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Cultural Resources

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# MANAGING THE ENVIRONMENTAL RISK

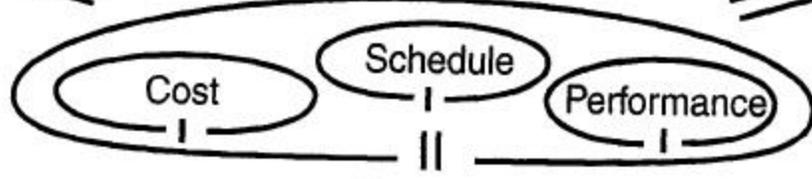
Applying the Environmental Analysis Process of the National Environmental Policy Act to Weapon System Acquisition Programs

## The National Environmental Policy Act

X X  
Public Participation

X X  
Scientific Analysis

X X  
Expert Agencies



X X X  
Program Manager

## **Points to Remember**

**The National Environmental Policy Act (NEPA) requires:**

- **Accurate, Scientific Environmental Analysis**
- **Expert Agency Comment, and**
- **Public Participation to foster Excellent Decisions.**

**Army Regulation 200-2 "Environmental Analysis of Army Actions"**

- Is the Army Policy Related to NEPA
- Is codified in law (Title 32 CFR Part 651)
- Contains instructions for the NEPA process for ALL Army Actions, and
- Contains the Army's list of Categorical Exclusions

**Department of Defense Directive 5000.1 "Defense Acquisition" and Department of Defense Regulation 5000.2-R "Mandatory Procedures for Major Defense Acquisition Programs (MDAPs) and Major Automated Information Systems (MAIS) Acquisition Programs" require:**

- Programs to comply with all environmental laws and regulations
- Programs to establish an Environment, Safety and Health Evaluation, which includes
- A Pollution Prevention Program
- Programs to make prudent investments in pollution prevention to reduce life cycle environmental costs and liability.

*The environmental analysis process necessary to comply with NEPA can help you manage and defend your acquisition program.*

# **MANAGING THE ENVIRONMENTAL RISK**

**Applying the  
Environmental Analysis Process  
of the  
National Environmental Policy Act  
to  
Weapon System Acquisition Programs**

June 1996

Prepared by the  
Planning Group for  
Environmental Requirements, NEPA,  
and the Weapon System Acquisition Process Initiative

# Acknowledgement

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was prepared with the assistance of

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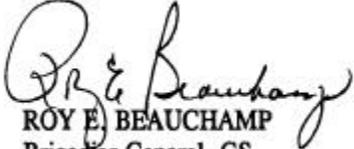
## Foreword

The National Environmental Policy Act (NEPA) is our Nation's foremost public law for protecting the environment. NEPA demands that environmental consequences of a proposed action be scientifically analyzed prior to the action taking place. The Department of the Army Regulation 200-2 contains policy defining Army procedures for complying with NEPA requirements. All U.S. Army actions must comply with NEPA.

*Managing the Environmental Risk* provides guidance for Army Acquisition Program Managers about the requirements of NEPA. It also provides guidance for applying Army Regulation 200-2 during system acquisition. The most important lesson offered in this guidance is that the environmental analysis process necessary to comply with NEPA and the Army regulation can help you manage and defend your acquisition program.

Environmental analysis, like all other analyses, must be used to benefit acquisition programs. Environmental analyses produce recommendations, each with a degree of risk that must be managed. The NEPA process seeks to minimize environmental risk, which is complementary to minimizing other forms of program risk.

Using this guidance is a key element in acquisition pollution prevention. Your support for this guidance will be appreciated and feedback for improving it will be gratefully accepted.



ROY E. BEAUCHAMP  
Brigadier General, GS

**Deputy for Combat  
Service Support**

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## EXECUTIVE SUMMARY

*Managing the Environmental Risk* is concerned with protecting weapon system acquisition programs from adverse effects that can be caused by potential or actual environmental impacts.

Environmental laws are enacted to protect the environment from the effects of human activities, such as those occurring during the weapon system life cycle. When there is a question that an action taken by a Program Manager might violate an environmental law, there is risk that the program may be delayed or stopped. Conscious disregard of environmental law opens the Program Manager, personally, to the risk of legal proceedings. Most importantly, when there is a question that the environmental consequences of a proposed action might not have been adequately reviewed prior to decision making, there is also risk that a program may be delayed or stopped.

The National Environmental Policy Act (NEPA) requires that the environmental consequences of proposed actions be reviewed prior to a decision being made to take action. The Council on Environmental Quality's "Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act," as interpreted in Army Regulation 200-2, guides managers through analyses that allow them to make decisions with a full understanding of the environmental consequences of the action and its alternatives. The "NEPA process" is an analytical tool for managing environmental risk.

AR 200-2 provides detailed guidance for complying with NEPA during all Army activities. Department of Defense (DoD) Directive 5000.1 and DoD Regulation 5000.2-R direct acquisition Program Managers to consider the environmental consequences of acquisition program actions. *Managing the Environmental Risk* discusses complying with NEPA during the weapon system acquisition process. Using the NEPA process as a tool for managing program risk is discussed, and a method for integrating the NEPA process into normal acquisition processes is proposed. In addition, the procedure for preparing, reviewing, approving, and cataloguing NEPA documentation is addressed.

NEPA *requires* that the environmental consequences of each alternative be analyzed. NEPA *does not require* that the most environmentally benign action be selected by the Program Manager. NEPA encourages, and sometimes requires, public participation in the analytical process. Public participation enhances the analytical process by broadening the knowledge base. By implementing the NEPA process as a risk management tool, Program Managers will ensure that selected actions comply with environmental law; that environmental consequences are fully reviewed; and that the objectives, goals, thresholds, and mission requirements of the weapon system acquisition program are met.

*Managing the Environmental Risk* focuses on acquisition, not on the environment.

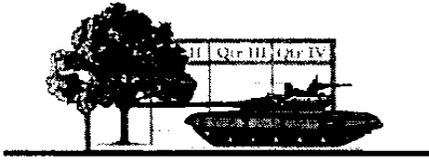
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## INTRODUCTION

The National Environmental Policy Act (NEPA)<sup>2°</sup> is the law that states that Federally funded activities must consider the environmental consequences of a proposed action before decisions are made and actions taken. In addition to NEPA, there are over 60 Federal laws protecting the environment as well as numerous State and local laws. The "NEPA process" is a tool that allows Program Managers to assess the environmental consequences of a proposed action. As a risk management tool, the NEPA process ensures that environmental laws are not violated, that environmental consequences are identified to the decision maker, and that the action supports the objectives, goals, thresholds, and mission requirements of the program.

The requirements of the broad range of environmental laws are very complicated, and beyond the scope required of the Program Manager. Program Managers must understand the requirements of NEPA, but not the requirements of all the other environmental laws. However, the Program Manager must be aware of these laws and have access to expert legal advice during the NEPA process. Fortunately, it takes conscious disregard of environmental law to open the Program Manager (personally) to legal proceedings. By initiating the NEPA process, the program office staff analyzes the environmental consequences of program actions, thereby decreasing the possibility of court action and eliminating conscious disregard of environmental law.

The NEPA process is not complicated and is fundamentally good analytical technique, good systems engineering practice, good risk management, and excellent staff work. The NEPA process has three essential ingredients: accurate, scientific analysis; expert agency comment; and public participation. Accurate scientific analysis is a foundation of weapon system acquisition programs, and scientific analysis of environmental issues complements other analytical disciplines. Expert agency comment and public participation are expanded "staff work."\* In some cases, NEPA requires "staffing" NEPA analyses beyond the Army, the Department of Defense (DoD), and the Federal government. *Expert agency commentary and public participation, whether from other Federal, State, or local agencies, public interest groups, or private citizens, improve the knowledge of the environmental consequences of the proposed action.* In some cases, public participation is required by NEPA; in other cases it just makes good business sense to expand the knowledge base.

The NEPA process becomes increasingly expensive as the level of analysis and degree of public participation becomes more in-depth. To minimize the cost of

\* "Staff work" or "staffing" is the action of soliciting participation, review and comment. Staffing sometimes requires obtaining concurrence and approval of program actions.

the NEPA process as well as risk to the program, the Program Manager should concentrate on mitigating adverse environmental consequences at the earliest opportunity. Note that when there is a range of reasonable alternatives, NEPA does not require that the most environmentally benign alternative be selected. Other factors affecting the acquisition program can and do influence the decision-making process.

Unfortunately, the NEPA process has become synonymous with the generation of paperwork. However, the President's Council on Environmental Quality (CEQ) stated that

NEPA's purpose is not to generate paperwork even excellent paperwork--but to foster excellent action. The NEPA process is intended to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore and enhance the environment<sup>28</sup>

Good scientific analysis is generally documented. The same applies to the NEPA process. Regulations established by the CEQ require specific documents be created to record the NEPA process some of which have very specific names and formats. These documents contain the results of analysis, conclusions regarding environmental effects, and other information developed throughout the NEPA process. There are very important reasons for these documents: to provide structured information for staffing, to support decision making, and to provide an audit trail.

Again, *Managing the Environmental Risk* focuses on weapon system acquisition, not on the environment. To assist Program Managers in applying the NEPA process to manage environmental risk, this guide includes four chapters. Chapter I provides general discussion of environmental risk associated with program management. Chapter 2 addresses NEPA requirements and the general NEPA process. Chapter 3 discusses DoD and Army regulations that implement NEPA. Chapter 4 describes how environmental analysis can be applied during an acquisition program to manage the environmental risk, comply with NEPA, and meet mission requirements.



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## CHAPTER 1: ENVIRONMENTAL RISK

This document is concerned with *protecting* weapon system acquisition programs from adverse effects that can be caused by potential and actual environmental impact. In this context, environmental risk is risk to the program, not to the environment, although they are inextricably linked. The goal of managing environmental risk is to minimize the potential impact of environmental laws and public disposition on the actions necessary to design, develop, test, manufacture, field, maintain, and dispose of a weapon system. By identifying these potential impacts, the Program Manager can assign a level of risk to each proposed action, evaluate mitigating measures, and manage the risk during the decision-making process. Environmental risk must be weighed against other risks to cost, schedule, and performance before a final decision can be reached.

### 1.1 SOURCES OF ENVIRONMENTAL RISK

There are *no* "green" weapon systems, not even in the Army! Weapon systems are designed to damage the environment when used in combat. Thankfully, weapon systems spend most of their life cycle out of combat during production, testing, peace-time operations, storage, maintenance, demilitarization, and disposal. Although some peace-time operations simulate combat, environmental impact must be minimized during other noncombat periods to minimize environmental risk.

Environmental risk to an acquisition program in the form of delayed schedule, increased cost, or degraded performance can be generated by

- actions that violate environmental law,
- actions that result in natural or physical impacts,
- actions that result in economic impacts, and
- actions that result in social impacts.

There are over 60 Federal environmental laws. These laws typically lead to restraints imposed on production, testing, fielding, operation, maintenance, and training actions during the weapon system life cycle. In most cases the law is concerned with pollutant waste emissions generated, released, and transferred; examples are the Clean Air Act and Clean Water Act. In other cases, the law regulates the preservation of the physical and ecological characteristics of an area; examples are the Endangered Species Act and National Historic Preservation Act. Other law such as the American Indian Religious Freedom Act, address economic impacts and social values. During the weapon system acquisition process, the laws having the greatest influence on environmental risk will change as the action being considered changes.

Environmental risk does not stop when a weapon system is transitioned to the field. The Program Manager must recognize that the weapon system requirements dictated by the system design influence the ability of all operational support facilities to comply with environmental law. Environmental laws treat production, training, and maintenance facilities similarly, but environmental compliance for maintenance facilities is compounded by the requirement to remove some materials that were applied during production (an example is paint stripping). Maintenance support can have greater environmental risk than new production. Thus, the mission capability and readiness of the weapon system can be threatened throughout the life cycle if environmental risk is not taken into account during all acquisition phases and program planning activities.

There are various laws whose regulations help quantify environmental risk. However, an action can have environmental risk even if no laws are violated. Environmental risk also has a qualitative judgment component. An example is the need to estimate the level of public reaction to a proposed action, whether the reaction will be favorable or unfavorable, and whether the reaction will be local or national in scope.

## **1.2 MEASURING ENVIRONMENTAL RISK**

Environmental risk is both a quantitative assessment and a qualitative judgment that a program action has a potentially adverse environmental impact. Again, environmental risk is risk to the program, not to the environment. Measuring environmental risk will usually require answers to questions such as the following:

- Is the action necessary to successfully complete the program?
- Will the action violate an environmental law?
- Is the action local, regional, or national in scope?
- Is the action a normal use for the area or facility proposed for use?
- Will the action alter the physical environment?
- Can the physical environment be restored after alteration, and how costly would that be?
- Will the action adversely effect the ecosystem?
- Can the ecosystem be restored after alteration, and how costly would that be?
- Are any local cultural groups affected?
- Is the local economy affected?
- Will the effect of the action be short-term or long-term?
- Who is the best team to address the action and its alternatives?
- Is there a mitigation plan that contains alternative actions, or explains how the action will be controlled or how the area will be remediated?
- Are there alternative actions that satisfy the mission requirements?
- Will the alternatives alter, lessen, or eliminate the environmental risk?
- How do the costs of implementing the alternatives compare?

- What is the schedule impact of implementing each alternative?
- What is the performance impact of implementing each alternative?
- When will the action take place during the program?
- Can the action be addressed during a later program phase?
- Will the action influence operational support functions?
- Will the action lead to disposal problems?
- Can the life cycle cost impact for the action and its alternatives be predicted?

Environmental risk assessment combines the qualitative judgment with the quantitative assessment of environmental analysis and program analysis to determine what effect each action (and alternative) will have on the system's cost, schedule, and performance aspects. Environmental risk management analyzes the alternatives to determine which is most acceptable to meeting the weapon system acquisition program goals. Ideally, the Program Manager will be able to select an action that meets the program goals and also has the least environmental impact. However, due to budgetary constraints, scheduling issues, or performance trade-offs, the ideal is not always possible.

### **1.3 MANAGING ENVIRONMENTAL RISK**

Managing environmental risk is necessary because

- the environmental consequences of each proposed program action are required to be analyzed, by law;
- the weapon system acquisition program can become the target of legal proceedings (usually in the form of an injunction) that slow or stop scheduled progress and increase cost; and
- the decision maker can be held personally liable for penalties if environmental laws are consciously disregarded.

The NEPA process is a tool for managing environmental risk during weapon system acquisition. The NEPA process can be guided by implementing the instructions of Army Regulation (AR) 200-2, Department of Defense Directive (DoDD) 5000.1, and Department of Defense (DoD) Regulation 5000.2-R. Other documents, such as AR 70-1, Department of the Army Pamphlet 70-3, and the *Materiel Developer's Guide for Pollution Prevention*, provide additional useful guidance. The following chapter concentrates on NEPA, without discussion of weapon systems and environmental risk. The instructions referenced above and the application of the NEPA process to acquisition programs are discussed in chapters 3 and 4.

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## **CHAPTER 2: THE NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)**

*This chapter focuses on the law only--NEPA and the regulations for implementing its procedural provisions. The discussion concentrates on the legal requirements of NEPA related to major Federal actions, such as the acquisition of weapon systems. Chapter 3 addresses DoD and Army policy for complying with NEPA during system acquisition. Program Managers are encouraged to seek legal advice during the NEPA process; while the process is not complicated, existing court rulings can greatly affect the decision-making process.*

### **2.1 INTRODUCTION**

The National Environmental Policy Act of 1969 is the law (Public Law 91-190) and can be found in the United States Code, Title 42, Sections 4321 through 4347 (42 U.S.C. 4321-4347). In section 4321, the Congress declared the purpose of NEPA:

The purposes of this chapter [42 U.S.C 4321 - 4347] are: To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.

NEPA contains broad policies and goals consistent with the stated purposes. NEPA created the President's Council on Environmental Quality (CEQ), and as a result of reorganization of Federal responsibilities, the U.S. Environmental Protection Agency (EPA) was also established. NEPA requires that the administrative procedures of all Federal agencies conform to the national environmental policy and that Federal agencies provide leadership in protecting and enhancing the quality of the Nation's environment. In section 4332, NEPA provides an outline for analyzing and reviewing the environmental impact of a proposed action prior to decision making, which includes cooperation with other Federal and State agencies and the public.

### **2.2 CEQ REGULATIONS FOR IMPLEMENTING THE PROCEDURAL PROVISIONS OF NEPA**

The "Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act" were developed by the CEQ and published in the Code of Federal Regulations (40 CFR 1500-1508). The purposes of these CEQ regulations are:

- to tell Federal agencies what they must do to achieve the goals of the Act;
- to ensure that environmental information is available to public officials and citizens before decisions are made and actions are taken; and
- to help public officials make decisions that are based on an understanding of environmental consequences, and take actions that protect, restore, and enhance the environment.

It is national policy that Federal agencies

- encourage and facilitate public involvement in decisions that affect the quality of the human environment, and
- use the NEPA process to identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the human environment.

The CEQ regulations explain what the Federal agencies must do to achieve the goals of the Act by describing an analytical (and paperwork-generating) process. Unfortunately, the NEPA process has become synonymous with "environmental documents" rather than with the analytical process that produces the data used to support decision making. However, as the CEQ has stated, "NEPA's purpose is not to generate paperwork--even excellent paperwork--but to foster excellent action."

## **2.3 THE NEPA PROCESS**

The NEPA Process\* has three essential ingredients: accurate, scientific environmental analysis; expert agency comment; and public participation. It is important to note that documentation is not one of the essential ingredients. The core is environmental analysis, by in-house or contracted technical experts, by expert agencies, and by the public. As with any good analytical process, documents are prepared to consolidate information and provide a historical record of the analysis. The CEQ regulations formalized the documentation, and established authority to limit the scope of the analysis.

The CEQ regulations require that the NEPA process be integrated into the earliest planning stage of a proposed action. The results of the NEPA process can therefore be made available concurrently with technical and cost studies of the proposed action, giving the decision maker a broader range of information upon which to base his/her actions. According to the Act, the NEPA process uses a "systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision-making..." During the analytical process, environmental effects and values are identified in adequate detail so they can be compared to economic and technical analyses. In addition, alternatives (including mitigating measures) are studied, developed, and described.

\*Underlined terms are clarified in text boxes.

### The NEPA Process:

- Accurate, scientific environmental analysis conducted in an unbiased manner.
- Expert agency comment from Federal, State or local government agencies having special expertise, authority to enforce environmental standards, or jurisdiction over the proposed action.
- Public participation in the form of comments and information provided by individuals, residents, Indian tribes or organizations affected by, requesting involvement, or displaying an interest in the proposed action.

## **2.3.1 Categories of Proposed Actions**

There are four broad categories in which proposed actions can fall during the NEPA process. These categories characterize the analytical process. Each category has its own level of analytical detail, its own requirements for expert agency comment and public participation, and its own documentation requirements. The categories are

- proposed actions that are exempt from analysis by law or emergency;
- proposed actions that meet the requirements of a categorical exclusion;
- proposed actions that require an environmental assessment to determine the significance of the action's impact on the natural and physical environment; and
- proposed actions that have significant impact on the natural and physical environment and therefore require an environmental impact statement.

### **2.3.1.1 Exempt Actions**

There are two types of exemptions that allow an action to be exempt from compliance with NEPA: exemption by law, and exemption by emergency circumstance.

Exemptions by law are allowed under 40 CFR 1500.6, which states that "each agency of the Federal Government shall comply with that section unless existing law applicable to the agency's operations expressly prohibits or makes compliance impossible." For example, the 1988 and 1990 Base Realignment and Closure Acts specifically exempted the military from some NEPA requirements. Furthermore, where classified information would be compromised, something less than a publicly releasable NEPA document may satisfy NEPA.

Exemption by emergency are allowed for under 40 CFR 1506.11, which states "Where emergency circumstances make it necessary to take an action with

significant environmental impact without observing the provision of these regulations, the Federal agency taking the action should consult with the Council about alternative arrangements." For example, an exemption due to an emergency might be necessary for national defense, security, or preservation of human life or property.

### **2.3.1.2 Categorical Exclusions**

Categorical exclusions are defined under 40 CFR 1508.4 as "actions which do not individually or cumulatively have a significant effect on the human environment and which have been found to have no such effect in procedures adopted by a Federal agency in implementation of these regulations." Under 40 CFR 1500.4 and 1500.5, the CEQ allows the use of categorical exclusions to reduce excessive paperwork and reduce delays in program progress resulting from analyzing actions having no environmental impact. *Each agency is required to prepare a listing of categorical exclusions available for agency use in its implementing NEPA instructions.* For example, routine operation and administrative activities may qualify for a categorical exclusion.

### **2.3.1.3 Actions that Require an Environmental Assessment**

An environmental assessment (EA) is a "concise public document for which a Federal agency is responsible that serves to:

- (1) Briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact.
- (2) Aid an agency's compliance with the Act when no environmental impact statement is necessary.
- (3) Facilitate preparation of a statement when one is necessary."

Environmental assessments include

- brief discussions of the need for the proposed action,
- brief discussions of alternatives,
- brief discussions of the environmental impacts of the proposed action and alternatives,
- a listing of agencies and persons consulted, and
- a conclusion.

These assessments are the historical record, accumulated data, analysis, and conclusions about the environmental consequences of the proposed action. 40 CFR 1501.4 states "The agency shall involve environmental agencies, applicants, and the public, to the extent practicable, in preparing assessments..." Depending on the nature of the proposed action, expert agency comment and public participation is always encouraged unless the action or a portion of the action is classified.

The EA is a decision document that leads to one of two outcomes: additional analysis necessary to develop an environmental impact statement (EIS) (see next subsection), or a finding of no significant impact (FNSI). The FNSI is "a document by a Federal agency briefly presenting the reasons why an action, not otherwise excluded, will not have a significant impact on the human environment and for which an environmental impact statement therefore will not be prepared. It shall include the environmental assessment or a summary and shall note any other environmental documents related to it. If the assessment is included, the finding need not repeat any of the discussion in the assessment but may be incorporated by reference." As with the categorical exclusion, the FNSI is used to reduce paperwork and delays. The FNSI *must* be publicized and disclosed to the public. The FNSI must be made available for public review for 30 days before the action can begin or before the agency makes its final determination on whether to prepare an EIS. The 30-day review period is necessary if

- (1) the proposed action is, or is closely similar to, one that normally requires the preparation of an EIS.
- (2) the nature of the proposed action is one without precedent.

Significant: The significance of the environmental consequences of a proposed action is determined from consideration of both context and intensity. Context is measured in terms of the short- and long-term impacts of the actions on society as a whole, the affected region, the affected interests, and the locality. Thus, "significant" varies based on the setting of the proposed action. Intensity refers to the severity of impact--upon public health and safety, upon the quality of the human environment, and upon threatened or endangered species--and to the threat of violating environmental laws. The intensity of the action may also be measured in terms of uncertainty or unknown risks; precedence for future actions; and adverse effects on local scientific, cultural, or historic resources. [Ref. 18, subsection 1508.27.]

#### **2.3.1.4 Actions that Require an Environmental Impact Statement**

If, during the NEPA process, the analytical team determines that the proposed action may have significant environmental consequences, then the team must perform additional analysis and prepare an EIS. The decision to prepare an EIS initiates a more extensive, more detailed analytical process that *requires* expert agency comment and public participation during the analysis.

The additional analytical process that leads to an EIS begins when the agency prepares and publishes a Notice of Intent (NOI) in the Federal Register. The NOI informs the reader that an EIS will be prepared. The NOI briefly describes the proposed action and possible alternatives; describes the agency's proposed scoping

process, including whether, when, and where an initial scoping meeting will be held; and states the name and address of a person within the agency who can answer questions about the proposed action, additional scoping activities, and the EIS.

Scoping: Preparation of an EIS is an extensive analytical process that requires the participation of expert agencies and the public. Scoping is a management tool used to place bounds on the analytical process, including page limits and time schedules. Scoping allows the analytical team to invite participation of expert agencies and interested members of the public. It also allows the team to identify existing documentation that may affect the analysis, identify significant versus insignificant issues as well as issues covered in other analyses, and allocate assignments for the analysis and subsequent preparation of the EIS. To determine the scope of EISs, agencies must consider: (1) three types of actions--connected (interdependent), cumulative, and similar; (2) three types of alternatives--no action, reasonable courses of action, and mitigation; and (3) three types of impacts--direct, indirect, and cumulative. Depending on the nature of the proposed action, the team may elect to hold a scoping meeting during which the attendees, public and private, may participate in the scoping process. [Ref. 18, subsection 1508.25]

Concise analysis that includes the concerns raised by agency experts and the public is required to fully consider the significant environmental consequences of a proposed action. Concise analysis of any highly complicated subject requires that the analysis remain focused on the issues identified during the scoping process, and that the effort expended on repetitive issues, insignificant issues, and issues previously analyzed be minimized. For this purpose, tiering is encouraged during the analysis.

When the initial analysis is completed, a draft EIS (DEIS) is prepared that documents the results and proposes a decision regarding the proposed action. The DEIS must be publicized and distributed to reviewing entities such as expert agencies and the public. Distribution of the DEIS must include all Federal agencies that have jurisdiction by law or special expertise with respect to any environmental impact or that are authorized to develop and enforce environmental standards, appropriate State and local agencies, Indian tribes, agencies requesting statements of the kind proposed, and the interested public. NEPA requires that an appropriate period of time be allowed for review and comment. The preparing agency must assess and consider all comments and respond to each one by modifying alternatives already described; developing and evaluating new alternatives; supplementing, improving, or modifying the analysis; making factual corrections; or explaining why a comment does not warrant further agency response. The comments and responses are included in the final EIS, which is again publicized and filed with the U.S.

Tiering: Agencies are encouraged to tier their EISs to eliminate repetitive discussions of the same issues and to focus on the actual issues ripe for decision at each level of environmental review. Whenever a broad EIS has been prepared and a subsequent EIS or EA is prepared on an action included within the entire program or policy, the subsequent EIS or EA need only summarize the issues discussed in the broader EIS and can concentrate on the issues specific to the subsequent action. The subsequent document should state where the earlier document is available. Tiering may also be appropriate for different stages of actions. [Ref. 18, subsection 1508.28]

Environmental Protection Agency. The final EIS is the document used to support the decision that results from the exhaustive analytical process.

### **2.3.2 Mitigation**

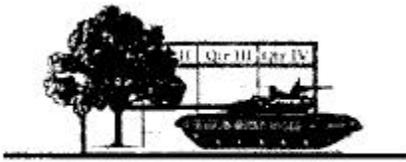
NEPA requires Federal decision makers to analyze the environmental consequences of proposed actions with the intent of encouraging the decision maker to select the most, or at least a more, environmentally acceptable approach. In all cases, environmental analysis is required to consider mitigation measures that can lessen the environmental impact of the proposed action. In some cases, *when mitigation measures are incorporated into the proposed action, they may reduce the environmental impact to an insignificant level, eliminating the need for an EIS*. If the analysis does proceed to an EIS, the mitigation measures must be addressed by the analysis. In all analyses, if a mitigation measure is selected with the action, it must be implemented.

Mitigation: (1) Avoiding the impact altogether by not taking a certain action or parts of an action. (2) Minimizing impacts by limiting the degree or magnitude of the action and its implementation. (3) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment. (4) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action. (5) Compensating for the impact by replacing or providing substitute resources or environments. [Ref. 18, subsection 1508.20]

#### **2.3.2.1 Pollution Prevention**

In 1993, the CEQ addressed the issue of pollution prevention and NEPA. The CEQ stated that, pursuant to NEPA's policy goals, it is the responsibility of Federal departments to take every opportunity to include pollution prevention considerations in the early planning and decision-making processes for their actions, and where appropriate to document those considerations in any EISs or EAs

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## CHAPTER 3: DOD AND ARMY NEPA IMPLEMENTATION

This chapter discusses DoD and Army guidance addressing compliance with NEPA, and the weapon system acquisition guidance addressing environmental analysis. The current guidance, both for NEPA compliance and for acquisition, is changing. The changes reflect the importance of environmental analysis for complying with NEPA, and recognition that environmental analysis can reduce the life cycle cost of a weapon system.

### 3.1 DoD AND ARMY GUIDANCE ON COMPLIANCE WITH NEPA

The actions necessary to comply with NEPA have been documented in DoD and Army instructions, directives, and regulations. The DoD Instruction 4715.9 "Environmental Planning and Analysis,"<sup>TM</sup> contains policy for all of DoD. The Army's regulation AR 200-23 contains instructions for implementing NEPA for all Army actions.

DoDI 4715.9 and AR 200-2 (currently being revised) reflect the most recent policy and guidance related to NEPA. However, neither of these revised documents specifically addresses the application of NEPA during weapon system acquisition, other than to include weapon system acquisition as a major Federal action, and to provide broad statements that generally encompass all acquisition activities. DoDI 4715.9 contains the following statements. It is DoD policy to:

- Integrate environmental considerations into acquisition programs in accordance with DoD 5000.2-R and DoD Directive 5000.1, and
- Require the proponent of an action to program funding of the costs of any environmental planning and analysis necessitated by the action.

The draft AR 200-2, originally titled "Environmental Effects of Army Actions," is being given a new title, "Environmental Analysis of Army Actions." This change in title elevates the importance of analysis in decision making; it is not just an exercise in preparing paperwork.

The National Defense Authorization Act for Fiscal Year 1995 <sup>17</sup> (Public Law 103-337, section 815) requires the Secretary of Defense to issue uniform guidance to

- achieve the purposes and intent of the National Environmental Policy Act for major defense acquisition programs,
- analyze the life-cycle environmental costs for major defense acquisition programs, and
- establish and maintain a data base for NEPA documents.

## **3.2 ARMY ACQUISITION PROGRAM ACTIONS REQUIRING ENVIRONMENTAL ANALYSIS**

AR 200-2 "Environmental Analysis of Army Actions" (draft, 1/96) will reflect the most recent policy and guidance that

Army materiel systems will be designed, developed, tested, produced, fielded, improved upon, and ultimately disposed of in full compliance with all environmental laws and regulations. The Army acquisition community will integrate environmental analyses into its decision making process and will further ensure that appropriate environmental life cycle costs become an integral part of total program costs estimates and budgets. PEOs and PMs will integrate the NEPA process along with other program planning at the earliest possible time to ensure that acquisition planning and decisions reflect environmental values and considerations. During the planning process, materiel acquisition proponents will, as early as possible, determine the type of environmental analyses that will be required throughout the life cycle of their assigned program and identify appropriate funding.

Army Program Managers should review the new AR 200-2 to develop an understanding of the requirements of NEPA as it applies to all Army actions, and make a conscientious decision about the level of analysis required for the proposed action and the documentation needed. The information presented in chapter 4 uses the new AR 200-2 as a basis for applying environmental analysis to weapon system program actions. The information also discusses when it is appropriate to initiate the NEPA process and prepare NEPA documents as a historical record of the analysis and the program decision-making process.

### **3.2.1 Clarification of NEPA Terms Used in AR 200-2**

In regard to the information presented in chapter 2, the following may clarify certain discussions for Army Acquisition Program Managers:

- Categorical exclusions for Army actions are listed in AR 200-2.
- EAs and EISs are documents specifically defined by NEPA. While NEPA dictates the format and content to some degree, these documents should contain the results of good, scientific analysis including the results from staffing the analysis. Like other analyses conducted by the program, the results are recorded to support the decision-making process.
- The term "normally" is used in AR 200-2 to describe actions that, under most circumstances, require the preparation of an EIS.

"Normally" is not defined by NEPA, the CEQ or other regulations but AR 200-2 provides a listing of such actions.

- Expert agencies are primarily Federal, State and local agencies. Examples are EPA and the U.S. Fish and Wildlife Service, as well as similar agencies at the State and local level. Local area agencies have greater understanding of the potential impact of an action within a local area and should be consulted. The Army also has expert agencies, such as the Army Corps of Engineers, the U.S. Army Environmental Center, the U.S. Army Center for Health Promotion and Preventive Medicine, and facility Environmental Quality Offices, which can provide assistance during the NEPA process.
- AR 200-2 dictates time periods that should be allowed for the review of environmental documents, and it provides guidance related to publicizing documents. Program Managers should review the requirements for publishing NEPA documents, particularly EAs and FNSIs.
- In the context of NEPA, alternatives are actions that could be taken to meet the mission requirements. Alternatives may or may not reduce the severity or intensity of the environmental impact of an action. Some alternatives, such as acquiring one weapon system versus another, are not pertinent to the acquisition program because the decision to acquire the weapon system was made based on mission needs which were analyzed prior to initiating the acquisition program at milestone 1. The discussion of alternatives within the NEPA process should exclude alternative systems unless it is pertinent to the analysis. Environmental analysis should be limited to those actions that could be selected and implemented.

### **3.3 WEAPON SYSTEM ACQUISITION GUIDANCE RELATED TO NEPA**

Acquisition guidance, similar to environmental guidance, has undergone a transformation. DoDD 5000.1 and DoD 5000.2-R contain guidance for acquiring weapon systems that includes environmental, safety, and health analyses. Both DoD 5000 documents have been substantially rewritten and meet the Congressional direction of Pi. 103-337. DoD 5000.2-R contains the requirement to analyze weapon system environmental costs and specifically includes hazardous materials management and pollution prevention programs as methods to reduce life cycle cost.

The Army's acquisition policy (AR 70-P and DA Pamphlet 70-37) are out-dated with regard to the revisions of the DoD 5000 series documents. However, AR 70-1 and DA Pamphlet 70-3 contain useful recommended actions that should be considered when conducting environmental analysis during acquisition. Much of this information can also be found in the *Matériel Developer's Guide for Pollution Prevention?*

### **3.3.1 Requirements of DoDD 5000.1**

Section 2 of DoDD 5000.1, contains a subsection titled "Environmental Management." This subsection states the following:

It is DoD policy to prevent, mitigate, or remediate environmental damage caused by acquisition programs. Prudent investments in pollution prevention can reduce life cycle environmental costs and liability while improving environmental quality and program performance. In designing, manufacturing, testing, operating and disposing of systems, all forms of pollution shall be prevented or reduced at the source whenever feasible.

### **3.3.2 Requirements of DoD 5000.2-R**

DoD 5000.2-R covers procedures for major defense acquisition programs (MDAPs) some of which apply only to higher level acquisition category (ACAT) programs. However, DoD 5000.2-R explicitly states that "all programs, regardless of acquisition category, shall comply with" the Environment, Safety and Health section (part 4, section 4.3.7 discussed below). Furthermore, part 3, section 3.3.1.1 states that "use of commercial or non-developmental items does not exempt the PM from complying with environmental requirements, unless exempted by statute." Part 1, section 1.4.6 also states the following:

At the end of its useful life, a system must be demilitarized and disposed. During demilitarization and disposal, the PM shall ensure material determined to require demilitarization is controlled and shall ensure disposal is carried out in way that minimizes DoD's liability due to environmental, safety, security, and health issues.

#### **3.3.2.1 Part 3, section 3.3.6 Environmental, Safety, and Health Considerations**

Section 3.3.6 requires that the acquisition strategy include a programmatic environmental, safety and health (ESH) evaluation. An ESH evaluation must be initiated at the earliest possible time to support the acquisition program initiation decision (which is usually milestone I). The ESH evaluation must be maintained and updated throughout the life cycle of the program. The ESH evaluation describes the PM's strategy for meeting the ESH requirements in part 4, section 4.3.7, establishes responsibilities, and identifies how progress will be tracked.

**Be Aware: All acquisition programs, regardless of ACAT-level or commercial or non-developmental items acquisition, must comply with DoD 5000.2-R, part 4, section 4.3.7.**

### **3.3.2.2 Part 4, section 4.3.7 Environment, Safety and Health**

Section 4.3.7 states that environmental, safety, and health (ESH) analyses shall be conducted to integrate ESH issues into the systems engineering process and support development of the programmatic ESH evaluation. The ESH analyses must address the requirements of each 4.3.7 subsection, as follows:

- (1) The PM shall comply with NEPA, the Implementing Regulations for NEPA and Executive Order 12114, Environmental Effects Abroad of Major Federal Actions.<sup>1~</sup> (subsection 4.3.7.1)
- (2) The PM shall regularly review environmental regulations and shall analyze the regulations and evaluate their impact on the program's cost, schedule and performance. (subsection 4.3.7.2)
- (3) The PM shall identify and evaluate system safety and health hazards, define risk levels, and establish a program that manages the probability and severity of all hazards associated with development, use and disposal of the system...including conditions that create significant risks ...to personnel who produce, test, operate, maintain, or support the system. (subsection 4.3.7.3)
- (4) The PM shall establish a hazardous material management program. (subsection 4.3.7.4)
- (5) The PM shall establish a pollution prevention program. (subsection 4.3.7.5)

As a historical note, the revised DoD 5000.2-R, part 4, section 4.3.7 has consolidated and reduced the volume of requirements in the prior DoDI 5000.2, part 6, section I. It is important to note that emphasis on environmental analysis has been broadened to include pollution prevention and hazardous materials management. DoD 5000.2-R has also been extended to include maintenance, storage, and disposal actions following fielding of the system, and indicates that taking early and successful action will reduce the life cycle cost of the weapon system to the Army. These are areas that had not previously been emphasized.

### **3.3.3 Programmatic ESH Evaluation**

The length and technical breadth of weapon system acquisition cover many areas. It is usually not possible to create a single EA, a distinct FNSI, a single EIS, or a single Record of Decision that covers an entire acquisition program. The ESH evaluation will cover all acquisition phases, whereas significant environmental impacts may be associated only with certain events such as live fire testing, operational testing, fielding or training. These circumstances highlight the need for continual ESH evaluation, not one-time programmatic environmental assessments or impact statements.

Under the new DoD 5000.2-R, part 4, section 4.3.7, a programmatic ESH evaluation must be initiated early (during phase 0 and prior to milestone I), maintained, and updated. Unfortunately, the instructions use many terms

(evaluation, assessment, and analysis) having specific meaning under NEPA in ways that may confuse the reader. Conceptually, the Program Manager should consider the programmatic ESH evaluation to be a filing cabinet (component of the Acquisition Strategy), with each environmental analysis being a file.

In the ESH evaluation file cabinet, the strategic planning input for the Acquisition Strategy may be located in the top file drawer along with input to other top-level plans, schedules, and resource estimates. Other file drawers will be filled with ESH analyses addressing system design characteristics, production requirements, test requirements, operating and maintenance requirements, and training plans. In each case, the ESH evaluation must contain accurate, scientific, environmental analysis data (both administrative and technical) that supports acquisition decisions. These same data are used as some or all of the data necessary for preparing NEPA documents. NEPA documents, therefore, should be filed in the programmatic ESH evaluation.

### **3.3.3.1 Tiering the Programmatic ESH Evaluation**

There is a legal concern that the Program Manager must be aware of when managing a continual evaluation of environmental consequences. NEPA encourages tiering the analysis to focus on only the issues affecting the environment. However, it is possible to misuse tiering and limit the scope of an analysis to such an extent that the true cumulative impacts of an action are not considered. Breaking up an action into small pieces to avoid stating the full potential cumulative impact is called "*segmentation*" and it is *not* legal. A legal advisor should review the progress of ESH analyses to ensure that the analysis is tiered, not segmented. If he/she advises the Program Manager that the analysis is becoming segmented then the Program Manager must decide whether the analysis should be redirected and whether additional analysis will continue to benefit the program.

Tiering should not be applied to the ESH evaluation of a weapon system by addressing each life cycle phase independently because the environmental impact may not be phase dependent. Program Managers should apply event-oriented management\* to environmental considerations, just as event-oriented management is applied to the rest of the program. Event-oriented environmental analysis will keep segmentation from becoming a problem in the first place, and will allow environmental risk management to coincide with and supplement other program risk management actions for the event.

\*Event-oriented management is discussed in section 2 of DoDD 5000.1.



## CHAPTER 4: ENVIRONMENTAL RISK MANAGEMENT

In chapter 1, environmental risk was introduced as an element of program risk to cost, schedules, and performance. A series of questions was proposed to help Program Managers assess an action's level of environmental risk. The current chapter discusses the acquisition process and the use of environmental analysis in managing program risk. It is impossible to predict every instance in which a program decision may have adverse environmental consequences, or every action that will require completing the NEPA process (analysis, comment, participation) and preparing NEPA documentation. As a result, the philosophy of the best defense is a good offense" should be applied. An excellent offense is to incorporate environmental analysis in all program actions. Preparing NEPA documentation and informing the public, when appropriate, is an excellent defense.

### 4.1 INTEGRATED PRODUCT TEAMS (IPTs)

Early in the acquisition program, the Program Manager will establish an integrated product/process development structure using IPTs. If the Program Manager strongly endorses the importance of environmental analysis as a major concern of his/her program, the IPTs will consider the environmental consequences of each proposed action or event. Each IPT contains the *core* expertise needed to analyze proposed actions within their technical area, but they may require additional specialized expertise for environmental or legal considerations. The IPT should obtain assistance from Army environmental and legal personnel, who will advise the IPT where to obtain additional expertise or if the assistance of an expert agency is required. It may also be possible that public participation will be required.

Environmental analysis may be required for every program activity in each life cycle phase, therefore it *is recommended that the Program Manager assign a staff member to coordinate environmental issues and concerns*. The staff member chosen for this function should be an engineer or logistician who understands the weapon system requirements, and has received acquisition pollution prevention and environmental training through the Army school system. He/she should be responsible for the ESH evaluation in which the actions of the IPTs are documented. *It is also recommended that the staff member coordinating environmental issues and concerns be assigned to the Integrating IPT (IIPT)\** to assure program visibility of environmental considerations, ensure that environmental analysis remains an important program function, and ensure that the NEPA process is applied to events before decision points. The coordinating staff member will assure that the recommendations of the IPTs will be brought forward to the IIPT, which is chaired by the Program Manager.

\*Integrating IPTs are discussed in part 5, section 5.4 of DoD 5000.2-R.

## 4.2 A SYSTEMS ENGINEERING APPROACH TO ENVIRONMENTAL ANALYSIS

There are five possible paths associated with environmental analysis. Figure 1 depicts those paths during weapon system engineering.

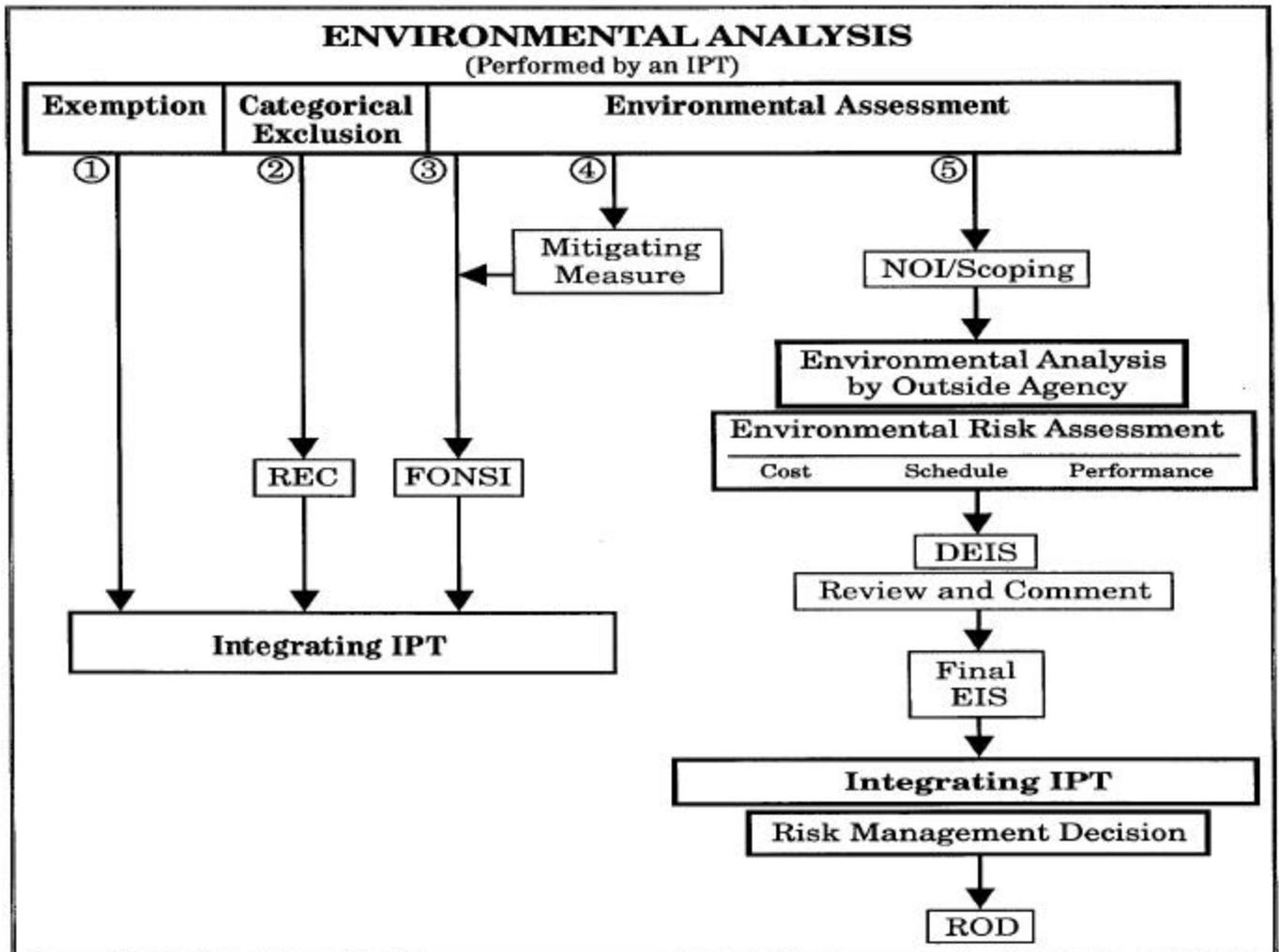


Figure 1. Environmental Analysis in Systems Engineering

As figure I shows, the environmental analysis might result in either an exemption or a categorical exclusion (both discussed in chapter 2). The exemption can be the result of the law or an emergency. In the case of a categorical exclusion,

the Program Manager may have to file a Record of Environmental Consideration (REC) if required by AR 200-2. In either case, the recommendation of an exemption or categorical exclusion is submitted to the IIPT. The Program Manager can approve exemptions and RECs.

If an exemption or categorical exclusion does not apply in an analysis, the analysis formally becomes an environmental assessment in NEPA terminology. Although the analytical approach might not change, the analytical team (IPT) must determine the type and extent of public participation in the assessment based on factors inherent in the issue being analyzed. AR 200-2 provides factors to be weighed in determining the type and extent of public participation. The factors are

- the magnitude of the proposed project/action,
- the extent of anticipated public interest, based on experience with similar proposals,
- the urgency of the proposal, and
- the National security classification.

Participation by expert agencies (Army experts and agencies with jurisdiction) is required by AR 200-2, while public participation is always encouraged but is not required. However, the EA must be provided to the public for a 30-day comment period prior to approval of the FNSI, unless certain conditions specified in AR 200-2 are met. If these conditions are met, an authority above the Program Manager can waive the 30 day review period.

From the environmental risk point-of-view it is preferable that all program actions have no significant impact; allowing the environmental assessment to result in a FNSI. Alternatively, upon consideration of the environmental consequences, the IPT may develop a different way of meeting the program requirements without a significant impact, hence identifying and selecting a mitigating measure that supports a FNSI. If the FNSI is approved based on a mitigating measure, that mitigating measure must be implemented. The EA and FNSI are submitted as a recommendation to the IIPT. The Program Manager can approve the EA, but he/she must obtain concurrence from the Milestone Decision Authority. Only the Milestone Decision Authority can approve the FNSI. Again, the EA must be made available to the public for 30 days prior to approving the FNSI.

The other possible outcome of the EA is the determination that the action will have a significant impact and therefore require more in-depth analysis and preparation of an EIS. The NEPA process for preparing an EIS is initiated through the Notice of Intent (NOI) and scoping process (discussed in chapter 2) and proceeds as require by law. Path 5 shows three shaded boxes indicating the additional analysis that must be conducted. The top shaded box shows that additional environmental analysis must be accomplished, and that it should be accomplished by an outside agency (other than the program office or its contractors) to avoid any appearance of a conflict of interest. The next shaded box shows additional analysis by the program office to assess the risk of the action and its reasonable alternatives

to the program cost, schedule and performance. When it is completed, the final EIS is submitted as a recommendation to the IIPT. The Program Manager, in considering the EIS with the IIPT, must make a risk management decision (bottom shaded box) regarding the action based on all environmental and program considerations. A Record of Decision (ROD) must then be issued as required by NEPA. The EIS and subsequent ROD must ultimately be approved by the Milestone Decision Authority.

Figure I is a conceptual representation of environmental analysis conducted within the IPT framework of the program's organization. It is not intended to provide the details of each analytical possibility. For instance, mitigating measures may be applied during the analysis for the EIS. Furthermore, in each environmental analysis (exemption, categorical exclusion, EA, and EIS) the Program Manager always evaluates the risk involved in the IPTs recommendation before making a decision. However, using the IPT framework successfully places the analysis in the hands of knowledgeable technical experts without fencing it in an environmental "stovepipe," and allows multi-disciplinary consideration of the IPT recommendation at the IIPT level.

#### 4.3 ENVIRONMENTAL ANALYSIS WITHIN THE PHASES OF ACQUISITION PROGRAMS

Figure 2 shows the phases of an acquisition program; each of these phases has environmental components linked to events within and across the phase boundaries. The following discussion is ordered by phase and events within each phase for clarity. Note that many environmental analyses must be accomplished concurrent with the planning and technical activities leading up to each event, so that the program schedules is not jeopardized.

Phase 0 Concept Exploration	Phase I Program Definition and Risk Reduction	Phase II Engineering and Manufacturing Development	Phase III Production, Fielding/ Deployment, and Operational Support	Demilitarization and Disposal
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Figure 2. Acquisition Program Phases

In general, during phase 0 the Acquisition Manager states that the environment is a major program concern that must be protected to minimize risk. This philosophy is built into the developing program plans. Phase I focuses on developing an environmentally acceptable basic design with selection of environmentally acceptable materials and production processes. Using environmental analysis allows the integration of materials and processes that

support the overall mission philosophy of performance with environmental consideration. In phase II the nuts and bolts of system configuration are finalized, based in part on the understanding that environmentally unacceptable design mistakes would be repeated during operational support, and that a disposal liability could be incurred. Phase III addresses the left-over design problems and how the environmental cost of these problems can be minimized as new technologies become available. Demilitarization and disposal planning is an integral part of all the phases; this aspect of environmental risk management is a continual process that can avoid nonproductive environmental expenses, minimize schedule impacts, and reduce life cycle cost. In the following subsections, the environmental analysis aspects of each phase are discussed.

### **4.3.1 Phase 0: Concept Exploration**

An ESH evaluation initiated during concept exploration cannot comprehensively predict every environmental consequence of the program. Therefore, the IPTs should begin building inputs to the phase 0 ESH evaluation with two purposes in mind; to set the Acquisition Manager's environmental stewardship policy, and to plan resource and schedule requirements of environmental analysis throughout the weapon system acquisition program. These policy and planning exercises are input to the Acquisition Strategy.

#### **4.3.1.1 Environmental Analysis in the Acquisition Strategy**

The Acquisition Strategy should contain a strong statement of the program's environmental stewardship philosophy. The statement should address compliance with NEPA; compliance with and periodic review of other environmental laws; regard for soldier, worker, and public safety and health; and dedication to reducing weapon system life cycle costs through environmental analysis, which includes pollution prevention and hazardous materials management programs. *It is recommended that this statement be issued as a policy statement emphasizing that the NEPA process (environmental analysis, expert agency comment, and public participation) is an integral part of the program "corporate culture."* This policy will positively influence the program staff, contractors, and other supporting personnel, who will perceive that the Acquisition Manager considers environmental analysis to be an important part of all program actions. With this policy in mind, environmental analysis will automatically be included up front in research, development, and engineering processes, not as a costly reactive response to legal challenges, environmental regulations, or disposal problems. If environmental consequences are emphasized early in concept exploration and mitigating measures are employed, the chances that the environmental analysis will lead to the complete NEPA process for preparing an EIS are reduced.

The NEPA process can be expensive and time consuming. In some cases (such as testing and evaluation) it may also be unavoidable. However, early planning and coordination within the IPTs can significantly reduce cost and schedule delays. The phase 0 ESH evaluation should establish placeholders in the Test and Evaluation

Master Plan (TEMP) and all other program plans (such as the fielding strategy) to estimate the funding and personnel resources and time schedules needed for the NEPA process. The IPTs should prepare a coordinated input to the Acquisition Strategy describing the Acquisition Manager's strategy for meeting ESH objectives; establishing goals and responsibilities; setting plans for tracking progress, budgets, and schedules; and deriving resource estimates for the TEMP and other program plans.

#### **4.3.1.2 NEPA Preparation for Phase I**

During phase 0, a management philosophy, structure and plan were put in place to provide environmental analysis support. During phase I the implementation of environmental analysis as a risk management tool begins in earnest with the implementation of a pollution prevention program designed to address the environmental consequences of the system design at the technical level.

#### **4.3.1.3 Environmental Risk Management: Phase 0 Exit Criteria**

To meet the criteria\* for exiting phase 0, the Acquisition Manager should demonstrate that he/she will comply with NEPA and is prepared to meet the requirements of DoD 5000.2-R, part 4, section 4.3.7, by implementing a well-planned environmental strategy and establishing a comprehensive ESH evaluation. The actions recommended above initiate the process of environmental risk management. The environment is shown to be a major concern of the Acquisition Manager and that NEPA and other environmental laws and regulations will be taken seriously--in other words, *there will be no conscious disregard of environmental law*. These actions also initiate an internal organizational process that ensures environmental considerations will be part of the decision-making process from the very beginning of the program, by establishing environmental responsibility as an element of the program's structure.

#### **4.3.2 Phase I: Program Definition and Risk Reduction**

During phase I, the IPTs should investigate environmental analyses and NEPA documentation prepared by similar weapon system acquisition programs. This information will become increasingly available through the Defense Technical Information Center (DTIC) as programs adhere to the new DoD 5000.2-R guidelines.

The ESH evaluation will also grow as program concepts become more defined through (1) technology development; (2) prototyping and operational assessments allowing the IPTs to refine the planning input to the Acquisition Strategy; and (3) the IPT's environmental analysis of the design, material and process, manufacturing, operation, and maintenance alternatives being prepared. While the NEPA process may not be required for each program event at this point, the

\*Exit criteria are discussed in part 3, section 3.2.3 of DoD 5000.2-R

hazardous material management program and the pollution prevention program (required by DoD 5000.2-R) should begin to address the environmental risk presented by design concepts and material and process selection and explore mitigating measures where necessary. The IPTs must also identify actions that must be completed prior to the milestone decision review at the end of phase I and plan the activities that must be initiated in phase II.

#### **4.3.2.1 Environmental Analysis of System Configuration**

The configuration of most weapon systems is composed of existing PM-managed items, developmental items, commercial items, and nondevelopmental items. During phase I, as PM-managed items are selected for inclusion in the weapon system configuration, existing environmental analyses addressing each PM-managed item should be gathered for review by the IPTs to determine whether further analysis is required. For developmental items, the environmental analysis should be entrained in the development process if the program manager's direction is adhered to. For commercial or nondevelopmental items, the IPTs should evaluate the manufacturer's configuration data to identify environmental issues inherent to a component, particularly issues affecting procurement, transportation, handling, storage, maintenance, and disposal.

#### **4.3.2.2 The Pollution Prevention Program**

While DoD 5000.2-R requires establishing a hazardous materials management program *and* a pollution prevention program, *it is recommended that Program Managers establish a Pollution Prevention Program which is responsible for all the environmental aspects of part 4, section 4.3.7* (environment, safety and health). The pollution prevention program should be a coordinated effort among the IPTs. The pollution prevention program can then respond to all aspects of compliance with environmental law, as well as address material, process, and technology aspects of the weapon system design. The *Material Developer's Guide for Pollution Prevention* [see reference 15] provides a recommended approach to establishing a pollution prevention program during weapon system acquisition. Readers are encouraged to review this information as a another tool for performing environmental analysis, identifying mitigating measures, complying with NEPA, and managing environmental risk. The materiel developer's guide includes information for establishing a hazardous materials management program as an element of the pollution prevention program.

#### **4.3.2.3 The Hazardous Materials Management Program**

The Aerospace Industries Association developed National Aerospace Standard (NAS) 411,<sup>6</sup> "Hazardous Materials Management Program" as a guide to hazardous materials management during the design and manufacture of weapon systems. DoD adopted NAS 411 and is promoting its use as a risk management tool for formulating mitigating measures for the production line, and identifying and tracking hazardous

materials used for operational support. NAS 411 directs the contractor to analyze the materials, products, and processes specified by the DoD (contract), proposed by the design contractor, or routinely used during production. The contractor is directed to analyze the system design and the production plan to identify hazardous materials, and to suggest methods by which the hazardous materials can best be managed. Environmental risk management schemes for hazardous materials may lead to the use of alternative, environmentally acceptable materials, products, or processes; redesign of the product or the process, or management of the hazardous material to comply with environmental laws until alternatives can be considered at a later date. The hazardous materials management program provides data for environmental analyses and is important for identifying mitigating measures.

*It is recommended that NAS 411 (equivalent requirements) be incorporated into all contracts consistent with the acquisition phase, budget and projected production schedule. It should also be included in funding agreements with matrix support elements such as Army or DoD laboratories and other governmental agencies. Including NAS 411 requirements in these documents gives supporting activities and contractors the authority to budget actions necessary to evaluate design selections, identify hazardous material usage, consider environmentally acceptable alternatives, or manage the hazardous materials required in the design. A lesson learned from the using NAS 411 is that contracts should stipulate that contractors notify the Program Manager when changes in production processes are made.*

The competitive nature of commercial industry will cause contractors to use the NAS 411 investigation to introduce new, environmentally acceptable technologies into design, testing, and manufacturing. The competitive impetus is to improve technological capability, eliminate nonproductive costs, and/or transfer cost savings to engineering productivity or award programs. Correctly managed, NAS 411 provides a win-win cost, schedule, and performance control scenario to the government and the contractor.

The need for NAS 411 in intragovernmental funding agreements is more abstruse. AR 200-2 notes that "research and development for weapons, vehicles and other equipment or activities" is an action requiring evaluation yet also states that "routine research, testing, and operations conducted at established laboratories, to include contractor-operated laboratories," is eligible for a categorical exclusion from NEPA. Established laboratories performing research and development in support of the acquisition program may not be cognizant of or may disregard the environmental consequences of their design efforts, depending on their definition of "routine research, testing, and operations. Including the provisions of NAS 411 in funding agreements would assure any reviewer that the Program Manager was actively seeking the inclusion of environmental analysis during all research and development related to the acquisition program.

#### **4.3.2.4 NEPA Preparation for Phase II**

Phase I! emphasizes designing as environmentally acceptable a weapon system as possible. Activities focus on analyzing major concepts and on employing the pollution prevention program to identify and integrate mitigating measures, such as new technologies, materials, and processes, into the system design. In phase I, the Program Manager must prepare for new environmental analyses associated with phase II actions, such as system testing and Low Rate Initial Production (LRIP), in addition to continuing pollution prevention and other analyses.

In any case, where an event will affect a fixed facility and may have an identifiable impact on the environment, the Program Manager should assume for planning purposes that the NEPA process is required. The time and resources necessary to complete the NEPA process should be scheduled for completion before the event so that the event can be completed and does not adversely affect upcoming milestone decisions. It is preferable, however, for the actions initiated during phase I to lead to a mitigating measure that could reduce the action's environmental impact to an insignificant level. While no longer specifically required in the form of "Annex E" by DoD 5000.2-R, it is recommended that environmental risk management activities be presented at the milestone decision review for phase I and continuing at each review thereafter.

#### **4.3.2.5 Environmental Risk Management: Phase I Exit Criteria**

The phase I exit criteria derived by the Program Manager should demonstrate an established, cognitive effort to comply with NEPA and implement environmental analysis as a method of managing program risk and controlling life cycle costs. The NEPA process for testing and evaluation and for LRIP activities should be ongoing or be scheduled for completion prior to the decision point. The actions cited in the previous paragraphs establish preventive measures that ensure the environmental consequences of design and manufacturing decisions are being considered, reviewed, and altered in cases where proven, environmentally acceptable alternatives are available. The pollution prevention program provides the opportunity to identify mitigation measures, allowing the acquisition program to use these analytical data to prepare an EA, issue a FNSI, and avoid the additional expense of an EIS (*if the issue analyzed can be mitigated*).

#### **4.3.3 Phase II: Engineering and Manufacturing Development**

During phase II the activities of phase I continue and the scope of the ESH evaluation broadens and fills more "file drawers." Phase II presents additional opportunities to incorporate environmental analysis as a part of system design, as design fixes and upgrades are developed for items identified during the phase I pollution prevention program. *In phase II, the focus of environmental risk is the system configuration*, emphasizing the nuts and bolts of system design, when mitigating measures are implemented and opportunities to minimize environmental risk in maintenance, logistic support (spares, consumable items), operation, and

disposal are planned and incorporated in actions. It is critical that environmental mistakes not be made in system configuration because they will be repeated in spare part procurement, refurbishment and replacement, and so on, over and over again. The nonproductive costs associated with these mistakes are paid at each step, and once again when the system or component is disposed of. Sometimes, the last payment in the weapon system life cycle occurs *after* disposal.

#### **4.3.3.1 Testing and Evaluation**

Testing and evaluation (developmental, initial operational, and live fire) is likely to require the NEPA process because of the possible physical impact to the natural environment caused by the test exercise, construction of special facilities, or other identifiable impacts that could be considered significant. Testing and evaluation primarily affects real property on installations. Because the installation commander is responsible for ensuring that activities occurring on the installation comply with environmental laws, the weapon system testing and evaluation requirements create issues that he/she must address. *It is the Program Manager's responsibility to provide the installation with the resources needed to support the test activity, including the resources needed for environmental analyses.* The NEPA process must be completed prior to the decision to go ahead with the test exercise. The NEPA process can be expensive and time consuming, so planning and resource estimates must include the NEPA process, as early as possible, to avoid delays in the test schedule. Initial estimates and plans should have been included in the TEMP during phase 0, further refined and implemented prior to the end of phase I in preparation for phase II test events.

#### **4.3.3.2 LRIP Manufacturing**

As the system configuration is established, the materials and processes used to manufacture the 'system are selected. The selection of alternative, environmentally acceptable materials and processes (made during phase 0 and phase I) presents the opportunity for the production facility to improve the capital plant and for the program to select new technologies that improve performance and reduce life cycle cost. However, introducing new weapon system technologies will create new environmental issues that must be analyzed, particularly if new facilities are required or if new manufacturing process waste streams are initiated. The NEPA process will need to be considered as the system configuration and production plans are prepared. This must be accomplished prior to initiating LRIP if the impacts of the new technology are considered to be significant.

#### **4.3.3.3 NEPA Preparation for Phase III**

Phase III covers a broad spectrum of activities for which environmental analysis may be required. Environmental analysis related to production may need additional attention as manufacturing capabilities are expanded from LRIP to full-scale production. In addition, environmental analysis may be required for components produced by subvendors that the prime contractor has integrated into

the system and that have not been reviewed in earlier phases. Phase III also covers fielding and deployment, where strategies may raise significant environmental concerns within local communities and for installation commanders. Operational support, which includes maintenance, spare parts, and consumable replacement logistics, should also be addressed during phase III. Phase III environmental analysis may also consider any newly available environmentally acceptable alternatives for various items.

#### **4.3.3.4 Environmental Risk Management: Phase II Exit Criteria**

The phase II exit criteria derived by the Program Manager should demonstrate that environmental analysis is successfully supporting program progress in reducing program costs, maintaining scheduled events, and improving system performance. Environmental risk management in phase II focuses on two areas: specific material, product, and process analysis for the manufacture of the weapon system, and activities that potentially affect the physical environment. These two areas are critical to environmental risk management because nonproductive costs can be avoided by proper design and production planning, and because actions that alter the physical environment generate high public visibility.

#### **4.3.4 Phase III: Production, Fielding/Deployment, and Operational Support**

##### **4.3.4.1 Production**

In the past, manufacturing materials and processes were fully defined in the technical data package (TDP) via inclusion of system specifications, military specifications, military standards, engineering drawings, and other requirements documents. In performance specification TDPs, however, the Program Manager may be unaware of the materials, products, and processes specified for manufacturing the system because contractors will select materials and processes available in their facilities and will not conscientiously improve facility processes without financial impetus. It is increasingly important that NAS 411 or equivalent requirements be included in performance specification contracts during production planning to avoid unknown and unmanageable environmental risks introduced by performance specifications. The environmental risk to performance specifications is the possible inheritance of repairable or replaceable items that cannot be repaired without incurring unplanned environmental control costs or replaced without incurring large disposal costs. The Program Manager should manage these environmental risks through his/her logistic support and disposal planning efforts, to avoid unpleasant surprises at a later date.

##### **4.3.4.2 Fielding/Deployment**

Fielding, like testing and evaluation, is likely to require the NEPA process because of the possible physical impact to the natural environment caused by operational exercises, construction of special facilities, or other identifiable impacts

affecting the local community. Fielding primarily affects real property on installations, but may also affect local economies, wildlife, and cultural concerns. Because it is the installation commander's responsibility to ensure that activities occurring on the installation comply with environmental laws, the weapon system operational support requirements create issues that he/she must address. *It is the Program Manager's responsibility to provide the installation with the resources needed to support fielding, including the resources needed for environmental analyses.* The NEPA process must be completed prior to accepting the final fielding strategy and should be coordinated with other DoD or U.S. user organizations. Again, the NEPA process can be expensive and time consuming, so planning and resource estimates must include the NEPA process to avoid delays in fielding the weapon system.

#### **4.3.4.3 Integrated Logistic Support**

Integrated logistic support (ILS) covers a broad spectrum of activities that generate environmental issues for field activities and maintenance depots. In these activities, any environmentally unacceptable design requirements that remained in the system configuration will be repeated throughout the life of the system--for example, during spare part procurement and during refurbishment in depot maintenance. The costs associated with these requirements therefore increase dramatically over time. The cost of disposal of environmentally unacceptable parts is becoming prohibitive, as is the cost of disposing of consumable items such as chemicals and lubricants. Some ILS requirements demand the procurement of hazardous chemicals, which are costly to procure and very costly to control due to needs for personal protective equipment and inventory control, special handling requirements, management control, and treatment and disposal of wastes. In addition, training to ensure personnel and environmental protection increases the life cycle cost, as does legal and insurance liability.

ILS environmental issues should be identified in the system documentation (spare parts TDPs, Technical Manuals (TMs) and Depot Maintenance Work Requirements (DMWRs)) and resolved. A review of the system documentation will identify every application where environmentally unacceptable materials, products, and processes are used. These issues should be resolved through the weapon system pollution prevention program; this process will require cooperation with the operational support sites. Environmentally acceptable alternatives must meet performance requirements and be capable of shop-level use. Although Army policy does not require a toxicity clearance approved by the Army Surgeon General, such approval is highly recommended.

For items requiring redesign to include an environmentally acceptable alternative material, product, or process, the environmental analysis should be accomplished during a planned product improvement or modification as replacement technology becomes available. Systems should not be upgraded solely to eliminate an environmental problem unless the problem prevents the installation from complying with environmental law or directly affects the readiness posture of the weapon system.

#### **4.3.4.4 Spare Parts and Consumable Items**

Environmentally unacceptable fielded items should be modified and eliminated by attrition except, as was the case with ozone-depleting chemicals, where readiness is directly affected by nonavailability of the product. All weapon systems contain environmentally unacceptable parts and components because there are not proven, commercially available alternatives that satisfy every performance requirement. Trade-offs are inevitable, and trade-offs yielding to environmentally unacceptable criteria must be managed. Spare part and consumable item procurement is an opportunity to re-evaluate the environmental risk imposed by the component characteristics and determine whether a proven alternative has become available. If it has, the program should initiate an engineering change process. Upon completion of the engineering change, future spare part procurements will initiate a flow of environmentally acceptable parts and consumable items through the stock system.

#### **4.3.4.5 NEPA Preparation for Demilitarization and Disposal**

Demilitarization and disposal are highly regulated activities that draw the attention of Federal, State and local enforcement agencies and the local public. The major portion of the Army's environmental budget is being spent to clean up after demilitarized and disposed materiel. It is highly unlikely that there will ever be a "green" weapon system capable of being fully recycled without waste, but it is possible to catalog and track the environmental unacceptable aspects of the weapon system throughout its life-cycle. By periodically reviewing this information, the Program Manager can accurately estimate the cost and manage the demilitarization and disposal activity. In addition, the Program Manager must periodically review changes in environmental law affecting his proposed demilitarization and disposal actions. Careful tracking of new environmental law is necessary to continue projecting the program's liability into the future.

#### **4.3.4.6 Environmental Risk Management: Phase III Exit Criteria**

The phase III exit criteria derived by the Program Manager should demonstrate that environmental analysis has been successfully used to control program costs, maintain scheduled events, and improve system performance. Where environmentally unacceptable materials and processes remain in the weapon system design, they have been catalogued and are being actively tracked to assure that they are resolved as alternatives become available where appropriate. The Program Manager must be able to show that the environmental liability of the system is predictable, when current environmental law is used as a baseline.

#### **4.3.5 Demilitarization and Disposal**

At the end of its useful life, a system must be demilitarized and disposed. During demilitarization and disposal, the PM shall ensure material determined to require demilitarization is controlled and shall

ensure disposal is carried out in a way that minimizes DoD's liability due to environmental, safety, security, and health issues.\*

*Disposal problems occur during every phase of the system life cycle* beginning with concept exploration when items used in research and development must be disposed of. Disposal is costly for activities such as demilitarization, chemical treatment, and emission control, and often for cleanup or remediation of sites. These problems become more costly as the system ages. Also, there are few subjects that gather more interest from the public than waste disposal.

The Program Manager must plan for and budget system disposal early. Disposal problems would be well known if each design engineer made a conscientious study of the regulations governing disposal of the materials and chemicals used in manufacturing, maintaining and operating the weapon system. The cost of disposal of all materials is skyrocketing as disposal sites become less available and the processes required for "clean" disposal respond to increasingly rigid environmental laws and regulations. Even though some materials retain recycling value, materials containing hazards have less recycling value than virgin materials, and usually contractors are paid to haul hazardous materials off-site rather than trying to recycle them.

More importantly, the disposal liability would be well known if each design engineer and the Program Manager could see into the future and predict changes in laws and regulations restricting disposal activities. Environmental analysis for disposal must look at the long-term viability of the disposal solution, because the final payment sometimes comes due 10ng after demilitarization. System disposal efforts are costing the Army extremely large amounts of money, especially for the recovery and remediation of disposal sites where the environmental risk of waste disposal was not accurately predicted. The lesson to be learned is to use environmental analysis during all stages of the weapon system life cycle to minimize the disposal burden and reduce environmental risk (liability). Unfortunately, final disposal, like testing and evaluation and fielding, will likely require the NEPA process and development of an appropriate NEPA document.

#### **4.4 ARMY ACQUISITION NEPA DOCUMENTS**

It is always preferable to avoid the added expense of NEPA documentation if possible. However, sometimes the requirement for NEPA documents will *occur* and will affect some decision point. This subsection discusses who should prepare a NEPA document, how it should be reviewed within the acquisition community, who approves it, and where it should be stored after approval and decision making. This information is supplemental to the requirements of NEPA for expert agency comment, and public participation.

\*DoD 5000.2-R, part 1, section 1.4.6.

#### **4.4.1 Preparing Agencies**

Program Managers should seek matrix support from local environmental and legal offices to prepare NEPA documents. IPTs should prepare NEPA documents which receive approval from the Program Manager including FNSIs that are forwarded for approval by the Milestone Decision Authority (MDA). EISs must be prepared by outside agencies by law.

If the environmental analysis leads to a finding that an EIS is required, the Program Manager should review the issue to determine what actually requires the additional analysis (scoping) and who should prepare the EIS. Initially the Program Manager should consider the local major subordinate command's environmental office for managing the EIS. Alternatively, *For issues related to real property, it is recommended that the Army Corp of Engineers be contacted.* In some cases, they may also administrate the environmental impact analysis and oversee the expert agency comment and public participation process (i.e. staffing) in cooperation with the affected field command. *If the issue is related to the system configuration, materials, or manufacturing processes, the Army Acquisition Pollution Prevention Support Office (AAPPSO) could be contacted.* AAPPSO will provide additional guidance and identify resources for preparing the EIS if needed. The U.S. Army Environmental Center also has a NEPA Support Center to support NEPA compliance. Although the Program Manager may be required to provide monetary resources and technical data, removing the Program Manager, program office staff, and contractors from administering or conducting the analysis eliminates any conflict-of-interest concerns. It is important to remember, though, that delegating the authority to administrate the analysis is not the same as delegating the responsibility for the analysis. A Program Manager's responsibility cannot be delegated.

#### **4.4.2 Review of NEPA Documents**

Depending upon the subject matter of a particular NEPA document, the scope of involvement of the interested public, and the effect the NEPA process may have upon the acquisition program, the Program Manager may wish to obtain an outside review of the document prior to a milestone decision point. AAPPSO can act as the Assistant Secretary of the Army for Research, Development and Acquisition representative to the Overarching IPT for ACAT I programs and the equivalent IPT for ACAT II through IV programs at the Army level. AAPPSO, at the request of the Program Manager, will review NEPA and other environmental analysis documents. In addition, in accordance with AR 200-2, the Office of the Director of Environmental Programs will review NEPA documents upon request. In the case where the document addresses a specific facility or installation, the local Environmental Quality Assurance office should review the document.

#### **4.4.3 Approval of NEPA Documents**

In accordance with AR 200-2, NEPA documents shall be approved at the levels shown in table 1. The Program Manager must evaluate each NEPA document

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requiring signature and approval above his/her own level and determine who the appropriate decision authority is for approval within the chain of command. This action should be accomplished during the internal Army-staffing process.

Table 1. NEPA Document Approval

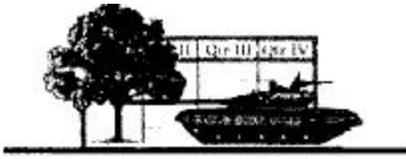
<u>NEPA Document</u>	<u>Approval</u>
Exemption	Program Manager
Categorical Exclusion	Program Manager
Record of Environmental Consideration	Program Manager
Environmental Assessment	Program Manager
Concurrence:	Milestone Decision Authority
Finding of No Significant Impact	Milestone Decision Authority
Environmental Impact Statement	Milestone Decision Authority
Record of Decision	Milestone Decision Authority

#### **4.4.4 DoD NEPAL Documentation Database**

All NEPA documents prepared by the Army must be forwarded to the Defense Technical Information Center (DTIC) and to the U.S. Army Environmental Center (USAEC). DTIC submittals must be accompanied by a standard form 298. The addresses for DTIC and USAEC are:

Defense Technical Information Center  
8725 John J. Kingman Road  
Suite 0944  
Ft. Belvoir, Virginia 22060-6218  
Tele: 703-767-8040/DSN 427-8040  
Fax: 703-767-8032/DSN427-8032

U.S. Army Environmental Center  
Attn: SFIM-AEC-ECN (Reiland)  
Aberdeen Proving Ground -  
Edgewood Area, Maryland 21010-5410  
Tele: 410-671-3206  
Fax: 410-671-1680



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## CHAPTER 5: SUMMARY

The National Environmental Policy Act (NEPA) requires that Federal Program Managers consider the environmental consequences of proposed actions before making decisions to proceed. This law is supported by DoD instructions and Army regulations.

The effect of these laws and regulations on the weapon system acquisition program is to require environmental analysis of all proposed actions (1) to determine whether the action will violate a law, (2) to identify any mitigating measures that will limit the environment impact to an insignificant level, and (3) to determine the best method for proceeding with the action if the environmental impact is significant.

Program Managers must perform environmental analyses. Environmental analysis conducted only for the sake of the environment does not benefit the program, but it does cost resources and time. Therefore, the Program Manager must determine how to use the environmental analysis to benefit the acquisition program and incorporate it in the Acquisition Strategy.

Many program actions potentially have an environmental impact that can be very expensive, both in the near-term sense of controlling acquisition cost and schedule, and in the long-term life cycle cost. To benefit the acquisition program, environmental analyses must answer the questions concerning environmental impact, *and* they must address environmental risk to the acquisition program. Environmental risk is an element of program risk, and it must be managed.

This document recommends using environmental analysis as a risk management tool. In acquisition management, environmental risk management is not an environmental issue; it is the acquisition manager's tool to assess program risk, provide data to support decisionmaking, and when necessary, be used in the NEPA process. Environmental analysis must benefit the acquisition program by providing useful data for review by the program staff and by expert agencies and the public, if necessary.

The NEPA process can be costly, but an environmental impact statement is only required when an action will have a significant environmental impact. Some environmental impacts can and should be mitigated (i.e., limited to an insignificant level) by careful program engineering and management decisions that consider environmental consequences and select the most environmentally acceptable alternative that meets the program's requirements.

If a significant impact cannot be avoided, and an EIS is required, the analysis must be managed to reduce environmental risk. The environmental analysis must

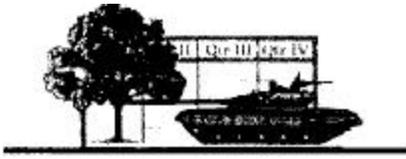
be complete, providing all the data that could affect the decision; and the staff work must be excellent to ensure that all interested parties from expert agencies and the public are informed and given a chance to review and comment on the data.

The bottom line of using environmental analysis as a risk management tool is planning and active management. Environmental analysis should be planned for each program event, and completed prior to the event. Actively incorporating environmental analysis in the program philosophy and organization structure will help to accomplish the goal of minimizing environmental risk.

The following rule of thumb should be used to protect the program from environmental risk:

**Analyze,**  
**Mitigate,** if possible, and when in doubt  
**Publicize**

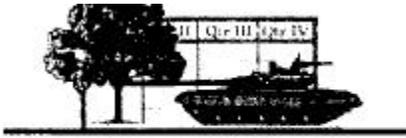
**Be Honest. Do Not Be Silent.**



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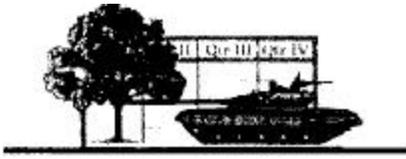
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