the EMS implementation during normal activities in order to make an adequate assessment of the effectiveness of the EMS. Unfortunately, there is no formula to define what the relative proportions will be, as the situation is different in every organization. However, there are some indications that too much of the audit time dedicated to paper review is a problem that occurs with some frequency. This could lead to an inadequate assessment of the effectiveness of the EMS and potentially to poor performance issues being overlooked and leading to a loss stakeholder confidence in the certification process.

APPENDIX Z. Part 2. NASA Environmental Management Checklist

Z2.1 Introduction

a. Part 2. NASA Environmental Management Checklist (Part 2) is intended to provide a consistent NASA checklist for use in EMS Review processes.
b. This NASA Environmental Management System (EMS) Checklist follows the same format as NPR 8553.1, NASA Environmental Management System (EMS). The content of this checklist is primarily designed to reflect NPR 8553.1 at this time for a NASA Center.
c. Part 2 is composed of two parts. The main body of text can be issued to a Center prior to a Headquarters led Environmental Functional Review (EFR) in order to assist in the review process.
d. The main body of text or portions of Part 2 and the forms contained in Part 2, Attachment Z2.1, NASA Environmental Management System Checklist Forms, may be used by a Center when conducting internal EMS reviews. Use of this checklist and the forms contained in Part 2, Attachment Z2.1 is required under NPR 8553.1during EMS reviews at self-declaring Centers. When being used by a Center, the Center will need to determine which parts of the checklist and forms apply across the Center and to each sub-organization at the Center. Centers are free to determine if they wish to issue applicable portions of the main body of the text of the checklist to sub-organizations prior to EMS review activities or if the content will be covered during the EMS review.
e. Centers are required to fully transition from conformance with requirements of NPR 8553.1 dated May 6, 2002, to those NPR 8553.1A no later than March 22, 2007. Centers are required under NPR 8553.1A to conform to applicable EMS review and EMS self-declaration or external recognition program requirements by December 31, 2005. Use of this Checklist is subject to these conditions and this Checklist can be used to identify whether existing environmental programs meet applicable requirements.
f. Reference excerpts are provided from the NPR in Italics, as well as suggestions on possible sources of information that could be used to demonstrate the current status of the area in question and how the requirements of the NPR are met.

Note: Key additional / changed requirements associated with NPR 8553.1A compared with those of the May 6, 2002 version of NPR 8553.1 are provided in bold Italics. The text of this Checklist does reflect the revised NASA use of terminology such as aspects and impacts. Significant changes to existing questions in the text of this checklist since October 2000 are highlighted with the exception of Sections Z2.8, and Z2.9, which in their entirety are additions to the Oct 2000 version of this checklist.

g. The highlighted text is provided to assist Centers with the transition to NPR 8553.1A. Centers should anticipate their use in any EFRs taking place no later than 2 years from the effective date of NPR 8553.1A (March 22, 2005).
h. Section Z2.8 is intended for use only during EFRs and is provided herein for Centers to assist with awareness of how they will be evaluated in this area.
i. Centers that have decided to participate in an external recognition program (Section Z2.8.3) have committed to conformance with its requirements, thereby making the program requirements of that external recognition program, auditable criteria, as they are "other" commitments to which the Center has committed itself.
j. Section Z2.9 is provided for Centers participating in the U.S. Environmental Protection Agency, National Environmental Performance Track (NEPT) program. Centers that have decided to participate in that external recognition program have committed to conformance with its requirements, thereby making NEPT program requirements, auditable criteria, as they are "other" commitments to which the Center has committed itself.
k. For Centers registered to ISO 14001, the base checklist in Sections Z2.2 to Z2.6 meets or exceeds ISO 14001:1996 Section "5.4 EMS Audit" checklist requirements. These Centers can expect that their registrar will require them to have completed the transition to ISO 14001:2004 no later than May 16, 2006. To assist with this transition and for long-term use in the future, each section of this checklist, where appropriate, includes additional checklist items specifically geared towards additional or changed clauses found in ISO 14001:2004. These additional items have been enclosed in text boxes to assist in clarifying their intended use.
l. If a Center wishes to participate in a state EMS recognition program, it is the responsibility of the Center to determine requirements for the specific program. The Center should evaluate the requirements of the program against the EMS requirements in the NPR and determine what additional requirements there are for the state program. It will be necessary for the Center to develop a separate or augmented checklist in order to gauge their performance in meeting the state requirements. State EMS recognition programs may include requirements that are beyond those of the NASA EMS and Self-Declaration or which upon close examination may be satisfied by using existing EMS elements.
m. Part 2, Attachment Z2.1 provides auditing forms for use only by experienced auditors during the various EMS reviews and assessments noted above. The forms include summary notations about the checklist, and suggestions for possible means of verification of the status of Centers relative to the checklist.

Z2.2 Environmental Policy

Z2.2.1 Reference

"2.0 Environmental Policy NASA Policy on Environmental Quality and Control, 14 CFR, subpart 1216.1, expresses NASA's commitment to the broad statement of national environmental policy expressed by Congress in the National Environmental Policy Act. NASA Policy Directive (NPD) 8500.1, NASA Environmental Management, is NASA's internal environmental policy. This policy is available to both the public and the NASA community through NASA's Web pages and NODIS at ... and is consistent with 14 CFR, subpart 1216.1. 4.2.2.2 NASA Centers and Mission Directorates and Mission Support Offices shall ensure that all employees are aware of the existence of NASA environmental policy and its applicability to their work."

Z2.2.2 Checklist items

a. How does Center Management (including the environmental management committee or working group) review and implement environmental policy?
b. If a Center has adopted a Center specific environmental policy as the Primary focus of the Center EMS, does its content either reference or cover at a minimum that of the NASA Policy?
c. How does the Center ensure that all employees are aware of the policy and its applicability to their work?
d. How are applicable environmental policy commitments documented for contractors and communicated to tenants?
e. How is the environmental policy made available to the public?

f. Identify how the Center environmental policy commits to complying with applicable legal and other requirements, which relate to the Center's environmental aspects.
g. How is the policy communicated to all persons working for or on behalf of the Center?

Z2.3 Planning

Z2.3.1 Environmental Aspects and Impacts

Z2.3.1.1 Reference

"P.2 APPLICABILITY ***The scope of the EMS at each Center consists of management defined: activities, products, and services applicable to the EMS, over which the Center has control and/or influence.*** *1.1 Roles and Responsibilities Each NASA Center is responsible for: (1) Determining the applicability of this EMS to its*

contractors, ***to satisfy EMS-related requirements of Executive Order 13148 (and applicable Federal Acquisition Regulations).*** *When a determination is made that the EMS is applicable, the NASA officials responsible for the contracts shall ensure that a requirement for implementing this EMS is incorporated into all such contracts no later than the time of the next recompetition of the contracts.* ***(2) Determining the applicability of the EMS to its tenants in order to satisfy EMS-related requirements of Executive Order 13148, subject to the limitations of tenancy agreements. When a determination is made that the EMS is applicable, Center Management shall ensure that EMS requirements for tenants are incorporated into future tenancy agreements. (3) Working with the Headquarters Environmental Management Division to define the scope of the Headquarters Environmental Management System as it pertains to the Agency and Centers"***

"3.1.2.3 NASA Centers are responsible for --

e. Identifying and documenting Center activities (past, present, and future), products, and services within ***the scope of the Center EMS.*** *f. Identifying* ***and documenting*** *the environmental aspects and associated environmental impact(s) of the documented activity, product, or service. g. Applying the EMS environmental aspect risk criteria. h. Periodically reviewing and updating the results of steps a. through c. above." Note: Chapter 3.1.3, Requirements for aspects and impacts have not been repeated herein.*

Z2.3.1.2 Checklist Items

a. Provide the Center's documented description of the scope of the Center EMS, including activities (past, present, and future), products, and services.
b. Describe how the Center identifies environmental aspects and impacts essential to developing their environmental management program. This should include:

1. The following steps:

i. Identification of all activities products and services.
ii. Aspect and impact identification.
iii. Aspect and impact grouping into aspect categories.
iv. Consideration of adverse and beneficial impacts, and scoring of severity of the impacts and the frequency of their occurrence.

2. Review the documentation of aspects and impacts for comprehensiveness including records of determination aspect categories, the impact categories, severity / frequency scores and determination of overall risk ranking levels.
3. Describe the Center approach for identifying and considering normal, abnormal, and emergency situations in identifying and evaluating aspects and associated known and potential impacts.
4. Describe the Center processes for identification of new aspects and impacts, and changes to aspects and impacts as a result of changes in requirements, products, processes, equipment and infrastructure.

c. Describe the Center's environmental risk management program. Is risk management an element of all programs?
d. How does the Center determine the applicability of the EMS to its contractors? What contract language has been developed which specifies requirements for the contractor to implement components of the EMS?
e. How does the Center determine for its tenants, the activities, products and services of that tenant, which are included in the scope of the EMS? What tenant agreement language has been developed which specifies EMS related roles and responsibilities for tenants?

f. How does the Center's documented description of the scope of the Center EMS, identify or include activities products and services that it can influence?
g. How does the Centers aspect and impact identification and analysis process ensure that it takes into account, planned changes in activities, products and services at the Center?
h. Described how the Center ensures that the high priority environmental aspects are taken into account throughout all areas of the EMS (each of Sections Z2.3.2 to Z2.6 below).

Z2.3.2 Legal and Other Requirements

Z2.3.2.1 Reference

"1.2.25 Legal and Other Requirements - those requirements that NASA or a Center is regulated to or has committed to meeting. Legal requirements include Federal, State and local laws, regulations, ordinances or policies; Office of Management and Budget circulars; Executive orders; enforceable Agency agreements; contractual obligations; and international obligations. Other requirements include internal standards, voluntary Agency agreements, Presidential initiatives, industry codes or practice, and non-regulatory guidelines.*NASA Centers are responsible for -- i. Developing, implementing and maintaining procedures for the identification of* ***legal and other requirements*** *and proposed changes to existing legal* ***and other*** *requirements* ***for applicability to Center activities and operations.*** *j. Evaluating NASAwide and Center agreements and commitments. k. Ensuring applicable legal and other requirements are available to appropriate individuals.* ***l. Providing information identified under step a. to Mission Directorates and Mission Support Offices when requested. m. Consulting with their Office of Chief Counsel, as appropriate, in fulfilling responsibilities under Chapter 3.2."***

Z2.3.2.2 Checklist Items

a. How does the Center utilize the regulatory support information on federal and state statutes, regulations, and executive orders provided by NASA Headquarters Environmental Management Division?

b. How is information provided to Mission Directorates and Mission Support Offices on Center legal or other requirements?
c. How does the Center evaluate, track and update information on: existing and new legal and other requirements applicable to the environmental aspects and impacts associated with its activities, products, and services and integrate them into Center programs and the implementation of NASA Policies?
d. How does the Center identify, track and update information on existing and new NASA-wide and Center agreements and commitments applicable to the environmental aspects and impacts associated with its activities, products, and services and integrate them into Center programs and the implementation of NASA Policies?
e. How does the Center interpret and provide employees and management ready access to the applicable legal and other requirements identified and tracked as noted above?
f. Highlight interaction with the Center Office of Chief Counsel over the past year.

g. Describe the process(es) used by the Center to determine how legal and other requirements apply to Center environmental aspects.
h. To what level of detail has the Center determined it needs to evaluate how these requirements apply?
i. Describe how the Center ensures that legal and other requirements are taken into account throughout all areas of the EMS (each of Sections Z2.3.1 above and Z2.3.3 to Z2.6 below).

Z2.3.3 Objectives and Targets

Z2.3.3.1 Reference

"3.3.2.4 NASA Centers are responsible for -- a. Establishing and maintaining documented Center objectives and targets consistent with high priority environmental aspects ***and NASA environmental policy.*** *b. Managing all other aspects so that they do not become high priority environmental aspects. These do not require EMS defined objectives and targets. 3.3.3 Requirements* ***e. Objectives and targets shall be established at all appropriate organizational levels as needed for the implementation and maintenance of the EMS.*** *f. Objectives and targets shall be established to address high priority environmental aspects. g. The determination of the need for objectives and targets shall be made by* ***the appropriate NASA authority;*** *however, the actual objectives and targets may be suggested by other interested parties h. When establishing objectives and targets each Center shall consider-- (1) Legal and other requirements. (2) Available technology options and infrastructure. (3) Operational, mission, and mission-related activities. (4) Financial resources. (5) Interests and views of stakeholders. d. Specific objectives and targets that are technically feasible and economically reasonable shall be established for high priority environmental aspects. e. If the determination is made that a high priority environmental aspect*

cannot be addressed with one or more objectives and targets due to being technically infeasible or economically unreasonable, the rationale behind this determination shall be documented. f. Objectives and targets may be established to address any ***medium,*** *low, or very low priority environmental aspects that a Center determines it needs to manage or maintain to ensure they do not become a high priority. g. Objectives and targets shall be reviewed and updated as appropriate."*

Z2.3.3.2 Checklist Items

a. Describe how the Center establishes and documents objectives and targets, and their timelines, for the high-priority environmental aspects.
b. Also identify any objectives and targets:

1. Needed for the implementation and maintenance of the EMS and
2. For non high-priority environmental aspects

c. With regard to the objectives and targets:

1. How are they established at all appropriate organizational levels?
2. In the process of establishing objectives and targets how have the following been considered:

i. Legal and other requirements?
ii. Available technology options and infrastructure?
iii. Operational, mission, and mission-related activities?
iv. Financial and technical resources?
v. Interests and views of stakeholders?

3. What process is used to determine and document findings about technical feasibility and economic reasonableness?

d. What process is used, and what evidence exists, for monitoring of progress towards objectives and targets and their review and updates to reflect changing situations?
e. How does the Center ensure that the objectives and targets are consistent with NASA Environmental Policy, including the commitment to promote continual improvement?

g. How does the Center ensure that objectives and targets are measurable where practicable?
h. How does the Center ensure that the objectives and targets are consistent with the Center's Environmental Policy, including the commitment to promote continual improvement?

Z2.3.4 Environmental Management Program(s)

Z2.3.4.1 Reference

"3.4.2.3 Centers are responsible for -- a. Establishing and maintaining documented Center EMPs. 3.4.3 Requirements ***d. All high priority environmental aspects shall be managed within the limits of technological feasibility and economic reasonableness. e. e. Ensure that management controls are in place to: mitigate adverse environmental impacts or secure existing benefits, associated with non-high priority environmental aspects, and prevent those environmental aspects from becoming high priority and manage NASA environmental policy and compliance activities. Controls shall remain in place unless it is determined that they are no longer required.*** *f. EMPs shall -- (7) Designate responsibility for achieving objectives and targets at each relevant function and level of organization. (8) Demonstrate that NASA is addressing its identified objectives and targets. (9) Address major compliance activities if applicable. (10) Identify required resources (technical and financial) to carry out the EMPs. (11) Reflect changes in objectives and targets. (12) Establish the timeframes in which objectives and targets are to be achieved."*

Z2.3.4.2 Checklist Items

a. Describe the Center's Environmental Management System Program(s). What documented operating procedures or implementation plans exist?
b. Identify or list all environmental controls (Center-wide and those specific to selected areas or functions at the Center) handbooks, environmental management programs (EMPs), compliance activity programs, guidance materials, or standard operating procedures. This includes documentation in support of EMPs for high priority aspects, and management of medium and low priority aspects to prevent them from becoming high.
c. Describe how the results of the following processes are addressed by the EMPs:

1. Identification of activities, products, and services.
2. Identification of aspects and impacts and their prioritization.
3. Setting of objectives and targets.

d. How does the Center ensure that the EMPs address NASA wide program requirements for achieving EMS objectives and targets? Consider if they include:

1. Identification of program responsibility at all appropriate organizational levels.
2. Identification of required resources (within identified limits of technical feasibility and economic reasonableness).
3. Establishing program timeframes.

e. How are changes in objectives and targets reflected in EMPs?
f. If there are changes in activities, products and services, how are they reflected in changes to EMPs?

g. How do EMPs address regulatory compliance activity requirements and ensure that regulatory compliance driven objectives and targets are maintained?
h. Describe how environmental staff participate in project planning, design and construction to ensure compliance with environmental regulatory requirements.
i. Describe the processes in place to ensure that all programs and projects for the Center, and other organizational functions, have been reviewed for environmental performance, impacts, and requirements. How do these processes ensure that Center actions do not have a disproportionately high and adverse human health or environmental effects on minority or low-income populations? Processes can include:

1. Record of environmental consideration.
2. MSDS review prior to procurement.
3. Purchasing checkout list.

j. Environmental Program Initiatives - The environmental program provides opportunities to develop environmental initiatives (other than regulatory compliance) and goals that will benefit or enhance NASA's environmental program. Success with the initiatives will be shared with other Centers. Summarize initiatives, including results, so that information can be shared agency-wide (optional if already reported under NETS).

Z2.4 Implementation and Operation

Z2.4.1 Structure and Responsibility

Z2.4.1.1 Reference "1.1Roles and Responsibilities c. The Center Director is responsible for -- (10) Implementing NASA Environmental Policy and Requirements. ***(11) Defining the scope of the Center EMS. (12) As applicable, delegating Component Facility environmental management responsibilities to an appropriate Component Facility NASA Authority and optionally designating an individual to assume Center Director responsibilities for the EMS at Component Facilities*** *(13) Assigning roles and responsibilities for the Center EMS Representative. (14) Providing the authority needed for the EMS Representative to implement and maintain the Center EMS. (15) Providing resources for the effective operation and maintenance of the Center EMS.* ***(16) Periodically reviewing the Center EMS for status and viability. (17) Self-declaration of the Center EMS or participation in an external EMS recognition program no later than December 31, 2005.*** *(18) Reporting to NASA Headquarters Environmental Management Division on EMS progress and metrics as requested. g. Each NASA Center is responsible for -* ***(4) Reviewing and providing comments to Headquarters Environmental Management Division on NASA environmental information, policy, requirements, and guidance.*** *e. The Component Facility NASA authority, shall be responsible for implementation of an EMS commensurate with the environmental responsibilities delegated by the Center*

Director The Component Facility EMS may be separate from, or a subset of, the Center EMS. 4.1.2.3Centers are responsible for implementing NASA Environmental Policy and this NPR. 4.1.2.4Center EMS Representatives are responsible for -- g. Ensuring the implementation and maintenance of Center EMS requirements. h. Documenting and communicating roles, responsibilities, and authorities to facilitate effective implementation of the Center EMS. i. Requesting resources for the effective operation and maintenance of the Center EMS. j. Exercising the authority necessary to implement and maintain the Center EMS. k. Establishing a Center EMS Core Team, or other means able to accomplish an equivalent function, with assigned roles and responsibilities. l. Periodically assessing, reviewing, and reporting on the condition of the Center EMS."

Z2.4.1.2 Checklist Items

a. At the Center, how are EMS related roles and responsibilities for senior management identified?
b. At the Center, how are environmental management roles, responsibilities, and authorities defined, documented, and communicated for all appropriate organizational levels (i.e., job descriptions, organizational charts, program manuals)? Consider the following:

1. What delegation of authority exists within the environmental management organization?
2. What offices and individual(s) have authority and accountability for various management functions?
3. Identify documentation that establishes authority and indicate whether it includes cease and desist authority.

c. Describe your environmental civil service staff and their assigned environmental programs (i.e., pollution prevention, hazardous waste).

1. List names, titles, and briefly describe areas of responsibility for:
2. Each environmental media (e.g., air, water).
3. Their assigned environmental management system roles.
4. List and describe how responsibilities are divided or shared between civil service and contractors.
5. Provide available organization charts for the Center's environmental management organization.

d. How has Center management defined the roles, responsibilities, and authority of the EMS representative and the EMS Center Core Team/equivalent function and by what means is conformance with these requirements ensured and where appropriate documented/recorded?
e. How does Center management ensure adequate resources are provided for the EMS? Consider:

1. Technology

2. Financial resources
3. Human resources and specialized skills including issues relating to dedicated environmental support and those with collateral duties, such as:

i. Issues/problems due to insufficient staff;
ii. How you assess environmental staffing needs (i.e., excessive overtime, excessive use of contractors, compliance deficiencies);
iii. Degree of success in gaining approval for additional staff and why;
iv. Programs not being undertaken due to insufficient staff; and
v. Issues regarding how contractor staff and "inherently governmental functions" are managed.

f. What processes exist to periodically review defined roles responsibilities and resources for appropriateness, and how is conformance with these processes demonstrated?
g. How does the environmental management committee or working group provide cross-organizational support in implementing new requirements?
h. How does the Center ensure that, NASA's Environmental Policy and the requirements of NPR 8553.1, as they apply to contractor operations within the scope of the EMS, are appropriately managed, at the procurement stage and during the life of contracts?

i. How does the EMS Representative request, and Center Director ensure, the availability of resources to improve the EMS?

Z2.4.2 Environmental Training, Awareness, and Competence

Z2.4.2.1 Reference

"4.2.2.1Centers are responsible for establishing and maintaining procedures for -- a. Determining EMS training needs. b. Conducting training as required at each relevant level and function of the organization. c. Verifying and recording that the necessary EMS training has occurred 4.2.3 Requirements d. Employees engaged in activities associated with EMS environmental aspects or compliance activities, shall receive appropriate training, as determined by the Center under Chapter 4.2.2. e. Training records shall be maintained in accordance with Chapter 5.3. f. Employees shall be aware of the following areas, ***as appropriate, based on activities they are engaged in*** *(Note: These may be accomplished* ***by formal awareness training*** *or as a part of the employee's on-the-job training requirements): (1)* ***Adverse environmental impacts and beneficial environmental impacts associated with the high priority environmental aspects of their work, that they may affect,*** *and the benefits of improved environmental performance, and (2)* ***Requirements of the EMS applicable to their work,*** *and awareness of consequences associated with their deviation from these requirements."*

Z2.4.2.2 Checklist Items

a. Describe the process used to identify and track, training needs of all personnel whose activities may result in beneficial or adverse environmental impacts associated with environmental aspects or compliance activities.
b. Describe the process for identifying new training requirements (existing programs requiring review/revision or new program requirements). This includes evaluation of effectiveness of existing training programs.
c. Describe the process of training for new or transferred individuals.
d. Provide examples of how environmental and awareness training programs have been integrated with each other and into other training programs.
e. How does the Center ensure that personnel receive appropriate training and updates?
f. Describe the procedures for, and content of, employee awareness training including:

1. The environmental aspects with high risk rankings associated with work that they may effect, and benefits of improved performance.
2. Applicable requirements of the EMS.
3. Roles and responsibilities in conforming to the environmental policy and EMS requirements and awareness of consequences of deviation from these requirements.

g. How is awareness and associated training renewed over time?
h. How does the Center ensure personnel whose activities may result adverse or beneficial impacts associated with environmental aspects or compliance activities, are competent on the basis of appropriate education, training, and/or experience?
i. Identify the means by which records of the above training (needs analysis and related to programs) are maintained.
j. Identify support organizations with environmental responsibilities and describe their awareness of environmental responsibility and extent of support they provide.

k. How does the Center identify all persons (NASA staff, contractors, suppliers and others) performing tasks on its behalf that have the potential to cause adverse environmental impacts and beneficial environmental impacts associated with the high priority environmental aspects of their work?
l. Having identified these persons and associated high priority environmental aspects, how does the Center ensure they are competent on the basis of: appropriate education, training or experience. In the case of contractors and suppliers and others how is this ensured?
m. How does the Center ensure records of competence for all persons, including contractors, suppliers and others, are retained?
n. How does the Center ensure that all persons, including contractors, suppliers

and others, are aware of the areas noted under Section Z2.4.2.2.f. above?

Z2.4.3 Communication

Z2.4.3.1 Reference

"4.3.2.2 Centers are responsible for -- g. Internal communication to various organizational levels. h. Receiving, recording, and responding to relevant communications from external parties. i. Following existing communications procedures (or creating new procedures as necessary) in communicating with internal and external parties. ***j. Choosing if they will restrict external communications regarding high priority environmental aspects to within Freedom of Information Act limits, as specified by the Guide for Freedom of Information Act Requesters*** *located at http://www.hq.nasa.gov/office/pao/FOIA/guide.html.* ***k. Documenting applicable EMS requirements within contracts no later than the time of the next recompetition. l. Communicating applicable EMS requirements to tenants, subject to the limitations of tenancy agreements."***

Z2.4.3.2 Checklist Items

a. Describe existing communication procedures for communication with internal and external parties including:

1. Communication lines between the environmental office and Center management.
2. Communication lines between the Center and regulatory agencies and/or the public (environmental problems such as reporting spills or public comments).
3. Communication procedures for communicating Center environmental aspects with external parties. (Note: Decision regarding external communication must be recorded.)
4. Center processes for receiving, documenting, and responding to relevant communications from external interested parties.
5. Center outreach programs.

b. How are Center management updated regarding the requirements of NASA Environmental Management and applicable environmental laws and Executive Orders?

c. Describe Center processes for communication of EMS requirements to Contractors and Tenants.

Z2.4.4 EMS Documentation and Document Control

Z2.4.4.1 Reference

" Centers are responsible for--

a. Establishing and maintaining Center EMS documentation.

b. Establishing and maintaining Center EMS document control procedures.

c. Determining if they will use established quality management system conformant document control procedures, or other filing systems for the control of EMS documents.

4.4.3 Requirements

d. Specific document control procedures shall ensure the --

(1) Periodic review and update of EMS documents as necessary.

(2) Removal of obsolete EMS documents.

e. Obsolete EMS documents that are retained for legal and historical reasons shall be archived per NPD 1440.6, NASA Records Management, NPR 1441.1, NASA Records Retention Schedules, and NPD 2800.1, Managing Information Technology.

f. EMS documents and documented procedures shall be --

(7) Legible.

(8) Dated (with dates of revision).

(9) Readily available in locations where essential operations occur.

(10) Identifiable.

(11) Maintained in an orderly manner.

(12) Retained for a specified period.

d. Electronic or hardcopy versions of EMS documents under the Center EMS Representative's control shall meet the requirements of step c above.

f. Compliance documents are not subject to EMS document control requirements but shall be maintained according to external requirements and shall be readily available."

Z2.4.4.4 Checklist Items

a. Describe how plans and procedures are managed.

1. How does the Center review, create, update, approve, and implement new procedures (e.g., Hazardous Waste Management Plans, Spill Prevention Plans, Pollution Prevention Plans) to ensure they are:

i. Legible?
ii. Dated (with dates of revision)?
iii. Identifiable?
iv. Maintained in an orderly manner?

v. Retained for a specified period?

2. How are documents periodically reviewed, revised, and approved for adequacy? How are obsolete documents removed at points of issue and use as necessary?
3. How are plans and procedures made readily available in locations where essential operations occur?
4. For each document, has a "document owner" and where possible and alternate, been assigned to maintain it?

b. For all environmental (Center-wide and those specific to selected areas or functions at the Center) handbooks, environmental management programs (EMPs), management controls in place for medium and low priority aspects to prevent them from becoming high, guidance materials, or standard operating procedures (see, Section Z2.3.4.2.b. above):

1. What process is in place to ensure that these are complete and maintained?
2. How are interrelationships between these documents tracked and understood?

c. Are documents current and available at all locations where operations essential to the effective functioning of the EMS are performed? How is this ensured and how are end users made aware of changes?
d. Are obsolete documents suitably identified and stored as EMS records where appropriate, for legal and/or knowledge retention purposes?

e. How does the Center ensure that Center generated EMS documents reference related documents necessary for operation of the EMS, which may or may not have been generated by the Center?
f. Of these documents, how are documents of external origin managed to Center document management standards outlined above in Section Z2.4.4.2.a.
g. For each element / area of the EMS, has the Center determined which documents, including records, it has found are necessary for effective planning, operations and control of processes that relate to the Center's high priority environmental aspects?
h. How are these documents identified, and any listing kept up to-date?
i. How is suitable identification applied to obsolete documents if they are retained?

Z2.4.5 Operational Control

Z2.4.5.1 Reference

"Definitions 1.2.30 Operational Controls - measures taken: to manage environmental aspects, to mitigate adverse environmental impacts or secure beneficial environmental impacts, and to manage NASA environmental policy and

compliance activities. These may include: training, communication, procedures and practices, monitoring and measurement activities, and the installation and operation of physical structures or equipment. 1.2.31 Operational Control Procedures - documented procedures in place: to manage high priority environmental aspects, to mitigate adverse environmental impacts or secure beneficial environmental impacts, and to manage NASA environmental policy and compliance activities. *4.5.2.2 Centers are responsible for --* ***a. Operational controls and operational control procedures associated with high priority environmental aspects. b. Operational controls associated with non-high priority environmental aspects, in place to prevent those environmental aspects from becoming high priority. c. Implementing and conforming to EMS procedures.*** *4.5.3 Requirements a. Procedures developed under Chapter 4.5.2 shall -- (1) Stipulate specific operating and maintenance criteria, and* ***(2) Be communicated to tenants as appropriate.*** *b. Centers shall document applicable procedures within contracts no later than the time of the next recompetition. c. Operational controls and operational control procedures associated with non-high priority environmental aspects, in place to prevent those environmental aspects from becoming high priority, shall remain in place unless it is determined that they are no longer required."*

Z2.4.5.2 Checklist Items

a. How does the Center identify those operations and activities whose impacts are associated with the high-priority environmental aspects in line with its policies, objectives, targets, and compliance activities?
b. Does the Center have documented procedures established and maintained to address situations where the absence of such procedures could lead to deviations from the environmental policy, or from objectives, targets and compliance activities (e.g., inspection, reporting, emergency response, and NEPA)? Is there a list of documented and undocumented procedures?
c. Describe how these procedures stipulate specific operating and maintenance criteria? A subset of examples is sufficient.
d. Has the Center identified operations and activities requiring procedures (documented or undocumented) associated with management controls for medium or low priority aspects and preventing them from becoming high priority?
e. Is there a list of these procedures?
f. How has the Center determined what procedures, specifically in relation to the aspects of goods and services provided by contractors and suppliers, are needed in order to attain its objectives and targets? Is there a list of these procedures?
g. How are these procedural requirements documented for suppliers and contractors (see also Section Z2.4.3.2.c. above)?
h. What maintenance process(es) does the Center use to assess the adequacy, effectiveness and appropriateness of the procedures noted above (Section Z2.4.5.2.a. to Z2.4.5.2.g.)?
i. How do tenant user-agreements address environmental responsibilities?

1. Itemize the types of tenant-user agreements, such as Memorandums of Agreement, policy documents, and Host Tenant Agreements.
2. Describe environmental responsibilities of tenant organizations and how these are communicated (see also Section Z2.4.3.2.c. above)?
3. Are clear lines of responsibility indicated in the agreement, including responsibility for funding requirements?
4. Is the degree of control and influence over tenant organizations noted in the definition of the scope of the EMS?

Z2.4.6 Emergency Preparedness and Response

Z2.4.6.1 Reference

"4.6.2 Centers are responsible for implementing ***emergency preparedness plans, procedures and guidelines. 4.6.3.a Employees shall be provided with, training as appropriate, on emergency preparedness and response requirements: (1) Associated with environmental aspects and impacts identified in Chapter 3.1, and (2) As externally required under legal and other requirements"***

Z2.4.6.2 Checklist Items

a. Are procedures developed and maintained to prevent and mitigate environmental impacts associated with emergency situations including accidental releases? Are there examples of this review from recent incidents? Make available the annually reviewed and updated local hazards/threat analysis (NPR 8715.2 4.2 (b) and 6.2.3 (b)).
b. How does your Center review and revise emergency response plan procedures after an incident to address deficiencies? Make available the annual review of emergency preparedness and emergency response procedures (NPR 8715.2 6.2.3(c)).
c. How frequently does the Center test its plan using activities such as drills or tabletop reviews and how do these activities tie in to plan improvements?
d. How does the Center emergency planning process and hazards/threat analysis tie in with the aspects and impacts identification process (see Section Z2.3.1.2.b above)?
e. What environmental training programs / program components are in place for aspects and impacts associated with emergency preparedness and response?
f. How are these reviewed / revised and coordinated with other environmental training programs (see also Sections Z2.4.2.2.b and Z2.4.2.2.d above)?

g. Describe how the Center is able to demonstrate satisfactory responses to emergency situations and accidents, and any required measures to prevent, minimize or mitigate associated environmental impacts, have occurred?

Z2.5 Checking and Corrective Action

Z2.5.1 Monitoring and Measurement

Z2.5.1.1 Reference

"5.1.2.2 Centers are responsible for, establishing and maintaining documented procedures to track, monitor, and measure the key characteristics of operations associated with EMS objectives and targets and EMS high priority environmental aspects. 5.1.3 Requirements. Equipment used for monitoring shall be appropriately calibrated and calibration records maintained."

Z2.5.1.2 Checklist Items

a. Describe the system used and documented procedures to inspect, test, monitor, track, and measure key characteristics of operations associated with EMS objectives and targets and high priority environmental aspects including:

1. Contractors.
2. Tenants.
3. Recording information on:

i. Tracking of performance.
ii. Relevant operational controls.
iii. Conformance with objectives and targets.

4. Inspection and testing which may include:

i. Equipment, hazardous waste accumulation and satellite accumulation points, air or water discharge points and tank tightness.
ii. Schedules and frequency for inspections and assessments.
iii. On going documented programs and one time programs.

b. Describe processes for calibration of monitoring equipment associated with managing high-priority environmental aspects and the maintenance of calibration records.
c. Describe monitoring and measurement activities at the Center associated with activities to manage medium or low priority aspects and prevent them from becoming high priority.

d. Describe Center processes for calibration or verification of monitoring and measurement equipment associated with managing environmental aspects, and the retention of associated records (replaces Sections Z2.5.1.2.b. and Z2.5.1.2.c.).

Z2.5.2 Nonconformance, Corrective and Preventive Action

Z2.5.2.1 Reference

*"5.2.2 Centers are responsible for establishing procedures to track nonconformance and corrective action. Center **quality management system** procedures may be used. 5.2.3 Requirements a. Preventive and corrective actions shall be appropriate to the magnitude of the environmental impact. b. Action **shall** be taken to mitigate any impacts caused by a nonconformance and provide for both initiation and completion of corrective and preventive action."*

Z2.5.2.2 Checklist Items

a. Describe Center procedures for nonconformance and corrective /preventive action, including how responsibility and authority are defined, for:

1. Identifying and investigating nonconformance?
2. Initiating and completing corrective action to mitigate the impacts of nonconformance?
3. Identifying and investigating the need for preventive action?
4. Initiating and completing preventive action to prevent occurrence?

b. How does the Center ensure that corrective or preventive actions taken have been effective and appropriate to the magnitude of the environmental impact?
c. How does the Center implement and record changes in documented procedures resulting from corrective and preventive action?
d. Describe the mechanisms used to identify, investigate, report, correct, track, and monitor trends in environmental problems and "incidents."
e. Describe Center programs and provide examples of root cause analysis and trend identification, and mechanisms to communicate root causes, trends, and lessons learned.
f. Describe how the results of: review of training programs, monitoring and measurement activities, environmental functional reviews, annual EMS reviews, reviews of compliance, management reviews, and evaluation and reporting of metrics (see Sections Z2.4.2, Z2.4.6, and Z2.5.1 above and Sections Z2.5.4, Z2.6 and Z2.7 below) tie into corrective action processes at the Center.
g. Describe the system(s) used to track inspection/audit findings and other sources of actions to ensure corrective actions or repairs are taken. Provide examples of the types of findings tracked and the numbers of resolved versus unresolved findings.

h. Describe how the results of reviews of compliance with other requirements to which the Center subscribes (see Section Z2.5.4 below), tie into corrective action processes at the Center.

Z2.5.3 Records

Z2.5.3.1 Reference

"5.3.2NASA Centers are responsible for -- c. For EMS records, conformance with this NPR, and applicable NASA records requirements including: NASA NPD 1440.6, NASA Records Management, NPR 1441.1, Records Retention Schedules, and NPD 2800.1, Managing Information Technology. b. Retaining records of compliance activities in accordance with legal and regulatory guidelines. 5.3.3 Requirements a. A records retention matrix for EMS records shall be established and maintained. b. Environmental records shall be legible, identifiable, and traceable to an activity, product, or service. c. Environmental records shall be maintained and stored in a manner that -- (1) Allows for their ready retrieval, and (2) Protects them from loss, damage, or deterioration. ***e. Compliance records are not subject to EMS record requirements but shall be maintained according to external requirements and shall be readily available"***

Z2.5.3.2 Checklist Items

a. Records and operational/historical data are critical to environmental management. Describe the following as they pertain to your organization:

1. Records retention matrix for EMS records (see Appendix B.2), including all forms: paper, magnetic, electronic or optical disc, photographic or combination thereof.
2. Controls in place to ensure the legibility, integrity, accuracy, and timeliness of environmental data.
3. Availability of environmental records and data for examination.
4. Protection of records from loss, damage, or deterioration.
5. Record-keeping responsibilities of contractors and monitoring of contractors.

b. How are records maintained so that they can be traced to an activity, product or service?

c. How has the Center identified, for each element of the EMS, which records are necessary to demonstrate conformity to the requirements of the EMS?

Z2.5.4 EMS Audit

Z2.5.4.1 Reference "5.4.2.2 Centers are responsible for -- Supporting Headquarters Environmental Management Division - led environmental functional reviews as necessary to ensure that Center programs, projects, facilities, systems, and operations comply with all environmental requirements. ***Establishing and maintaining programs and procedures for internal annual EMS reviews and internal reviews of compliance with local environmental regulations. Internal, annual EMS reviews, in years that Headquarters Environmental Management Division - led environment***

functional reviews are not conducted. At a minimum, in conducting its annual EMS reviews, each Center will internally review all elements of its EMS for conformance with this NPR, as applicable to its internal sub-organizations, over a 3-year period. *Periodic internal reviews of compliance with local environmental regulations.* ***At a minimum compliance with all applicable local environmental regulations will be reviewed over a 3-year period.*** *5.4.3 Requirements* ***c. Results of previous Headquarters Environmental Management Division -led environmental functional reviews, independent self-declaration assessments, Center-led annual EMS reviews and reviews of compliance with local regulations shall be considered, as appropriate, by Centers when conducting EMS reviews and reviews of compliance with local environmental regulations. d. Results of annual EMS reviews, self-declaration assessments, and reviews of compliance with local environmental regulations*** *and environmental functional reviews shall be provided to Center Senior Management. e. Center auditing procedures shall address auditor competence."*

Z2.5.4.2 Checklist Items

a. Describe Center internal review systems. Consider the following factors:

1. Has the organization established a program and procedures for conducting annual Center level EMS reviews that cover off all elements of the EMS, as applicable to internal sub-organizations, over a 3-year period?
2. Does the review program determine whether or not the EMS conforms to planned arrangements (requirements of NPR 8553.1, and those that have been defined in Center EMS documents, documented procedures and procedures (written or non-written) see Appendix B.2)?
3. How does the review program determine whether the EMS review itself has been properly implemented and maintained?
4. How does the EMS review system provide information on the results of reviews to Center Senior Management?
5. How does the review process consider the results of previous internal EMS reviews, independent EMS assessments and environmental functional reviews?
6. Does the EMS review system include schedules based upon the environmental importance of the activity concerned and the results of previous reviews?
7. Does the review system cover the: review criteria (beyond Sections Z2.2 to Z2.7 of this checklist), scope, frequency, and methodologies used?
8. Does the review system identify responsibilities and requirements for conducting reviews and reporting results?

b. Outline documented Center programs and procedures for review of compliance with environmental legal requirements.
c. Describe the Center's processes for acting upon the results of compliance reviews. Make available results of recent reviews and resulting/resolved actions. How is this integrated with the requirements for corrective and preventive action?
d. Describe the Center's processes for providing Center Senior Management with

the results of: reviews of compliance with local environmental regulations and environmental functional reviews.

e. Describe the how the Center ensures auditor competence, including: objectivity and impartiality for its internal EMS and compliance reviews.

f. Describe the Center process for, and the assigned responsibilities of the EMS representative, related to reporting recommendations for improvement of the EMS to Center Senior Management?

g. Outline documented programs and procedures for review of compliance with other requirements to which the Center subscribes.

h. Describe processes for acting upon the results of reviews of compliance with other requirements to which the Center subscribes. Make available results of recent reviews and resulting/resolved actions. How is this integrated with requirements for corrective and preventive action?

i. Describe the Center's processes for providing Center Senior Management with the results of: reviews of compliance with other requirements to which the Center subscribes.

j. Describe the Center's processes for keeping records of the results of: EMS reviews, reviews of compliance with environmental legal requirements and reviews of other requirements to which the Center subscribes.

Z2.6 Management Review

Z2.6.1 Reference

"6.2.4 Center Directors are responsible for periodically reviewing Center EMS for status and viability. 6.2.5 Center EMS Representative is responsible for -- a. Reporting to the Center Director and NASA Headquarters Environmental Management Division on the results of ***Center-led annual EMS reviews*** *and on the status and viability of the Center EMS. c. Reviewing and updating (as necessary) Center objectives and targets. d. Reviewing the determination(s) of technical feasibility and economic reasonableness where it was decided not to set objectives and targets to address high priority environmental aspects."*

Z2.6.2 Checklist Items

a. Describe the mechanism used for the Center Director to review and act upon environmental functional reviews, and other information deemed appropriate, in determining whether environmental policy, objectives, targets, or other Center EMS component changes are required in light of:

1. Audit results.
2. Changing circumstances.

3. The commitment to continual improvement of the EMS.

b. Describe the reporting process used for communicating the results of the internal EMS reviews and the status and viability of the EMS to the Center Director.
c. How frequently and under what circumstances are Center level management reviews conducted?
d. Describe the topic areas covered in recent management reviews.
e. Describe the role of the EMS representative in the management review process at the Center.
f. Describe how the results of the management review are documented and acted upon.

g. Describe the process of preparation for a management review including the EMS Representative's process for preparing recommendations for improvement.
h. (Replace Section Z2.6.2.a. with) Describe the mechanism used for the Center Director to review and determine whether: environmental policy, objectives, targets, or other Center EMS component changes are required in light of:

1. Results of EMS reviews, environmental functional reviews, reviews of compliance with legal requirements and reviews of compliance with other requirements to which the Center subscribes.
2. Communication from external interested parties, including complaints.
3. The environmental performance of the Center.
4. The extent to which objectives and targets have been met.
5. Status of corrective and preventive action.
6. Follow-up actions from previous management reviews.
7. Changing circumstances, including changes in applicable legal and other requirements.
8. Recommendations for improvement.

i. Describe the minimum: areas covered, and content of, output generated by a Center management review.

Z2.7 Metrics

Z2.7.1 Reference

"7.2.3 Centers are responsible for -- a. Corrective actions addressing non-conformances identified as a result of evaluating and reporting of metrics. b. Reporting metric results to NASA Headquarters Environmental Management Division.

7.3 Requirements Metrics shall be documented and reported in accordance with a schedule as established by NASA Headquarters Environmental Management Division."

Z2.7.2 Checklist Items

a. What metrics does the Center utilize in its internal EMS reviews?
b. What EMS changes have been instituted based on the review of metrics?

Z2.8 Self-Declaration and External Recognition Programs

a. For those Centers who have determined that they wish to self-declare their EMS, the following series of checklist items are for use during EFRs and can also be used by Centers to evaluate if they satisfy the requirements for self-declaration. The content of this section of the checklist is designed primarily to meet the requirements of the Environmental Management System Agency Self-Declaration Protocol for Appropriate Federal Facilities (Final Version September 10, 2003) provided by the Office of the Federal Environmental Executive (OFEE).
b. Excerpts are provided from the OFEE Protocol in Italics, and NPR 8553.1A followed by suggestions on possible sources of information that could be used to demonstrate the current status of the area in question and how requirements are met.
c. This section does not replace content of Section Z2.5.4 above and should be used in conjunction with it.
d. Section Z2.8.3 applies to Centers which have elected to participate in an external recognition program as an alternative to self-declaration of their EMS.

Z2.8.1 Self-Declaration Process

Z2.8.1.1 Reference

(OFEE)

"Agencies / bureaus shall direct their facilities or organizations to use one or more EMS evaluation guide(s)" Guidance will cover "makeup of the independent review team (e.g., Headquarters, other facility, other agency, or contractor), and qualifications of independent reviewers, a requirement for facility or organization management to make a Self-Declaration statement that the EMS is in place when that conclusion is reached. direction on documenting and using the results of EMS evaluations. This shall include steps for acknowledging adequate facility EMSs," (NPR 8553.1) "1.2.34 Self-Declaration - refers to a NASA Center's statement that it is conformant with NASA's EMS self-declaration requirements and the Agency Self-Declaration Protocol for Appropriate Federal Facilities. 1.2.21Independent

Self-Declaration Assessment - refers to an assessment of conformance of a Center's EMS to the defined criteria of this NPR by individuals without direct responsibility for the activities being assessed. 1.2.20 External EMS Recognition Program - includes any of the following: the International Organization for Standardization's (ISO), ISO 14001, the Environmental Protection Agency's (EPA), National Environmental Performance Track, and/or an acceptable State-sponsored EMS recognition program. 6.2.5.a Center EMS Representative is responsible for -- Reporting to the Center Director on the results of annual EMS reviews and self-declaration assessments as applicable. Center Directors are responsible for -- 1.1.c Self-declaration of the Center EMS or participation in an external EMS recognition program no later than December 31, 2005. 6.2.4.b When applicable, making an annual EMS self-declaration that the Center EMS conforms to applicable requirements of this NPR, is in place, and is viable. 5.4.2.2 Centers are responsible for, if self declaring their EMS: Annual EMS reviews utilizing the current NASA Environmental Management System Checklist as it applies across the Center and to internal sub-organizations. Independent self-declaration assessments every third year. The environmental management portion of a Headquarters Environmental Management Division conducted environmental functional review, is a source of an independent self-declaration assessment."

Z2.8.1.2 Checklist Items

a. Describe the Center process for EMS evaluation used in conducting EMS self-declaration assessments. Make available the operating procedures used and identify the version of the EFR checklist used for the most recent assessment.
b. Describe how the self-declaration assessment covers off all elements of the EMS, as applicable to internal sub-organizations.
c. Describe how independence and objectivity was achieved in the assessment process in general when the last independent self-declaration assessment was conducted.
d. What requirements has the Center set as its criteria that a statement of self-declaration is appropriate?
e. Describe the process used by the Center to make a self-declaration statement that the EMS is in place and viable.
f. Make available the most recent self-declaration assessment and resulting report to the Center Director and the Center Director's self-declaration statement.

Z2.8.2 Self-Declaration Results / Feedback

Z2.8.2.1 Reference

(OFEE) Guidance will cover

"follow-up actions to address inadequacies in the EMSs, and reporting results of evaluations for inclusion in agency-wide annual EMS reviews." Z2.8.2.2 Checklist Items a. Describe the process by which the Center documents and uses the results of the Self-Declaration assessments and the Center's process for determination of status

and viability. b. Describe the mechanisms used by the Center to investigate, report, correct and track inadequacies and areas for improvement, identified in the assessment and the Center's process for determination of status and viability. c. How is feedback on the EMS Self-Declaration evaluation process documented and reported to NASA Headquarters Environmental Management Division? Z2.8.3 External Recognition Programs Z2.8.3.1 Reference (OFEE) Guidance will cover "Agencies / bureaus shall include appropriate guidance to ensure that facilities desiring to participate in a Federal or state EMS recognition program (e.g., National Environmental Performance Track, Oregon Green Permit Program, New Jersey Silver Track Program) reflect the respective requirements in their self declaration procedures." (NPR 8553.1) "State Sponsored EMS Recognition Program - an acceptable State sponsored EMS recognition program, will involve at a minimum, equivalent requirements to those for EMS Self-Declaration."

Z2.8.3.2 Checklist Items

a. Which external recognition program(s) does the Center choose to participate in?
b. Are there any gaps between this program and the requirements for independence and comprehensiveness of the process associated with Self-Declaration?
c. Has the Center identified the gaps between the requirements of NPR 8553.1A and those that are assessed as part of the external recognition program?
d. How are the gaps (Sections Z2.8.3.2.b. and Z2.8.3.2.c. above) addressed by the Center?
e. How are the results of assessments of the Centers EMS associated with the External Recognition program reported to senior management at the Center and how are noted areas of weakness or deficiencies acted upon?

Z2.9 National Environmental Performance Track

a. For those Centers who chose to become, or who are, program members of the National Environmental Performance Track (NEPT), the following series of questions can be used to assist in evaluating if they satisfy the requirements for NEPT. The content of this section of the checklist is designed primarily to meet the requirements of the NEPT program, as referenced in the documentation given below.
b. Excerpts are provided from the list of NEPT documents in italics. Suggestions on possible sources of information that could be used to demonstrate the current status of the area in question are provided.
c. Documentation used to define the specifics of NEPT criteria, include:

1. National Environmental Performance Track Program Guide (EPA 240-F-01-002), March 2003 (Program Guide);
2. National Environmental Performance Track Application Form (OMB No. 2010-0032), Expiration Date: 06/30/03 (Application);

3. National Environmental Performance Track Checklist (Checklist) (http://www.epa.gov/performancetrack/apps/app.htm);
4. National Environmental Performance Track Standard Criteria (Std. Criteria) (http://www.epa.gov/performancetrack/program/index.htm);
5. Final Performance Track Program Changes (Program Changes)
6. (http://www.epa.gov/performancetrack/events/news.htm);

In addition to the Questions under Section 9 of Attachment Z2.1, it is recommended that Centers also review the Performance Track independent assessment protocol (http://www.epa.gov/performancetrack/ind_assessment.htm#current).

Z2.9.1 Environmental Policy

Z2.9.1.1 Reference

"A written environmental policy, defined by top facility management, that includes commitments to:... (3) continuous improvement in environmental performance, including areas not subject to regulations; and (4) sharing information about environmental performance and the operation of the EMS with the community."

Z2.9.1.2 Checklist Items

a. Does the Center have a Center level, environmental policy that commits to pursue "continuous" improvement in environmental performance and a requirement to share information on EMS performance with the community?
b. Describe how the Center environmental policy commits to continuously improve environmental performance, even in areas where there are no regulatory requirements.
c. Describe how the Center environmental policy commits to sharing information with the community about Center environmental performance and how the EMS operates. Or describe how Center programs and procedures share information with the community regarding environmental performance and how the EMS operates.

Z2.9.2 Planning

Z2.9.2.1 Reference

"Identification of significant environmental aspects and legal requirements, including procedures for integrating anticipated changes to the facility's requirements or commitments in the EMS. Measurable objectives and targets to meet policy commitments and legal requirements, to reduce the facility's significant environmental impacts, and to meet the performance commitments made as part of the facility's participation in the program. In setting objectives and targets, the facility should consider the following criteria: preventing pollution at its source, minimizing cross-media pollutant transfers, and improving environmental performance" "Does

your EMS include an inventory of all your legal requirements at the Federal, State, tribal, or local level?"

Z2.9.2.2 Checklist Items

a. Describe the Center procedure for identification of tribal legal and other requirements, where applicable.
b. Describe the Center process for integrating anticipated changes to the Center's requirements and/or voluntary commitments.
c. Describe how the Center establishes measurable objectives and targets to meet the performance commitments made as part of the facility's participation in NEPT.

Z2.9.3 Implementation and Operation

Z2.9.3.1 Reference

"Establish roles and responsibilities for meeting objectives and targets of the overall EMS and compliance with legal requirements, including a top management representative with authority and responsibility for the EMS." "Defined procedures for: (1) achieving and maintaining compliance and meeting performance objectives; (2) communicating relevant information regarding the EMS, including the facility's environmental performance, throughout the organization; (3) providing appropriate incentives for personnel to meet the EMS requirements; ..... "Does your EMS hold managers and employees accountable for meeting EMS requirements? A facility will demonstrate its commitment to public outreach and report periodically on its performance."

Z2.9.3.2 Checklist Items

a. How does the Center EMS hold managers and employees accountable for meeting EMS requirements? Are there defined procedures for providing appropriate incentives for personnel to meet the EMS requirements?
b. How does the Center demonstrate a commitment to public outreach?
c. Describe the process by which the Center reports periodically on their performance.

Z2.9.4 Checking and Corrective Action

Z2.9.4.1 Reference

*"facilities need to demonstrate past environmental achievement and commit to continued improvement in their performance. Past achievements and future commitments will be in specific **aspects** of environmental **categories.**" "Prior to applying to the Program, facilities must have had an assessment of their EMS conducted by an independent party. For purposes of this criterion, an independent*

party is one that is neither directly employed by the applying facility nor has played a substantive role in developing the facility's EMS. Have you completed at least one EMS cycle (plan-do-check-act)? Did this cycle include both an EMS and a compliance audit? Have you completed an objective self-assessment or third-party assessment of your EMS?"

Z2.9.4.2 Checklist Items

a. How does the Center demonstrate past environmental achievement and commit to continued improvement in performance? (Past achievements and future commitments will be in specific aspects of environmental categories.)
b. Has the Center completed as least one EMS cycle (plan-do-check-act), including both an EMS and compliance audit?
c. Has the Center completed an objective self-assessment or third-party independent assessment of the EMS?

Z2.9.5 Management Review

Z2.9.5.1 Reference

"Documented management review of performance against the established objectives and targets and the effectiveness of the EMS in meeting policy commitments. A facility will retain EMS documentation and provide a summary of its performance, including performance against objectives and targets, and a summary of the results of compliance and EMS audits, in its Annual Performance Report." "The Annual Performance Report includes the following categories of information:

- *Summary of the performance of the facility's EMS (based on objectives and targets), including a summary of the EMS and compliance audits performed and any corrective action taken.*
- *Brief progress report on the facility's performance commitments.*
- *Summary of the facility's environmental public outreach activities.*
- *Self-certification that the participant continues to meet the Performance Track criteria."*

Z2.9.5.2 Checklist Items

a. Describe the reporting process by which a Center retains EMS documentation and provides a summary its performance, including performance against objectives and targets, and a summary of the results of compliance and EMS audits.
b. Does the Center Annual Performance Report include the following:

1. A summary of the facility's EMS assessment activities and progress towards meeting EMS objectives and targets, including brief descriptions of audits conducted and improvements made?

2. A brief report on progress made in meeting the facility's environmental performance commitments?
3. A summary of the facility's public outreach activities?
4. A self-certification that the facility continues to meet NEPT's criteria for membership?

Part 2 Attachment Z2.1. NASA Environmental Management System Checklist Forms

a. The following series of forms are for use by:

1. NASA Headquarters Environmental Management Division when conducting environmental functional reviews (EFRs); and
2. Centers when conducting annual; EMS reviews or self-declaration assessments.

b. Each form is intended for use after the Center, or sub-organization at a Center, which is the subject of the EFR, EMS review, or self-declaration assessment, has provided the information outlined in the EMS Checklist.
c. The forms are intended to serve as guidance while experienced auditors conduct audit and review activities. Auditors may choose to make notations regarding: sources of information used, individuals present or interviewed, and information obtained on the forms or attach additional pages or copies of material used in the execution of the auditing process.
d. Each form covers one key section of the EMS Checklist and includes:

1. A synopsis of the checklist items for the specific paragraph of the EMS Checklist.
2. Where a procedure is required the symbol **P** is included in the form.

   Note: **P** Means one or more procedures are needed to meet the requirements of various Chapters of NPR 8553.1. Centers have the option in these cases whether to document the procedures. If not documented, applicable personnel may be required to demonstrate knowledge of expectations.
3. Where a documented procedure is required the symbol **D** is included in the form.

   Note: **D** Means one or more documented procedures, maintained in accordance with Chapter 4.4 is needed.
4. Where a record is required, the symbol **R** is included in the form.

Note: **R** Means one or more records are needed to meet the requirements of Chapter 5.3.

e. In all cases, additional procedures, documented procedures, or records may be used at the discretion of the Center and these should be in place if their absence prevents the Center from meeting the requirements of the NPR.
f. Notes such as: check this, review this, and confirm that, are included as helpful hints for the reviewers in the Description of Observation/Finding/Other Notes section of each form.
g. The final box on each form (for Sections AZ2.1.2 to AZ2.1.6) includes items for consideration based on added on revised requirements associated with ISO 14001:2004 that are beyond the requirements of NPR 8553.1. These are included to assist Centers that will need to conform to ISO 14001:2004 by no later than May 16, 2006.

NASA Environmental Management System Review Checklist
AZ2.1.2 Environmental Policy

Question:

How is the NASA environmental policy implemented across the Center and how are employees made aware of the policy and its applicability to their work??

If the Center has adopted a Center specific environmental policy as the Primary focus of the Center EMS, does its content either reference or cover at a minimum that of the NASA Policy and is it periodically reviewed for continued adequacy?

How are applicable environmental policy commitments documented for contractors and communicated to tenants?

Description of Observation/Finding/Other Notes:

Canvas randomly selected employees and ask them to explain how the policy applies to them and the work they do and do they know where to get a copy.

Is there a plan ensuring that all levels of the organization are familiar with the policy?

How does the Center ensure that contractors and tenants are aware of applicable commitments within the policy and how they affect the Center's ability to meet those commitments?

14001:2004

Review the Center policy for commitments to compliance with both applicable legal and other requirements.

Interview contractors and suppliers (I.e. examples of all persons), and identify how they were made aware of the Center environmental policy and how it applies to them.

Reviewer Signature:	χ Notes continued on other side Date:

NASA Environmental Management System Review Checklist
AZ2.1.3.1 Environmental Aspects and Impacts

Question:

How has the Center defined the scope of the EMS and followed the steps required to identify activities (past, present and future), products, services, aspect categories, aspects, impacts, consequences, frequency, and risk ranking prescribed in Chapter 3.1 of NPR 8553.1?

How does the Center ensure that the aspects and impacts listing is reviewed and updated at regular intervals?

How does the Center identify environmental risk in order to develop management strategies?

Description of Observation/Finding/Other Notes:

R *Review the Center management definition of the scope of the EMS to assess its comprehensiveness.*

Review any Center specific processes **P** *used to complete the identification of all aspects and high priority environmental aspects. If the Center has documented these processes they are subject to controls.*

R *Records of aspects, impacts, aspect categories and the justification and background for risk rankings should be reviewed for completeness. Has the Center identified beneficial environmental impacts? Are the assigned aspect categories* **R** *in a format that will allow for NASA wide data comparisons?*

Ensure through interviews and documentation reviews that a comprehensive aspect and impact identification and classification process exists. This includes review steps taken to identify aspects associated with contractor and tenant activities within the scope of the EMS.

Ensure processes **P** *are in place to keep the aspect and impact information up to date. Examine* **R** *review notes and changes made.*

ISO 14001:2004

Review how the Center scope and EMS considers activities, products and services it can influence.

When reviewing the aspect and impact identification process, check to see that it takes into account planned changes in activities products and services.

Discuss how the Center ensures how high priority environmental aspects are taken into account in the way each EMS element or sub-element operates. Note: This may be done when reviewing this element or as one added part of the conformance assessment for all other elements when they are assessed.

Reviewer Signature:	χ Notes continued on other side Date:

NASA Environmental Management System Review Checklist
AZ2.1.3.2 Legal and Other Requirements

Question:

How does the Center ensure that the legal and other requirements directly applicable to the environmental aspects and impacts associated with its activities, products, and services have been identified, are integrated into Center programs and the implementation of NASA Policies, and are communicated to appropriate individuals? This includes providing access, tracking and regular updating of information.

How are new or changed requirements incorporated into operating procedures?

Description of Observation/Finding/Other Notes:

P *Examine the procedure(s) that the Center uses to:*

- *Identify existing, new, and changes to legal and other requirements, using NASA-wide, Center-specific, and additional resources.*
- *Determine who needs to know this information and how they are kept informed and updated as appropriate.*
- *Keep track of the requirements (document controls apply if Center has deemed procedures need to be documented in order to ensure they are followed).*

Any interpretations generated on applicability of legal requirements, Center specific permits / agreements, or related training are records. **R** *However, unless the Center deems it appropriate to maintain internal records of which legislation applies at different time periods, then the actual laws and regulations are a matter of public record and need not be treated as EMS records.*

ISO 14001:2004

Review the Center's procedure for determination of how legal and other requirements apply to the aspects at the Center. Discuss the rationale used that limits the degree of detail to which this analysis of how these requirements apply is conducted.

Discuss how the Center ensures how legal and other requirements are taken into account in the way each EMS element or sub-element operates. Note: This may be done when reviewing this element or as one added part of the conformance assessment for all other elements when they are assessed.

Reviewer Signature:	χ Notes continued on other side Date:

NASA Environmental Management System Review Checklist
AZ2.1.3.3 Objectives and Targets

Question:

What process does the Center use for setting objectives and targets?

What factors are considered in setting them?

How is progress towards their achievement monitored and how are they reviewed and updated if necessary?

Description of Observation/Finding/Other Notes:

D *Review Center objectives and targets, for high-priority environmental aspects and any other aspects for which the Center has decided objectives and targets are appropriate.*

If objectives or targets were not set for high-priority environmental aspects based on technical feasibility or economic reasonability, review record. **R**

Determine how the Center has considered: legal and other, technology and infrastructure, operational and mission, financial, and stakeholder issues in setting objectives and targets. If a formal process **P** *was undertaken there may be records.*

Get Center personnel to explain how it ensures objectives and targets align with the NASA environmental policy and continual improvement.

Get staff to explain how progress towards objectives and targets is monitored. **R** *Records of progress, if generated, should be reviewed.*

Staff should have a consistent answer regarding when and how objectives and targets are reviewed and updated.

ISO 14001:2004

Review the proportion of Objectives and Targets that are measurable.

Get Center personnel to explain how it ensures objectives and targets align with the Center's environmental policy and continual improvement.

Reviewer Signature:	χ Notes continued on other side Date:

NASA Environmental Management System Review Checklist
AZ2.1.3.4 Environmental Management Programs

Question:

Describe the Center's environmental management programs (EMPs) and supporting guides, procedures, etc. and how they address the objectives and targets, and related compliance activities. This includes programs in existence to prevent aspects from becoming high priority.

How do the EMPs and management controls ensure NASA wide environmental programs, including associated NASA governing documents, are addressed? Include environmental program initiatives and NEPA related assessment activities.

Description of Observation/Finding/Other Notes:

Review the Center processes on how EMPs reflect the progression from:

- *Identification of new or modified activities, products, and services,*
- *Identification of new or modified aspects and impacts, and their prioritization, and*
- *Setting of objectives and targets. If established documented procedures for program development and execution are present and deemed necessary by the Center, then the procedures are subject to document controls.*

Review the Center generated list of all EMPs and **D** *and selectively review with Center personnel.*

Confirm that all high-priority environmental aspects are sufficiently covered.

Selectively review, with Center personnel, management controls in place for medium and low priority aspects to prevent them from becoming high.

Do EMPs include detail on who is responsible, resources, and timelines? Do these appear to be realistic and sufficient? Does the affected staff agree?

Review with staff, examples of, and what will trigger, a change in a documented EMP and changes in how medium or low priority aspects are managed. A replaced documented EMP will become a record **R.**

How do the programs and management controls highlight and address compliance requirements? Including NEPA and environmental justice where applicable, is it the exception or the norm that these requirements are followed?

Review program initiatives and have environmental staff detail how EMPs and their activities are included in all working areas of the Center (such as programs, design and construction).

Reviewer Signature:	χ Notes continued on other side Date:

NASA Environmental Management System Review Checklist
AZ2.1.4.1 Structure and Responsibility

Question:

At the Center, how are environmental management roles, responsibilities, and authorities defined, documented, and communicated for all appropriate organizational levels? Is there **"stop work"** authority within environmental?

Describe your environmental civil service staff and their assigned environmental programs. Describe the roles of the environmental support contractor(s) and roles of support contractors that operate environmental programs at the Center.

How does Center management ensure adequate resources are provided for the EMS?

How does the environmental management committee or working group provide cross-organizational support / and improve access to senior management?

Description of Observation/Finding/Other Notes:

Review documentation of roles and responsibilities (R and R) for the EMS. **D** *Review these for senior management, key environmental staff, the EMS representative, and the EMS core team or equivalent.*

When interviewed, do staff's impressions of their R and R align with those they have been assigned? How have their R and R been communicated to them? Specifically examine R and R with the EMS representative/EMS core team or equivalent.

During interviews, discuss with senior management and environment staff how roles and responsibilities are determined and implemented in association with new or changing environmental requirements.

Ascertain the extent to which the EMS and environmental program "ownership" rests with environmental staff and the office versus operational staff.

Does it appear that management ensures adequate resources have been provided for the EMS and its maintenance in accordance with NPR 8553.1?

- ⇒ *Issues/problems due to insufficient staff.*
- ⇒ *How you assess environmental staffing needs (i.e., excessive overtime, excessive use of contractors, compliance deficiencies).*
- ⇒ *Degree of success in gaining approval for additional staff and why.*
- ⇒ *Programs not being undertaken due to insufficient staff.*
- ⇒ *Issues regarding how contractor staff and "inherently governmental functions" are managed.*
- ⇒ *Resources/funding available for studies, research, and environmental maintenance activities.*

Is there a clear line of authority leading from top management to overall programs and to detailed program execution with accountability? Is there evidence that things actually work the way the roles and responsibility documentation say they do? Evidence could be records of communications or instructions, for example, of how resources for a new or changed program were developed.

Review processes **P** */* **D** *for the management of contractor operations within the scope of the EMS.*

ISO 14001:2004

Review the EMS representative responsibilities to ensure they include recommending improvements to the EMS and review how the EMS representative has been provided with resources to improve the EMS.

Reviewer Signature:	χ Notes continued on other side Date:

NASA Environmental Management System Review Checklist
AZ2.1.4.2 Environmental Training Awareness and Competence

Question:

Describe the process used to identify and track training needs of all personnel whose activities may result in impacts associated with high-priority environmental aspects or compliance activities.

Describe the procedures for and content of employee awareness training.

How does the Center ensure personnel whose activities may result in impacts associated with high priority environmental aspects or compliance activities are competent on the basis of appropriate education, training, and/or experience?

Description of Observation/Finding/Other Notes:

Review Center procedures for identification of training needs, requirements for general awareness and competency training, and specific awareness (and related competence) for high priority environmental aspects and associated impacts employees may affect. **P** *What triggers recognition of a new or revised training need (internal or external)?*

The training procedures should ensure that needs once identified are correlated with appropriate training programs that are completed and whose effectiveness is monitored.

Are training and records **R** *of training complete and up to date? Crosscheck selected records with interviewed staff.*

How does the Center ensure that support organizations including on-site contractors are appropriately trained and aware?

How are training requirements for contractors whose activities are associated with high-priority environmental aspects addressed?

ISO 14001:2004

Review how the Center has identified and then ensures that persons are competent and aware as appropriate?

Reviewer Signature:	χ Notes continued on other side Date:

NASA Environmental Management System Review Checklist
AZ2.1.4.3 Communications

Question:
Describe existing communication procedures for communication with internal and external parties.

Description of Observation/Finding/Other Notes:
To assess the effectiveness of internal communications review the quantity and nature of recent communications from management down and operational levels up as well, across the organization. This should include the environmental office as well as EMS-related communications not driven by the environmental office.

Assess the effectiveness and access of internal communication from the environmental staff up the chain to senior management (Center Director/Deputy level).

Review recent communications between the Center and outside stakeholders including regulatory agencies. Review for examples of reactive and proactive communication and follow-up.

What procedure **P** *exists for communicating the Center environmental impacts to external parties.*

Review Center processes for communication of EMS requirements to Tenants and documentation of them for Contractors.

What communications procedures are used and do staff feel they are effective? **P** *Determine if they are actually followed via review of records* **R** *and interviews.*

Reviewer Signature:	χ Notes continued on other side Date:

NASA Environmental Management System Review Checklist
AZ2.1.4.4 EMS Documentation and Document Control

Question:

Describe how plans and procedures are managed.

What process is in place to ensure that for all environmental handbooks, environmental management programs (EMPs), guidance materials, and standard operating procedures, these are complete and maintained? How are internal relationships among these documents tracked and understood?

Description of Observation/Finding/Other Notes:

The Center should have a formal process for the development, approval, and maintenance of procedures and documentation. **P** *Review a subset of the EMS documents* **R** *or* **D** *to determine if they are within one or more document control systems and are the current versions located where they are needed (Review records and documentation for high priority environmental aspects and ongoing management controls.) What evidence exists of steps being taken to ensure that only current and appropriate documents are in place, and are the ones being used? Review disposition of obsolete documents.*

Do users and authors (at Center-wide and operational control levels of the organization) understand how the document control system works, their roles and the applicable specifics of document control requirements?

Review documentation that explains how the core Center level EMS documents interact and provide direction to related EMS documentation. **D**

ISO 14001:2004

Review how EMS documents reference or refer to related documents including documents with external origins.

How does the Center ensure that external origin documents are managed as EMS documents (review both documents that are on site but which come from external sources and documents that the Center does not keep on site but has established links to as a part of the EMS)

When reviewing EMS documents, are they mapped to EMS elements (or sub elements) and has the Center identified documents that are necessary to demonstrate conformance with the EMS or ISO 14001:2004?

Reviewer Signature:	χ Notes continued on other side Date:

NASA Environmental Management System Review Checklist
AZ2.1.4.5 Operational Control

Question:

Does the Center have documented procedures established and maintained to address situations where the absence of such procedures could lead to deviations from environmental policy, objectives, targets, and compliance activities?

Describe how these procedures stipulate specific operating and maintenance criteria.

What procedures are needed in relation to suppliers, contractors, and tenants and how are these requirements met?

Description of Observation/Finding/Other Notes:

Review the listing of operational control procedures supplied by the Center for completeness and consideration of how well the procedures function as part of the management of environmental impacts and consequences. **D** *When examining the procedures look for actual operational and maintenance criteria. Examine procedures associated with high priority environmental aspects as well as medium or low priority aspects being managed to prevent them from becoming high.*

Examine the process(es) **P** *that the Center uses to decide what operational controls are required and how the adequacy of these controls is assessed and maintained. How proactive versus reactive is this process?*

How are operational controls **P** *for suppliers and contractors developed, documented when needed* **D** *and communicated (within the limits of the scope of the EMS) and are the controls actually part of how things get done / are the front line individuals aware of the purpose of the controls? Where practical, interview selected contractors and suppliers.*

Examine how well the Center understands if its tenancy agreements, and any informal arrangements, align with Center objectives and targets and the overall EMS. Formal records **R** *of such arrangements may be appropriate.*

Reviewer Signature:	χ Notes continued on other side Date:

NASA Environmental Management System Review Checklist
AZ2.1.4.6 Emergency Preparedness and Response

Question:

Are procedures developed and maintained to prevent and mitigate environmental impacts associated with emergency situations?

How does the Center review and revise emergency response plan procedures after an incident to address deficiencies in how environmental impacts are mitigated?

How frequently does the Center test its plan?

What environmental training exists in association with emergency response plans and procedures?

Description of Observation/Finding/Other Notes:

Review the emergency response plans and procedures including any related Contingency Plans, SPCC Plans and P2 plans. **P**

Assess how comprehensive the identification of potential environmental impacts associated with potential emergencies identified under the NPR 8715.2 required Hazard / Threat / Vulnerability Analysis has been, and how these have been considered in the development of emergency response plans and procedures.

Review what impacts in association with potential emergencies were considered in developing the aspects and impacts list for the Center and its evaluation with the risk matrix.

Examine any revisions to the plans, as a result of tabletop reviews **R**, *actual incidents, or new internal or external information.*

How actively does the center pursue opportunities to improve in this area? Examine the Center's annual review **R** *of emergency preparedness procedures.*

Review **R** *or* **D** *the environmental component of training associated with emergency preparedness and response for impacts within the scope of the EMS.*

ISO 14001:2004

Review records **R** *of responses to recent emergencies and accidents and assess the appropriateness of measures taken to minimize or mitigate associated environmental impacts.*

Reviewer Signature:	χ Notes continued on other side Date:

NASA Environmental Management System Review Checklist
AZ2.1.5.1 Monitoring and Measurement

Question:

Describe the system used and documented procedures to inspect, test, monitor, track, and measure key characteristics of operations associated with EMS objectives and targets and high-priority environmental aspects.

Describe processes for calibration of monitoring equipment.

Description of Observation/Finding/Other Notes:

Review monitoring and measurement plans and procedures. **D**

Was a comprehensive process undertaken to identify characteristics of operations that need monitoring or measuring? This should include contractors, tenants, and any areas where operational controls have been identified as needed. Assess how the Center has determined what monitoring processes and equipment are critical for managing high priority environmental aspects and for preventing others from becoming high and how this is kept up to date.

Review records **R** *on progress towards meeting objectives and targets or maintenance of performance in already managed areas.*

Review record **R** *keeping and sample records to see if monitoring is being conducted in accordance with procedures.*

Review calibration processes and records for EMS related equipment? **D** *and* **R** *Note: Quality management system models for calibration are one possible method to follow.*

Review how progress towards, and conformance with, objectives and targets is monitored and measured. **R**

ISO 14001:2004

Review documentation **D** *of information to monitor environmental performance associated with key characteristics.*

Reviewer Signature:	χ Notes continued on other side Date:

NASA Environmental Management System Review Checklist
AZ2.1.5.2 Nonconformance, Corrective and Preventive Action

Question:

Describe Center procedures for nonconformance and corrective/preventive action.

How does the Center ensure that corrective or preventive actions are appropriate to the environmental impact?

What tracking and record keeping is done in association with these processes?

How are these processes connected with auditing and management review processes?

Description of Observation/Finding/Other Notes:

Review the corrective and preventative action procedures. **P** *These should include actions from Center, HQ, and external parties resulting from monitoring and measuring programs, reviews of the EMS, management reviews as a result of metrics and any of the EMS elements in general.*

Review how corrective action requirements are identified. In interviews are staff typically aware of the corrective and preventive action process and how it is an integral part of continuous improvement?

Determine if proactive / preventive steps are in place that look internally and externally beyond the Center and NASA and how preventive actions are followed up on.

Are actions tracked to completion and feedback provided on progress towards resolution? Follow a couple of actions from identification of an issue, through any root cause analysis (does the Center have a formal Root Cause Analysis process?), determination of course of action, assignment of responsibility, authority and resources, through to completion. This should be recorded in changes in documented procedures. **R** *Select actions from across the various sources noted above and by the Center and assess if the process is effectively applied for different types of actions as well as levels of complexity and if the level of effort through the stages of identification to resolution are commensurate with the magnitude of the problem.*

Examine Center processes **P** *for dealing with unresolved actions / for which long term solutions are required and follow on is required.*

How is periodic trend analysis of corrective and preventive actions accomplished? What trends were found (if any)?

ISO 14001:2004

How do reviews of compliance with legal and other requirements tie into corrective and preventative action procedures?

Reviewer Signature:

χ Notes continued on other side
Date:

NASA Environmental Management System Review Checklist
AZ2.1.5.3 Records

Question:

What record types and record keeping systems are in use? How does the Center identify required records and ensure they are all properly controlled?

How are records maintained so that they can be traced to an activity, product, or service?

Description of Observation/Finding/Other Notes:

Review selected EMS records in different record keeping systems and look for consistencies in approach and controls as an indicator of maturity of systems. Auditable records are:

1. *Activities Products and Services, Aspects and Impacts, Aspect Categories, and Risk Matrix inputs and results.*
2. *EMS training records.*
3. *Compliance activity records in accordance with legal and other requirements.*
4. *Calibration and maintenance records.*
5. *Management review results.*
6. *Results of test of emergency response procedures.*
7. *Decision with regard to external communication of high-priority environmental impacts.*
8. *Changes in the documented procedures resulting from corrective and preventive action.*
9. *Self-declaration assessments, Center EMS reviews, and compliance reviews.*
10. *External communication.*
11. *Any additional records listed in the Center's records retention matrix or Center EMS procedures.*

Review records maintained by NASA staff as well as contractors.

Review records **R** *associated with high priority environmental aspects and medium or low priority aspects being managed to prevent them becoming high.*

What steps are taken to allow records to be traced to the specific activity, product, or service? Crosscheck a few records to confirm that records can be traced.

ISO 14001:2004

When reviewing the records retention matrix, are records mapped to EMS elements (or sub elements) and has the Center identified records that are necessary to demonstrate conformance with the EMS or ISO 14001:2004?

Reviewer Signature:	χ Notes continued on other side Date:

NASA Environmental Management System Review Checklist
AZ2.1.5.4 EMS Audit

Question:

Describe Center internal EMS review processes.

Outline documented Center programs and procedures for review of compliance with environmental legislation and regulations.

Describe the Center's processes for acting upon the results of compliance reviews, HQ Environmental Functional Reviews, and external audits.

Description of Observation/Finding/Other Notes:

Review recent Center internal EMS review results. **R** *Was a planned review procedure* **P** *used and followed? Was the process capable of providing the Center with on objective and impartial assessment of the state of the EMS? Review how any independent or external third party assessments or audits are integrated into the Center approach.*

How did the review assess conformance with the commitments required by NPR 8553.1 and by the Center's EMS documentation and procedures? (For example: Did selected elements of the management system get reviewed or were all elements reviewed? Do all operating areas of the Center come under scrutiny from time to time with emphasis on areas of environmental importance? Does the procedure increase review frequency in problem areas? What model for the review process was used [e.g. the NASA Example SOP or ISO 19011] and can the EMS staff articulate the rationale for how the process works?) Do reviews result in clear statements directed to affected parties as to if the EMS is properly maintained?

How did the results get conveyed to management?

Examine the compliance review process. Does it look at areas where a non-compliance may not exist at present but could? Does the review include recommendations for improved performance?

Are trends in EMS non-conformances or regulatory non-compliance identified for further examination and possible root cause analysis?

How are findings from internal, HQ, and external audits and reviews integrated into the preventive and corrective action system?

ISO 14001:2004

Review the Center procedure **P** *for reviews of compliance with other requirements, how this is reported to management and how results are dealt with.*

Review how records **R** *of EFRs, EMS reviews, reviews of legal and other requirements are kept.*

Reviewer Signature:

χ Notes continued on other side
Date:

NASA Environmental Management System Review Checklist
AZ2.1.6 Management Review

Question:

Describe the mechanism used for Center level management to review and act upon reviews, audits, assessments, and other information deemed appropriate by management, in determining whether environmental policy, objectives, targets, or other EMS component changes are required.

Describe communications processes and roles related to management reviews.

Description of Observation/Finding/Other Notes:

In order to understand what information senior management is provided for making decisions, follow the process of preparation of EMS information for a Center-level management review through to actions resulting from a review. Documentation of the review **R** *and how changes in Center-level EMS elements are directed by management should be examined to see that that top Center management is involved in the review.*

Check that a follow up process occurs.

ISO 14001:2004

Assess if the management review includes consideration of:

- ***Results of EMS reviews, environmental functional reviews, reviews of compliance with legal requirements and reviews of compliance with other requirements to which the Center subscribes.***
- ***Communication from external interested parties, including complaints.***
- ***The environmental performance of the Center.***
- ***The extent to which objectives and targets have been met.***
- ***Status of corrective and preventive action.***
- ***Follow-up actions from previous management reviews.***
- ***Changing circumstances, including changes in applicable legal and other requirements.***
- *Recommendations for improvement.*

Review how the EMS Representative process recommends improvements to the EMS.

Review the outputs **R** *from recent management reviews to ensure they include:*

- *Decisions and actions to be taken.*
- *Changes to policy, objectives targets and all EMS elements.*

Reviewer Signature:	χ Notes continued on other side Date:

NASA Environmental Management System Review Checklist
AZ2.1.7 Metrics

Question:

What metrics does the Center utilize in its EMS reviews? Are they workload, performance, or data metrics?

What EMS changes have been instituted based on the review of metrics?

Description of Observation/Finding/Other Notes:

How useful is the information the metrics provide? Do the metrics need to be normalized?

Is the behavior that each metric encourages understood by the Center and is it desirable?

Do the results of metrics feed into the corrective action processes when appropriate?

For EMS metrics provided to Headquarters in the past, review with environmental staff how the data was assembled / can be verified.

Reviewer Signature:	χ Notes continued on other side Date:

SELF-DECLARATION FORMS

NASA Environmental Management System Review Checklist
AZ2.1.8.1 Self-Declaration Process

Question:

Describe the Center process for conducting EMS self-declaration assessments?

How does the Center ensure independence in the assessment process?

What process is used to summarize the assessment results, report them to senior management at the Center and enable the Center Director to make a determination that the EMS is in place and viable?

Description of Observation/Finding/Other Notes:

Review the Center specific processes used to conduct EMS Self-Declaration.

Review with the EMS Representative how independence was attained for the Self-Declaration assessment. The assessment of the effectiveness of previous management reviews and most recent assessment under Section 5.4 which should not have been conducted by the same individuals year over year.

Review the most recent assessment, and report generated for senior management. Did the report provide information on all EMS elements, and areas where improvements where needed? Did the assessment and reporting process consider and note as appropriate, variations in the state of the EMS across the Center and the EMS components?

How was the Center Director engaged in the process of determining if the Center EMS was in place and viable?

Reviewer Signature:	χ Notes continued on other side Date:

NASA Environmental Management Review Checklist
AZ2.1.8.2 Self-Declaration Results / Feedback

Question:

How are the details of Self-Declaration Assessments Documented?

How is follow-up associated conducted?

How are the results of assessments reported to NASA HQ EMD?

Description of Observation/Finding/Other Notes:

Review the detailed assessment and compare to the Center's stated process for conducting assessments.

Review follow on actions resulting from the most recent Self-Declaration assessment. Were both areas of EMS weakness and noted deficiencies addressed?

Was the report submitted to NASA HQ the full assessment or a summary?

Reviewer Signature:	χ Notes continued on other side Date:

NASA Environmental Management Review Checklist
AZ2.1.8.3 External Recognition Programs

Question:

What external recognition program(s) does the Center participate in?

How does the program assess if the EMS is in place and viable?

Description of Observation/Finding/Other Notes:

Assess if the external recognition program requires, or as a part of participation conducts, an independent assessment of the Center's EMS and the commitments therein.

Examine the process for gaps between program conducted EMS assessments and Sections 2.0 to 7.0 above. If gaps exist, how do Center processes under Section 5.4 address these gaps?

Does the program provide feedback on the state of the EMS to the Center and if so what does the Center do in reaction?

How are results reported to Senior Management?

Reviewer Signature:	χ Notes continued on other side Date:

NATIONAL ENVIRONMENTAL PERFORMANCE TRACK FORMS

NASA Environmental Management Review Checklist
AZ2.1.9.1 Environmental Policy

Question:

Does the Center Environmental Policy require continuous improvement?

Does the Policy commit to sharing environmental performance information with the community?

Description of Observation/Finding/Other Notes:

Review the Center environmental policy.

Discuss with Center staff areas (regulated and unregulated) where continuous improvement in environmental performance has occurred and is planned.

Review environmental performance information and information on the Center EMS that has been shared with the community.

Reviewer Signature:	χ Notes continued on other side Date:

NASA Environmental Management Review Checklist
AZ2.1.9.2 Planning

Question:

How does the Center consider anticipated changes in activities, products and services in its review and update of aspects and impacts?

Is the Center subject to any Tribal requirements?

When objectives and targets are set, what is the full list of possible considerations?

Description of Observation/Finding/Other Notes:

Review the documentation and records associated with the review of aspects and impacts under section3.1. Does the Center's EMS documentation call for consideration of anticipated changes and is this done?

If reviews are annual, are anticipated changes in the next year or more considered?

If the Center has determined as a part of it's legal and other requirements processes that tribal requirements exist, are they tracked, communicated etc. as other legal and other requirements in Section 3.2.

As part of the review the process by which objectives and targets are se under Section 3.3. Are the following considered when setting objectives and targets: preventing non-compliance, preventing pollution at its source, minimizing cross-media pollutant transfers, and improving environmental performance?

Reviewer Signature:	χ Notes continued on other side Date:

NASA Environmental Management Review Checklist
AZ2.1.9.3 Implementation and Operation

Question:

How are employees held accountable for and provided incentives related to meeting EMS requirements?

How is responsibility for achieving objectives and targets of the overall EMS and compliance with legal requirements assigned?

How does the Center accomplish public outreach and report on environmental performance?

Description of Observation/Finding/Other Notes:

As part of interviews under Section 4.1, identify methods used by the Center to provide incentives to employees to meet EMS requirements and the means by which they are held accountable. This should include environmental staff, management, front line staff and the programs related to contractors in this area.

Identify the defined individual assigned with ensuring objectives and targets are met. As they aware of their responsibilities in this area.

Review how responsibility for meeting compliance with legal requirements is defined.

Review records of Public Outreach activities. Discuss with environmental staff how the Center decides which activities to engage in and how potential audiences are selected?

Review recent Center reports on environmental performance. Are reports produced on an annual basis and cover the performance summary for each of the environmental aspects reported under NEPT?

Reviewer Signature:	χ Notes continued on other side Date:

NASA Environmental Management Review Checklist
AZ2.1.9.4 Checking and Corrective Action

Question:

How has the Center tracked past environmental achievements?

How is performance tracked now in association with continued performance improvement?

Has the Center completed a full PDCA cycle including a third party EMS assessment?

Description of Observation/Finding/Other Notes:

Review past processes to track achievements and associated results.

Review current processes and plans for ongoing tracking of performance. Look for correlation with objectives and targets.

Review previous EMS assessment and Management Review records to establish if the Center has completed a PDCA cycle with a fully operational EMS. Past EFR since the EMS was completed would be considered a third party assessment.

Reviewer Signature:	χ Notes continued on other side Date:

NASA Environmental Management Review Checklist
AZ2.1.9.5 Management Review

Question:

Does the management review process satisfy NEPT requirements including review relative to objectives and targets?

Does the annual report that the Center continues to meet NEPT requirements?

Description of Observation/Finding/Other Notes:

Has a documented management review of performance against the established objectives and targets and the effectiveness of the EMS in meeting policy commitments been conducted?

Review the environmental performance report including performance against objectives and targets, and the summary of the results of compliance and EMS audits. Ensure that the Annual Performance Report includes the following categories of information:

- *Summary of the performance of the facility's EMS (based on objectives and targets), including a summary of the EMS and compliance audits performed and any corrective action taken.*
- *Brief progress report on the facility's performance commitments.*
- *Summary of the facility's environmental public outreach activities.*
- *Self-certification that the Center continues to meet the Performance Track criteria."*

Reviewer Signature:	χ Notes continued on other side Date:

ADDITIONAL FORMS

NASA Environmental Management System Review Checklist
AZ2.1.10.1 Additional

Question:

How is the environmental office resourced from a personnel perspective?

Are there any changes which should be made to the Environmental Staffing Model variables?

Description of Observation/Finding/Other Notes:

Reviewer Signature:	χ Notes continued on other side Date:

NASA Environmental Management System Review Checklist
AZ2.1.10.2 Additional

Question:

How are functions divided between civil servant and contractor environmental staff? How are inherently governmental functions delegated?

Description of Observation/Finding/Other Notes:

Reviewer Signature:	χ Notes continued on other side Date:

NASA Environmental Management System Review Checklist
AZ2.1.10.3 Additional

Question:

Is your environmental support contract fixed price, "cost", hybrid, or another type?

How do you ensure adequate oversight of the environmental contractor?

Description of Observation/Finding/Other Notes:

Reviewer Signature:	χ Notes continued on other side Date:

NASA Environmental Management System Review Checklist
AZ2.1.10.4 Additional

Question:

For line supervisors and line personnel who are directly responsible for programs or operations with environmental impact, how are these responsibilities integrated into the performance planning and evaluation process?

Description of Observation/Finding/Other Notes:

Reviewer Signature:	χ Notes continued on other side Date:

NASA Environmental Management System Review Checklist AZ2.1.10.5 Additional	
Question:	
Description of Observation/Finding/Other Notes:	
Reviewer Signature:	χ Notes continued on other side Date:

NASA Environmental Management System Review Checklist AZ2.1.10.6 Additional	
Question:	
Description of Observation/Finding/Other Notes:	
Reviewer Signature:	χ Notes continued on other side Date:

APPENDIX Z. Part 3. NASA Environmental Management System Checklist

Z3.1 Introduction and Background

a. Part 3. NASA Environmental Management System Checklist (Part 3) is intended to serve as general guidance to NASA Centers (and their Component Facilities to which this requirement applies) on conformance with self-declaration related requirements of NPR 8553.1 and Executive Order 13148 (the EO).
b. The EO requirements stipulate that for each appropriate facility an EMS must be implemented by December 31, 2005 and subsequently maintained. Federal agencies can satisfy this requirement with external EMS recognition programs or self-declaration. NASA Headquarters, all NASA Centers, and a number of NASA Component Facilities have been identified as appropriate facilities requiring an EMS. The NASA Headquarters Environmental Management Division maintains the current list of appropriate facilities.
c. The Office of the Federal Environmental Executive (OFEE) and the Executive Order 13148 Interagency Work Group [15] established EMS self-declaration requirements to ensure the credibility of self-declarations of EMS for appropriate facilities.

[15] Executive Order 13148, Greening the Government Through Leadership in Environmental Management Sec. 306. "Interagency Environmental Leadership Workgroup. Within 4 months of the date of this order, EPA shall convene and chair an Interagency Environmental Leadership Workgroup (the Workgroup) with senior-level representatives from all executive agencies and other interested independent Government agencies affected by this order. The Workgroup shall develop policies and guidance required by this order and member agencies shall facilitate implementation of the requirements of this order in their respective agencies. Workgroup members shall coordinate with their Agency Environmental Executive (AEE) designated under section 301(d) of Executive Order 13101 and may request the assistance of their AEE in resolving issues that may arise among members in developing policies and guidance related to this order. If the AEEs are unable to resolve the issues, they may request the assistance of the Chair of the Council on Environmental Quality (CEQ)".

Z3.2 EMS Self-Declaration Drivers

a. Requirements for EMS self-declaration originate from NPR 8553.1 as driven by the EO.
b. NPR 8553.1 related requirements include the process for self-declaration and individual responsibilities for Center Directors (or, in the case of a Component Facility a designee may be appointed) and Center EMS Representatives. The process is driven by requirements

articulated in the EMS Self-Declaration Protocol[16] and the Clarification of Self-Declaration Terms. [17] Part 3, Attachment Z3.1 provides the text of the Self-Declaration Protocol. Part 3, Attachment Z3.2 provides the text of the Clarification of Self-Declaration Terms.

---

[16] Environmental Management Systems, Agency Self-Declaration Protocol for Appropriate Federal Facilities, Final Version September 10, 2003, transmitted under cover from the Office of the Federal Environmental Executive, January 27, 2004.
[17] Clarification of Terms Used for Self Declaration of Conformance to the EO 13148 Requirement for EMS Implementation, issued by USEPA, Federal Facilities Enforcement Office, October 4, 2004.

Z3.2.1 EMS Self-Declaration Protocol

a. The EMS Self-Declaration Protocol was developed by the Executive Order 13148 Interagency Work Group, finalized on September 10, 2003, and issued by OFEE in January 2004. It requires that federal agencies and their facilities or organizations ensure credibility in their process to self-declare conformance with their selected EMS. To do this, agencies must develop a process that provides for effective and objective assessment of their EMS in a manner that (1) not only ensures their EMS is conformant, but (2) also is designed for ongoing evaluation and continual improvement. Such a process must not only verify that appropriate EMS documentation is developed, but must also affirm that the facility or organization is actually implementing its EMS as defined in its documentation and is doing what it says it is doing. This process must also include the degree of transparency and objectivity necessary to make the self-declaration credible.

Z3.2.2 Clarification of Self-Declaration Terms

a. The content of the clarification of self-declaration terms is specific to the degree of independence of auditors.
b. When reporting self-declaration, facilities or organizations are requested to provide the basis for the conclusion regarding self-declaration. That is, whether the declaration is made based on an internal evaluation from a first party audit, an independent review from an external, second party audit or an independent review from an external, third party audit, or a combination of the above.
c. Thus as a part of self-declaration statements, the basis for the declaration should be included.
d. The clarification of terms specifically notes that requirements are driven by "each agency's self-declaration protocol". NASA has defined its criteria for self-declaration within the applicable sections of NPR 8553.1 and specifically the NPR's definitions (Chapter 1.2) for: "Independent Self-Declaration Assessment", and "Self-Declaration".
e. NASA has determined that annual self-declaration is required and that every third year, self-declaration must be based on an independent self-declaration assessment (second or third party).
f. "Internal Evaluations: First party audits" are conducted by participants within the scope of the EMS. A Center conducted internal EMS review would be considered a first party audit.
g. "Independent Reviews: Second party audits" are conducted by reviewers from outside the EMS scope. The EMS portion of a NASA Headquarters led environmental functional review (EFR) is an example a second party audit.
h. For NASA Centers, the key factor in a second party audit is that the reviewers do not otherwise work at or have any responsibility associated with the parts of the Center being reviewed. For example, a NASA on-site contractor that does not provide general environmental support services to the Environmental Office at a Center could provide a second

party independent review, of the parts of the Center they otherwise have no contact with.

i. "Independent Reviews: Third party audits" are conducted by a third party such as an independent ISO 14001 Registrar. Third party audits are not required by the EO for self-declaration. An external contractor retained for the express purpose of providing EMS audit services would be considered a third party. See also Section Z3.5 for discussion of external recognition programs.
j. Combinations of First Second and Third party audits may also occur. The NASA process of internal EMS reviews and a Headquarters led EFR every third year is an example of a combined approach. ISO 14001 registration audits (which cover the scope of ISO 14001) augmented by internal EMS reviews that examine the portions of NPR 8553.1 which are beyond ISO 14001 is a combined approach.

Z3.3 EMS Self-Declaration Process

Z3.3.1 Center Director

a. Center Directors are responsible for: "when applicable, making an annual EMS self-declaration that the Center EMS conforms to applicable requirements of this NPR, is in place, and is viable".
b. Center Directors in part will rely on the EMS Representative, via their assigned responsibilities, in order to make this statement. As Center Directors, as part of the management review process, are responsible for periodically reviewing the Center EMS and annual EMS reviews are required, these reviews and self-declarations may be (at the discretion of the Center) conducted as an integrated process.
c. Center Directors should be involved in this self-declaration reporting process described in Section Z3.3.2 below, to the extent needed to allow them to make an informed assessment that the Center EMS is in place and viable, including conformance to: the requirements of NPR 8553.1, and Center defined EMS requirements. While Section Z3.4 below provides guidance, Centers and Center Directors are free to determine what, an "in place and viable" EMS is.
d. To complete the annual self-declaration, the Center Director (or possibly their designee at a Component Facility) should sign a statement including language similar to the following:

   "As the Director (insert correct Position / Title if on behalf of a Component Facility) of the (NASA Center), I have determined that (insert appropriate facility name[s] as listed by NASA Environmental Management Division for reporting purposes to EPA) has an environmental management system(s) that is in place and is viable. Furthermore, I confirm that I, and senior management, have reviewed the environmental management system for conformance with NPR 8553.1and Center EMS requirements."
e. Attachment Z3.3 below provides one possible format for the actual self-declaration. A Center Director could also choose to issue a signed statement similar to the above text in another format, (e.g., memo to the record, statement in the meeting minutes, etc.).
f. Note: Senior management is referenced in the statement above, because under NPR 8553.1, Chapter 5.4.3.d, the results of EMS reviews and independent self-declaration assessments are to be provided to Center Senior Management.
g. Further, as per Section Z3.2.2 above, the statement should including language similar to the following.

   "The determination that the environmental management system(s) is in place and viable, has included consideration of the results of the following assessment(s) (insert as appropriate, the dates of the most recent independent self-declaration assessment or most recent internal EMS review(s))."

h. Signed annual statements are EMS records. They will be requested during environmental functional reviews as well as potentially under annual Executive Order 13148 reporting. Furthermore, external parties may request copies as evidence that Federal facilities are meeting the requirements of the Executive Order.

Z3.3.2 Self-Declaration Reporting

a. It is recommended that Centers develop a procedure or process that outlines the topics that will be covered in the process of reporting on if the Center meets self-declaration requirements to senior management and the Center director.
b. The self-declaration reporting process may include:

1. Information to be assembled and provided by the EMS Representative.
2. If the Center EMS Core Team participates in or advises in the process.
3. Center Management review of information prior to reporting to the Center Director.
4. How the reporting will enable the Center Director to come to a conclusion on EMS status and viability.

c. The information to be relayed via the reporting process may include:

1. The results of the most recent self-declaration assessment.
2. Status of findings under previous: self-declaration assessments, EMS reviews, or environmental functional reviews.
3. Other information assembled to assist with determining if the EMS is in place and viable (see Section Z3.4 below).

Z3.3.3 Center EMS Representative

a. Center EMS representatives are responsible for reporting to the Center Director on: the results of Center-led annual EMS reviews, independent self-declaration assessments, and the status and viability of the Center EMS. Self-declaration assessments and EMS reviews are to be provided to Center Senior Management as well.
b. Reporting noted above might include a briefing on the results of the most recent independent self-declaration assessment or internal EMS review, such as, strengths and weaknesses in the EMS and opportunities for improvement. A report may (if appropriate) include an actual recommendation (with justification) as to if the EMS is "in place and viable".

Z3.4 Determination that the EMS is in Place and Viable

a. The terms "in place" and "viable" are not defined terms in the NASA EMS. This Sub-chapter discusses potential strategies an EMS Representative and Center Director could use to reach a conclusion as to if the Center EMS is in place and viable.
b. For guidance on the process and practice of conducting EMS reviews and use of the environmental functional review checklist, see Appendix Z Part 2. Section Z3.5 below discusses EMS reviews and independent assessments as they apply to self-declaration.

Z3.4.1 An "in place" EMS

a. For all of the clauses of NPR 8553.1 (roles, responsibilities and defined requirements), for an EMS to be "in place", the last time conformance was assessed, the assessor should have indicated that the clause was satisfied. In general, the results of reviews and independent assessments of the EMS are a good indicator that an EMS is "in place".

b. If the internal review or independent assessment notes previously unidentified opportunities for continual improvement under a clause, provided that a plan of action to effect change is in place, this should not be considered as something that negates a finding that an EMS is "in place".
c. Conversely, if previous reviews or independent assessments have identified that a clause was not satisfied, and that agreed actions to resolve this where not completed, then the EMS is not in place.
d. The "stop light" system used during environmental functional reviews is one indicator process for assessing if an EMS is in place. Consider each of the "17 elements" of the EMS as a program area and apply the following criteria.

1. Healthy (green) -- good program, on-track in meeting requirements.
2. Needs improvement (yellow) -- program does not meet requirements in one or more areas.
3. Requires immediate attention (red) -- program does not meet major requirements in more than one area.

e. Using this indicator process, an "in place" EMS should be green for all 17 EMS elements. A small number of areas could be yellow and the EMS could still be considered "in place", if:

1. The areas now yellow have previously been identified as green, and due to changing situations (examples: re-organization of management structure has changed Center roles and responsibilities, or a new program has increased planned activity affecting several aspects), required changes are not yet complete, and
2. The affected areas of the Center were aware of the deficiencies prior to the most recent review or independent assessment, and were in the process of corrective action (for the above examples: affected EMS documentation has been scheduled for review and revision, the affected aspects and aspect prioritization are scheduled to be reviewed prior to commencement of increased activity).

Z3.4.2 A "Viable" EMS

a. For an EMS to be "viable" a determination should be made that the "elements" of the EMS work as a system to achieve improvements in environmental performance. This determination is more subjective than the in place determination. To assist in justifying determinations of viability, Centers should document what indicators of viability were considered.
b. A simple way to consider if the EMS is viable is to consider if it is a "living" system that evolves with changing circumstances. Does the EMS evolve and improve based on its own internal processes, and checks and balances, as opposed to only when external influences (like EFRs or other independent reviews) are considered. An EMS that exists in a static or steady state over repeated continuous improvement cycles, is not evolving.
c. Potential indicators of viability include:

1. On an annual basis, a percentage of EMS documentation is proactively reviewed and as needed revised, as opposed to routinely waiting until near expiration deadlines before review.
2. The EMS has assisted in the identification and subsequent improved management of environmental aspects that had not previously been identified as requiring improved management.
3. Plans for future changes in activities at the Center were proactively brought to the attention of the environmental office, and affected aspects and their priority levels were reviewed.
4. Changes in legal or other requirements have been identified, and were appropriate subsequent consequences to operations identified and required changes in practices put in place.
5. The Center periodically checks to see if operational staff are aware of what components of the

operational controls are in place to ensure compliance with legal or other requirements. Note: Being able to recite a defined clause from a regulation is of less importance than, understanding that a specific work practice is required by law.
6. The majority of objectives and targets were met on schedule.
7. Environmental management programs are periodically reviewed and revised (as well as work items under the programs) to ensure they remain relevant, progress towards their implementation is tracked. This also applies to management controls in place to ensure aspects do not become high priority.
8. The focus of training and communication programs has been evolving (based on the results of past EMS reviews and monitoring and measurement activities that have identified areas for improvement).
9. Review of communication with external parties has identified changes in stakeholder issues and perceptions over time, which has been considered in the prioritization of aspects.
10. Review of operational controls is conducted jointly by authors and users, in order to ensure they remain relevant and practical.
11. The results of recent emergency preparedness exercises where used to evaluate and ensure that the potential environmental consequences and used in the aspect prioritization remain valid.
12. Monitoring and measurement activities are periodically reviewed and have been tied into corrective and preventive action processes at regular intervals, and not just prior to annual EMS reviews.
13. The majority of EMS reviews and resulting corrective actions and changes in the EMS are completed as planned and well in advance of the next EMS review.
14. Improvement in Center level data for NASA metrics required under NPR 8553.1.
15. Improvement in Center internal EMS metrics.

d. Not all of the above indicators need to be present for an EMS to be viable, but if converse situations for the majority have been identified during ongoing operations or during an EMS review or independent assessment, then the viability of the EMS would be questionable. Centers should consider developing a list of viability indicators that will be tracked and define as a part of the reporting processes in NPR 8553.1 Chapter 4.3.2 determine how these will be reported up to the Center Director.
e. In recognition of the potential for integration of the process for Center self-declaration and management review processes, consider the recommended EMS management review elements below (from ISO 14004:2004 [18]) when making choices in what is reported to management and the Center Director to assist in making a determination of viability.

---

[18] ISO 14004: Environmental Management Systems - General Guidelines on Principles, Systems and Support Techniques, International Organization for Standardization (ISO), 2004.

"Inputs to the management review may include:

a. results of internal audits and evaluations of compliance with applicable legal requirements and with other requirements to which the organization subscribes,
b. communication from external interested parties, including complaints,
c. the environmental performance of the organization,
d. the extent to which objectives and targets have been met,
e. status of corrective and preventive actions,
f. follow-up actions from previous management reviews,
g. changing circumstances, including

1. changes in the organization's products, activities and services,

2. results of the evaluation of environmental aspects from planned or new developments,
3. changes in applicable legal requirements and other requirements to which the organization subscribes,
4. the views of interested parties,
5. advances in science and technology, and
6. lessons learned from emergency situations and accidents,

h. recommendations for improvement."

Z3.5 EMS Reviews and Assessments

Z3.5.1 EMS Reviews

a. Annual internal EMS reviews are required at all NASA Centers in non-EFR years. For self-declaring Centers this is also true. The key difference is that the EFR checklist must be used for internal EMS reviews at self-declaring Centers.
b. For all Centers, the internal EMS review process must cover all EMS elements for all applicable operating areas, over a 3-year period. A Center cannot wait for an EFR to cover some of the EMS elements. Therefore, if the EFR is to be the only EMS review or assessment activity at the Center that year, the entire EMS in all applicable operating areas will need to be reviewed the other 2 years.
c. The Center does need to determine which of the EMS elements apply in its different operating areas in order to assess them as appropriate. While all "17 elements" can be expected to apply to the Center environmental office, the process of setting objectives and targets for example, may not apply across all operating units, while the programs to achieve the objectives and targets could be restricted to the areas of the Center expected to participate.
d. There may be times were the internal EMS review process should be undertaken at a higher frequency. For example: if a review in one year identifies an area where a corrective action is under way or continual improvement activities were under way, consideration should be given to returning the following year to assess progress. Areas with ongoing, periodic or marginal conformance should be considered for a higher review frequency.
e. Centers should strive for objectivity throughout the EMS review process in order to obtain the greatest possible benefit from each review.

Z3.5.2 Independent Self-Declaration Assessments

a. Independent self-declaration assessments are required every third year and can consist of the EMS component of a Headquarters EFR.
b. NPR 8553.1 Chapter 1.2 includes NASA's definition of independent self-declaration assessment.

   "An assessment of conformance of a Center's EMS to the defined criteria of this NPR by individuals without direct responsibility for the activities being assessed."
c. This definition does not preclude the use of internal Center staff to assess the Center EMS, provided that independence can be demonstrated and that there is no direct responsibility for the activities being assessed.
d. If a Center conducts an independent self-declaration assessment other than a Headquarters EFR, the means by which independence and a lack of direct responsibility is achieved should be documented.
e. Section Z2.8 of Appendix Z, Part 2 focuses on self-declaring Centers. Section Z2.8 is primarily meant for use during independent self-declaration assessments including

Headquarters led EFRs, and is made available as information for Centers to understand how an EFR will evaluate self-declaration activities.

Z3.6 External EMS Recognition Programs

a. NPR 8553.1 stipulates that Centers may choose to participate in an external EMS recognition program or self-declare. The NPR definition of an "External EMS Recognition Program" identifies acceptable programs.
b. If a Center wishes to participate in a program not listed, it should consult with the NASA Environmental Management Division as to if the program is acceptable. The NPR defines an "Acceptable State-Sponsored EMS Recognition Program" and references self-declaration requirements as the benchmark.

Part 3 Attachment Z3.1. Agency Self-Declaration Protocol for Appropriate Federal Facilities

This Attachment provides the content of the Environmental Management Systems, Agency Self-Declaration Protocol for Appropriate Federal Facilities, as issued by the Office of the Federal Environmental Executive, Final Version dated, September 10, 2003.

Introduction and Purpose:

The process used by federal agencies and their facilities or organizations to self-declare conformance with their selected environmental management systems (EMS) must ensure credibility. In order to meet this goal, agencies must develop a process that provides for effective and objective assessment of these systems in a manner that not only ensures the system is conformant, but is also designed for ongoing evaluation and continual improvement. Such a process must not only verify that appropriate documentation is developed, but affirm that the facility or organization is actually implementing their EMS as defined in their documentation and doing what they say they are doing. This process must also include the degree of transparency and objectivity necessary to make the self-declaration credible.

This protocol outlines procedures for federal agencies developing processes that will ensure the credibility of self-declaration of EMS for their appropriate facilities as set forth in Executive Order 13148. Specifically, this protocol is designed to satisfy the following principles:

1. Result in accurate and reliable information on federal facilities' progress as they adopt improved business practices associated with EMS implementation.
2. Focus responsibility for initial EMS verification and on-going quality assurance at the agency / bureau level.
3. Provide agencies / bureaus flexibility to implement EMS in ways that support their overall public mission.
4. Provide an independent basis for verifying the status of a facility or organization EMS, and appropriately communicating that status to internal and external stakeholders.
5. Ensure that system verification is more than a documentation review, and that the effectiveness of implementation is also reviewed.
6. Use existing EMS elements where possible so that self-declaration becomes an integral part of the organization's EMS.

3.1. Protocol:

Agencies / bureaus shall direct their facilities or organizations to use one or more EMS evaluation guide(s) in conducting EMS self-declarations. Examples of evaluation guides are included in:

- Appendix A, The Global Environmental Management Initiative (GEMI) National Aeronautics and Space Administration "ISO 14001 Environmental Management System Self-Assessment Checklist" [Hotlink title text to document]
- Appendix B, "Oregon Green Permits Program Guide -- Attachment B: EMS Description and References." [Hotlink title text to document]
- Appendix C, The National Aeronautics and Space Administration's "Environmental Functional Review Checklist." [Hotlink title text to document]

1. In directing use of the selected evaluation guide, agencies / bureaus shall establish a procedure including the following:

a. direction on the use of the chosen evaluation guide(s).
b. direction on the frequency of self-declaration internal evaluations; the frequency of agency / bureau independent reviews, makeup of the independent review team (e.g., Headquarters, other facility, other agency, or contractor), and qualifications of independent reviewers, a requirement for facility or organization management to make a self-declaration statement that the EMS is in place when that conclusion is reached.
c. direction on documenting and using the results of EMS evaluations. This shall include steps for acknowledging adequate facility EMSs, follow-up actions to address inadequacies in the EMSs, and reporting results of evaluations for inclusion in agency-wide annual EMS reviews.
d. a schedule for reviewing agency / bureau EMS Self-Declaration Procedures. This review shall consider changes in agency / bureau programs and missions when appropriate but on a schedule that does not exceed five years. This is designed to allow a phased approach and continual improvement. An example of an agency EMS Self-Declaration Procedure is included in Appendix D, The National Aeronautics and Space Administration's "Environmental Functional Review Standard Operating Procedure." [Hotlink title text to document]

2. Agencies / bureaus shall communicate their choice of guide(s) and procedures described above in accordance with their internal and external EMS communication procedures.
3. Agencies / bureaus shall establish their procedures for EMS self-declaration as soon as practical but not later than NLT December 31, 2004.
4. Agencies / bureaus shall include appropriate guidance to ensure that facilities desiring to participate in a Federal or state EMS recognition program (e.g., National Environmental Performance Track, Oregon Green Permits Program, New Jersey Silver Track Program) reflect the respective requirements in their self declaration procedures.
5. Facilities or organizations that wish to self declare their EMS before agency procedures are in place may:

a. adopt a recognized independent review process such as third-party registration to ISO 14001 or
b. document the information described in protocol item1(b), (c) and (d) above and communicate that information to external parties in accordance with their EMS communication procedures.

Part 3 Attachment Z3.2. Clarification of Terms Used for Self-Declaration

This attachment provides the content of the Clarification of Terms Used for Self Declaration of Conformance to the EO 13148 Requirement for EMS Implementation as issued by USEPA in October 2004.

The purpose of this guidance is to provide clarification and consistency on the use of terms for describing the status of self declaration of conformance with the EO 13148 requirement for an EMS at appropriate Federal facilities. The September 10, 2003 Self Declaration Protocol, paragraph 1(b) uses the terms "internal evaluations" as well as "independent reviews" and calls for each agency to determine the proper implementation of these procedures. When reporting self declaration, facilities or organizations are requested to provide the basis for the conclusion regarding self declaration. That is, whether the declaration is made based on an internal evaluation from a first party audit, an independent review from an external, second party audit or an independent review from an external, third party audit. These terms are described below.

Internal evaluations: First party audits are EMS audits conducted by the participants within the scope of the EMS under consideration. An internal audit is required by the ISO 14001 standard and is an accepted part of any EMS framework. It serves the primary purpose of ensuring the EMS is functioning properly. In addition, information from this audit is used to correct non-conformance with the selected EMS framework and is part of the suite of information provided to management as part of the formal management review process. First party audits may be conducted by those implementing the EMS or by others who will then provide the relevant results of the audit to the EMS team for their use as an internal audit.

Independent reviews: External, second party audits are EMS audits conducted by reviewers from outside the scope of the EMS in question. The purpose of an external, second party audit is to allow an unbiased and objective review of the EMS to determine if it conforms to the appropriate/selected EMS framework and reflects the EMS in question. While second part audits are conducted by those outside the control or scope of the EMS, these audits may be conducted by the same organization as the parent organization of the EMS in question. For example, a qualified agency headquarters audit team may review the EMS of a facility within that agency or qualified auditors from one facility from a given agency may audit the EMS of another facility within that agency. In addition, this audit may be conducted by a qualified outside party such as a consultant/contractor or by some other unbiased party such as individuals from a state or federal voluntary program or someone from another federal organization. The qualifications for those conducting second party independent reviews will be defined by each agency's self declaration protocol.

Independent reviews: External, third party ISO audits are conducted by ANSI-RAB accredited, independent registrar. These audits are formal, sanctioned audits conducted according to established ISO guidance to determine conformance with the ISO 14001 EMS Standard for those facilities that elect to use that Standard. A successful audit by a third party ISO auditor, will result in the facility or organization being fully certified to the ISO 14001 EMS Standard and receiving a certificate stating conformance. The qualifications for these auditors are defined by ISO and ANSI-RAB. It is noted that third party ISO audits are not required by the EO.

Part 3 Attachment Z3.3. Sample Format Of EMS Self-Declaration

This attachment provides a sample format for a written statement of self-declaration.

(Use Center Letter-head and scan actual signed form/letter for possible display on Center web site)

Date:

To whom it may concern:

Subject: Status of Environmental Management System (EMS) at

(commonly used Center name)

As the Director (insert correct Position / Title if on behalf of a Component Facility) of the (NASA Center), I have determined that (insert appropriate facility name[s] as listed by NASA Environmental Management Division for reporting purposes to EPA) has an environmental management system(s) that is in place and is viable.

Furthermore, I confirm that I, and senior management, have reviewed the environmental management system for conformance with NASA Procedural EMS Requirements and Center EMS requirements.

The determination that the environmental management system(s) is in place and is viable, has included consideration of the results of the following assessment(s) (insert as appropriate, the dates of the most recent independent self-declaration assessment or most recent internal EMS review(s)).

Signed

Name, Title

APPENDIX Z. Part 4. NASA Center EMS Guidance

Click Here: PDF Version