Routine Environmental Audit
of
Ames Laboratory
Ames, Iowa

U.S. Department of Energy
Office of Environmental Audit

September 1994

MASTER

PREFACE

Preface

**U.S. Department of Energy
Routine Environmental Audit
Conducted at
Ames Laboratory
Ames, Iowa**

The Secretary of Energy's July 20, 1993, Environment, Safety, and Health Policy establishes daily excellence in the protection of the worker, the public, and the environment as the hallmark and highest priority of all DOE activities. That policy also calls for a proactive program of continuous improvement to move the Department beyond minimal compliance with standards. In furtherance of that policy, the Office of Environment, Safety and Health (EH) has established, as part of the internal oversight responsibilities within DOE, a program within the Office of Environmental Audit (EH-24) to conduct environmental assessments of DOE programs and operating facilities. The ultimate goal of this program is enhancement of environmental protection and minimization of risk to public health and the environment through systematic and periodic evaluations of the Department's environmental programs within line organizations.

Through its environmental evaluation program, EH-24 is committed to helping establish DOE as a model of responsible environmental stewardship. In addition, this program will serve to reinforce the Secretary's goal of building on the current efforts to attain and maintain compliance in cooperation with the regulatory authorities and other affected stakeholders.

This document contains the findings identified during the routine environmental audit of Ames Laboratory, Ames, Iowa, conducted September 12-23, 1994. The audit included a review of all Ames Laboratory operations and facilities supporting DOE-sponsored activities. The audit's objective is to advise the Secretary of Energy, through the Assistant Secretary for Environment, Safety and Health, as to the adequacy of the environmental protection programs established at Ames Laboratory to ensure the protection of the environment, and compliance with Federal, state, and DOE requirements.

September 1994
Washington, DC

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

This report documents the results of the routine environmental audit of Ames Laboratory, in Ames, Iowa. During the audit, the activities conducted by the audit team included reviews of internal documents and reports from previous audits and assessments; interviews with Ames Laboratory, Iowa State University (ISU), U.S. Department of Energy (DOE), and DOE Chicago Operations Office (CH) personnel; interviews with external stakeholders; and inspections and observations of selected facilities and operations. The onsite portion of the audit was conducted September 12-23, 1994, by the DOE Office of Environmental Audit (EH-24), located within the Office of Environment, Safety and Health (EH).

DOE 5482.1B, "Environment, Safety, and Health Appraisal Program," establishes the mission of EH-24 to provide comprehensive, independent oversight of Department-wide environmental programs on behalf of the Secretary of Energy. The ultimate goal of EH-24 is enhancement of environmental protection and minimization of risk to public health and the environment. EH-24 accomplishes its mission by conducting systematic and periodic evaluations of the Department's environmental program within line organizations, and by using supplemental activities that strengthen self-assessment and oversight functions within Program Office, Operations Office, and contractor organizations.

The audit evaluated the status of programs to ensure compliance with Federal, state, and local environmental laws and regulations; compliance with DOE Orders, directives, and guidance; and conformance with accepted industry practices and standards of performance. The audit also evaluated the status and adequacy of the management systems developed to address environmental requirements.

The audit's functional scope was comprehensive and included all areas of environmental management and technical programmatic evaluation in the areas of environmental monitoring, environmental quality assurance, waste management, and toxic and chemical materials management. Although the audit was designed to be thorough and to consider a representative sample of Ames Laboratory's environmental activities and programs, it was not intended to be exhaustive in scope. Instead, it was meant to provide DOE organizations, including the Secretary, with an indication of the status of Laboratory management's effectiveness in achieving its mission in an environmentally responsible manner.

Since the 1992 Tiger Team Assessment, Ames Laboratory has been addressing specific environmental issues and improving environmental management processes and capabilities. Improvements have been made in incorporating environmental consideration into day-to-day management. Management practices for chemicals and waste materials have improved. Additionally, the Laboratory has developed a systematic approach to evaluate environment, safety, and health (ES&H) risks associated with new or changing projects. Improvement has been aided by an overall increase in attention to ES&H issues by Laboratory management and staff, increased staff expertise in environmental issues, and quality management initiatives resulting from the creation of the Ames Laboratory Office of Assurance and Assessment (Ames-OAA).

Overall progress in environmental program development remains slow. Corrective actions associated with a number of Tiger Team Assessment environmental findings have slipped.

Attention and emphasis from Laboratory management, CH, and the DOE Office of Energy Research (ER) have not been sufficient to bring timely closeout of all corrective actions, including those related to the environmental training program; internal self-assessment and oversight; the environmental monitoring and environmental quality assurance programs; waste management; and toxic and chemical materials management.

To ensure active involvement with the external stakeholders regarding inactive waste site issues, Ames Laboratory management, including direct personal involvement by the Director, has devoted significant effort toward establishing proactive mechanisms to communicate and receive input from the public. However, the Laboratory is currently in a reactive state of management with respect to the environmental aspects of its ongoing operations. The results of the 1992 Tiger Team Assessment, CH appraisals, and a recent U.S. Environmental Protection Agency (EPA) inspection continue to set the priorities of the Laboratory. Many necessary environmental programs and work procedures have not been fully developed. Additionally, responsibilities for key Laboratory-wide environmental positions have not been defined, and existing systems do not consistently and comprehensively monitor and report environmental performance data through line management. Currently, the flow of information to senior management is exception-based, with little routine status reporting on environmental issues. The challenge in advancing environmental performance at Ames Laboratory is the completion of environmental programs and systems. This will likely take several years, based upon the current rate of progress and the limited resources available.

SECTION 1.0

INTRODUCTION

1.0

INTRODUCTION

This report documents the results of the routine environmental audit of Ames Laboratory, located on the campus of Iowa State University (ISU) in Ames, Iowa. The onsite portion of the audit was conducted September 12-23, 1994, by the DOE Office of Environmental Audit (EH-24).

DOE 5482.1B, "Environment, Safety, and Health Appraisal Program," establishes the mission of EH-24, which is to provide comprehensive, independent oversight of DOE complex-wide environmental programs on behalf of the Secretary of Energy. The ultimate goal of EH-24 is to enhance environmental protection and minimize risk to public health and the environment. EH-24 accomplishes its mission by conducting systematic and periodic evaluations of the Department's environmental programs within line organizations, and by using supplemental activities to strengthen self-assessment and oversight functions within Program Office, Operations Office, and contractor organizations.

These evaluations function as a vehicle to apprise the Secretary and Program Managers of the current status and vulnerabilities of Departmental environmental activities and environmental management systems. Several types of evaluations are conducted, including:

- comprehensive baseline environmental audits;
- routine environmental audits;
- environmental management assessments; and
- special issue reviews.

The purpose, scope, and approach of the routine environmental audit of Ames Laboratory are described below.

1.1

PURPOSE

The purpose of the routine environmental audit of Ames Laboratory was to provide the Secretary of Energy, through the Assistant Secretary for Environment, Safety and Health (EH-1), with concise information pertaining to the following areas:

- the adequacy of environmental management programs and systems;
- DOE vulnerabilities and liabilities associated with environmental management practices;
- compliance with environmental laws and regulations, DOE Orders, and DOE environmental policies (as identified in Appendix F) that were within the audit scope;
- adherence to best management (and accepted industry) practices pertaining to environmental management programs;

- progress and effectiveness of environmental corrective actions resulting from the 1992 Tiger Team Assessment; and
- noteworthy environmental management practices.

The information gathered during this audit and embodied in this report will assist DOE in determining patterns and trends in environmental deficiencies and strengths. The director of the DOE Office of Energy Research (ER) and the DOE Chicago Operations Office (CH) are expected to use this information to develop corrective actions; to make appropriate modifications to specific programs to prevent recurrence; and to implement lessons-learned programs to ensure broad applications to other operations, programs, and facilities.

1.2 SCOPE

The scope of the audit included environmental management disciplines described in Protocols for Conducting Environmental Management Assessments of DOE Organizations (DOE/EH-0326), and technical programmatic evaluations in the areas of environmental monitoring, environmental quality assurance, waste management, and toxic and chemical materials management. The management disciplines were organizational structure (OS); environmental commitment (EC); formality of environmental programs (FP); internal and external communication (IC); staff resources, training, and development (SR); program evaluation, reporting, and corrective action (PE); and environmental planning and risk management programs (RM).

1.3 APPROACH

The routine environmental audit was conducted in accordance with the DOE Environmental Audit Program Guidance (January 1994 Draft Final), Protocols for Conducting Environmental Management Assessments of DOE Organizations (DOE/EH-0326), and Performance Objectives and Criteria for Conducting DOE Environmental Audits (DOE/EH-0358). Accepted assessment techniques were followed.

The audit was conducted by a team of professionals managed by a DOE Headquarters Team Leader and Deputy Team leader from EH-24, and was staffed by technical and administrative support contractor personnel. The names, areas of responsibility, affiliations, and biographical sketches of the team members are provided in Appendix A. The audit included three phases: planning, conducting onsite activities, and reporting.

As part of the planning phase, a memorandum was sent to Ames Laboratory announcing the audit and requesting information about Ames Laboratory's management systems and selected environmental programs. A pre-audit site visit was conducted June 7, 1994. The site's response to the information request, combined with information gathered during the pre-audit site visit, formed the basis for the "Plan for the DOE Routine Environmental Audit of the Ames Laboratory" (see Appendix B); this included a preliminary schedule for onsite activities. The audit team modified the preliminary schedule during the onsite activities, as more information was obtained and additional areas of interest were identified.

Onsite audit activities included interviews with Ames Laboratory, ER, and CH personnel, and with the representatives of the Iowa Department of Natural Resources and the Ames Laboratory Community Advisory Group; document review (including previous audit and

self-assessment reports); and observations of actual environmental management activities or operations. The audit team conducted daily debriefs that were attended by Ames Laboratory, ER, and CH personnel. The audit team used information from site observations, document reviews, and interviews to develop findings, which are discussed in Sections 2.0 and 3.0 of this report. Lists of site documents reviewed and interviews conducted are provided in Appendices D and E, respectively.

Deficiencies identified by the audit team were categorized as findings. Findings are conditions that, in the judgment of the audit team, may not satisfy one or more of the following: environmental regulations; DOE Orders; Consent Agreements with regulatory agencies; environmental permit conditions; DOE or contractor environmental policies and procedures; regulatory agency guidance; accepted industry practices or technical standards; DOE guidance; and/or best management practices. Findings are detailed in Section 3.0 and are organized by audit disciplines, as identified in Section 1.2 of this report.

1.4 BACKGROUND AND SITE DESCRIPTION

The mission of Ames Laboratory is to conduct basic research in materials, mathematical and chemical sciences, and related research in materials reliability and nondestructive evaluation. The Laboratory maintains capabilities for preparing high-purity metals, alloys, compounds, and single crystals.

Ames Laboratory is located on the campus of ISU, in the City of Ames, Iowa in Story County (see Figure 1-1). It occupies 12 DOE-owned buildings, which provide approximately 356,000 square feet of floor space; this includes the Technical and Administrative Support Facility (TASF), which is expected to be ready for occupancy in October 1994. Government-owned buildings are located on approximately 10 acres of land owned by ISU and leased to the Federal government on a 99-year lease. In addition to these buildings, Ames Laboratory leases approximately 26,000 square feet of building space from ISU.

Ames Laboratory was founded in the early days of the nation's atomic energy program because of ISU's expertise in separating and purifying uranium. During and immediately following World War II, ISU was under contract to the Manhattan District of the U.S. Army Corps of Engineers to produce pure uranium and thorium. Uranium production continued at Ames during the war years, so that by the end of 1945, more than 1,000 tons of pure uranium had been produced and delivered. In 1947, Ames Laboratory was established as an Atomic Energy Commission-funded laboratory. In 1961, the Laboratory research reactor was constructed approximately 1 mile northwest of the ISU campus, on land leased from the State of Iowa. This location became known as the Applied Sciences Complex. The reactor was operated from 1966 to 1977. In 1981, the reactor was decontaminated and decommissioned.

In 1987, DOE transferred ownership of the buildings at the Applied Science Complex site to ISU. The buildings included were the Applied Science Center (ASC), the ASC Annex, the Radioactive Waste Disposal Building, and the Test Cell. Ames Laboratory retains beneficial use of the Radioactive Waste Disposal Building through the year 2060. This building houses the Alpha Operations Facility, a Laboratory facility in which small amounts of radionuclides will be used.

Figure 1-1. Ames Laboratory Site Map.

The ISU campus is surrounded by the City of Ames, Iowa, which has a population of 48,000. An estimated 52,000 people live within a 5-mile radius of the campus. The student population of ISU is about 25,000. The region is gently rolling hills with a slight southeastern pitch. Surface material is glacial drift with a depth of about 65 feet. This material is underlaid predominantly by limestone bedrock. In the campus area, depth to groundwater is about 10 feet. At the ASC site, this depth is about 15 feet. Surface runoff from both areas goes to Squaw Creek, a tributary of the South Skunk River.

1.5 ENVIRONMENTAL PROGRAMS AND ORGANIZATIONS

Ames Laboratory is a single-program laboratory, operated by ISU under contract to DOE. The DOE Office of Energy Research (ER) has landlord responsibilities for Ames Laboratory; within ER, the Office of Basic Energy Sciences (ER-10) has program responsibility. Although considered a single-program laboratory, Ames Laboratory also supports, through its research efforts, a number of other DOE programs, including Nuclear Energy (NE), Defense Programs (DP), Fossil Energy (FE), Energy Efficiency (EE), and Environmental Management (EM).

The Ames Laboratory contract is administered by CH. Within CH, the Director of the Ames Laboratory Management Office (ALMO) serves as the contracting officer. The ALMO Director is supported by an environment, safety, and health (ES&H) specialist, who is responsible for providing day-to-day oversight of Ames Laboratory. Periodic ES&H appraisals of Ames Laboratory are conducted by the CH Environment, Safety and Health Division.

ISU has delegated direction and oversight of Ames Laboratory to the Institute for Physical Research and Technology (IPRT). IPRT reviews proposed work to ensure that it is appropriate for Ames Laboratory and is consistent with ISU goals and objectives. IPRT is responsible for monitoring the implementation of Tiger Team Assessment corrective actions and the development of Ames Laboratory policies and procedures.

Although Ames Laboratory is overseen by IPRT, the director of the Laboratory is fully responsible and accountable for the Laboratory's performance. Ames Laboratory is composed of four divisions: Science and Technology, Operations, Administrative Services, and Planning and Technology (see Figure 1-2). The Science and Technology Division is composed of 11 separate research programs that carry out the research activities of Ames Laboratory. Within the Operations Division, the Environment, Safety and Health Group (Ames-ES&HG) is responsible for recommending policy, providing consultation and resources to line organizations, and auditing ES&H activities.

In addition to these divisions, Ames Laboratory has three independent offices which report to the director. These offices are the Office of Assurance and Assessment (Ames-OAA), the Internal Auditor's Office, and the Education Coordinator's Office. Ames-OAA provides oversight for the implementation of Ames Laboratory requirements, inspects for nonconformance, and tracks corrective actions. Ames-OAA also provides coordination of the Laboratory's training program and directs the implementation and maintenance of continuous improvement policies and requirements.

AMES LABORATORY

*Member of Executive Council

Figure 1-2. Ames Laboratory Organization Chart

SECTION 2.0

SUMMARY OF ROUTINE ENVIRONMENTAL AUDIT RESULTS

2.0

SUMMARY OF ROUTINE ENVIRONMENTAL AUDIT RESULTS

This section of the report summarizes the results and conclusions of the routine environmental audit of Ames Laboratory, conducted by the DOE Office of Environmental Audit (EH-24) September 12-23, 1994.

Since the 1992 Tiger Team Assessment, Ames Laboratory has been addressing specific environmental issues and improving environmental (ES&H) management processes and capabilities. Improvements have been made in incorporating environmental consideration into day-to-day management. Management practices for chemicals and waste materials have improved. Additionally, the Laboratory has developed a systematic approach to evaluate ES&H risks associated with new or changing projects. Improvement has been aided by an overall increase in attention to ES&H issues by Laboratory management and staff, increased staff expertise in environmental issues, and quality management initiatives resulting from the creation of the Ames Laboratory Office of Assurance and Assessment (Ames-OAA).

Overall progress in environmental program development remains slow. Corrective actions associated with a number of Tiger Team Assessment environmental findings have slipped. Attention and emphasis from Laboratory management, CH, and the DOE Office of Energy Research (ER) have not been sufficient to bring timely closeout of all corrective actions, including those related to the environmental training program; internal self-assessment and oversight; the environmental monitoring and environmental quality assurance programs; waste management; and toxic and chemical materials management.

To ensure active involvement with the external stakeholders on inactive waste site issues, Ames Laboratory management, including direct personal involvement by the Director, has devoted significant effort toward establishing proactive mechanisms to communicate and receive input from the public. However, the Laboratory is currently in a reactive state of management with respect to the environmental aspects of its ongoing operations. The results of the 1992 Tiger Team Assessment, CH appraisals, and a recent EPA inspection continue to set the priorities of the Laboratory. Many necessary environmental programs and work procedures have not been fully developed. Additionally, responsibilities for key Laboratory-wide environmental positions have not been defined, and existing systems do not consistently and comprehensively monitor and report environmental performance data through line management. Currently, the flow of information to senior management is exception-based, with little routine status reporting on environmental issues. The challenge in advancing environmental performance at Ames Laboratory is the completion of environmental programs and systems. This will likely take several years, based upon the current rate of progress and the limited resources available.

2.1

STRENGTHS

During the audit, the audit team identified a number of management practices which represent strengths of the environmental program at Ames Laboratory:

External Communication. The Laboratory has a very effective external communication effort; this has helped during the last year to cultivate positive relationships with key stakeholder groups regarding remediation at the Chemical Disposal Site and characterization of Laboratory-related wastes at the city's former sewage treatment plant.

During the last year, the Laboratory established the Community Advisory Group (CAG) to provide a formal forum for addressing citizens' concerns regarding the Laboratory. The group has met five times with Ames Laboratory and IPRT senior management to address specific concerns. To complement this effort, the Laboratory has held a series of general public meetings and workshops. Also, the Office of Public Affairs and Information and the Laboratory Director have sent a series of "Dear Neighbor" letters to concerned citizens and other stakeholder groups. The letters have dealt with a variety of issues and have been helpful in keeping the public apprised of recent events. Overall, the external communication efforts by Laboratory senior management and the Office of Public Affairs and Information have been very effective.

ES&H Risk Management. Ames Laboratory has established systems to ensure that environmental issues are addressed during the early stages of project development. The Ames Laboratory Proposal Submission Policy requires researchers proposing new Laboratory projects to complete the Preliminary Proposal Form which must be reviewed for potential environmental impacts by both the Ames-ES&HG Manager and the NEPA Compliance Officer prior to proposal approval. The Readiness Review Procedure is another system established by the Laboratory to identify environmental issues in the early stages of project development. The procedure requires the review of all new projects, or scale-ups of existing projects, by a lead specialist from Ames-ES&HG and a facilitator working with the project leader to ensure that all environmental risks are identified and mitigated prior to project start-up.

Hazardous Waste Management Training Program. Ames Laboratory has recently developed a strong training course for hazardous waste generators. The course covers the fundamental information that generators need to know (e.g., regulatory requirements and Laboratory procedures), and clearly describes the implications to the Laboratory if generators do not handle their wastes appropriately. One of the most valuable aspects of the course is its emphasis on practical, Laboratory-specific examples of things to do and things to avoid. The instructor has held tailored sessions for various generator groups within the Laboratory (e.g., generators from the facilities shops, generators from the programs that handle radioactive materials) that focus on the specific waste management issues faced by these groups. There is also a quiz at the end of each session, designed to identify potential waste minimization opportunities and assess the participants' comprehension of the material.

2.2 FINDING DESCRIPTION SUMMARY

The following paragraphs summarize the findings in the management systems areas and technical disciplines which were identified during the Ames Laboratory routine environmental audit. A list of findings is provided in Table 2-1.

Organizational Structure (OS). Overall, the Laboratory structure appears appropriate to manage its environmental responsibilities. The Laboratory's Environment, Safety and Health Group (Ames-ES&HG) provides technical environmental support to the Laboratory. Responsibility for the implementation of programs rests with line management. The responsibility for Laboratory-wide policy development and oversight of environmental programs lays with the Office of Assurance and Assessment (Ames-OAA). However, the Laboratory has not adequately defined the environmental roles and responsibilities of

TABLE 2-1

ROUTINE ENVIRONMENTAL AUDIT TEAM FINDINGS

Finding Number	Title of Finding	Page No.
Organizational Structure (OS)		
OS-1	Definition of Environmental Management Roles and Responsibilities	3-5
Environmental Commitment (EC)		
	No findings identified	
Formality of Environmental Programs (FP)		
FP-1	Routine Inspections	3-15
Internal and External Communication (IC)		
IC-1	Routine Reporting of Environmental Performance Data	3-18
IC-2	Communication Between ISU-EH&S and Ames-ES&HG	3-20
Staff Resources, Training, and Development (SR)		
SR-1	Staffing and Staff Utilization	3-25
Program Evaluation, Reporting, and Corrective Action (PE)		
PE-1	Corrective Action System	3-28
PE-2	Environmental Performance Review	3-31
Environmental Planning and Risk Management (RM)		
	No findings identified	
Toxic and Chemical Materials (TCM)		
TCM-1	Emergency Planning and Reporting	3-37
Waste Management Program (WM)		
WM-1	Radioactive and Mixed Waste Management	3-44
WM-2	Hazardous Waste Management Program	4-46
Environmental Monitoring and Quality Assurance Programs (EQ)		
EQ-1	Environmental Monitoring Plan for Ames Laboratory	3-53
EQ-2	Environmental Monitoring Quality Assurance Program	3-55

certain key staff and managers. Accurate and detailed position descriptions for some of these staff do not exist. Because of this, it is difficult to hold the personnel in these positions accountable for environmental performance in the yearly performance review process. The overview of this discipline is found in Section 3.1.1.

Environmental Commitment (EC). Ames Laboratory has implemented several programs that support environmental performance and help to communicate a message of environmental commitment throughout the organization. Specific activities include the establishment of Ames-OAA, the Readiness Review Procedure, and the efforts to involve the community in decisions concerning ongoing remediation activities. Weaknesses in some existing environmental programs and the limited visible focus on closing out corrective action plans, however, have the potential to undermine the improvements that have been achieved. Failure to correct existing weaknesses in a timely manner may result in an impression that Laboratory management is not fully committed to the organizational goal of environmental excellence. The overview of this discipline is found in Section 3.2.1.

Formality of Environmental Programs (FP). Ames Laboratory has made a great deal of progress toward formalizing environmental protection activities. Mechanisms for regulatory tracking appear adequate. The level of formality of environmental procedures is not consistent across the Laboratory; however, Ames-OAA has issued procedures and provided guidance for formalizing documents to implement Laboratory programs, and progress is evident. There are a number of routine inspection processes at the Laboratory. Those with the specific purpose of evaluating waste management activities look at environmental issues; others focus on safety and security. Ames-ES&HG has implemented an internal records management system, which is being enhanced according to the Ames-OAA program. A system is in place to ensure that internal and external environmental responses and reports are submitted on time. There was one finding in this portion of the audit; related to deficiencies in the routine environmental inspection program. The overview of this discipline is found in Section 3.3.1.

Internal and External Communication (IC). Internal communication of environmental issues at the Laboratory is largely informal. Some routine environmental performance data are generated at the program and group level, but these data are not consistently and routinely reported to line management. On the other hand, the Laboratory has a very strong program in external communication, which has helped to address public concerns regarding remediation and waste characterization efforts at the Laboratory. One concern regarding external communication pertains to the relationship between Ames-ES&HG and the ISU Environmental Health and Safety (ISU-EH&S) group. The absence of a close working relationship between these two groups, which have similar and sometimes overlapping responsibilities, results in lost opportunities for mutual gain. The overview of this discipline is found in Section 3.4.1.

Staff Resources, Training, and Development (SR). Environmental staff resources at Ames Laboratory are not sufficient to develop and implement environmental protection programs to the degree expected by DOE. The open 1992 Tiger Team Assessment corrective actions related to major environmental programs (e.g., hazardous and mixed waste disposal, toxic and chemical material management, ALARA [as low as reasonably achievable] program, air emissions program) clearly point to a need for additional staff to complete these corrective actions. The Ames Laboratory training program, given its well-planned basis and the arrival of a new Training Coordinator, should adequately

address the Tiger Team Assessment findings related to environmental training within the next year. There was one finding identified in this portion of the audit; related to Ames-ES&HG's lack of environmental staff and inefficient utilization of existing staff. The overview of this discipline is found in Section 3.5.1.

Program Evaluation, Reporting, and Corrective Action (PE). The assessment program that Ames Laboratory is developing in response to 1992 Tiger Team Assessment findings will establish a foundation for assessing and improving the Laboratory's environmental performance. However, there is still quite a bit of work to be done, not only at Ames-OAA but across the Laboratory. Additionally, the corrective action plan system has not been effective in closing out some key Tiger Team Assessment environmental findings. Improved control of the system is necessary to prioritize action items, verify closed items, and ensure the timely completion of the action plan. There were two findings identified in this portion of the audit; one related to the corrective action system for the Tiger Team Assessment findings and the other is related to the lack of environmental oversight performed by Ames-ES&HG. The overview of this discipline is found in Section 3.6.1.

Environmental Planning and Risk Management (RM). Ames Laboratory has integrated environmental considerations into many of its day-to-day decision-making activities and has established detailed plans for future environmental activities. Funding for the implementation of these plans is constrained, in part because the DOE Office of Energy Research (ER) does not directly fund the environment, safety, and health (ES&H) program and environmental activities have had to compete with other indirect activities for available funds. The Laboratory has also implemented the Readiness Review Procedure, which integrates the evaluation of environmental risks into the start-up and expansion of activities at the Laboratory. The overview of this discipline is found in Section 3.7.1.

Toxic and Chemical Materials Management (TCM). Overall TCM management practices have improved at Ames Laboratory since the 1992 Tiger Team Assessment. The assessment of toxic and chemical materials management, however, identified a lack of comprehensive systems to ensure compliance with requirements for emergency planning and reporting. There was one finding in this portion of the audit; related to the limitations of the chemical inventory and review systems, as well as deficiencies in relevant documents. The overview of this discipline is found in Section 3.8.1.

Waste Management (WM). The new Waste Management Program Manual and training initiatives provide a solid foundation for the Laboratory's waste management performance. Some aspects of the program are not yet fully developed, particularly in the areas of radioactive and mixed waste management and waste minimization. Reinforcement of these efforts, through development of processes to oversee, measure, and report performance at all levels of the Laboratory, will also enhance the effectiveness of the waste management program. There were two findings identified in the waste management portion of the audit; related to radioactive and mixed waste management and hazardous waste management. The overview of this discipline is found in Section 3.9.1.

Environmental Monitoring and Quality Assurance (EQ). Ames Laboratory has not made significant progress toward completing the Tiger Team Assessment corrective actions related to the integration of quality assurance into the environmental monitoring program. The Laboratory does not appear to have committed the necessary resources to develop adequate environmental monitoring documents essential to providing defensible

environmental monitoring data. There were two findings identified in this portion of the audit; one related to deficiencies in the EMP, and the other is related to the lack of an EQAP. The overview of this discipline is found in Section 3.10.1.

SECTION 3.0

ROUTINE ENVIRONMENTAL AUDIT OVERVIEWS AND FINDINGS

The audit findings in the following pages are not necessarily presented in order of importance. Rather, they are grouped by area of investigation, as listed in the Protocols for Conducting Environmental Management Assessments of DOE Organizations (DOE/EH-0326). This set of protocols is one of the primary tools used by the Office of Environmental Audit (EH-24) to conduct this type of audit. In addition to the protocols, the audit team consulted the DOE Environmental Audit Program Guidance (January 1994 Draft Final) and Performance Objectives and Criteria for Conducting DOE Environmental Audits (DOE/EH-0358).

Findings identified during the 1992 Tiger Team Assessment that have not been closed are not specifically readdressed in this report; however, some Tiger Team Assessment findings with overdue corrective actions were evaluated. Although the scope of this audit was comprehensive, the observations developed as supporting evidence for findings were based on sampling a limited selection of technical environmental disciplines.

Each area of investigation is introduced by an overview that describes: (1) the approach taken by the management or technical specialist in conducting the audit of that area; (2) Ames Laboratory programs and activities related to the area of investigation; (3) characterization of the strengths and weaknesses of Ames Laboratory activities; and (4) a brief summary of the auditor's findings. Each finding is organized into three sections: the performance objectives, the finding statement, and a discussion of the details of the finding. The performance objective specifies the particular practices or standards against which the finding is evaluated. In many cases, where the phrase "best management practice" appears in the performance objective, there are no specific regulatory or DOE references cited. Where this occurs, the best management practice is often based on the protocols described above or accepted industry practices. The finding statement concisely describes the issue that requires resolution. The discussion section sets out in detail the facts and observations that support the finding in the technical disciplines (i.e., environmental monitoring, environmental quality assurance, waste management, and toxic and chemical materials management).

Within each finding or overview, references to findings, interviews, and documents are made parenthetically; an example of this is, "(see Finding OS-1)," in which "OS" stands for "Organizational Structure," and "1" is the finding number. Abbreviations include the following:

OS	Organizational Structure
EC	Environmental Commitment
FP	Formality of Environmental Programs
IC	Internal and External Communication
SR	Staff Resources, Training, and Development
PE	Program Evaluation, Reporting, and Corrective Action
RM	Environmental Planning and Risk Management
TCM	Toxic and Chemical Materials
WM	Waste Management
EQ	Environmental Monitoring and Quality Assurance

Several specialists on the audit team covered more than one area listed above. In those cases, interviews and document reviews were often completed with multiple areas of responsibility in mind. To reduce duplication in referencing interviews and documents, they are identified as follows. An example of a referenced interview is "(I-A-1)," in which "I" signifies an interview, "A" denotes an individual team member, and "1" indicates the sequential interview number. Documents listed in this audit are designated by the letter "D" for document, followed by the letter designating each specialist (listed below), and a sequential number (e.g., D-A-1). Lists of documents reviewed and interviews conducted are presented in Appendices D and E, respectively.

<u>Designator</u> <u>Letter</u>	<u>Team</u> <u>Member</u>
A	Joseph C.P. Selle
B	Todd A. Rhodes
C	Joanne P. Fichera
D	Kathryn J. Nobrega
E	Lisa A. Baci
F	Christopher B. Martel
G	Leroy H. Banicki
H	Raeann Reid

3.1 ORGANIZATIONAL STRUCTURE

3.1.1 Overview

The purpose of the organizational structure portion of the routine environmental audit was to evaluate the effectiveness of the overall structure of Ames Laboratory with respect to: environmental programs and initiatives; whether environmental roles and responsibilities are consistently understood, well defined, and clearly communicated; whether position descriptions and annual performance appraisals support a high level of environmental performance and accountability; and whether a group independent of line management is responsible for policy, standards, and oversight functions. The regulations, requirements, and guidelines used in this audit are provided in Appendix F.

The general approach to this portion of the audit included a review of background documents and onsite interviews with various Laboratory staff whose duties affect overall environmental performance. Documents reviewed included position descriptions, organizational charts, organizational unit descriptions, and plans or manuals that describe various roles and responsibilities with respect to environmental programs or activities. The scope of interviews included specialists within the Ames Laboratory Environment, Safety and Health Group (Ames-ES&HG), line management within the Science and Technology Division, senior Laboratory management, key managers within the Operations Division, staff and management at the Institute of Physical Research and Technology (IPRT), management within the ISU Environmental, Health, and Safety (ISU-EH&S) group, and oversight staff at CH and ER.

ISU is under contract to DOE to operate Ames Laboratory. The Laboratory is located on ISU property, but responsibility and accountability for environmental performance has been delegated by ISU to the Director of the Laboratory. This management structure results in the existence of two environment, safety, and health (ES&H) groups on the ISU campus: ISU-EH&S and Ames-ES&HG. The ISU group is primarily responsible for environmental performance in ISU laboratory space, while the Ames Laboratory group has responsibility for DOE Laboratory space. Responsibility is shared for laboratories in which both DOE- and ISU-funded research takes place. The ISU Ames Laboratory Oversight Committee maintains programmatic oversight of Ames Laboratory and relies on IPRT for oversight on a range of issues, including ES&H matters. There is one environmental specialist position at IPRT.

Within Ames Laboratory, Ames-ES&HG is located in the Operations Division. The group provides support to the rest of the Laboratory on ES&H matters, including hazardous waste management, chemical storage, health physics, emergency response, environmental monitoring, procedures development, and others. Safety Coordinators, Safety Representatives, and Hazardous Waste Coordinators, located throughout the Laboratory, execute many environmental functions and provide the link between line management's and Ames-ES&HG. Many interviews demonstrated that responsibility for environmental program implementation rests appropriately with line management.

The Laboratory's Office of Assurance and Assessment (Ames-OAA), which reports directly to the Laboratory Director, is responsible for providing independent oversight of environmental programs and currently generates high-level policy and guidance on

environmental matters. It is independent from line management. Research programs and support service groups can issue their own specific procedures.

Most personnel whose actions affect environmental performance, including staff within Ames-ES&HG, Purchasing and Property Services, Facilities Services, and Engineering Services, have a general understanding of their environmental duties and responsibilities. Environmental duties for the individuals in these groups are supported in most cases by procedures in various levels of detail.

Environmental duties and responsibilities are less defined for and understood by line and support organizations. In particular, position descriptions outlining Laboratory-wide responsibilities for Hazardous Waste Coordinators, Safety Coordinators, and Safety Representatives do not exist. These positions are interpreted somewhat differently across the Laboratory. Also, position descriptions for line managers and the Division Director within Science and Technology do not define specific environmental responsibilities. As a result, Program Managers define their environmental responsibilities and duties inconsistently across the Division, and it becomes more difficult to hold these managers accountable for their environmental performance during annual performance reviews. Interviews in the Division indicated that managers are held accountable for environmental performance in a very broad and unspecific manner, rather than being held to a series of measurable performance indicators. Other means of achieving environmental goals include creatively encouraging desired behavior and building a team problem-solving atmosphere within the workplace.

The Ames-ES&HG Manager is located high enough in the overall organization to gain upper management attention to important environmental matters. In fact, there is an effective and close working relationship between Ames-ES&HG and the Operations Division Director. There is a Laboratory-wide policy granting any Laboratory employee stop-work authority in the event of imminent danger or a threat to the environment.

Overall, the Laboratory structure appears appropriate to manage its environmental responsibilities. Ames-ES&HG provides support on environmental issues throughout the Laboratory. Ames-OAA is responsible for providing independent oversight and is appropriately separate from line management. It should be noted that Ames-OAA's independent oversight program has not yet been implemented. There is a general recognition throughout the Laboratory that responsibility for environmental performance rests primarily within the line organization. More work needs to be done in defining and clarifying roles and responsibilities, however, to further support line management accountability for environmental performance.

There was one finding in the organizational structure portion of the audit; related to the definition of Laboratory-wide roles and responsibilities for a range of positions which affect overall environmental performance at the Laboratory.

3.1.2 Finding

OS-1: Definition of Environmental Management Roles and Responsibilities

Performance Objective: Best management practices suggest that environmental roles and responsibilities should be formal, well-defined, clearly communicated, and understood by all personnel whose activities may impact environmental performance.

Finding: Roles and responsibilities for some environmental management activities at Ames Laboratory are not well defined, clearly communicated, and consistently understood across the facility.

Discussion: Since the 1992 Tiger Team Assessment, Ames Laboratory has made a good deal of progress on defining roles and responsibilities for personnel whose duties affect Laboratory environmental performance. The Safety Analysis and Readiness Review processes formally incorporate environmental review, as does the Laboratory procurement process. Roles and responsibilities of line management and the Laboratory's Environment, Safety and Health Group (Ames-ES&HG) staff for these functions are generally understood throughout the site (I-A-2, 7, 15, and 17). There has also been some progress in defining Laboratory-wide roles and responsibilities in the Standard Operations Document, the Draft ES&H Program Manual, the Waste Management Program Manual (WMPM), and the Environmental Protection Implementation Plan.

Nevertheless, more specific definition of key roles and responsibilities is needed, especially for Laboratory-wide functions. Specific definition of roles and responsibilities in position descriptions is important because it forms the foundation for holding personnel accountable for environmental performance through an annual appraisal process. There is a particular need for additional, consistent definition of environmental duties for staff and management within the Laboratory's Science and Technology Division.

The following examples illustrate inadequately defined roles and responsibilities and describe the difficulty in holding personnel accountable for environmental performance in yearly appraisals.

- Not all Hazardous Waste Coordinators have position descriptions, and there is no standard position description indicating the Laboratory-wide responsibilities for this position (I-A-7, 8, 14, and 16; I-E-2 and I-E-14). Also, the duties of Hazardous Waste Coordinators are interpreted somewhat differently by the sample of coordinators interviewed during the audit (I-E-5, 7, 8, 9, and 13). In addition, there are no current standard position descriptions for the Safety Coordinator and Safety Representative positions (D-A-9; I-A-7, I-A-8, and I-A-16); both positions have significant environmental responsibilities. There are only out-of-date, draft documents which discuss these positions (D-A-9; I-A-7). Duties of the Safety Coordinators are interpreted differently by various program directors in the Laboratory's Science and Technology Division (I-A-8, 11, 15, and 16).

Standard position descriptions would not be appropriate for each of these positions, given the diverse wastes and processes throughout the Laboratory. Definitions of minimum duties, which can then be tailored to

individual programs and groups, would help to make hazardous waste management and environmental practices more consistent, however; this would aid in the implementation of environmental programs and procedures. Further, a position description would provide the basis for holding the waste coordinators accountable for their environmental performance in an annual review process.

- Ames Laboratory's WMPM does not provide a thorough description of various roles and responsibilities for waste management across the Laboratory. The manual does describe broad duties, but lacks sufficient detail. For example, the Safety Coordinator role is discussed only with respect to training; there is no mention of the Hazardous Waste Coordinator position (D-A-20). Further, there is no discussion of the interaction between Safety Coordinators and Hazardous Waste Coordinators. Because some aspects of waste management performed by both types of coordinators, there are two potential problems: overlapping duties and duties "falling through the cracks."
- Roles and responsibilities are not formalized for much of the middle and upper management within the Laboratory's Science and Technology Division, including the Division Director, the Program Managers, and the Group Leaders (I-A-9, 11, 15, and 20). There are no position descriptions or Personnel Information Questionnaires (PIQs) for faculty with joint ISU/Ames Laboratory appointments (I-A-11, I-A-15, and I-A-20). From an environmental standpoint, there are two problems associated with this.
 - Without a position description, the environmental performance expectations and responsibilities of these line managers are not clear. The environmental duties of managers charged with implementing environmental programs at Ames Laboratory are left up to the interpretation of the individuals in these positions. This does not promote consistency of environmental performance among the different research programs.
 - Without the specific responsibilities and measurable performance indicators mentioned above, it is difficult to hold program managers accountable for environmental performance, except in a very broad manner. In fact, several Laboratory staff members interviewed by the audit team indicated that the annual review process for line management within the Science and Technology Division handled environmental performance in a broad and unspecific manner (I-A-9, 11, 13, and 15). The audit team recognizes that the Laboratory has included environmental performance in the annual performance review process (D-A-41). This is a good first step; however, it needs to be accompanied by more formal and detailed discussion of specific environmental responsibilities for key personnel, especially those with joint Ames Laboratory/ISU appointments for whom no position description exists.

Accountability and responsibility for environmental performance inherently lies with line management. Environmental specialists are generally meant to support line management in implementing environmental initiatives. Ames-ES&HG personnel, as well as other personnel with environmental responsibilities throughout the Laboratory, indicated in interviews conducted by the audit team that the Laboratory has generally adopted this approach (I-A-9, I-A-11, I-A-15, I-B-1, I-B-8, I-B-10, I-B-11, and I-B-20). Ames Laboratory has taken some steps to formalize environmental responsibilities for key staff, especially the Safety Coordinators and Safety Representatives (D-A-9). However, a lack of consistent and formal position descriptions and specific environmental performance indicators does not support consistent environmental performance and line management accountability.

3.2 ENVIRONMENTAL COMMITMENT

3.2.1 Overview

The environmental commitment portion of the routine environmental audit was reviewed to assess Ames Laboratory's overall awareness of relevant environmental issues and its commitment to environmental excellence. More specifically, the review included an assessment of the Laboratory's environmental policies, senior management's support of and involvement in environmental initiatives, the extent to which all employees take personal responsibility for the potential environmental impacts of their activities and decisions, and the Laboratory's overall culture with respect to the environment. A list of regulations, requirements, and guidelines used in the audit is provided in Appendix F.

The general approach used in the audit was to review DOE Orders and background documents provided by DOE and the Laboratory prior to the onsite portion of the audit. Onsite activities included interviews with DOE and Laboratory personnel who are responsible for or who affect the Laboratory's environmental performance, and a review of environmental statements, policies, procedures, and other documents exhibiting environmental commitment. Input from all members of the audit team was considered in this portion of the audit.

Ames Laboratory has made improvement since the 1992 Tiger Team Assessment toward incorporating environmental performance into its day-to-day activities. Specifically:

- Environmental personnel have been hired to develop and implement environmental programs;
- The Office of Assurance and Assessment has been established to structure a quality assurance program;
- The New Project Proposal and Readiness Review processes have been implemented and have provided effective tools for identifying ES&H issues early in the project planning process; and
- Efforts to communicate plans for the remediation of the chemical disposal site and the former sewage treatment plant, and involve the community in the decision-making process, have been very successful.

Each of these systems and programs help to demonstrate the Laboratory's commitment to the environment. As these and other systems mature, environmental performance by line management should continue to improve. It should be noted that the developing nature of some systems is demonstrated by weaknesses in hazardous waste management practices, the environmental monitoring program, and environmental quality assurance. In addition, roles and responsibilities have yet to be fully defined, environmental status reporting is inconsistent across the organization, procedures are not fully in place or consistent across the organization, and, while many corrective actions have been closed out, a focused effort to complete the remaining actions is not evident.

Systems implemented to support environmental performance help to communicate a message of environmental commitment throughout the organization; however, weaknesses

in existing programs and the limited visible focus on closing out corrective action plans have the potential to undermine the improvements that have been achieved. Failure to correct existing weaknesses in a timely manner may result in an impression that Laboratory management is not fully committed to the organizational goal of environmental excellence.

Based upon the audit team's review of the environmental programs in place at the Laboratory and continuing efforts to improve environmental management systems, there are no findings in the environmental commitment portion of the audit.

3.3 FORMALITY OF ENVIRONMENTAL PROGRAMS

3.3.1 Overview

The purpose of the formality of environmental programs portion of the routine environmental audit of Ames Laboratory is to assess whether environmental protection activities at the Laboratory are being conducted in accordance with formal programs supported by documentation, inspections, and procedures. DOE 5480.19, "Conduct of Operations Requirements for DOE Facilities," and DOE 5700.6C, "Quality Assurance," provide requirements and guidelines for the development of directives, plans, and procedures related to the conduct of operations. These Orders state that DOE policy requires facilities to put procedures in place to control the conduct of their operations, and that these operations be managed with a consistent and auditable set of requirements. The regulations, requirements, and guidelines used in this audit are provided in Appendix F.

This portion of the audit focused specifically on the following areas:

- Regulatory Tracking and Translation — systems to transmit, track, and interpret environmental regulations and DOE Orders and incorporate them into policies, standards, and procedures.
- Procedures — mechanisms by which environmental programs and procedures are developed and effectively implemented throughout the organization.
- Routine Facility Inspections — systems to conduct routine inspections to ensure site compliance with applicable environmental requirements, and to identify and correct potential problems.
- Recordkeeping and Reporting — systems to maintain and retain records, and to ensure timely completion of environmental regulatory and management reporting requirements.

The general approach to this portion of the audit was to review DOE Orders and background documents provided by Ames Laboratory and DOE. Onsite activities included additional document review and interviews with management personnel of Ames Laboratory, ER, and CH.

Regulatory Tracking and Translation

Regulations identified by the Laboratory are translated into procedures and formally communicated to Ames-OAA for inclusion in their policies/procedures data base.

Ames Laboratory utilizes a variety of sources to routinely track Federal, state, and local regulations and DOE Orders and policies. CH provides the Laboratory with timely notification of impending changes in Federal and state regulations and DOE Orders. The Ames Laboratory Environment, Safety and Health Group (Ames-ES&HG) is in regular contact with DOE Headquarters and DOE special interest groups, and receives input from them pertaining to new, and changes to, regulations and Orders. Attendance at training courses and conferences is another way in which Laboratory personnel keep apprised of regulations and Orders. The ISU Department of Governmental Affairs is concerned with

Congressional legislation and has interacted with the Laboratory by providing them with applicable regulatory information.

Procedures

The new Ames Laboratory system being implemented for the preparation and management of procedures for eventual implementation of policies and programs is sound.

The development of procedures is outlined in the Ames Laboratory Standard Operations Document (December 1993) (SOD). Procedures having interdepartmental, Division, or Laboratory-wide impact are required to be reviewed by Ames-OAA and registered in the Ames-OAA data base. It is Ames-OAA's responsibility to issue review notifications for these procedures. The SOD includes a quality assurance rating system to be used to define the level of formality of work instructions or operating procedures for items or activities. Lower-tier procedures are logged into the document index of the issuing Program/Department or Group/Section.

To standardize the development of policies and procedures, Ames-OAA issued guidance in the form of procedures (e.g., "Writing Formal Procedures," "Writing Stand Alone Policy") in July 1993. Ames-OAA has been providing assistance to groups in developing their procedures and is considering the development of a training program on writing policies and procedures.

The level of formality/documentation of environmental procedures is not consistent across the programs, and there is some resistance to conforming to Ames-OAA's standards. Staff have indicated that the Ames-OAA procedure, "Writing Formal Procedures," results in longer procedures with "unnecessary" detail. The audit team observed that the waste management procedures, which were developed in accordance with the Ames-OAA procedure, did not contain sufficient detail to ensure compliance with regulations and Ames Laboratory procedures.

Ames Laboratory organizations have systems to periodically review and update environmental procedures. Some lower-tier procedures have been revised since the Waste Management Program Manual (WMPM) was issued in May 1994, and the changes and additional requirements in the WMPM were not addressed in the revised lower tier procedures. The team noted several instances in which aspects of these revised procedures were not consistent with the requirements specified in the new manual.

The Ames-ES&H Group has not prepared a plan to ensure that the most critical procedures that will be required to guide their activities receive priority. For example, procedures have not been developed for soil, water, and groundwater sampling, and to implement the Environmental Monitoring Plan (see Finding EQ-1).

Routine Facility Inspections

There are a number of routine inspection processes at Ames Laboratory in addition to the topical appraisals conducted by Ames-ES&HG. The "guard card program" is probably the most well-developed routine inspection program; however, the current program checklist covers primarily safety and security, with only one environmental item. Observations made during the guards' daily tours are reported within one week to the appropriate Program

Director. In addition, all the observations are compiled at the end of the month and are reported to the Program Directors and the Industrial Safety/Fire Protection Specialist. Currently, there are no plans to expand the guard card program to include more environmental items.

Some Laboratory Programs and Groups have well-planned and well-implemented walk-through processes, but the formality and consistency vary widely across the Laboratory. Some use formal procedures and checklists during the walk-throughs, and issues are promptly corrected and results are communicated to management. Other groups have not yet implemented a walk-through system. When walk-throughs occur, they are typically sporadic and informal. The results may or may not be verbally communicated to management, and there is no followup. To the extent that they are performed, the walk-throughs typically focus on health and safety items rather than environmental issues.

Inspections of waste management areas are conducted by essentially all Programs and Groups and Ames-ES&HG. The Ames-ES&HG staff conduct routine compliance inspections of the waste accumulation areas in Spedding Hall. Hazardous Waste Coordinators, Safety Coordinators, and Safety Representatives conduct periodic inspections of satellite accumulation areas to ensure compliance with the provisions of the WMPM. Most of the staff who conduct the inspections indicated that they did not use a written checklist and/or procedure to conduct these inspections; a few used the topical appraisals checklist. Some Coordinators said they document the results of their inspections in the form of memos to Program Directors, but in most cases both documentation and followup were inconsistent. The frequency of inspections and the specific waste management issues reviewed varied considerably. There was also wide variation across programs in their conformance with waste management requirements.

Because of the type of activities at Ames Laboratory, the pollution-control equipment is limited. There are two scrubbers in hydrofluoric acid service and one scrubber in ceramics. This equipment is maintained by the responsible researchers. There are a paint spray booth, baghouses for collecting graphite dust and sawdust, and a sandblasting booth in the shops areas. The mechanical devices on this equipment are tracked in the Laboratory's preventive maintenance system. On some specified frequency, a computer aided maintenance system (CAMS) ticket is automatically printed as a "tickler."

In response to a finding during the 1992 Tiger Team Assessment finding, there was a complete review of the Ames Laboratory ventilation systems to identify all existing systems utilizing HEPA filters. The systems are being evaluated to determine whether they are appropriate in these applications. There are two additional HEPA filters at the Alpha Operations Facility which were performance tested during this audit. There are also five High Efficiency Particulate Air (HEPA) filters on negative air machines used in asbestos abatement work. Facilities Services is working with Ames-ES&HG to develop testing requirements and procedures for the HEPA filtration system at the Alpha Operations Facility. These requirements will be used to develop procedures for all HEPA filtration systems at Ames Laboratory.

Recordkeeping and Reporting

Ames-OAA has developed a formal system for indexing policies, plans, manuals, procedures, and forms. Each document receives an individual index number based on

management codes that are unique to the organization that develops the document. Each manager and director has an appointed "documentation log keeper," and these documentation log keepers have been trained to use the index system.

The environmental Records Retention and Disposition Schedule was last updated in 1985. Ames-ES&HG essentially retains all environmental documents and records, either in readily accessible department files or in the onsite archives. This records retention practice will be corrected as part of the document management system being implemented by Ames-OAA. Documents will be categorized (e.g., as "records," "non-records," and "permanent") and many of the records currently stored onsite will be moved to the Federal Records Center in Kansas City.

Ames-ES&HG has developed a manual system for managing departmental records. File system documentation is kept in a computer file to facilitate word searches, and in hard copy. There is a central file for the department, but discipline-specific compliance records are maintained by the specialist in charge of compliance for the particular area. The Ames-ES&HG Document Log Keeper has implemented the Ames-OAA document index system for the department.

Ames-ES&HG has instituted a document log-in system. Each document received for action is entered in the log, with action dates and the responsible person identified. In addition, a list of routine environmental reports has been developed. All action dates are tracked by the department secretary to ensure that responses/reports are submitted on time .

Implementation of the revised occurrence reporting plan and procedures should ensure that all occurrences, whether reported through the Occurrence Reporting and Process System (ORPS) or not, will be documented in a single location.

Ames-OAA has described in the SOD, the formal mechanisms to correct, track, monitor trends of, and identify lessons learned related to environmental problems and incidents. This formal system has not been implemented, but there are systems in place. Audits, appraisals, and reviews conducted by DOE are tracked in the CH tracking system. Documentation for the topical appraisal and the Protection Services "guard card" programs preserve information for the identification and analysis of trends; however, this is not done. Distribution of "lessons learned" is the responsibility of Ames-ES&HG. Searches of ORPS for lessons learned has not been implemented; however, the newsletters distributed by DOE organizations are searched for lessons learned elements. These lessons learned, and those resulting from Ames Laboratory activities, are transmitted to Laboratory personnel through the Ames Laboratory Lessons Learned (AL³) Newsletter.

The audit team recognizes that procedures development and implementation is an evolving process at the Laboratory. Inadequate resources, time, etc., have been suggested as reasons why there were procedural gaps in some Laboratory programs.

This report identifies deficiencies in environmental procedures, regulatory reporting, and recordkeeping. CH has verified corrective actions as complete for only two findings that fall into these categories: hazardous and mixed waste packaging and transport, and waste minimization. Other corrective actions are in varying stages of completion. If milestone target dates remain as scheduled, several corrective actions should be available for CH verification this calendar year. Additional specialized training, environmental awareness

training, and preparation of a master scheduling plan for development and implementation of policies/procedures at the Laboratory and Program/Group levels have been discussed by the Laboratory as ways to correct the deficiencies noted. In an effort to identify those policies and procedures having Laboratory-wide application, Ames-OAA has issued a "documentation survey" to be completed by October 31, 1994. This survey will enable the Laboratory to prepare a comprehensive list of policies and procedures.

There was one finding identified in the formality of environmental programs portion of the audit; related to the lack of formality of routine facility inspections.

3.3.2 **Finding**

FP-1: Routine Inspections

Performance Objective: DOE 5480.19, "Conduct of Operations Requirements for DOE Facilities," directs DOE facilities to establish a routine site and equipment inspection program to ensure compliance with all relevant regulations, applicable DOE Orders, and overall performance goals. The DOE Guidance Document (December 1992) offers specific guidance on the design and implementation of routine facility inspection programs.

The Ames Laboratory Standard Operations Document, Section 9.2.2.1, "Manager Walk-Throughs," states, "Group/Section Leaders or their Safety Representatives shall conduct periodic walk-throughs at a frequency commensurate with the hazards associated with the Group's/Section's activities, with a minimum frequency of once every two months. . . ." In addition, this document outlines the performance objectives, criteria, and checklists to be used during the inspections, as well as the qualifications and training necessary for the personnel conducting the walk-throughs.

Finding: Ames Laboratory does not conduct consistent routine facility inspections as required.

Discussion: DOE 5480.19 and Ames Laboratory standards require that routine facility inspections be carried out by each Group/Section and Program/Department. Although most organizations are conducting walk-throughs, the formality and consistency vary widely across the Laboratory. For example:

- A few groups have well-planned and well-implemented walk-through processes. The Safety Representatives in these groups use formal procedures and checklists during the walk-throughs. Issues are promptly corrected and results are communicated to management.
- Some groups have not yet implemented a walk-through system. When walk-throughs occur, they are typically sporadic and informal. The results may or may not be verbally communicated to management, and there is no followup to ensure that issues are corrected.

Overall, implementation of walk-throughs across the Laboratory is inconsistent. To the extent they are performed, the walk-throughs typically focus on health and safety items rather than environmental issues. Hazardous Waste Coordinators, Safety Coordinators, and Safety Representatives indicated that they conducted periodic inspections of waste accumulation areas to ensure that generators were complying with the provisions of the Waste Management Program Manual. Most indicated that they did not use a written checklist and/or procedure to conduct these inspections; a few used the Laboratory's topical appraisals checklist. Some coordinators documented the results of their inspections in the form of memos to Program Directors, but both documentation and followup were, in most cases, informal. The frequency of inspections and the specific waste management issues reviewed varied considerably. There was also a wide variation across programs in their conformance with waste management requirements (D-E-64; I-E-5, 7, 8, 9, and 13) (see Finding WM-2).

3.4 INTERNAL AND EXTERNAL COMMUNICATION

3.4.1 Overview

The purpose of the internal and external communication portion of the routine environmental audit was to evaluate the extent and effectiveness of routine management reporting of environmental status data; the communication of environmental management activities and best management practices with respect to communications within and across divisions at Ames Laboratory; and the communication of information to external stakeholder organizations such as ISU, environmental regulators, environmental groups, and the community at large. The regulations, requirements, and guidelines used in the audit are provided in Appendix F.

The general approach to this portion of the audit included a review of background documents and onsite interviews of key personnel and several external stakeholders. Documents reviewed included employee newsletters, internal status report documents, agendas and minutes from various Ames Laboratory and Institute for Physical Research and Technology (IPRT) management meetings, press releases, "Dear Neighbor" letters, and other materials describing Laboratory communication activities to the general public. Interviews were conducted with the Laboratory's Public Affairs and Information Office, Laboratory upper management, Program Directors, a member of the Community Advisory Group (CAG), and the Iowa Department of Natural Resources (DNR).

Environmental performance data are generated within laboratory programs by Safety Coordinators, Safety Representatives, and Hazardous Waste Coordinators. These personnel gather information during walk-through inspections. The types of data include exceptions to hazardous waste requirements, establishment of procedures, availability of records, progress on environmental training, etc. It should be noted that the audit team found that there was a generally low level of formality and consistency across the Laboratory regarding these walk-through inspections and the types of data that are routinely tracked.

There is also a low level of consistency across the Laboratory as to whether the data are reported to line management or to Ames-ES&HG. Reporting within line management appears to be more exception-based rather than routine.

There are several successful informal means of communicating environmental issues at the Laboratory. Insider, the monthly newsletter published by the Public Affairs and Information Office, provides a good forum for discussion of environmental issues of general interest. In recent issues of the newsletter, have featured coverage of environmental issues, related to mostly the inactive waste sites, particularly to the former sewage treatment plant and the public meetings surrounding these issues. Also, the Public Affairs and Information Office organizes an internal forum, known as the Ames Laboratory Lunchtime Information Exchange, designed to improve face-to-face communication and personal interaction among Laboratory employees. As an additional stakeholder group, Laboratory employees frequently receive informational mailings.

Laboratory management seeks input from staff by prominently posting the Continuous Improvement Recommendation tear-off sheets around the Laboratory. Suggestion boxes

around the Laboratory give employees an opportunity to anonymously report their environmental concerns to management.

The Laboratory has a very effective external communication effort which utilizes a range of communication tools and techniques. At the core of the effort is the CAG, composed of eight individuals who represent citizens, community and environmental activists, and city officials. The Directors of both the Laboratory and IPRT have attended all five meetings of the group and have cultivated a positive relationship with this group and the general public. The Laboratory also holds well-publicized public meetings and workshops, and distributes information broadly in "Dear Neighbor" letters and by using an extensive mailing list which covers Federal and state regulators, city officials, DOE Headquarters, local groups, and the press.

Both ISU and Ames Laboratory have established environment, safety, and health organizations. These two groups exist separately, with largely different jurisdiction across the campus. Interaction and communication between them are minimal and opportunities for mutual benefit are lost.

Overall, internal communication within Ames Laboratory on environmental issues occurs informally. There are few formal status reports which provide line management with routine environmental performance data. This situation does not promote line accountability or consistent and effective implementation of environmental initiatives. Ames Laboratory has established a very effective external communication process, however, which has served the Laboratory well in promoting a positive image and handling the concerns of its external stakeholders.

There are two findings in the internal and external communication portion of the audit; one is related to the lack of routine environmental status reporting within line management and the other is related to the absence of a close working relationship with the ISU-EH&S group.

3.4.2 Findings

IC-1: Routine Reporting of Environmental Performance Data

Performance Objective: Best management practices suggest that formal and routine communication of environmental performance status data should be used to: facilitate implementation of environmental management systems; ensure line management that environmental programs are effectively implemented; and enhance top-down, bottom-up, and lateral communication of environmental information.

Finding: Ames Laboratory has not fully developed or implemented a formal process for communicating routine environmental status information within line management.

Discussion: Environmental performance data at Ames Laboratory are generated primarily by Safety Coordinators, Safety Representatives, and Hazardous Waste Coordinators. Some of these personnel gather information on employee environmental training, compliance with safety and environmental requirements and regulations, status on environmental initiatives/corrective actions, etc. This information is obtained by conducting walk-through inspections in the groups or departments for which they are responsible and by reviewing pertinent records. Additional performance data are generated by the Laboratory's Environment, Safety and Health Group (ES&HG) staff, which conducts periodic walk-through inspections of the Laboratory. It should be noted that the focus of these topical appraisals has been primarily focused on safety issues (D-C-51; I-C-21) (see Finding FP-1).

While there is some routine reporting of environmental data to certain Program Directors and to Ames-ES&HG, it does not flow consistently through the Laboratory from line management to upper management. This does not promote line management accountability for environmental performance or effective implementation of environmental initiatives.

The following are examples of the lack of routine environmental reporting.

- Some Safety Coordinators, Safety Representatives, and Hazardous Waste Coordinators report routine environmental status information to their Program Directors; however, this is not a uniform practice in the Laboratory (I-A-11 I-A-15, I-E-8, I-E-9, and I-E-13). For some programs, the Safety and Hazardous Waste coordinators report routinely to Ames-ES&HG, rather than to their own line management (I-A-11). In the Laboratory's Science and Technology Division, exception-based reporting is the norm for the majority of research programs (I-A-11, I-A-13, and I-A-15).
- Program Managers in the Science and Technology Division do not routinely report environmental information to the Division Director. Program Directors report to the Division Director when there is an incident or other special issue which needs attention (I-A-9 and I-A-11).
- The Executive Council and Program Directors meet on a monthly basis to discuss a broad range of issues. Very few routine environmental

performance issues are brought to this group's attention (I-A-1, 11, 13, and 15).

- The waste tracking data base is used primarily to prepare waste manifests and track overall quantities of waste at the Laboratory. The system is not used for routine management reporting to Program Directors or other managers at the Laboratory (I-E-19).
- Ames Laboratory's Office of Assurance and Assessment (Ames-OAA) tracks Laboratory-wide data on environmental training needs, as well as which personnel have taken courses. Although these data are provided to Program Directors, and others, on an as-needed basis, Ames-OAA does not provide routine status reports on this information to Laboratory management (I-A-15, I-E-3, I-E-8, and I-E-9). Given that hazardous waste training is a regulatory requirement, and given the Laboratory's commitment to provide this training to those who need it, routine status reporting of training data would be a useful tool for division management to ensure performance in this area.

Environmental status information of interest to Laboratory line management may include:

- summaries of routine inspections;
- results of routine inspections;
- status of corrective actions;
- waste generation/waste minimization statistics;
- status of training within individual groups or at the program level;
- progress on policy and procedure development; and
- progress on division/department performance relative to other environmental goals and initiatives.

Routine reporting of summary environmental data in some of these areas will help to focus line management attention on environmental issues, allow management to observe trends in performance data, and help to promote line management accountability for environmental performance. Routine reporting of environmental data is particularly important in the Science and Technology Division, in which the majority of waste generators reside and where there has historically been heavy reliance by management on Safety Coordinators and Safety Representatives to implement and monitor progress on environmental initiatives (I-A-2, 9, 13, 15, and 16).

IC-2: Communication between ISU-EH&S and Ames-ES&HG

Performance Objective: Best management practices suggest that effective working relationships be established and maintained with external parties which have a vested interest in environmental performance of a site, share environmental responsibilities with the site, or could potentially help to improve the level of environmental performance at the site.

Finding: The absence of a close working relationship between Ames Laboratory's Environment, Safety and Health Group (Ames-ES&HG) and the ISU Environmental Health and Safety (ISU-EH&S) group has resulted in lost opportunities to mutually improve environmental programs.

Discussion: ISU and Ames Laboratory maintain separate environmental specialist groups. ISU-EH&S is responsible for environmental performance in University-owned space; Ames-ES&HG is responsible for environmental management in the Ames Laboratory space. There is some sharing of responsibility between the two groups in those areas where Ames Laboratory rents or leases space from the University.

There is some sharing of data and information on environmental matters of mutual concern, such as some environmental monitoring data, status reporting pertaining to progress at the inactive waste sites and former sewage treatment plant, and the draft site treatment plan for compliance with the Federal Facilities Compliance Act. The working relationship of the two environment, safety, and health (ES&H) groups is not well-developed, however (I-A-1, 6, 7, and 9). As a result, there are missed opportunities for information-sharing and mutual gain. The Institute for Physical Research and Technology (IPRT), which provides oversight of ES&H matters at the Ames Laboratory on behalf of ISU, serves in part to facilitate communications between the two programs (I-A-1, I-A-2, and I-A-4). This facilitation is accomplished primarily by the environmental specialist position within IPRT.

The following facts indicate that the relationship between Ames Laboratory and ISU-EH&S is not well-developed.

- There are no regular meetings of staff or managers for the ISU and Ames Laboratory ES&H programs (I-A-1, 6, 7, and 16). There is little routine, formal reporting of environmental data of mutual interest to both groups, such as training courses offered and given, environmental inspection results, chemical purchasing, and waste accumulation (I-A-6).
- There is little informal sharing of information or other non-routine interaction between the staff or managers of the two programs (I-A-6, 8, 10, and 16). Further, several members of the Ames Laboratory staff with environmental responsibilities did not have comprehensive knowledge of ISU environmental programs, staffing levels, or staff capabilities and expertise (I-A-8, I-A-10, and I-A-17).
- Ames-ES&HG reported that the environmental training courses it offers were made available university-wide, including to ISU and to joint ISU/Ames Laboratory staff, researchers, and environmental specialists (I-A-8).

Environmental training events are advertised in a flier published by the Laboratory's Office of Assurance and Assessments (Ames-OAA) and are circulated to IPRT organizations. There is a perception on the part of ISU-EH&S program management, however, that Ames Laboratory training events are not available to ISU researchers and staff (I-A-6).

- During the summer of 1994, Ames-ES&HG initiated the purchase process for calibration equipment valued at approximately \$55,000. The equipment was associated with a corrective action plan which would be delayed until the equipment was made available. ISU owns a similar calibration unit, yet there was little analysis on the part of Ames Laboratory to determine if the ISU equipment could be used by the Laboratory as is or with some modification (I-A-9, I-B-1). In August 1994, when Laboratory senior management separate from Ames-ES&HG realized the potential applicability of the ISU calibration equipment, it interrupted the purchasing process for the new equipment and initiated an analysis to determine if the ISU equipment could be used at the Laboratory (I-A-9, I-B-1).
- ISU and Ames Laboratory chemical purchasing and materials handling systems are not linked electronically. If either program wants data from the other system, it must be manually retrieved and entered (I-A-17; I-D-10). This makes overall management and tracking of hazardous chemicals more difficult at the Laboratory, especially for research projects with joint ISU-Ames Laboratory funding where chemicals may be purchased and tracked by ISU but used in Ames Laboratory space.

There is good reason for the existence of both ISU-EH&S and Ames-ES&HG. The jurisdiction of the two groups is largely different. Nevertheless, given that both groups are responsible for implementing and maintaining a high level of environmental performance in an academic laboratory setting, that the jurisdiction of the programs does overlap in ISU-Ames Laboratory shared space, and that the resources and staffing levels are limited in both programs, there are opportunities for formal and informal communication which would potentially benefit both groups. As the groups explore additional opportunities for interaction and sharing of resources, they may need to explore issues pertaining to funding sources and liability.

Communicating the following types of information, whether formally or informally, would be beneficial to the environmental programs at Ames Laboratory and ISU:

- training courses offered, training modules, and training records on individual researchers and Laboratory managers trained by Ames Laboratory, ISU, or IPRT;
- availability of monitoring, analysis, calibration, or other environmentally-related equipment;
- helpful hints garnered from ongoing management of environmental programs, including provision of Ames Laboratory (and DOE complex-wide) Occurrence Reporting and Process Systems lessons learned materials to ISU;

- various environmental audit, assessment, and inspection results;
- chemical procurement and hazardous materials management records and data;
- waste management methods, techniques, or procedures for similar wastes; and
- environmental policies, program plans, program procedures, and overall guidance (recognizing that these may need to be tailored to suit the needs of the other program).

Interviews at Ames Laboratory revealed that there is an overall recognition that more interaction between the environmental programs at ISU and Ames Laboratory would be beneficial (I-A-1, 7, 9, 16).

3.5 STAFF RESOURCES, TRAINING, AND DEVELOPMENT

3.5.1 Overview

The purpose of the staff resources, training, and development portion of the routine environmental audit was to assess staff resources to ensure that they are sufficient to effectively develop and implement the organization's environmental protection programs. The audit evaluated the environmental protection training provided to Ames Laboratory staff and the staff development opportunities available for environmental personnel. A list of regulations, requirements, and guidelines used in this audit is provided in Appendix F.

The general approach to this portion of the audit was to interview Ames Laboratory personnel with responsibility for staffing and training activities. Documentation review included operating documents, position descriptions, performance evaluation forms, training material, training records, procedures, and other relevant documents.

Ames Laboratory's Environment, Safety and Health Group (Ames-ES&HG) plans for its environmental staffing needs through the ES&H 5-Year Plan. Although environmental staffing needs in this area had been identified and requested in the 5-Year Plan for the last two years, no increases in staff were funded. One result of insufficient staff resources has been Ames-ES&HG's inability to effectively develop and implement environmental protection programs to ensure compliance and to close out open corrective action from the Tiger Team Assessment findings.

Ames Laboratory's Office of Assurance and Assessment (Ames-OAA) has the overall responsibility for the Laboratory's training program, as well as for developing and implementing the Laboratory's assessment, quality-assurance, and records-control programs. Ames-OAA currently has insufficient resources to effectively develop and implement these programs. One result of this staffing shortage has been Ames-OAA's inability to close out its open corrective actions from the Tiger Team Assessment.

Ames Laboratory faces a significant training challenge because of its close alignment with ISU. Many researchers share joint ISU and DOE funding and move frequently between ISU and DOE projects. In addition, the high turnover rate associated with graduate students and research assistants increases the difficulty of ensuring that all staff with the potential to affect the environment receive the necessary training (e.g., hazardous waste management, hazard communication, etc.).

Ames-OAA is developing a comprehensive training program specifically tailored to the unique needs of the Laboratory. The Standard Operations Document establishes the framework for the training program. General Employee Training is given to each new Ames Laboratory employee (and existing employees who have not received it) and includes general environmental awareness modules (e.g., waste management, hazard communication, and environmental protection).

Special Employee Training is determined by the specific job position and its associated requirements. Ames-OAA is developing a job task analysis, training needs assessment, and hazard identification process to ensure that the specific training needs for a position are formally identified and received. Specialized training modules are developed by subject matter experts to address the specialized needs of a particular position. Based on the

design of the training program and its developing nature, no findings were identified related to the Laboratory's overall training system.

Development opportunities for Ames-ES&HG staff are externally constrained by the size and nature of the Laboratory's operations, as well as by the culture of long-term employment evident across the Laboratory. Career development paths for Ames-ES&HG specialists are primarily external to the Laboratory. Technicians, however, can be promoted within their merit employee status or the position can be changed (although with difficulty) to professional and scientific status. For the most part, career development training is available to the specialists. Weaknesses occur, however, in ensuring that merit employees receive the training necessary to ensure effective utilization of their skills and efforts.

Overall, environmental staff resources are not sufficient to develop and implement environmental protection programs to the degree expected by DOE. The open Tiger Team Assessment corrective actions related to major environmental programs (e.g., hazardous and mixed waste disposal, toxic and chemical material management, PCB management program, ALARA [as low as reasonably achievable] program, air emissions program, etc.) clearly point to a need for additional or reallocated resources. The Ames Laboratory training program, given its well-planned basis and the arrival of a new Training Coordinator (during the audit team's review), should adequately address the earlier Tiger Team Assessment findings within the next year.

There was one finding identified in the staff resources, training, and development portion of the audit; related to Ames-ES&HG staffing and staff utilization.

3.5.2 Finding

SR-1: Staffing and Staff Utilization

Performance Objective: Best management practices suggest that organizations should provide a sufficient level of environmental staff, and should train and utilize staff appropriately in order to ensure effective environmental performance.

Finding: The Ames Laboratory Environment, Health, and Safety Group (Ames-ES&HG) does not have adequate environmental staff resources and does not fully utilize the chemical safety technician.

Discussion: Ames-ES&HG has three full-time equivalents (FTEs) devoted to environmental activities: two for waste management, toxic and chemical materials management, and Superfund Amendments and Reauthorization Act (SARA) reporting; and one for all other environmental support. The environmental specialist is almost completely focused on supporting the environmental remediation activities surrounding the inactive waste sites and has little time for environmental program development, guidance, or review (I-C-9). Although additional environmental staffing was requested (an environmental technician) by Ames-ES&HG in the ES&H 5-Year Plan, the request was not funded (I-C-4 and I-C-13). The expectation of senior management is that once the inactive waste sites are remediated (within a year), the environmental specialist will have sufficient time for the other environmental responsibilities (I-C-4, I-C-6, and I-C-13). The audit team believes that this estimate is optimistic and that without additional environmental help the Laboratory most likely will fall further behind in developing and improving environmental programs and in initiating internal review of environmental performance. In addition to hiring another full-time professional, a number of options could be used to address this staff shortage; possibilities include re-assigning existing staff, borrowing staff from another DOE laboratory, and engaging a support service contractor.

In the waste management area, the chemical safety specialist is responsible for waste management, including radioactive waste, hazardous material management, and reporting under SARA. The specialist spends approximately 80 percent of the time on hazardous waste management and does not have the time to adequately address all of the responsibilities required of the position (I-E-1, 2, 12, and 16). The chemical safety specialist is assisted by the chemical safety technician, who is responsible primarily for twice-weekly hazardous waste collection, recordkeeping, and responding to waste generator questions. However, the technician has not had the level of waste management and hazardous materials management training necessary to effectively carry out these responsibilities, including training, for example in the Resource Conservation and Recovery Act (RCRA), hazard communication, and spill-response (D-C-23; I-C-6, I-C-20, and I-E-4). The technician, if appropriately trained, could provide timely guidance to waste generators during waste collection activities, and would gain important information on Laboratory waste management performance. In an environmental area as critical to the Laboratory's performance as waste management, effective utilization of available resources is necessary to achieve and maintain compliance.

3.6 PROGRAM EVALUATION, REPORTING, AND CORRECTIVE ACTION

3.6.1 Overview

The purpose of the program evaluation, reporting, and corrective action portion of the routine environmental audit was to assess whether Ames Laboratory and DOE have effective oversight programs in place. More specifically, the audit evaluated the types of oversight programs and activities, reporting of identified concerns to appropriate managers, and tracking and implementation of corrective actions that address root causes. A list of regulations, requirements, and guidelines used in this audit is provided in Appendix F.

The general approach used to perform this portion of the audit included interviews with Ames Laboratory, ER, ISU, and CH, personnel responsible for: conducting oversight, developing and implementing assessment programs, and tracking audit and assessment findings. Key documents reviewed prior to and during the onsite portion of the audit included operations documents, procedures, management plans, memoranda pertaining to program evaluation activities, schedules, and assessment reports including both internal and CH technical appraisals.

The program evaluation, reporting, and corrective action system for Ames Laboratory includes oversight and evaluation activities by all of the following organizations: ER, CH, the ISU Ames Laboratory Oversight Committee, the Institute for Physical Research and Technology (IPRT), and Ames Laboratory.

The CH Environment, Safety and Health Division (CH-ES&HD) completed four environment, safety, and health (ES&H) functional appraisals in November 1993. Although a management appraisal has not been conducted in the last 3 years, the combination of the February 1992 DOE Tiger Team Assessment, which included a management component, and this audit may help to satisfy CH's management systems information needs. CH-ES&HD plans to conduct a management appraisal of Ames Laboratory by the end of calendar year (CY) 1994.

Within the Ames Laboratory Management Office, the CH Ames Laboratory Facility Representative conducts surveillances of the Laboratory's facilities and processes approximately monthly. While the surveillances include environmental items, the focus has been primarily on safety and health issues. CH is responsible for validating and verifying the closeout of Tiger Team Assessment corrective actions. There are some weaknesses in this Tiger Team Assessment closeout process, such as the overall slow progress in completing action plans and the validation and verification of corrective actions that have not been appropriately completed.

The ISU Ames Laboratory Oversight Committee maintains programmatic oversight of Ames Laboratory and relies on IPRT for oversight of the Laboratory's environmental performance. Neither organization has conducted any formal reviews of Ames Laboratory to date, but IPRT maintains adequate awareness of Ames Laboratory's environmental activities.

The Ames Laboratory Standard Operations Document (SOD) establishes an assessment framework, encompassing all aspects of the Laboratory, that is designed to meet DOE Orders and policies. The assessment activities are designed to be used by all levels of the Laboratory. In addition, the Laboratory's Office of Assurance and Assessment

(Ames-OAA) will perform independent assessments of the Laboratory's activities. Assessments will be performed at numerous levels.

- Worker Assessments will be performed by individual employees. Worker observations and continuous improvement recommendations will be identified.
- Manager Assessments will analyze the Laboratory's management systems and performance, and will be conducted by Group/Section Leaders and Program Directors/Department Managers. Manager Assessments include manager walk-throughs and manager annual assessment reports.
- Independent Assessments will be performed by Ames-OAA and will include independent walk-throughs, independent management assessments, and independent activity performance observations.
- Ames Laboratory's Environment, Safety and Health Group (Ames-ES&HG) will conduct topical appraisals of the programs' and departments' ES&H performance.
- External audits will be conducted by external groups, including DOE, EPA, etc.

The assessment section of the SOD is a well-thought-out and well-organized approach to assessment activities for Ames Laboratory. Because of resource constraints, however, the whole process has yet to be fully integrated and implemented. Based on the structure of the process and its ongoing development, no findings were identified regarding the overall assessment system at Ames Laboratory.

With the exception of the health- and safety-focused topical appraisals identified above, Ames-ES&HG does not conduct formal oversight activities of the Laboratory's environmental performance. Again, resource and time constraints have affected Ames-ES&HG's ability to effectively assess the Laboratory's environmental activities.

Overall, the assessment program that Ames Laboratory is developing in response to Tiger Team Assessment findings will establish a foundation for assessing and improving the Laboratory's environmental performance. However, there is still quite a bit of work to be done, not only at Ames-OAA but across the Laboratory. The challenge for Ames Laboratory is to improve, integrate, and implement the discrete systems as quickly as possible.

There were two findings in the program evaluation, reporting, and corrective action portion of this audit; related to the corrective action process for Tiger Team Assessment findings and the other is related to the lack of environmental oversight conducted by Ames-ES&HG.

3.6.2 Findings

PE-1: Corrective Action System

Performance Objective: Best management practices suggest that a corrective action system should be established to ensure that identified environmental deficiencies are corrected and closed out in a timely manner. This system should: prioritize corrective actions; track the status of open action items; identify formally validated and verified items; identify and report on schedule slippages; identify the schedules of upcoming milestones; and report on overall progress.

An integral component of an effective corrective action system is involvement by senior management. Senior management should ensure that adequate progress is made in correcting identified environmental deficiencies by requiring systematic status reports, monitoring progress on key issues and overall performance trends, and taking necessary actions. Such actions may include changing priorities, reallocating financial and staff resources, or taking disciplinary actions.

Finding: Ames Laboratory's corrective action system does not ensure that environmental action items are resolved in a timely manner.

Discussion: The closeout of the Tiger Team Assessment corrective actions for Ames Laboratory is approximately 68 percent complete (D-C-58). The Ames-ES&HG corrective actions are approximately 63 percent complete (D-C-58). Certain management and technical corrective action items which have significant impact on compliance with regulations and DOE Orders have not been completed. These items include, but are not limited to: the training program, independent oversight, the waste management program, the chemicals management program, environmental monitoring, and environmental quality assurance.

Ames Laboratory prioritizes the funding of the corrective actions (Levels I, II, III) through the Activity Data Sheet process; however, implementation of the corrective actions is not prioritized (I-C-17 and I-C-22). Action Plan Coordinators have many competing responsibilities and resource limitations. In the absence of a prioritization scheme which addresses risks, costs and benefits, and competing demands, progress on the corrective actions has been at the discretion of the coordinators.

The Ames Laboratory Office of Assurance and Assessment (Ames-OAA) updates the status in the tracking data base for those items that have been completed. While it is CH's responsibility to validate and verify the closeout of corrective actions, Ames-OAA does some informal validation of individual action items. CH validates and verifies the closed action items during functional appraisals and surveillances. However, functional appraisals for the Laboratory are conducted once every 18 to 24 months. This is not timely enough to ensure that corrective actions are closed out promptly. The CH Ames Laboratory Facility Representative conducts surveillances approximately monthly and is also responsible for validating and verifying the completed ES&H action items. Validation and verification of completed items is typically done offsite through document review and telephone calls. In the audit team's opinion, this method is not sufficient to ensure that action items are closed out appropriately. For example, the team identified the following corrective actions that are considered closed:

- The Toxic and Chemical Materials Management corrective action (APO48) milestone 3 is noted as completed. Milestone 3 stated that procedures for spills of hazardous materials would be addressed in the Waste Management Program Manual (WMPM). The WMPM includes only procedures for spills of hazardous waste, however; spill procedures for all hazardous materials are not included in the WMPM (D-D-9). In addition, some spill requirements described in the WMPM are not included in the Chemical Hygiene Plan which governs spills of laboratory hazardous materials (D-D-32).
- Milestone 3 for the Reporting Under SARA Title III corrective action (APO49) is indicated as verified. Procedures for reporting have been developed; however, they are not comprehensive and have not been fully implemented (D-D-12; I-D-3 and I-D-11).
- The Radionuclide NESHAP Compliance corrective action (AP057) was noted as verified; however, the audit team was not able to obtain and review documentation that supported the completion of this action. In addition, there was no NESHAP Quality Assurance Plan (I-F-13).
- The Waste Minimization Plan and Pollution Prevention Awareness Plan corrective action (AP058) is noted as completed and verified in the status report (D-C-58). Review by the audit team, however, revealed that the waste minimization activities described in the WMPM do not meet the intent of DOE guidance.
- Milestone 1 of the PCB Management Program corrective action (AP062) is indicated as complete. Procedures are said to be incorporated into the WMPM (D-C-58). Review by the audit team indicated that the procedures are not included in the manual. Although the Laboratory has eliminated almost all PCB-containing materials onsite, at least five shipments of PCB waste, including 935 gallons of transformer oil, have occurred since 1992. These activities were conducted in the absence of procedures related to 40 CFR 761 (I-D-17 and I-H-12).

Management support for and emphasis on completing the corrective action plan is critical, especially given the lack of resources and competing needs. Support from Ames Laboratory management, CH, and ER has not been sufficient to promote timely closeout of all corrective actions. For example:

- While Ames senior management receives written quarterly status reports of corrective actions, there are no programmatic updates that indicate the Laboratory's progress with respect to key environmental actions, schedule slippages, and upcoming milestones (I-C-13 and I-C-17). Management has not taken aggressive actions to assign priorities or resources to ensure adequate and timely resolution. For example, the Laboratory is not holding regularly scheduled meetings with Laboratory senior management and the Action Plan Coordinators. These meetings would promote better understanding of priorities, progress, and barriers to completing the action plan, and would reinforce senior management's commitment to the process.

- CH and ER have not taken active roles in monitoring the progress of key environmental action items and have not taken action to ensure their timely resolution (I-C-10, 13, 17, 19, and 22).

PE-2: Environmental Performance Review

Performance Objective: DOE 5482.1B, "Environment, Safety and Health Appraisal Program," states that it is DOE policy to, "Ensure the protection of the environment," and that, "Internal appraisals shall be conducted at the operating level by persons not directly responsible for performance of the activities being appraised." Further, this Order states that the internal appraisal system shall ". . . review the overall operation of each facility with sufficient frequency to ensure adequate ES&H (environment, safety, and health) coverage and provide multidisciplinary reviews with in-depth technical competence in the areas being reviewed."

The draft Ames Laboratory Environment, Safety and Health Program Manual, dated August 1994, states that the Laboratory's Environment, Safety and Health Group (ES&HG) is, "responsible for reviewing, auditing, and assuring the adequacy of Laboratory ES&H programs, and for apprising the Director of deficiencies observed in those programs."

Best management practices suggest that an organization should regularly assess the effectiveness of its environmental protection programs in order to ensure compliance and minimize environmental liability.

Finding: Ames Laboratory does not conduct environmental appraisals of its operations in accordance with DOE 5482.1B, the August 1994 draft Ames Laboratory ES&H Program Manual, and best management practices.

Discussion: Environmental oversight at Ames Laboratory is the responsibility of Ames-ES&HG. Ames-ES&HG has reviewed environment, safety, and health performance during topical appraisals since early 1993. These appraisals form part of the Laboratory's assessment program as described in the Standard Operations Document (D-C-3). The topical appraisals, as they exist now, are typically informal inspections with no in-depth review of activities. There is an inspection checklist, but no procedures; observations are neither tracked and nor trended. The inspection checklist focuses on safety and fire protection issues and includes only a few environmental items, primarily chemical safety and storage (D-C-51; I-C-21 and I-H-10). Memoranda listing the inspection findings are written to the area managers for closeout.

The Ames-ES&HG Safety Inspector who conducts the appraisals has had little environmental training, particularly, chemical management and waste management training (D-C-23; I-C-6 and I-C-21). The Safety Inspector requests environmental support from the Chemical Safety Specialist or the Environmental Specialist when he believes he needs assistance. Both specialists, however, have little time to devote to reviews of laboratory activities because of their primary responsibilities (I-C-6, I-C-9, I-E-2, and I-E-10).

In the audit team's opinion, topical appraisals, as currently conducted by Ames-ES&HG, do not adequately assess the Laboratory's environmental performance in a manner that ensures compliance with regulatory and internal requirements, and that appraises the Director of the Laboratory's environmental status. This is evident, for example, by the gaps in the waste management program which resulted in the EPA Notice of Violation and in the weaknesses in evaluating all potential effluent and emission sources (see Findings WM-2 and EQ-1).

3.7 ENVIRONMENTAL PLANNING AND RISK MANAGEMENT

3.7.1 Overview

The environmental planning and risk management portion of the routine environmental audit addressed the extent to which technical and financial environmental planning is conducted and integrated into the overall planning process at Ames Laboratory. The adequacy of systems used by the Laboratory to identify, evaluate, and mitigate environmental risks was also addressed. A list of regulations, requirements, and guidelines used in the audit is provided in Appendix F.

The general approach to this portion of the audit was to review documents provided to the audit team by Ames Laboratory prior to arrival onsite. Once onsite, additional documents were reviewed and interviews were conducted. Key personnel interviewed included the Laboratory Director; Division Directors; Environment, Safety and Health Group (Ames-ES&HG) personnel; Budgeting Office personnel; Safety Review Committee (SRC) members; and Laboratory researchers. Key planning documents reviewed included the Environment, Safety and Health (ES&H) Management Plan fiscal year (FY) 1996 - FY 2000, the Guidance Manual for the ES&H Management Plan, and the Purchasing Requisition Review Procedure. Key documents reviewed in the area of environmental risk management included the Readiness Review Procedure, draft revisions to the Readiness Review Procedure, the Preliminary Proposal Form, and several completed Readiness Review packages. In addition, this portion of the audit relied on input from all members of the audit team.

In its Institutional Plan, Ames Laboratory states its "commitment to the attainment of total compliance with all . . . ES&H requirements and to the quest of excellence in its ES&H operations" (D-B-38). To achieve this goal, the Laboratory must rely in part on indirect (i.e., overhead) funds because, unlike the DOE's multi-program laboratories, Ames Laboratory and other single-program laboratories do not receive direct funding from ER for ES&H activities (I-B-1, 2, 5, 6, and 14). The Laboratory's need for additional funds to support its environmental programs has been effectively communicated to CH, as represented by the strong endorsement of Ames Laboratory's environmental plans in the FY 1996 - FY 2000 CH Environment, Safety and Health Division (CH-ES&HD) Management Plan and Planning Report (D-B-20).

In 1994, the Ames Laboratory's budget for environmental activities included funding from several sources:

- \$668,000 from the Office of Waste Management (EM-30) to fund waste management and waste minimization activities, including \$100,000 in capital expenses;
- \$405,000 from the Office of Environmental Restoration (EM-40) to fund environmental restoration activities; and
- \$104,000 from indirect (i.e., overhead) funds to cover remaining environmental activities.

In some cases, direct program funds were provided for activities that had environmental protection implications (e.g., pollution control equipment, full-time equivalents (FTEs) dedicated to chemical handling). The audit team did not review Laboratory records to determine the level of this direct funding.

Throughout the year, as the Laboratory's direct program funding levels are identified, the actual funding that will be provided to indirect activities is determined. As of this review, total indirect expenditures for the Laboratory will be approximately \$8.4 million in FY 1994. Of these funds, \$1,449,000 were allocated to indirect ES&H activities. Indirect activities specifically focused on environmental performance were budgeted to receive \$104,000, which is 7 percent of ES&H indirect funding and 1.2 percent of Laboratory indirect funding. Indirect funding for environmental activities is budgeted to increase to \$269,000 in 1995, which is 14 percent of ES&H indirect funding and approximately 3 percent of estimated Laboratory indirect funding (D-B-36; I-B-27).

Indirect funding priorities are determined annually when budgets are submitted and throughout the year as specific requests for additional funds are made. These requests are reviewed and funding priorities are set during meetings between the Laboratory Director, budgeting personnel, and Division Directors. During these meetings, funding requests from all indirectly funded activities are evaluated based upon the availability of funds and understood needs. Special attention to the funding of environmental activities is required because ES&H activities are not directly funded by ER. Without clear guidelines for the allocation of indirect funds, the potential for underfunded environmental programs exists at Ames Laboratory.

Ames Laboratory has established several systems to ensure that environmental issues are addressed during the early stages of project development. The Ames Laboratory Proposal Submission Policy (D-B-1) was developed to provide guidance to Laboratory researchers as they prepare proposals for new Laboratory projects. As part of this policy, researchers fill out the Preliminary Proposal Form (D-B-2), which must be signed by both the Ames-ES&HG Manager and the NEPA Compliance Officer prior to proposal approval.

The Readiness Review Procedure is another system established by the Laboratory to identify ES&H issues in the early stages of project development. The procedure, which has been in place since mid-1993, requires, by the SRC and the Ames-ES&HG staff, the review of all new projects or scale-ups of existing projects. For each project, a lead specialist from Ames-ES&HG and a facilitator work with the project leader to ensure that all ES&H risks are identified and mitigated prior to project start-up.

In August 1994, CH prepared a draft of its Safety Analysis and Review (SAR) System Appraisal Report focusing on the Readiness Review Procedure. The report recommended that, "Ames Laboratory should provide additional details . . . as to how the Laboratory would prepare . . . an SAR". An SAR is required for all ES&H Level III activities (D-B-20). Ames Laboratory has responded to CH's recommendation by preparing revisions to the Readiness Review Procedure that better define the type of reviews required for activities identified as ES&H Level III risks (D-B-17; I-B-22). The Laboratory's approach to addressing ES&H Level III risks would be further refined by the development of a consistent approach to addressing the probability of occurrence and predicted consequences of particular hazards, and by a framework to define acceptable and unacceptable risks.

3.8 TOXIC AND CHEMICAL MATERIALS MANAGEMENT

3.8.1 Overview

The purpose of the toxic and chemical materials management (TCM) portion of the routine environmental audit was to assess whether Ames Laboratory managed such materials as stipulated by numerous statutes, regulations, and standards. These include: Title III of the Superfund Amendments and Reauthorization Act (SARA, Title III) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); the Toxic Substances Control Act (TSCA); the Hazardous Materials Transportation Act (HMTA); the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA); DOE Orders; State of Iowa regulations; Ames Laboratory policies and administrative memoranda; and best management practices. A list of regulations, requirements, and guidelines used in the audit is provided in Appendix F.

The general approach to this portion of the audit was to review documents, including written policies, programs, and procedures; the chemical inventory; and compliance records. During the onsite portion of the audit, the audit team met with Ames Laboratory personnel and participated in selected walk-throughs.

Responsibility for TCM management at Ames Laboratory is shared among line management, laboratory employees, and the Environment, Safety and Health Group (Ames-ES&HG). Procedures for storage and handling of TCMs are contained in the Chemical Hygiene Plan; the draft Environment, Safety, and Health Program Manual; and other documents. Ames-ES&HG provides technical assistance for implementation of these procedures. Additionally, Ames-ES&HG is responsible for TCM training, industrial hygiene, hazard identification, and recordkeeping and reporting for environmental compliance.

Quantities of TCM at Ames Laboratory vary. With the exception of hazardous solvent waste stored in 55-gallon drums, the facility does not routinely store drum quantities of hazardous chemicals. Compressed gases are stored in laboratories and at the warehouse.

The Purchasing and Property Services Department administers systems for the procurement, distribution, and shipping of hazardous materials. Department procedures to manage the distribution of TCMs at the Laboratory include a system to track the locations of compressed gas cylinders. Through implementation of the Ames Laboratory Transportation Safety Manual, warehouse staff are responsible to ensure that hazardous materials are properly shipped internally and to outside users.

Ames-ES&HG uses information available through the Purchasing and Property Services Department to compile chemical inventories. Information regarding chemical purchases that proceed through the Laboratory's purchase requisition system is manually supplemented by Ames-ES&HG with information regarding chemical procurement from ISU Chem Stores. The Laboratory maintains a central collection of Material Safety Data Sheets (MSDSs) and is adopting a computer data base for electronic management of MSDSs. The Laboratory is also evaluating other chemical inventory and tracking systems, such as that used by Argonne National Laboratory and Pacific Northwest Laboratory.

The Metallurgy and Ceramics Program administers a comprehensive chemical inventory and tracking system that is based on a central chemical repository. This system is also used to

identify hazards present in each laboratory room. This program has submitted a proposal through the Activity Data Sheet process to implement a mass balance system to account for all TCM usage.

Since 1992, equipment that contained polychlorinated biphenyls (PCBs) has been retrofilled with non-PCB fluids, and some equipment has been removed from service. At least five shipments of PCB-containing materials have been made to waste treatment facilities since this time. Ames Laboratory sent two of these shipments to the ISU Chemical Waste Handling Facility for storage and subsequent offsite treatment. PCB management procedures were not in place during these activities and complete documentation is not available.

The Emergency Coordinator is currently refining the Laboratory's Emergency Plan to expand the coverage of the ES&HG Chemical Response Team procedures. The Facilities Services Department is currently refining its emergency procedures to include full coverage of the internal Ames-ES&HG chemical response team. Personnel from the Facilities Services Department also perform small-scale asbestos abatement activities. A written asbestos management plan is available.

Pesticides are applied by a licensed contractor for pest control with oversight from the Facilities Services Department. Pesticides are also used in experiments related to carcinogenesis. This audit evaluated pesticide use against FIFRA requirements only with respect to pest control. The applicability of FIFRA to research activities was not examined.

Since the 1992 Tiger Team Assessment, Ames Laboratory has improved its TCM management practices. For example, hazardous chemical storage has generally been eliminated in Ames Laboratory Stores and streamlined in the warehouse. These changes have lowered risks associated with "bulk" chemical storage and other issues identified by the Tiger Team Assessment. Additionally, the assignment of Safety and Hazardous Waste Coordinators has provided a mechanism by which sound TCM management practices can be observed in daily operations. There was one finding in toxic and chemical materials management portion of the audit; related to the limitation of the chemical inventory and emergency planning and reporting.

3.8.2 Finding

TCM-1: Emergency Planning and Reporting

Performance Objective: DOE 5400.1 mandates that DOE operations be conducted in an "environmentally safe and sound manner," and that operations proceed "in compliance with the letter and spirit of applicable environmental statutes, regulations, and standards."

DOE 5500.3A, "Planning, Preparedness and Response Program for Operational Emergencies," requires "emergency management programs consisting of plans and procedures for response to Operational Emergencies involving or affecting DOE facilities." Required documentation includes an emergency plan and associated procedures.

DOE 5000.3B, "Occurrence Reporting and Processing of Operations Information," contains requirements for the categorization, reporting, and processing of occurrences related to DOE operations. These occurrences include releases of hazardous substances to the environment.

Executive Order 12856, "Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements," mandates compliance with the statutes and regulations associated with the Emergency Planning and Community Right-to-Know Act (EPCRA) when thresholds of hazardous chemicals are met or exceeded. Federal facilities are also required to comply with the Pollution Prevention Act (PPA), which calls for the preparation of pollution prevention plans and overall reduction in the use of hazardous chemicals.

Title III of the Superfund Amendments and Reauthorization Act (SARA Title III) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) contains requirements for emergency planning and notification. Section 302 requires notification to the state emergency response commission if an extremely hazardous substance is present at the facility in an amount equal to or greater than the threshold planning quantity (TPQ) established for that substance. Section 311 requires facilities that are required to maintain Material Safety Data Sheets (MSDSs) under the Occupational Safety and Health Act (OSHA), to submit MSDSs, or a list of chemicals for which MSDSs are required, to the state emergency response commission and the local emergency planning committee. Section 312 requires submission of an annual hazardous chemical inventory Tier I or II form to these organizations if TPQs or other triggering levels are exceeded. Section 313 requires that facilities submit an annual Toxic Release Inventory (Form R) (TRI report) to the state and EPA regarding releases of toxic chemicals in excess of reportable quantities, which are based on annual chemical usage.

The Iowa Hazardous Chemicals Risks Right-to-Know Act, Iowa Code, Section 89B.12 (1987), promulgates requirements for provision of information on hazardous materials to the public through state and local authorities. The Iowa rule requires submission of a list of hazardous chemicals that are present in "significant amounts," supplemented by hazard information in "sufficient specificity" (e.g., National Fire Protection Association numerical hazard ratings) for listed chemicals. Iowa also requires Tier II reports. As of July 1, 1988, educational research laboratories no longer were exempt from these requirements.

Finding: Ames Laboratory has not implemented comprehensive systems to ensure that emergency planning and reporting requirements under DOE Orders, CERCLA/SARA statutes and regulations, and Iowa state regulations are met.

Discussion: Ames Laboratory is subject to numerous requirements that necessitate careful control of toxic and chemical materials (TCMs) procurement, types, and quantities to minimize the risk of emergency and/or environmental release. A comprehensive inventory and tracking system for TCMs is a critical element of TCM management systems that can assist in meeting these requirements. Ames Laboratory uses data derived from its data base of purchased chemicals to meet some of these requirements; however, the limitations of this system reduce its ability to utilize this information as a tool for compliance management.

Hazardous materials arrive at Ames Laboratory by one of four mechanisms: Ames Laboratory purchase order; requisition and pick-up from ISU Chem Stores; receipt of vendor samples, analytical samples, and synthesized chemicals that do not have purchase orders; and procurement directly through the ISU purchase order system (I-D-1, 3, 10, and 11). The Laboratory's Environment, Safety and Health Group (Ames-ES&HG) uses the Laboratory's purchasing data base to compile information on chemicals obtained by the first two mechanisms to create a purchasing chemical inventory; however, there is no single chemical inventory for all of Ames Laboratory that records chemicals received through all four mechanisms (I-D-1, I-D-3, and I-E-1).

The purchasing chemical inventory is used for multiple purposes, but it has limitations for environmental applications. Although this inventory can be used to trace chemical purchases to the offices of the chemical users, it does not track the specific locations of chemicals. The inventory can be used to identify purchase quantities, but does not provide information on the quantity of specific chemicals onsite at any one time (D-D-12; I-D-3, I-D-15, and I-D-17). The inventory does not reflect chemical reassignment or removal of surplus chemicals that become classified as wastes (I-D-13 and I-D-17). Additionally, the inventory does not include all information gained through the annual inventory conducted by the Laboratory programs (D-E-11; I-D-3).

Chemicals included in the chemical inventory are reviewed by Ames-ES&HG prior to ordering. Chemicals that exhibit explosive potential (peroxidizables); biological effects (hydrogen fluoride gas, hydrofluoric acid); poison potential (cyanides); and potential for radiological effects are subject to additional approval. This review process, however, does not flag most chemicals that are subject to special TCM management requirements. For example, pesticides, carcinogens, acute toxins, and chemicals that have low threshold reporting quantities under EPCRA are not necessarily subject to additional approval through this process (D-D-17; I-B-12, I-D-1, and I-D-3).

These deficiencies in the chemical procurement process and inventory system have significant implications for emergency planning and response. For example, the Ames Laboratory Emergency Plan is predicated on the assumption that onsite quantities of hazardous chemicals do not reach threshold quantities (D-D-16). In the absence of a real-time mechanism to track whether threshold quantities are reached for particular substances, there is no assurance that this assumption is always correct. With the exception of an administrative control to limit quantities of hydrogen fluoride gas to below

the TPQ, Ames Laboratory has not adopted a policy to track the amounts of chemicals onsite and to limit the use of hazardous materials to less than threshold quantities.

The current Ames Laboratory Emergency Plan is based on the results of a Hazards Assessment that was conducted in 1992 by SRA, Inc. (D-D-16). The Hazards Assessment, which focused on the likelihood of emergencies having offsite environmental consequences, compared *purchase quantities* of listed chemicals (fiscal year [FY] 1992) to their corresponding TPQs (D-D-34). Although the SRA report states that, "the master purchase list of the preceding 12 months . . . and chemicals found in laboratories were compared to the threshold planning quantities," the report goes on to state that the Laboratory lacks a detailed chemical inventory and that the purchase chemical list is "only an indicator" of the hazardous chemicals onsite. This suggests that the actual quantities of all listed materials were not verified in the Hazards Assessment. The Hazards Assessment information has not been formally updated since 1992 (I-D-7). The Laboratory plans to conduct another Hazards Assessment in November 1994; completion is expected by January 1995.

Other data suggest that not all relevant threshold quantities have been considered in emergency planning and notification activities. For example, Ames Laboratory does not have a mechanism that systematically identifies chemicals that are present onsite at reportable quantities subject to CERCLA release notification. SRA, Inc., reported that bromine, chloroform, and hydrogen peroxide were purchased in quantities exceeding their reportable quantities in FY 1992 (D-D-34). A review of the purchasing chemical inventory revealed that, in 1993, 450 grams of nickel carbonyl had been purchased at approximately the TPQ (one pound) (I-D-15). Phosgene, which has a TPQ of 10 pounds, appears on the purchasing chemical inventory, but the purchased quantity was not available. In this case, the purchased quantity could not be determined from the purchasing data base because the chemical appears as "used" (D-D-12; I-D-17).

Like the annual-chemical-use calculation method used by SRA, Inc., Ames Laboratory procedures for SARA reporting are also based on purchased, not actual, quantities of listed chemicals (D-D-51; I-D-17). Ames Laboratory notification procedures for compliance with SARA Section 311 call for submission of the chemical purchase inventory; however, this inventory lists the chemical abstract numbers and names of all chemicals purchased since 1984, not those for chemicals presently onsite, as implied by the 1994 notification letters. National Fire Prevention Association numerical ratings required by the State of Iowa are not included for some chemicals. Although research projects and chemicals have changed since the first submission of EPCRA information in 1987, updates had not been filed until a 1993 update was filed in 1994 (D-D-12 and D-D- 40-46; I-D-17).

SARA Title III Section 311 requires that all hazardous materials typically onsite that require MSDSs per Occupational Safety and Health Act (OSHA) regulations be included on the list of hazardous substances given to emergency organizations, and that MSDSs be available for substances listed. Under the OSHA Laboratory Standard (29 CFR 1910.1450(h)(2)(iii)), laboratories that make and ship hazardous substances to offsite users must prepare MSDSs. Ames Laboratory does not prepare MSDSs for chemicals synthesized in-house; therefore, these chemicals are not included in the inventory and MSDSs could not be provided to emergency responders if needed (I-D-9 and I-D-10).

Ames Laboratory is unlikely to use "extremely hazardous substances," as defined in Sections 312 and 313 of SARA Title III, in excess of the threshold quantities for typical usage and annual usage, respectively; however, DOE has requested that laboratories report a negative response to these SARA reporting requirements. Additionally, DOE has established an internal reporting quantity of 1,000 pounds for chemicals with TRI thresholds for annual usage. The DOE Activity Toxic Chemical Usage Report submitted by Ames Laboratory for 1993 indicates that hazardous chemicals have not been used in quantities that require reporting (D-D-30); however, calculation of annual usage based on purchase quantities may lead to under-reporting (e.g., the purchase quantity of acetone in 1993 totaled 800 pounds, 200 pounds less than the DOE threshold TRI quantity (I-D-3 and I-D-17)).

Although Federal facilities are not required to submit Tier II and Form R information for calendar year (CY) 1994 to local authorities until 1995, the Ames Laboratory procedure for this reporting is not covered in the draft Environment, Safety, and Health Program Manual (D-D-36). There is no site-specific procedure that describes Section 313 reporting. Due dates for reports are not included in Ames Laboratory procedures for filing SARA reports (D-D-30).

Documentation and TCM emergency procedures required by DOE 5500.3A are not comprehensive. For example, specific spill and release scenarios that would likely require the assistance of an external hazardous materials response team are not included in relevant documents (D-D-16; I-D-7 and I-D-11). Spill/release procedures in the Laboratory Emergency Plan are limited to a general, half-page description which refers to environment, safety, and health (ES&H) procedures that do not exist (D-D-16; I-D-3). Procedures for incidental spill response are general, and do not address specific steps required for response to various classes of hazardous materials (D-D-9, D-D-16, and D-D-32; I-D-3). Although the call-out list for chemical spills is kept updated within Ames-ES&HG and Protective Services, it is not included in the Laboratory Emergency Plan (D-D-16 and D-D-38; I-D-3), and the Emergency Awareness Training Checklist does not include spill/release response (D-D-23).

Internal and DOE reporting of environmental incidents is also incomplete. For example, two release notifications to the Iowa Department of Natural Resources (DNR) (hydraulic fluid, July 1993, and diesel fuel, August 1992) are not included in Ames Laboratory Occurrence Reporting and Processing System (ORPS) documentation (D-H-27; I-H-21). These spills resulted from contractor activities involving hazardous materials that did not belong to Ames Laboratory; therefore, the Laboratory decided not to include the spills in ORPS. DNR requires reporting of all spills, regardless of size. A revised Ames Laboratory Occurrence Reporting Plan with Policy and Procedures for Implementation, which should address the concern, is being circulated for approval (D-H-27). In addition, there is no internal procedure for consolidating information related to environmental incidents (I-D-11, I-H-15, I-H-16, and I-H-20). Ames Laboratory also lacks formal procedures for reporting environmental releases to DNR (D-D-47; I-D-4 and I-D-11).

3.9 WASTE MANAGEMENT PROGRAM

3.9.1 Overview

The purpose of the waste management portion of the routine environmental audit was to evaluate the current status of hazardous, radioactive, and mixed waste management programs and underground storage tank management activities at the Laboratory, with respect to its ability to ensure compliance with Federal and state regulations, DOE Orders, and Laboratory procedures. A list of regulations, requirements, and guidelines used in the audit is provided in Appendix F.

The scope of this audit included interviews with Ames Laboratory staff in the Environment, Safety and Health Group (Ames-ES&HG) within the Operations Division, and in the Office of Assurance and Assessment (Ames-OAA). It also included interviews with staff in the Science and Technology and Operations divisions who are involved in waste generation and management. The audit team also reviewed waste management documents, including policies, procedures, plans, hazardous waste manifests and reports; and observed waste generation and management practices.

Ames-ES&HG staff have primary responsibility for developing the Laboratory's Waste Management Program. Ames-ES&HG staff also perform several other waste management activities, including: training hazardous waste generators; assisting generators in characterizing their wastes; transporting waste from satellite accumulation areas (SAAs) to the waste accumulation areas (WAAs) located in Spedding Hall; arranging for waste disposal; preparing waste management plans and procedures; and filing required reports with regulatory agencies and DOE. Ames-OAA has designed a process to assess environment, safety, and health (ES&H) training needs; Ames-OAA also maintains training documentation.

The 11 research programs in the Science and Technology Division generate non-hazardous, hazardous, acute hazardous, mixed, and radioactive wastes. The Laboratory's Operations Division also generates hazardous wastes, which are primarily spent solvents and paint wastes. At its primary location on the main campus of ISU, the Laboratory operates as an EPA-designated large quantity generator. The Laboratory also has two additional EPA identification numbers for activities located several miles from the main ISU campus: a research program, located at ISU's Applied Science Center, which operates as an EPA-designated conditionally exempt small quantity generator; and a chemical disposal site, being remediated by CH, which is an EPA-designated large quantity generator.

The Laboratory contracts with Laidlaw Environmental Services for transport and disposal of its hazardous waste. Prior to selecting Laidlaw and executing a contract with the company, Laboratory staff contacted other DOE facilities that use Laidlaw for references. The Laboratory plans to conduct an onsite inspection of Laidlaw's operations in early 1995.

The Laboratory has small quantities of transuranic wastes. It is also storing and generating relatively small quantities of mixed waste, some of which has been stored for several years because of the DOE moratorium on shipping and disposing of all hazardous wastes generated within radiologically controlled areas at DOE facilities. The Laboratory

has prepared a Draft Site Treatment Plan for these wastes as part of its requirements under the Federal Facilities Compliance Act.

The Laboratory also generates non-hazardous wastes. Most of the programs generate used oils from vacuum pump maintenance. Used oil is collected in the maintenance garage and Room 115 of Spedding Hall and subsequently is given to a commercial recycling facility. Used batteries are typically returned to the vendor when new batteries are purchased. The Laboratory is operating an office paper recycling program.

Ames Laboratory has one underground storage tank (UST), a 3,000-gallon diesel fuel tank located near the computer garage. The fuel is used to power three emergency generators. The Laboratory has implemented an inventory control system as the release detection program for this tank, even though this activity is not required for tanks that store fuel solely for use by emergency power generators. It plans to remove the tank before December 1998, when more stringent UST requirements are due to become effective.

The 1992 Tiger Team Assessment Report for Ames Laboratory identified fundamental deficiencies in waste management, including: the lack of waste management plan program, and procedures; inconsistent and inadequate management of satellite and waste accumulation areas (SAAs and WAAs); and inadequate waste training and training recordkeeping. Many of these problems were noted in a November 1993 Environmental Protection Program Appraisal conducted by CH, and in a Notice of Violation issued as a result of a RCRA inspection conducted by EPA in April 1994.

Ames Laboratory has developed a Waste Management Program Manual (WMPM), issued in May 1994, and has undertaken an extensive program of waste management training. The Laboratory has also implemented a computerized waste tracking system. This system is currently used by Ames-ES&HG staff to prepare waste disposal documentation and required reports for DOE and EPA, and has the capability to be expanded to provide routine information for line management (e.g., on waste characteristics and volumes or on the effectiveness of waste minimization/pollution prevention initiatives).

The recent initiatives taken by Ames Laboratory provide a solid foundation on which to build an effective waste management program, and have resulted in improved waste management performance at the Laboratory. Some aspects of the program are not yet fully developed and/or implemented, however. In order to complete the program, the Laboratory will be required to develop a number of additional plans and procedures (particularly in the areas of radioactive and mixed-waste management and waste minimization), and ensure that all such documents, including those developed at the program and group levels, are consistent with regulatory requirements or Laboratory-wide waste management policy and procedures. Planned changes in the training needs assessment and documentation processes also will improve the waste management program at the Laboratory. Reinforcement of these efforts, through development of processes to oversee, measure, and report performance at all levels of the Laboratory, also will enhance the effectiveness of the waste management program.

There were two findings in the waste management portion of the audit; one related to radioactive and mixed waste management and the other is related to hazardous waste management.

3.9.2 Findings

WM-1: Radioactive and Mixed Waste Management

Performance Objective: DOE 5820.2A, "Radioactive Waste Management," requires the development of a Waste Management Plan to provide generators of low-level, high-level, transuranic, mixed, and hazardous waste the information and procedures needed to properly manage their wastes. The plan must incorporate quality assurance principles and ensure that waste acceptance criteria for the receiving disposal facility are met through the development and implementation of low-level radioactive and transuranic waste certification plans.

In 1992, Ames Laboratory was accepted by DOE's Hanford Site as part of their Small Generator Program, which relieved it from the requirement to develop a low-level radioactive waste certification plan; however, development of a waste characterization plan and a transuranic waste certification plan remained a requirement.

In 1991, a memorandum from the Secretary of Energy established a moratorium on shipping and disposing of all hazardous wastes generated within radiologically controlled areas at DOE facilities. To lift the moratorium, each DOE facility was required to develop a plan and obtain approval from the DOE Office of Environmental Management (EM, formerly the Office of Environmental Restoration and Waste Management) prior to releasing such wastes.

Finding: The radioactive and mixed waste procedures provided in the Waste Management Program Manual (WMPM) are not fully developed regarding implementation, and identification and management of potentially mixed wastes subject to the moratorium. In addition, a waste characterization plan and a transuranic waste certification plan has not been developed.

Discussion: The 1992 Tiger Team Assessment Report for Ames Laboratory identified several issues related to the management of radioactive and mixed wastes, including the lack of a radioactive and mixed waste management plan and low-level radioactive and transuranic waste certification plans. The Laboratory developed corrective actions to address the deficiencies. After reviewing the efforts taken by the Laboratory to implement the corrective actions the Audit Team concluded that some milestones had not been met.

In response to the Tiger Team Assessment, Ames Laboratory developed the WMPM to correct some of the deficiencies (D-F-19). The WMPM was distributed to waste generators across the Laboratory in May 1994; it was intended to provide procedures to: manage hazardous, radioactive, and mixed wastes; provide acceptance criteria; and define the process for determining of waste types. The WMPM does not provide detailed guidance to generators on identifying a radioactive or mixed waste, and does not provide details on characterizing wastes. This information, however, was provided in the training received by generators of low-level radioactive and mixed wastes.

A flow chart provided in the WMPM to assist generators in determining waste types indicated that radioactive waste could be disposed as solid non-radioactive waste. This error was identified and corrected in June 1994, but an updated flow chart had not been distributed to the generators (D-F-20 and D-F-21; I-E-10). The flow chart refers users to

DOE 5400.5 to determine radioactivity threshold levels above which hazardous and non-hazardous wastes are managed as mixed or radioactive wastes. However, the flow chart does not reference which table in the Order to be used. This approach for hazardous waste management has not been approved by EM as required under the moratorium.

The 1992 Tiger Team Assessment Report also identified a lack of waste certification plans for low-level radioactive and transuranic wastes. As part of the corrective action plan, Ames Laboratory applied for and received approval from the Hanford Site to be included under their Small Generator Program. As a result, the Laboratory does not have to develop a low-level radioactive waste certification plan. Although the volume of transuranic waste is minimal, the Laboratory is required to develop a waste characterization plan and a transuranic waste certification plan. Neither a waste characterization plan nor a transuranic waste certification plan has been developed, and elements of the radioactive waste procedure provided in the WMPM do not adequately facilitate the characterization of low-level radioactive waste for the reasons identified in the above paragraph. Also, the WMPM does not address quality assurance requirements as an integral part of the hazardous, radioactive, and mixed waste procedures.

WM-2: Hazardous Waste Management Program

Performance Objective: 40 CFR 262 specifies requirements for hazardous waste generators; these include requirements for: determining whether a waste is a hazardous waste, accumulation of hazardous wastes, container management, inspections, contingency planning, and training. It also requires generators of hazardous wastes to certify that they have waste minimization programs in place.

DOE 5400.1, "General Environmental Protection Program" requires a waste minimization plan that quantifies changes in waste quantity, volume, and toxicity.

DOE 5700.6C, "Quality Assurance," establishes quality assurance requirements for DOE.

Ames Laboratory's Waste Management Program Manual specifies Laboratory-wide waste management procedures for waste generators and includes requirements for characterizing, labeling, accumulating, and manifesting hazardous wastes.

Best management practices suggest that a program should be in place to ensure that hazardous waste management activities are performed in accordance with DOE, Federal, state, and facility guidelines. Such activities include: determining the physical, chemical, and radiological characteristics of all wastes managed at the facility; safely accumulating wastes; preparing emergency preparedness and contingency plans; and minimizing wastes.

Finding: Ames Laboratory has not fully developed and implemented a program that ensures that all hazardous waste management and waste minimization activities are performed in accordance with DOE, Federal, state, and facility requirements and guidelines.

Discussion: Ames Laboratory has developed a WMPM, issued in May 1994, and has undertaken an extensive program of hazardous waste management training for waste generators (D-E-8 and D-E-56; I-E-2 and I-E-3). These activities are necessary first steps in developing an effective hazardous waste management program; however, some aspects of the program are not yet fully developed and/or implemented. In particular, there are no formal line management or Laboratory-wide programs to verify that generators understand and consistently follow the new procedures in the WMPM or to provide quality assurance review of data supplied by generators (I-E-1, 2, 5, 7, 8, 9, 12, 13, and 14) (see Findings FP-1 and PE-2).

Also, the Laboratory is still in the process of developing several other key aspects of its waste management program, including a hazardous waste contingency plan and a waste minimization/pollution prevention plan (both of which are still in draft form) and comprehensive changes to its training needs assessment and documentation processes.

Specific examples of areas in which the existing waste management program does not ensure that all hazardous waste management and waste minimization activities are performed in accordance with DOE, Federal, state, and facility requirements and guidelines are summarized below.

Waste Characterization

As described in the WMPM, Ames Laboratory relies on generators to provide most of the information that the Laboratory uses to characterize its hazardous waste. The WMPM describes the regulatory framework for hazardous waste characterization. It also indicates the information that generators must provide on the Laboratory's hazardous waste label and on the internal manifest document used when waste is transferred from the generator to the Laboratory's Environment, Safety and Health Group (Ames-ES&HG) for accumulation and disposal. The hazardous waste management training program developed by Ames-ES&HG and begun this summer is designed to reinforce and clarify the requirements and procedures for characterizing and labeling wastes (D-E-8 and D-E-56; I-E-1 and I-E-2).

The audit team observed a variety of situations in which generators were not correctly implementing the new waste characterization procedures, including several cases where this failure could have resulted in improper characterization or disposal of hazardous waste.

- In August 1994, an Ames-ES&HG technician picked up a waste container from an area not classified as a radiation control area; the waste was subsequently classified as mixed waste. The internal manifest that accompanied this container did not specify that the waste was radioactive. During the process of bar-coding the container in the hazardous waste accumulation area (WAA, also known as temporary accumulation area or TAA), the technician noticed a radiation label and had a Health Physics technician survey the container. This survey revealed that the waste was radioactive, as well as hazardous (D-E-66; I-E-17 and I-E-19).
- The audit team observed one location where what appeared to be solvent-soaked rags were being air-dried prior to disposal as non-hazardous waste. Several rags were also discarded in a nearby trash barrel. The WMPM indicates that any material contaminated by a hazardous waste must be considered hazardous and handled accordingly, but does not provide any specific examples to illustrate the implications of this requirement. According to interviewees, examples are provided in hazardous waste training and some generators interviewed were familiar with this requirement (D-E-8; I-E-7, I-E-9, and I-H-19).
- The audit team observed several examples of materials that were either uncharacterized or initially characterized as waste when they were really intended for recycling (I-D-5, 8, 11, and 13).
- The WMPM specifies the process for labeling hazardous waste containers stored in satellite accumulation areas (SAAs) and recording label information on an internal manifest used when waste is picked up by Ames-ES&HG. This process includes the use of a brightly colored Laboratory hazardous waste label that clearly identifies hazardous waste containers; establishes a consistent labeling format for all Laboratory hazardous waste that includes information required by RCRA; and provides additional information that assists the Laboratory in characterizing and tracking its wastes. Although the audit team observed a high level of conformance with this new process, there were instances in which hazardous waste containers did not have the

new label or the label did not include all of the required information. There were also examples of internal manifests prepared by generators that did not contain all of the information required by the new WMPM procedures (D-E-65; I-E-4, 5, 7, 8, and 17).

Ames Laboratory has a procedure to help ensure that researchers do not leave unidentified materials behind when they leave the Laboratory or when a research project is complete; however, there are gaps in this procedure, and it does not appear to be consistently followed in all programs (I-E-2, 5, 8, 13, and 14) (see Finding TCM-1). Several people reported that they still find material that does not belong to current employees or researchers (I-E-4, I-E-8, and I-E-13). Without basic knowledge of how these wastes were generated, characterization can be very expensive.

Satellite and Waste Accumulation Areas

The WMPM does not provide clear guidance on requirements for SAAs (D-E-8).

- The WMPM does not mention that the Resource Conservation and Recovery Act (RCRA) requires SAAs to be at or near the point of generation and "under the control of the operator of the process generating the waste." There are several areas being managed as SAAs that do not appear to satisfy this requirement. Any areas that do not satisfy the requirements for SAAs must be managed as WAAs, which are subject to additional requirements for activities such as inspections, contingency planning, and emergency communications (D-E-54; I-E-7, I-E-8, and I-E-13).
- The WMPM does not indicate that there are quantity restrictions on the amount of waste a generator may accumulate in an SAA (e.g., no more than one quart of acute hazardous waste can accumulate in an SAA). As described in the WMPM, Ames Laboratory has imposed a 30-day limit on the amount of time waste may accumulate in SAAs in order to prevent the accumulation of significant quantities of waste. However, there is no mechanism to ensure that a generator does not exceed the quantity limit within a 30-day period. Clear guidance and adequate oversight will help generators to avoid inadvertently exceeding these quantity restrictions (D-E-8; I-E-12).
- The WMPM requires secondary containment for waste containers stored in SAAs. The team observed inconsistencies in the extent to which this practice is being implemented across the various research programs. Some programs check to ensure that their groups have adopted this practice; some did not seem to be aware of the requirement; and at least one program is aware of the requirement, but is having difficulty getting its researchers to adopt it (I-E-5, 7, 8, 9, and 13).

Hazardous Waste Training and Contingency Planning

RCRA requires generators to maintain detailed training records, including: the job title for each position related to hazardous waste management; the names of employees filling each job; and a written description for each position that includes requisite skills,

education, or other qualifications. Ames Laboratory is making comprehensive changes to its process for assessing environment, safety, and health (ES&H) training needs and documenting training activities; the new process will include a job task/hazards assessment and a needs questionnaire for all employees. The Laboratory is currently assessing options to ensure that this new system addresses the specific RCRA training documentation requirements and adequately covers all individuals that generate or manage hazardous waste at the Laboratory (D-E-12 and D-E-13; I-E-15 and I-E-18).

Ames Laboratory currently does not have a hazardous waste contingency plan that satisfies RCRA requirements. This deficiency was identified in the 1992 Tiger Team Assessment, the 1993 CH appraisal, and the recent EPA RCRA inspection. The Laboratory has prepared a draft hazardous waste contingency plan in response to these findings and has submitted the plan to EPA for review, but has not made a final decision about whether to issue a stand-alone contingency plan or to develop a plan to be appended to the existing emergency plan. The current draft plan addresses the waste storage areas in Room B55 of Spedding Hall and the Waste Disposal Building at the Applied Sciences Complex. If it is determined that areas currently being managed as SAAs should be handled as WAAs, the plan would need to be expanded to cover these additional areas (D-E-4, 5, 6, 9, and 14; I-E-14).

Waste Minimization

DOE's Waste Minimization/Pollution Prevention (WM/PP) Crosscut Plan requires each DOE facility to establish site-specific goals "to reduce the generation of all types of wastes and pollutants, including hazardous, radioactive, radioactive mixed, and sanitary from site operations" (D-E-68). Ames Laboratory has developed a preliminary draft WM/PP plan, and the waste minimization program has been described as being "in the very developmental stages" (D-E-11; I-E-2). In its present form, the content of the draft plan does not provide the level of guidance needed to effectively satisfy DOE and other legal requirements and guidelines (D-E-10, 68, 69; I-E-2, I-E-16, and I-E-19). Specific concerns identified include:

- The plan's goals and the strategies described to achieve the goals are generic and do not reflect the specific types of activities present at the Laboratory (e.g., there is no mention of the Laboratory's desire to minimize mixed and acute hazardous waste or to return to small quantity generator status).
- The current draft does not include criteria for evaluating WM/PP opportunities, does not contain any specific schedules or milestones for accomplishing the activities outlined in the plan, and does not provide a specific approach for measuring and reporting progress in achieving site goals.
- While relevant site directives are listed in the plan, there is no reference to the WMPM and no identification of how these directives support the plan. In addition, there is no guidance describing how the WM/PP goals in the plan will be integrated into working-level procedures and Laboratory activities.

- A baseline assessment of waste generation and pollutant releases is not provided and specific plans for performing such an assessment are not identified.
- Several WM/PP efforts currently in place at the Laboratory are not identified (e.g., identification of potential WM/PP opportunities during hazardous waste management training and the chemical tracking done to prepare the Toxic Chemicals Activity Report).
- The plan focus is on Laboratory waste generation, rather than a broader focus on facility pollution prevention including energy and water conservation and other non-laboratory wastes and releases.
- The draft plan does not describe how the Laboratory will ensure that any WM/PP efforts are consistent with DOE Orders, and Federal, state, local, and Ames Laboratory requirements.

3.10 ENVIRONMENTAL MONITORING AND QUALITY ASSURANCE PROGRAMS

3.10.1 Overview

The purpose of the environmental monitoring and quality assurance programs portion of the routine environmental audit was to evaluate Ames Laboratory's environmental monitoring activities, with a particular emphasis on quality assurance as required in DOE Orders and suggested in best management practices. A list of regulations, requirements, and guidelines used in the audit is provided in Appendix F.

The general approach of the environmental monitoring and quality assurance programs portion of the audit was to review the Laboratory's Environmental Quality Assurance Program (EQAP) and the integration of quality assurance requirements into environmental monitoring programs. Ames Laboratory was asked to provide the written EQAP, as well as the Environmental Monitoring Plan (EMP); this plan presents the design basis, implementation, and quality assurance requirements for environmental monitoring programs. Documents reviewed included the draft Groundwater Protection Management Plan (GPMP, also known as the Groundwater Protection Management Program Plan or GPMPP), the draft Air Emissions Program Plan, procedures, sampling results, and reports. It also included interviewing personnel involved in environmental sampling and analysis activities, and inspecting facilities. Monitoring of air effluents from the Alpha Operations Facility at the Applied Sciences Complex was also reviewed, because small quantities of plutonium and uranium-235 are expected to be used in this facility in the future.

The 1992 Tiger Team Assessment Report identified that an EQAP had not been developed and that quality assurance was not incorporated into environmental monitoring programs. Ames Laboratory responded with a corrective action plan (APO44) to develop an EQAP and conduct staff training regarding adherence to quality assurance for all activities, including environmental monitoring. Originally, the EQAP was to have been developed and implemented by July 31, 1993; the milestone for completion of this corrective action was changed to May 31, 1995.

In addition, the Tiger Team Assessment Report identified that an EMP had not been developed. Ames Laboratory responded with a corrective action plan to conduct baseline monitoring to determine environmental monitoring needs, and use the information as the basis for developing and implementing environmental monitoring programs. The EMP, including quality assurance, was to have been developed and implemented by September 30, 1993; the milestone for completion of this corrective action was later changed to December 31, 1994.

Ames Laboratory is evaluating the need for baseline environmental monitoring of groundwater, air emissions, and discharges to the storm and sanitary sewers. Both Laboratory staff and contractors perform the sampling and analyses as part of the evaluation of EMP needs. Specifically, environmental sampling activities at Ames Laboratory include:

- groundwater sampling of wells at the underground diesel storage tank, and other wells located around the ISU campus;

- sampling batch wastewater discharges from the Waste Disposal Building into the ISU sanitary sewer system for radioactivity; and
- sampling storm water discharges and liquid waste combined discharges from the laboratories into the ISU sanitary sewer system.

According to the Tiger Team Corrective Action Plan Summary Status Report, the EQAP and the EMP are scheduled to be developed and implemented by May 31, 1995 and December 31, 1994, respectively (AP044, AP055); however, Ames Laboratory has not made significant progress toward completing the corrective actions. The draft Air Emissions Program Plan does not meet the requirements of DOE 5400.1. The Laboratory does not appear to have committed the necessary resources to develop adequate environmental monitoring documents essential to providing defensible environmental monitoring data. The Laboratory has developed a draft GPMP (August 1994) (D-F-12). Although all elements required under DOE 5400.1 have been addressed, the Plan appears to be more of a summary than a detailed discussion and strategy for groundwater protection at the Laboratory.

There were two findings in the environmental monitoring and quality assurance programs portion of the audit; one related to deficiencies in the EMP, and the other is related to the lack of an EQAP.

3.10.2 Findings

EQ-1: Environmental Monitoring Plan for Ames Laboratory

Performance Objective: DOE 5400.1, "General Environmental Protection Programs," requires that each facility prepare a written Environmental Monitoring Plan (EMP). The plan must identify and discuss two major activities: effluent monitoring and environmental surveillance. The plan is required to contain the rationale and design criteria for the monitoring programs, extent and frequency of monitoring and measurements, procedures for laboratory analyses, quality assurance requirements, program implementation procedures, and direction for the preparation and disposition of reports. The EMP shall be approved by the appropriate Head of Field Organization or designee.

Finding: Ames Laboratory does not have an approved EMP, and the current draft does not meet the requirements of DOE 5400.1 with respect to documentation of the effluent monitoring and environmental surveillance program.

Discussion: The 1992 Tiger Team Assessment identified that an EMP for Ames Laboratory had not been developed. The Laboratory's corrective action plan originally stated that an EMP would be developed and implemented by September 30, 1993; however, the milestone for completion of this corrective action was changed to December 31, 1994.

An EMP is intended to document the results and evaluations of baseline effluent monitoring and environmental surveillance activities, and the design criteria, implementation procedures, and quality assurance requirements for the environmental monitoring programs developed as a result of the baseline monitoring. However, the draft EMP (D-F-22) describes the Laboratory's baseline environmental monitoring of groundwater, sanitary and storm sewer discharges, storm drains, and air emissions to evaluate monitoring needs.

The draft EMP does not include a comprehensive review of Ames Laboratory's operations with respect to the identification of significant pollutants and hazardous materials for which there is a need to establish effluent monitoring and environmental surveillance programs. For example, the Laboratory's submission to the Iowa Department of Natural Resources for exemption from air permitting focused on research facilities, but did not include outlying service facilities. These service facilities contain air emission sources, including a paint spray booth, a baghouse for graphite dust, and a sandblasting booth. The draft EMP also does not describe quality assurance requirements for the activities they are conducting.

Ames Laboratory developed a draft Groundwater Protection Management Plan (GPMP) (also known as a Groundwater Protection Management Program Plan or GPMPP) (D-F-12) and a draft Air Emissions Program Plan (D-F-13) which are required to be part of the EMP. The draft GPMP addresses all the required elements of DOE 5400.1 but lacks the detail normally expected in these plans. The Air Emissions Program Plan does not meet DOE 5400.1 requirements. The Air Emissions Program Plan does not provide the basis for a comprehensive survey and evaluation of potential air emission sources at the Laboratory, and the resulting air emissions program design based upon the evaluations.

Ames Laboratory has not applied the expertise and resources to develop the comprehensive environmental monitoring programs that comprise the EMP.

EQ-2: Environmental Monitoring Quality Assurance Program

Performance Objective: DOE 5400.1, "General Environmental Protection Program," Chapter IV, Section 10.a, states that a "Quality assurance program consistent with DOE 5700.6C shall be established covering each element of environmental monitoring and surveillance programs commensurate with its nature and complexity." The quality assurance program must include several items, including program design, procedures, field quality control, laboratory quality control, recordkeeping, chain-of-custody procedures, audits, etc. A quality assurance section should be included in the Annual Site Environmental Report and should summarize the measures taken to ensure the quality of monitoring data. The overall quality assurance program, including sampling, analysis, and data management, should be described for both radioactive and nonradioactive effluents and environmental monitoring. A summary of results from participation in interlaboratory cross-check programs should be included, comparing site results and expected results.

Finding: Ames Laboratory has not prepared an Environmental Quality Assurance Program (EQAP), and quality assurance has not been incorporated as a specific component of environmental monitoring programs.

Discussion: The 1992 Tiger Team Assessment Report identified that Ames Laboratory had not developed or implemented an environmental quality assurance program. The Laboratory responded in its corrective action plan that an environmental quality assurance plan would be developed by July 31, 1994. This milestone has been rescheduled to May 31, 1995. Such a plan has not been developed for the Laboratory's environmental monitoring activities, including those activities carried out by contractors for the Laboratory. Furthermore, there are no initiatives to develop the EQAP.

DOE 5400.1 requires quality assurance to be incorporated as part of environmental monitoring and surveillance programs. Ames Laboratory has developed an Air Emission Program Plan (D-F-12) and a Groundwater Protection Management Plan (D-F-13). As part of these programs, baseline monitoring was undertaken at Ames Laboratory to characterize groundwater and sanitary and storm sewer discharges to determine monitoring needs for demonstrating compliance with Federal, state, and local regulations and DOE Orders. Soil samples were also collected for confirmatory monitoring purposes in association with investigating inactive waste sites. However, the Laboratory has not developed quality assurance requirements as part of these programs which would have addressed, in part, the sampling activities.

Sampling activities are performed by Ames Laboratory personnel and contractors. Discharges from the Waste Disposal Building wash tank to the ISU sanitary sewer are sampled and analyzed for radioactivity by Laboratory staff (I-F-1). Sanitary sewer discharges from the Metals Development Building and Wilhelm, Spedding, and Gilman Halls were sampled and analyzed by contract laboratories, and it is anticipated that contractors will be used in the future. Groundwater sampling is carried out by a contractor and samples are analyzed by a contract laboratory. Ames Laboratory does not have a quality assurance program which addresses sampling and analysis conducted by its own staff or for sampling conducted by contractors. For sampling activities performed by contractors, the Laboratory relies upon the contractors' quality assurance programs.

Some components of quality assurance are present in Ames Laboratory's environmental sampling and analysis activities. One element of the Ames Laboratory quality assurance programs is participation in the Environmental Measurements Laboratory (EML) Interlaboratory Comparison Program. Ames Laboratory receives samples from EML semi-annually, analyzes them for radioactivity, and provides the results to EML. The results of the interlaboratory comparison are published in a semi-annual report, and Ames Laboratory performs informal reviews of the data and makes adjustments in procedures and methods as necessary. However, these data were not presented in the Annual Site Environmental Report as required by DOE 5400.1.

Another aspect of quality assurance present in Ames Laboratory's environmental monitoring activities included procedures to sample the wash tank at the Radioactive Waste Disposal Building and to analyze the samples for radioactivity. However, procedures have not been developed for sampling soil, sampling discharges to the sanitary sewer from facilities other than the Waste Disposal Building, sampling storm sewers, and sampling of an outfall.

APPENDIX A

BIOGRAPHICAL SKETCHES OF THE AUDIT TEAM

NAME: William A. Eckroade

AREA OF RESP: Team Leader

ASSOCIATION: U.S. Department of Energy

EXPERIENCE: 8 Years

- U.S. Department of Energy, Office of Environmental Audit
 - Environmental Team Leader/Environmental Engineer. Principal responsibilities include leading multidisciplinary teams of professionals in performing Environmental Audits; Environmental Assessments; and Environment, Safety and Health (ES&H) Progress Assessments at DOE facilities.
 - Served as Team Leader for environmental audits at Western Area Power Administration and Continuous Electron Beam Accelerator Facility (CEBAF); and as Manager of a Special Issue Review of Pollution Prevention Management.
 - Served as Deputy Team Leader for the Routine Environmental Audits of the Coal-Fired Flow Facility, the Alaska Power Administration, the Maywood, NJ, FUSRAP Site, and Grand Junction; the Environmental Management Assessment of the Bonneville Power Administration; and the Tiger Team Assessments of the Energy Technology Engineering Center and Ames Laboratory.
 - Technical specialist for the ES&H Progress Assessment of the Hanford Site, responsible for the conduct of a programmatic assessment of Hanford's Environmental Restoration Program.
- U.S. Department of Energy, Office of Environmental Compliance
 - Environmental Engineer responsible for conducting independent oversight of environmental compliance activities at the Savannah River Site.
- U.S. Environmental Protection Agency, Office of Waste Programs Enforcement
 - Environmental Engineer responsible for providing assistance in technical case development to assigned EPA regional offices. Additionally, responsible for conducting oversight of regional activities involving activities at enforcement lead Superfund sites.

EDUCATION: M.S., Civil Engineering, University of Maryland
B.S., Geophysics, Virginia Polytechnic Institute

NAME: Leroy H. Banicki

AREA OF RESP: Deputy Team Leader; Formality of Environmental Programs

ASSOCIATION: U.S. Department of Energy, Office of Environmental Audit

EXPERIENCE: 18 Years

- U.S. Department of Energy, Office of Environmental Audit
 - Environmental Protection Specialist responsible for providing guidance, direction, and assistance to a multidisciplinary group of professionals performing management assessments and environmental audits at DOE facilities nationwide.
- Headquarters, Air National Guard, Andrews AFB, MD
 - Project Officer for Department of Defense Installation Restoration Program.
- White Sands Missile Range, NM
 - Deputy Director, Environmental and Natural Resources Office, with responsibility for hazardous waste management, asbestos abatement, spill control and countermeasure, and environmental training programs.
- U.S. Department of the Army, Fort Carson, CO
 - Environmentalist, responsible for hazardous waste management, asbestos abatement, and cultural and natural resources programs.
- U.S. Army Corps of Engineers, Jacksonville, FL
 - Biological Scientist, responsible for Environmental Assessment/Environmental Impact Statement preparation and Endangered Species programs.
- U.S. Department of Agriculture, Soil Conservation Service, Prosser, WA
 - Soil Conservationist
- Menominee Indian Nation, Neopit, WI
 - Forest Inventory Specialist
- University of Texas at El Paso and El Paso Community College, El Paso, TX
 - Biology Instructor

EDUCATION: M.S., Biology, University of Texas at El Paso
B.S., Wildlife Management, McNeese State University
Postgraduate Studies, Forest Pathology, Louisiana State University

NAME: Raeann Reid

AREA OF RESP: Team Coordinator; Formality of Environmental Programs

ASSOCIATION: Arthur D. Little, Inc.

EXPERIENCE: 22 Years

- Arthur D. Little, Inc.
 - Team Coordinator for Tiger Team Assessments of the Energy Technology Engineering Center, the Naval Petroleum Reserves in California, the Strategic Petroleum Reserves, and the Naval Petroleum and Oil Shale Reserves in Colorado, Utah, and Wyoming; the Environmental Management Assessment of the Waste Isolation Pilot Plant; and the Routine Environmental Audits of Argonne National Laboratory-West, the Pinellas Plant, and the Hanford Site.
 - Deputy Team Coordinator for the Tiger Team Assessment of Idaho National Engineering Laboratory and the Environmental Management Assessment of the Fernald Environmental Management Project.
 - Technical Specialist evaluating toxic and chemical materials management for the Tiger Team Assessment of Energy Technology Engineering Center; and Management Specialist for the Environmental Management Assessments of the Superconducting Super Collider and the National Institute for Petroleum Energy Research.
 - Led and participated in audits and risk assessments for several Arthur D. Little clients, primarily in petrochemical and refining industries such as chemical manufacturing plants, chemical and oil terminals, oil refineries, and oil and gas production facilities.
- Other Industry Experience
 - Experience in environmental operations; environmental regulatory affairs; industrial and commercial hazardous waste management, site evaluation, remediation, and offsite disposal; and industrial and commercial laboratory management.
 - While working for a major petrochemical manufacturer, audited toll manufacturers, bulk terminals, repackaging plants, recyclers, and commercial disposal facilities.

EDUCATION: B.S., Mathematics, Minor Chemistry, Texas Technological University

NAME: Lisa A. Baci
AREA OF RESP: Waste Management
ASSOCIATION: Arthur D. Little, Inc.
EXPERIENCE: 14 Years

- Arthur D. Little, Inc.
 - Environmental Management Specialist for assessments of the Continuous Electron Beam Accelerator Facility, Stanford Linear Accelerator Center, and Sandia National Laboratory, California, covering the areas of: organizational structure; internal and external communication; staff resources, training and development; and environmental planning and risk management.
 - Served as Waste Management Specialist for the Tiger Team Assessments of the Stanford Linear Accelerator Center and the Strategic Petroleum Reserves.
 - Helped a major diversified international manufacturing and service company assess its existing environmental, health, and safety organization and identify changes to better align the ES&H organization with the company's new global business structure.
 - Assessed environmental management systems at the corporate, division, and plant levels for many companies, including major chemical manufacturers, leading consumer and industrial products manufacturers, and a natural gas pipeline operation.
 - Managed a project for a large state environmental agency to identify state and local permitting requirements that affect hazardous waste cleanup and to assess options to streamline and better coordinate the permitting process.
 - Analyzed the potential economic benefits to various parties at a Federal Superfund site from past waste disposal practices at the site.
- Temple, Barker, and Sloane, Inc.
 - Analyzed the economic and financial impacts of several major environmental regulations for the U.S. Environmental Protection Agency. These analyses included a study of the impacts on municipalities of proposed new regulations on solid waste landfills and a study of the impacts on generators, transporters, and recyclers of proposed regulation on facilities that handle used oil.

EDUCATION: Master of City and Regional Planning (M.C.R.P.), Harvard University
B.S., Urban and Environmental Planning, Worcester Polytechnic
Institute
A.B., Economics, College of the Holy Cross

NAME: Joanne P. Fichera

AREA OF RESP: Staff Resources;
Program Evaluation, Reporting and Corrective Action

ASSOCIATION: Arthur D. Little, Inc.

EXPERIENCE: 8 Years

- Arthur D. Little, Inc.
 - Participated in numerous DOE Environmental Management Assessments and Tiger Team Assessments. Analyzed management systems areas such as management commitment; communications; resources, training, and development; program evaluation, reporting, and corrective action; and environmental planning and risk management. As a Tiger Team member, conducted in-depth assessments of drinking water, wastewater, and surface water management programs for DOE facilities.
 - Analyzed strengths and weaknesses of DOE pollution prevention programs at four sites. Provided expertise in assessing the management systems supporting the pollution prevention programs, including program strategy, resources, incentives, communications, and information management. Identified barriers to implementation and made recommendations to improve the programs at the facility and Headquarters level. Assisted in developing a protocol for this review that focused on management systems and pollution prevention implementation.
 - Assisted in the development of the environmental management system protocol for DOE. The protocol, developed to meet DOE's Performance Objective Criteria for Environmental Systems, is used as a guide for all Environmental Management Assessments of DOE facilities. Also was instrumental in developing protocol training for DOE.
 - Analyzed DOE Tiger Team Management and Organization findings from 19 DOE facilities to identify programmatic issues and determine commonalities and peculiarities. Also responsible for the overall coordination of the Management and Organization analysis effort.

EDUCATION: M.A. (in progress), Environmental Policy, Tufts University
M.A., Economics, Tufts University
B.A., Economics and Spanish, Tufts University

NAME: Christopher B. Martel

AREA OF RESP: Environmental Monitoring and Quality Assurance Programs

ASSOCIATION: Arthur D. Little, Inc.

EXPERIENCE: 11 Years

- Arthur D. Little, Inc.
 - Senior Consultant. Participated in Tiger Team Assessments of the Energy Technology Engineering Center, the Stanford Linear Accelerator Center, the National Institute for Petroleum and Energy Research, the Idaho National Engineering Laboratory, the K-25 Site, and the Ames Laboratory. Participated in ES&H Progress Assessments and Routine Environmental Audits of the Fernald Environmental Management Project, the Savannah River Site, and the Savannah River Ecology Laboratory.
 - Project Manager for radiological hazard assessments conducted for clients in the mining and biotechnology industries, and research and development laboratories. Assessments included conducting extensive surveys, material sampling, and air sampling; estimating worker internal and external doses; and providing detailed guidance on administrative and engineering controls in the workplace.
 - Performed several quantitative risk assessments for the transport of high- and low-level radioactive waste shipments, and large quantity shipments of radioactive materials.
 - Performed remedial investigations to quantify environmental levels of a variety of radionuclides on several sites, including research reactors, accelerators, depleted uranium working facilities, and research laboratories.
 - Conducted radiological health and safety audits at oil and gas operations, hospitals, biotechnology laboratories, chemical plants, research and development laboratories, and government institutions.

EDUCATION: M.S., Health Physics, University of Lowell
B.S., Environmental Sciences, University of Lowell

OTHER: Certified in the Comprehensive Practice of Health Physics by
the American Board of Health Physics
Certified Hazardous Waste Site Supervisor
Member of the National and New England Chapter of the Health
Physics Society.

NAME: Kathryn J. Nobrega
AREA OF RESP: Toxic and Chemical Materials
ASSOCIATION: Arthur D. Little, Inc.
EXPERIENCE: 9 Years

- Arthur D. Little, Inc.
 - Launched and manage a comprehensive OSHA compliance service for laboratories in the United States. Visit client laboratories to review management systems and regulatory compliance programs, identify and assess hazards, inspect facilities, critique work practices, and evaluate ventilation systems and other engineering controls. Client laboratories have included numerous university research and teaching laboratories.
 - For the National Toxicology Program, prepared chemical-specific information packages on test chemicals for use by contract laboratory personnel. The packages contain toxicity profiles, and establish guidelines for safe use, handling, and disposal of hazardous test chemicals, many of which are suspected carcinogens. Also assisted in writing executive summaries of safety and toxicity information on hazardous chemicals nominated for testing.
 - Led a study of building design for a quality-control laboratory at an oil refinery in Chile. Following an examination of building integrity, hazardous materials handling, and ventilation, evaluated hazards to employees and the physical plant posed by current operations. Provided recommendations pertaining to laboratory design, furniture, ventilation systems, and services configurations for construction of a new facility. The study was conducted in Spanish.
 - Led domestic compliance audits of commercial clinical laboratories for large, diversified pharmaceutical company. Key areas included solid and hazardous waste management, including medical waste; chemical health and safety; and bloodborne pathogens management.
- The Children's Hospital, Boston, MA
 - Tracked clinical research studies and clinical trials. Acted as a liaison between laboratory staff, physicians, and patients. Maintained financial performance of research and clinical laboratories, and prepared grant applications.

EDUCATION: M.B.A., Occupational Health Management, Boston University
B.S., Zoology, University of Massachusetts at Amherst

NAME: Todd A. Rhodes

AREA OF RESP: Environmental Commitment;
Environmental Planning and Risk Management

ASSOCIATION: Arthur D. Little, Inc.

EXPERIENCE: 8 Years

- Arthur D. Little, Inc.
 - Served as a specialist for the DOE's Environmental Management Assessments of the Superconducting Super Collider and the Pinellas Plant. Protocol areas covered include Staff Resources, Training, and Development and Environmental Planning and Risk Management.
 - Served as management systems team leader during the Trans Alaska Pipeline System Assessment. Managed a team of six individuals, including five oil company personnel, over the 6-month-long second phase of the assessment. Topical areas reviewed as part of this assessment included Management Leadership; Risk Management; Information and Documentation; Personnel and Training; Operations and Maintenance; Management of Change; Emergency Planning; Compliance; and Quality Control.
 - Participated as a core team member for the development of a course designed to help companies assess the strategic impact of environmental issues on their business and develop competitive strategies to address those issues. Responsibilities included developing course materials, marketing, and course presentation.
 - Managed day-to-day activities for an environmental life-cycle study focusing on the impact of environmental labeling standards on an international manufacturer's paper product. Responsibilities included collection and assessment of environmental data, conceptual development of a database which calculated the product's ability to meet the labelling criteria, and analysis of the study results. The results of this study provided the client with a clear understanding of the environmental strengths and weaknesses of its nine facilities and its overall product line.
- Atlantic Metal Products and Artisan Electronics
 - Operations Coordinator/Expeditor at both companies. Managed the production and inventory resources associated with the manufacture of assigned accounts. Products manufactured include sheet metal products used in the computer industry and cable assemblies used in military applications.

EDUCATION: M.B.A., University of Michigan
B.S., Operations Management, The Pennsylvania State University

NAME: Joseph C.P. Selle

AREA OF RESP: Organizational Structure;
Internal and External Communication

ASSOCIATION: Arthur D. Little, Inc.

EXPERIENCE: 9 Years

- Arthur D. Little, Inc.
 - Participated as a management specialist in the Environmental Management Assessments of the Southwestern Power Administration, Continuous Electron Beam Accelerator Facility, Superconducting Super Collider, Argonne National Laboratory-West, and Pinellas Production Plant.
 - As a member of the company's Environmental Strategy Unit, assists private and public sector clients, including Federal, state and quasi-public institutions, in developing environmental strategies and policies. Key services provided include government regulatory and procedure analysis as well as regulatory policy analysis. Past involvement in management system environmental benchmarking studies focusing on the chemical and oil industry.
- Massachusetts Department of Environmental Protection
 - As a regional Planner in the Division of Solid Waste Management, co-authored the Massachusetts Solid Waste Masterplan. In support of the plan, performed quantitative analysis of solid waste generation rates and management methods. Planned and analyzed the state's long-range strategy for solid waste management.
 - Worked to revise the state permit procedure for solid waste facilities, and crafted strategy to ensure use of integrated solid waste planning and management for new and existing facilities.
 - Worked with hydrogeologists to design a risk assessment screening procedure for solid waste landfills. The procedure was designed to dovetail with Federal and state hazardous waste assessment and remediation programs.
 - As a program coordinator for the Office of Program Development and Evaluation, provided ongoing management consulting support to the Commissioner of the Department. Examples of projects include, analysis and revamping of the Department's formal budgeting procedures, redesign of the Department's internal communication and priority setting procedure, and ongoing support in the preparation of annual Department budgets submitted to the Governor.

EDUCATION: Masters of Public and Private Management (M.P.P.M.), Yale University
B.A., Geography and Environmental Studies, Dartmouth College

NAME: Mead L. Summer
AREA OF RESP: Technical Editor
ASSOCIATION: DevTech Systems, Inc.
EXPERIENCE: 11 Years

- DevTech Systems, Inc.
 - Technical Editor, providing support to the Department of Energy, Office of Environmental Audit, in conducting environmental assessments of DOE sites. Served as technical editor for the Routine Environmental Audits of the Y-12 Plant and the Hanford Site.
- National Endowment for the Arts
 - Information Specialist, responsible for responding, both orally and in writing, to public and press inquiries regarding Endowment activities. Also was responsible for compiling staff biographies, official statements and other information released to the print and broadcast media.
- *Daytona Beach News-Journal*
 - Assistant Business Editor. Principal duties included assigning, writing, and editing stories for business and real estate sections of newspaper, and designing layout of pages for those sections. Also was responsible for supervising staff of four reporters and three columnists and for coordinating with other editors, photography staff and composing room personnel.
 - Columnist. Wrote weekly column on local and regional business and real estate issues, and was a regular participant in cable television roundtable on Florida business.
- *The Mesa Tribune*
 - Sports Writer, responsible for coverage of professional, collegiate, high school, and amateur athletic events.
- Other Experience
 - Editor of two "how-to" books, *Selling Your Own Home* and *Associations: Maintaining a Community*.
 - Wrote travel articles for various newspapers and magazines.

EDUCATION: Juris Doctor Program, The Catholic University of America
B.S., Journalism, Arizona State University

NAME: Helen C. Walters
AREA OF RESP: Team Administrator
ASSOCIATION: DevTech Systems, Inc.
EXPERIENCE: 25 Years

- DevTech Systems, Inc.
 - Provided information processing and production of the Environmental Restoration and Waste Management Programmatic Environmental Impact Statement for the Department of Energy.
 - Provided logistical support and administrative oversight for 8 to 25 specialists during Tiger Team Assessments, Progress Assessments, Special Issue Reviews, and Routine Environmental Audits for DOE's Office of Environmental Audit and Office of Special Projects (EH-5). Logistical support included acting as liaison for DOE Headquarters in acquiring computers, office space, hotel arrangements, supplies, and access to high-security areas onsite. Work-to-date includes support at more than 22 DOE facilities. Developed and presented briefings on logistics, format, and style to all audit/assessment personnel; and created handbooks with detailed information on the site, the style and format of the report, and documents required before departing from site. Administrative oversight duties included organizing schedules for production, supervising site personnel responsible for keying in information, and working with site coordinators to ensure quality control of the final report.
 - Provided support for development and production of the Self-Assessment Training course for the Office of Special Projects.
 - Provided support for development and production of the Seminar on Radiological Concepts training course for the Office of Environmental Audit.
 - Assisted in development and production of the draft Administrative Support Procedures and Guidance for the Office of Environmental Audit.
- National Council of Farmer Cooperatives
 - Administrator. Responsible for administration of financial and human resources for a staff of 13 professional and 13 support staff. Duties in the area of finance included the preparation and oversight of an annual operating budget of \$2.5 million with reporting responsibility to a committee composed of board members. Duties in the area of human resources included hiring and training of all support staff, and developing and coordinating employee benefits packages. Responsible for accommodating 65 employees in newly constructed, 17,000-square-foot office space.

EDUCATION: B.S., Business, Kent State University

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APPENDIX B

AUDIT PLAN

**Plan for the
DOE Routine Environmental Audit
of the
Ames Laboratory
Ames, Iowa**

**U.S. Department of Energy
Office of Environmental Audit
September 12 - 23, 1994**

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PLAN FOR THE DOE ROUTINE ENVIRONMENTAL AUDIT OF AMES LABORATORY

1.0 INTRODUCTION

The DOE Environmental Audit Program is carried out by the Office of Environmental Audit (EH-24) within the Office of Environment, Safety and Health (EH). The program was created in 1985 with a goal to provide a continuing program of internal, independent oversight of line management's environmental performance, in support of DOE's broader goal of achieving full compliance and excellence in the environmental area. The objectives of the program in achieving this goal include:

- Conducting comprehensive baseline environmental audits of facilities that were not addressed in the Environmental Survey and that were not assessed by a Tiger Team;
- Conducting assessments of environmental management within line programs, including adequacy of self-assessment programs;
- Conducting a continuing program of field/technical re-audits of major and other DOE facilities;
- Conducting special issue reviews to assess high priority issues at a particular site, or to assess issues which cut across site and program lines; and
- Supporting line management self-assessment programs through continuing updates and automation of audit protocols, training, and other mechanisms of transferring the special auditing expertise of EH-24 to the field.

The Routine Environmental Audit (audit) of the Ames Laboratory, during the period of September 12 - 23, 1994, will focus on environmental management systems with a technical programmatic assessment in the areas of air, groundwater, and surface water monitoring; environmental quality assurance; waste management; and toxic and chemical materials management. It will evaluate the effectiveness of environmental management programs established by the DOE Chicago Operations Office (CH) and the Ames Laboratory contractor, Iowa State University (ISU). The audit will be conducted in accordance with DOE Environmental Audit Program Guidance (January 1994), Protocol for Conducting Environmental Management Assessments of DOE Organizations (DOE/EH-0326), and Performance Objectives and Criteria for Conducting DOE Environmental Audits (DOE/EH-0358). In DOE/EH-0358, performance objectives and criteria for air quality, surface water quality, groundwater quality, environmental quality assurance, waste management, and toxic and chemical materials will be emphasized.

From an organizational perspective, the audit will focus on Ames Laboratory, but will also include CH, the Office of Energy Research (ER), ISU, and the Ames Laboratory environmental subcontractors. The audit team will concentrate on line management's performance in developing and implementing effective environmental management systems.

The scope of the environmental management portion of the audit is comprehensive in that it covers a full range of relevant management systems, including:

- Organizational Structure;
- Environmental Commitment;
- Environmental Protection Programs;
- Formality of Environmental Programs;
- Internal and External Communication;
- Staff Resources, Training, and Development;
- Program Evaluation, Reporting, and Corrective Action; and
- Environmental Planning and Risk Management.

Coordination among the audit team members will be routine and extensive, since each of the management systems are interrelated. The results of the technical programmatic assessment will provide evidence of the overall effectiveness of the environmental management systems.

2.0

ROUTINE ENVIRONMENTAL AUDIT IMPLEMENTATION

The Routine Environmental Audit (audit) of Ames Laboratory will be conducted by a team consisting of a Team Leader and Deputy Team Leader from the DOE Office of Environmental Audit (EH-24); a team coordinator, management systems specialists, and a technical specialist from Arthur D. Little, Inc. (ADL); and an administrator and an editor from DevTech Systems, Inc. (DevTech). The names and assignments are listed below:

Bill Eckroade	DOE	Team Leader
Lee Banicki	DOE	Deputy Team Leader Formality of Environmental Programs
Raeann Reid	ADL	Team Coordinator Formality of Environmental Programs
Lisa Baci	ADL	Waste Management
Joanne Fichera	ADL	Staff Resources, Training, and Development Program Evaluation, Reporting, and Corrective Action
Chris Martel	ADL	Environmental Monitoring Environmental Quality Assurance
Kathryn Nobrega	ADL	Toxic and Chemical Materials
Todd Rhodes	ADL	Environmental Commitment Environmental Planning and Risk Management
Joe Selle	ADL	Organizational Structure Internal and External Communication
Helen Walters	DevTech	Administrator
Mead Summer	DevTech	Technical Editor

2.1

PRE-AUDIT ACTIVITIES

Pre-audit activities for the Ames Laboratory audit included issuing an introduction and information request memorandum, a pre-site visit to the Ames Laboratory, and initial review of documentation provided to the audit team by the Ames Laboratory.

On June 7, 1994, the DOE Team Leader and Deputy Team Leader and the Arthur D. Little team coordinator met with the Ames Laboratory staff to discuss the routine environmental audit process and the purpose and scope of the audit, and the audit team members were briefed on the environmental management programs of the Ames Laboratory. Site documents were reviewed, and onsite audit activities and logistics were discussed.

2.2 ONSITE ACTIVITIES AND REPORTS

The onsite activities for the audit will begin September 12 and continue through September 23, 1994. Onsite activities will include interviews with the Ames Laboratory management and staff and representatives of CH, ER, and the Institute for Physical Research and Technology, the Iowa State University group providing oversight of the Ames Laboratory activities; record and document reviews; and field inspections of selected operations and various environmental media sampling events.

The agenda for the audit (including a preliminary interview schedule) is shown in Attachment A. The interview schedule reflects the audit team's best attempt to identify relevant personnel to be interviewed. Experience has shown that these schedules change based on the availability of site personnel and as additional information is gathered by the audit team members. Modifications to the interview schedule, or other elements of the agenda, will be coordinated with the designated Ames Laboratory contacts and counterparts.

During the audit, the team will conduct daily debriefing sessions with the Ames Laboratory management and staff to review progress and concerns to date. Factual accuracy reviews of all audit findings will occur during the second week of the audit. At the conclusion of the onsite portion of the audit, on September 23, 1994, a closeout briefing will be conducted. During this briefing, a summary of the results of the audit, including program strengths and key findings, will be presented by the Team Leader. Also at the closeout, the draft report will be provided to ER, CH, the Ames Laboratory, and Iowa State University for review and comment.

2.3 POST-AUDIT ACTIVITIES

Following the onsite activities, ER, General Counsel for the Environment (GC-11), CH, the Ames Laboratory, and ISU will have the opportunity to submit final comments on the draft report. After reviewing these comments, EH-24 will issue a final report. ER, CH, and the Ames Laboratory will be responsible for preparing a corrective action plan that will be reviewed by EH-24.

Following is a tentative schedule for completion of these post-audit activities:

October 7	Site comments on draft report due to EH-24
October 21	Response to comments on draft report to site
November 4	Draft corrective action plan due to EH-24
November 18	Final audit report to site
November 18	Comments on draft corrective action plan to site
December 16	Final corrective action plan due to EH-24

APPENDIX C

SCHEDULE OF ONSITE ACTIVITIES

SCHEDULE OF ONSITE ACTIVITIES

Week 1	Mon. 9/12/94	Tues. 9/13/94	Wed. 9/14/94	Thurs. 9/15/94	Fri. 9/16/94	Sat. 9/17/94
Joseph C.P. Selle Organizational Structure Internal and External Communication	<ul style="list-style-type: none"> • Orientation • Interviews <ul style="list-style-type: none"> - S. Turkle - R. Struss - L. Mathison - J. Snow • Daily report preparation • Team Meeting 	<ul style="list-style-type: none"> • Daily Debrief • Interviews <ul style="list-style-type: none"> - S. Karsgen - E. Sabottka - T. Wessels - K. Hannasch - T. Barton • Daily report preparation • Team Meeting 	<ul style="list-style-type: none"> • Daily Debrief • Interviews <ul style="list-style-type: none"> - P. Waters - B. Thompson - S. Goel - D. Bluhm M. Godar - E. Yeung • Daily report preparation • Team Meeting 	<ul style="list-style-type: none"> • Daily Debrief • Interviews <ul style="list-style-type: none"> - P. Thiel - D. Meyer - S. Merritt - P. Neeson - M. Scott - L. Witt • Document review • Daily report preparation • Team Meeting 	<ul style="list-style-type: none"> • Daily Debrief • Interview <ul style="list-style-type: none"> - A. Stokes • Develop findings and overview • Daily report preparation • Team Meeting 	<ul style="list-style-type: none"> • Develop findings and overview

SCHEDULE OF ONSITE ACTIVITIES (continued)

Week 1	Mon. 8/12/94	Tues. 8/13/94	Wed. 8/14/94	Thurs. 8/15/94	Fri. 8/16/94	Sat. 8/17/94
Todd A. Rhodes Environmental Commitment Environmental Planning and Risk Management	<ul style="list-style-type: none"> • Orientation • Interviews <ul style="list-style-type: none"> - T. Barton - J. Eckert - B. Thompson - D. Williams • Daily report preparation • Team Meeting 	<ul style="list-style-type: none"> • Daily Debrief • Interviews <ul style="list-style-type: none"> - W. Sherry - I. Haugen - M. Godar - L. Mathison - S. Goel • Daily report preparation • Team Meeting 	<ul style="list-style-type: none"> • Daily Debrief • Interviews <ul style="list-style-type: none"> - P. Thiel - D. Johnson - P. Joab - M. Meyer - R. Struss - M. Edelson - S. Weeks - I. Haugen • Daily report preparation • Team Meeting 	<ul style="list-style-type: none"> • Daily Debrief • Interviews <ul style="list-style-type: none"> - P. Waters - R. Angelici - A. Ferruzzi - M. Porter - T. Logrosso - T. Wessels • Daily report preparation • Team Meeting 	<ul style="list-style-type: none"> • Daily Debrief • Interviews <ul style="list-style-type: none"> - G. Steen - T. Ellis • Document review • Daily report preparation • Team Meeting 	<ul style="list-style-type: none"> • Develop findings and overviews
	Mon. 8/19/94 <ul style="list-style-type: none"> • Interviews <ul style="list-style-type: none"> - L. Mathison - I. Haugen 					

SCHEDULE OF ONSITE ACTIVITIES (continued)

Week 1	Joanne P. Fichera												Kathryn J. Nobrega												Toxic and Chemical Materials																			
Mon, 9/12/94	• Orientation				• Interviews				• L. Witt				• S. Turkle				• T. Wessels				• R. Struss				• T. Wessels				• Daily report preparation				• Team Meeting				• Interviews				• Daily Debrief			
Tues, 9/13/94	• Interviews				• L. Mathison				• T. Wessels				• J. Dobson				• M. Godar				• P. Waters				• Daily report preparation				• Team Meeting				• Interviews				• Daily Debrief							
Wed, 9/14/94	• S. Goel				• P. Neeson				• M. Meyer				• T. Barton				• S. Chesney				• J. Fletcher				• K. Sordelot				• Daily report preparation				• Team Meeting				• Interviews				• Daily Debrief			
Thurs, 9/15/94	• Interviews				• T. Wessels				• J. Snow				• J. Fletcher				• Document review				• Daily report preparation				• Team Meeting				• Interviews				• Daily Debrief											
Fri, 9/16/94	• Interviews				• C. Thompson				• B. Carlson				• L. Mathison				• Document review				• Develop findings and overview				• Daily report preparation				• Team Meeting				• Interviews				• Daily Debrief							
Sat, 9/17/94	• Develop findings and overview												• Develop findings and overview												• Develop findings and overview																			

SCHEDULE OF ONSITE ACTIVITIES (continued)

Week 1	Mon. 9/12/94	Tues. 9/13/94	Wed. 9/14/94	Thurs. 9/15/94	Fri. 9/16/94	Sat. 9/17/94
Lisa A. Bael Waste Management Program	<ul style="list-style-type: none"> • Orientation • Interviews <ul style="list-style-type: none"> - K. Hannasch - T. Wessels - C. Thompson • Daily report preparation • Team Meeting 	<ul style="list-style-type: none"> • Daily Debrief • Interviews <ul style="list-style-type: none"> - W. Wong - B. Hokel - M. Godar - M. Vaclav • Daily report preparation • Team Meeting 	<ul style="list-style-type: none"> • Daily Debrief • Interview <ul style="list-style-type: none"> - K. Baikerikar - G. Norton - K. Hannasch • Daily report preparation • Team Meeting 	<ul style="list-style-type: none"> • Daily Debrief • Interviews <ul style="list-style-type: none"> - W. Waters - K. Hannasch - J. Hayes - S. Lillard • Daily report preparation • Team Meeting 	<ul style="list-style-type: none"> • Daily Debrief • Interviews <ul style="list-style-type: none"> - L. Mathison - T. Wessels - K. Hannasch - C. Thompson • Daily report preparation • Team Meeting 	<ul style="list-style-type: none"> • Develop findings and overview
	Mon. 9/19/94					
	<ul style="list-style-type: none"> • Interviews <ul style="list-style-type: none"> - T. Wessels - K. Hannasch 					
Christopher B. Martel Environmental Monitoring and Quality Assurance	<ul style="list-style-type: none"> • Orientation • Interviews <ul style="list-style-type: none"> - T. Wessels - L. Mathison - W. Waters - P. Millis - J. Withers • Daily report preparation • Team Meeting 	<ul style="list-style-type: none"> • Daily Debrief • Document review • Interviews <ul style="list-style-type: none"> - B. Hokel - L. Mathison - P. Millis • Daily report preparation • Team Meeting 	<ul style="list-style-type: none"> • Daily Debrief • Document review • Interviews <ul style="list-style-type: none"> - R. Struss - K. Hannasch • Daily report preparation • Team Meeting 	<ul style="list-style-type: none"> • Daily Debrief • Interview <ul style="list-style-type: none"> - K. Hannasch • Develop findings and overview • Daily report preparation • Team Meeting 	<ul style="list-style-type: none"> • Daily Debrief • Interviews <ul style="list-style-type: none"> - B. Hokel - K. Ewing • Factual Accuracy Review • Team Meeting 	

APPENDIX D

**SITE DOCUMENTS
REVIEWED BY THE AUDIT TEAM**

SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM

Document #	Title/Description	Author	Organization	Recipient	Document Date
JOSEPH C.P. SELLE - ORGANIZATIONAL STRUCTURE, INTERNAL AND EXTERNAL COMMUNICATION					
D-A-1	ISU Ames Laboratory Oversight Committee membership and recent agendas	Various	Ames Laboratory Oversight Committee	Various	Various, 1994
D-A-2	Safety coordinator walk-throughs in Environmental Science Program and Safety Coordinator position description for the program	J. Hayes	Ames Laboratory Environmental Sciences Program	E. Yeung	Various
D-A-3	Training module and list of Safety Coordinators and Representatives who have taken training	T. Wessels	Ames Laboratory Office of Assurance and Assessments (Ames-OAA)	Various	1993-94
D-A-4	Hazardous Materials Packaging and Transportation Manual	S. Merritt	Ames Laboratory Purchasing and Property	Various	1/94
D-A-5	Procedure for equipment transfer from laboratory to warehouse	L. Mathison	Ames Laboratory Environment, Safety and Health Group (Ames-ES&HG)	Laboratory employees	6/92
D-A-6	Communications Plan: Three blue binders	S. Karsgen, et al.	Ames Laboratory Public Affairs & Information	Various	Various
D-A-7	Meeting notes from meetings of Safety Coordinators and Representatives	D. Meyer	Ames-ES&HG	Safety Coordinators and Representatives	3-5/94
D-A-8	Annual Performance Review Process documents	Various	Ames Laboratory Personnel Office	Various	1993
D-A-9	Various Performance Indicator Questionnaires and job descriptions for Safety Coordinators and Representatives	Various	Various	General	Various, 1993

SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-A-10	List of Hazardous Waste Coordinators and Safety Coordinators and Representatives	R. Struss	Ames Laboratory Operations Division	General	1994
D-A-11	Institutional Plan for FY 1994-FY 1999		Ames Laboratory		2/94
D-A-12	IS-5101, UC-11, Ames Laboratory Environmental Protection Implementation Plan (11/9/93-11/9/94)		Ames-ES&HG		9/93
D-A-13	Emergency Preparedness Appraisal Report		CH Environment, Safety and Health Division (CH-ES&H)		11/15-19/93
D-A-14	Environmental Protection Program Appraisal Report		CH-ES&H		11/15-19/93
D-A-15	DOE/CH-9217 <u>Corrective Action Plan</u> in response to the March 1992 Tiger Team Assessment of Ames Laboratory		ISU		8/21/92
D-A-16	Corrective Action Plan Summary Status Report				9/8/94
D-A-17	Description of corrective actions taken and/or to be taken in response to the Notice of Violation issued to Ames Laboratory on 4/14/94		Ames-OAA	L. Harrington, EPA, Region VII	4/22/94
D-A-18	FY 1994 EM-40 Current Year Work Plan for Ames Laboratory, Iowa State University				
D-A-19	Organizational Chart and U.S. Department of Energy Work Breakdown Structure Dictionary Part I, Part II				
D-A-20	Ames Laboratory Waste Management Program Manual		ISU		
D-A-21	Environmental Management FY 1996 Field Submission Activity Data Sheet				
D-A-22	Summary Ames Laboratory Environment, Safety and Health Management Plan FY 1996-FY 2000				
D-A-23	Ames Laboratory Draft Institutional Plan FY 1995-FY 2000		Ames Laboratory		6/94

SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-A-24	Environmental Restoration and Waste Management Five Year Plan Activity Data Sheet FY 1995-FY 1999				
D-A-25	Insider (a newsletter for the Employees of Ames Lab) and some sample brochures				Various
D-A-26	Communications and Trust (lunchtime communication information exchange)				
D-A-27	Letters regarding Community Advisory Group				Various
D-A-28	Factsheet: Closed Chemical Disposal Site		Ames Laboratory		6/94
D-A-29	Letters re: Waste site issues				Various
D-A-30	Press releases from the last 6-12 months		Ames Laboratory		Various
D-A-31	EM Plan/Report Distribution List				
D-A-32	DOE organization charts to illustrate the Ames Laboratory reporting relationships to CH; EM; ER				
D-A-33	Position Description: Director				
D-A-34	Position Description: Laboratory Operations Specialist				
D-A-35	Duties and Responsibilities for the following people: Struss; Brazelton; Godos; Hokel; Mathison; Waters; Hannasch; and Withers				
D-A-36	ISU Ames Laboratory Oversight Committee: Plan of Organization				
D-A-37	DOE-CH Surveillance Program Plan for Ames Laboratory				10/9/92
D-A-38	U.S. Dept of Energy DOE Chicago Field Office Subject: Article 94: Environmental Protection				
D-A-39	Environment, Safety and Health Management Plan Activity Data Sheets (ADS), Contact W-7405-eng-82				5/24/94
D-A-40	Ames Laboratory Stop Work Authority Policy		Ames Laboratory		10/1/93

SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-A-41	Lab-Wide Annual Performance Review Form		Ames Personnel Office	Ames Laboratory staff	1993
TODD A. RHODES - ENVIRONMENTAL COMMITMENT, ENVIRONMENTAL PLANNING AND RISK MANAGEMENT					
D-B-1	Memo re: Proposals for new work	D. Williams	Ames Laboratory	Program Directors, Managers, and Principal Investigators	4/21/94
D-B-2	Preliminary Proposal Form (Form 10100.001 Rev. 1)		Ames Laboratory		4/94
D-B-3	MuCAT Beamline proposal for new work		Ames Laboratory	D. Williams	
D-B-4	Readiness Review (Procedure 10200.010 Rev. 1)	T. Lograsso	Ames Laboratory		2/1/94
D-B-5	The Risk-Based Priority Model Description (Section 3.2 of ES&H 5-Year Plan Guidance Manual)		DOE	M. Godar	
D-B-6	ES&H Management Plan Information System, Total Annual Costs - By Functional Area		DOE Office of Basic Energy Services (E-10)	S. Goel	
D-B-7	Group standard operating documents	D. Johnson	Ames Laboratory		8/17/94
D-B-8	Group document review checklist	D. Johnson	Ames Laboratory	J. Hoekstra	9/4/94
D-B-9	Purchasing Requisition Review Procedure		Ames Laboratory Environment, Safety and Health Group (Ames-ES&HG)	P. Joab	
D-B-10	Memo re: Environmental Monitoring Program	R. Struss	Ames Laboratory	L. Mathison	3/8/94
D-B-11	Memo re: Environmental Monitoring Program	L. Mathison	Ames Laboratory	R. Struss	4/29/94
D-B-12	Letter re: Baseline Monitoring Program funding justification, EM-30 Current Year Work Plan (ADS-5100)	L. Mathison	Ames Laboratory	S. Webster	5/5/94
D-B-13	Guidance Manual, ES&H Management Plan for FY 1996-2000	DOE	DOE	I. Haugan	11/93

SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-B-14	Draft Ames Laboratory Policy and Procedure for Implementation of the National Environmental Policy Act	W. Waters	Ames Laboratory		9/1/94
D-B-15	Trahanovsky Group Policy and Procedures	Trahanovsky	Ames Laboratory		
D-B-16	Draft Safety Analysis and Review System Appraisal Report - Ames Laboratory	G. Steen	CH Environment, Safety and Health Division (CH-ES&H)	Ames Laboratory	8/19/94
D-B-17	Revisions to Readiness Review Procedure	T. Logrosso	Ames Laboratory		
D-B-18	Activity ES&H Readiness Review Appraisal Form (ESC Project No. 2 - SLAPS 30301.001)	A. Bevolo	Ames Laboratory	B. Hokel	7/27/94
D-B-19	Readiness Review Form for HF Project (30411.003)	T. Ellis	Ames Laboratory	K. Hannasch	4/20/94
D-B-20	Chicago Operations Office ES&H Management Plan and Planning Report		CH	L. Mathison	5/94
D-B-21	Ames Laboratory Hazards Assessment		Systems Research and Applications Corporation	Ames Laboratory	12/92
D-B-22	Safety checklist	D. Johnson	Ames Laboratory		
D-B-23	DOE/CH-9217 <u>Corrective Action Plan</u> in response to the March 1992 Tiger Team Assessment of Ames Laboratory		Institute for Physical Research and Technology		8/21/92
D-B-24	FY 1994 EM-40 Current Year Work Plan for Ames Laboratory, Iowa State University		Ames Laboratory		
D-B-25	ER Safety and Health Five Year Plan Activity Data Sheets, Contact W-7405-eng-82		Ames Laboratory		3/25/93
D-B-26	Summary Ames Laboratory Environment, Safety and Health Management Plan FY 1996-FY 2000		Ames Laboratory		6/6/94
D-B-27	Environmental Restoration and Waste Management Five Year Plan Activity Data Sheet FY 1995-FY 1999		Ames Laboratory		7/9/93
D-B-28	Executive Summary of the Ames Laboratory Waste Minimization and Pollution Prevention Plan		Ames Laboratory		

SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-B-29	Needs Assessment Procedure	J. Stewart	Ames Laboratory		
D-B-30	Insider (a newsletter for the employees of Ames Laboratory) and some sample brochures		Ames Laboratory		Various
D-B-31	Memo with attached Environmental Policy Statement	L. Mathison	Ames Laboratory	Laboratory staff	1/23/90
D-B-32	Safety Health and Plant Protection Safety Program and Policy and Procedure Guide		Ames Laboratory		5/90
D-B-33	DOE Chicago Field Office Subject: Supplemental Agreement: Article 94: Environmental Protection		Ames Laboratory	W. Madden	3/8/93
D-B-34	Memo re: Environment, Safety, and Health Management Plan ADS Ranking	L. Mathison	Ames Laboratory	M. Godar, T. Wessels	3/2/94
D-B-35	Ames Laboratory Stop Work Authority Policy	L. Mathison	Ames Laboratory		10/1/93
D-B-36	Ames Laboratory, September 1994 Environmental Assessment, Environmental Activities - FY 1996 Budget Submission	I. Haugan	Ames Laboratory	T. Rhodes	9/15/94
D-B-37	Memo re: Facility management review of ES&H management Plan risk ranking	L. Mathison	Ames Laboratory	T. Barton, R. Struss	3/9/94
D-B-38	Ames Laboratory Institutional Plan - FY 1994-FY 1999		Ames Laboratory		2/94
JOANNE P. FICHERA - STAFF RESOURCES, TRAINING, AND DEVELOPMENT; PROGRAM EVALUATION, REPORTING, AND CORRECTIVE ACTION					
D-C-1	Institutional Plan/FY 1994-FY 1999		Ames Laboratory		2/94
D-C-2	Ames Doc. No. 10200.002, Rev. 1, Training Resources Handbook		Ames Laboratory Office of Assurance and Assessment (Ames-OAA)		4/94
D-C-3	Ames Doc. No. 10200.001, Ames Laboratory Standard Operations Document		Ames-OAA		12/93
D-C-4	Environmental Protection Program Appraisal Report		CH Environment, Safety and Health Division (CH- ES&H)		11/15-19/93

SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-C-5	Letter re: Comments/corrective action plans for the November 1993 ES&H appraisal findings		Ames-OAA	J. Fletcher, CH	1/26/94
D-C-6	Corrective Action Plan Summary Status Report		Ames Laboratory		9/8/94
D-C-7	Description of corrective actions taken and/or to be taken in response to the Notice of Violation issued to Ames Laboratory on 4/14/94		Ames-OAA	L. Harrington, EPA, Region VII	4/22/94
D-C-8	Organization Chart and U.S. Department of Energy Work Breakdown Structure Dictionary Part I, Part II		DOE		
D-C-9	Draft Needs Assessment Procedure		Ames Laboratory		
D-C-10	Draft Training Needs Questionnaire		Ames Laboratory		
D-C-11	Training Module Development		Ames Laboratory		12/7/93
D-C-12	Visitor Training		Ames Laboratory		5/1/94
D-C-13	Ames Lab Self Assessment		CH		10/26/92
D-C-14	DOE organization charts to illustrate the Ames Lab reporting relationships to CH; EM; ER		DOE		
D-C-15	Position Description: Director		CH		
D-C-16	Position Description: Laboratory Operations Specialist		CH		
D-C-17	Duties and Responsibilities for the following people: Struss; Brazelton; Godos; Hokel; Mathison; Waters; Hannasch; and Withers		Ames Laboratory		
D-C-18	ISU Ames Laboratory Oversight Committee: Plan of Organization		ISU		
D-C-19	DOE-CH Surveillance Program Plan for Ames Laboratory		CH		10/9/92
D-C-20	FY 1993 Summary Appraisal Report of Ames Lab, Contract No. W-7405-ENG-82		CH		10/93
D-C-21	DOE Chicago Field Office Subject: Supplemental Agreement: Article 94: Environmental Protection		CH		2/1/93

SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-C-22	DOE Chicago Field Office Subject: Article 94: Environmental Protection		CH		2/1/93
D-C-23	Employee Summary Module Sheet (sample)		Ames Laboratory		9/14/94
D-C-24	Professional Development Opportunities		ISU Training and Development Office		9-10/94
D-C-25	ES&H Management Plan and Planning Report		CH		5/94
D-C-26	Energy Research Self-Assessment Program Plan		DOE Office of Energy Research (ER)		8/91
D-C-27	Ames visit - October 2-3, 1991 and Ames Environmental Program Assessment 11/18/93	S. Goel	ER		10/91 and 11/93
D-C-28	Energy Research Program Associate Directorate Implementation Plan for the Self-Assessment Program		ER		9/91
D-C-29	Implementation of Departmental Realignment		DOE Administrative Division (AD)		5/93
D-C-30	Meeting minutes - ISU Ames Laboratory Oversight Committee	J. Dobson	ISU	Committee members	Various, 7/92-5/94
D-C-31	Draft Manager Walk-through Checklist QA Performance Objectives				
D-C-32	Annual Performance Review (sample)		Ames Laboratory		
D-C-33	Memo re: Classification Assignment of a New Position in Ames Laboratory	M. Burkheimer	ISU	L. Witt, Ames Laboratory	9/28/92
D-C-34	Procedure Log		Ames Laboratory		
D-C-35	Printout of number of attendees at GET and Hazardous Waste Management training		Ames-OAA		9/12/94
D-C-36	Hazard Inventory ISU Occupational Medicine Program, Department of Environmental Health and Safety		ISU		

SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-C-37	Status of milestones for all action plans (chart)	T. Wessels	Ames Laboratory		6/7/93
D-C-38	Milestone narratives	T. Wessels	Ames Laboratory		9/15/94
D-C-39	Various memos concerning updating corrective action plan	T. Wessels	Ames Laboratory	D. Bluhm	Various, 12/92-6/94
D-C-40	Ames Laboratory Draft Needs Assessment Team Charter (draft)		Ames-OAA		
D-C-41	Draft Employee Training Profile		Ames-OAA		
D-C-42	Ames Laboratory/IPRT Draft Training Modules		Ames-OAA		3/31/94
D-C-43	ISU Employee Performance Evaluation		ISU		
D-C-44	Annual Performance Review		Ames Laboratory Personnel Division		
D-C-45	ISU Professional and Scientific 1993/94 Pay Matrix		ISU		
D-C-46	Position Description Questionnaire	Iowa Board of Regents	ISU		
D-C-47	Professional and Scientific Position Information Questionnaire		ISU		
D-C-48	Memo re: Report of ETD Safety Walk-Through Assessment including revised ETD Safety Program	S. Weeks	Ames Laboratory	J. Corones	6/23/94
D-C-49	Memo re: ETD Safety Program and Safety Assessment Walk-Through	S. Weeks	Ames Laboratory	J. Corones	12/21/93
D-C-50	Various memos re: ES&HG Topical Appraisal of Engineering Services Group 7/5/94	Various	Ames Laboratory	Various	Various 5-8/94
D-C-51	Various memos re: ES&HG Topical Appraisals	Various	Ames Laboratory	Various	Various 10/92-6/94
D-C-52	Draft Topical Appraisal Schedule		Ames-ES&HG		
D-C-53	General Employee Training (GET) Evaluation Form		Ames-OAA		
D-C-54	General Employee Training information and handouts		Ames-OAA		

SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-C-55	Ames Laboratory Performance Review and Planning System, Supervisor Instructions		Ames Laboratory Personnel Division		
D-C-56	Welcome to GET: General Employee Training (training overheads)		Ames-OAA		
D-C-57	Ames Laboratory ES&HG Management Plan FY 1996-FY 2000 (summary)		Ames-ES&HG		
D-C-58	Tiger Team Corrective Action Plan Summary Status Report		Ames-OAA		9/8/94
D-C-59	ES&H Program Manual		Ames-ES&HG		8/1/94
D-C-60	ES&H/QA Tracking System Corrective Action Plan Process	S. Chesney	CH		
D-C-61	Training Summary	S. Chesney	CH		
KATHRYN J. NOBREGA - TOXIC AND CHEMICAL MATERIALS					
D-D-1	Institutional Plan/FY 1994-FY 1999		Ames Laboratory		2/94
D-D-2	Ames Doc. No. 10200.001, Ames Laboratory Standard Operations Document		Ames Laboratory-Office of Assurance and Assessments (Ames-OAA)		12/93
D-D-3	IS-5098, UC-20e, Ames Laboratory Site Environmental Report CY 1993		Ames Laboratory		CY 1993
D-D-4	Emergency Preparedness Appraisal Report		CH Environment, Safety and Health Division (CH-ES&H)		11/15-19/93
D-D-5	Environmental Protection Program Appraisal Report		CH-ES&H		11/15-19/93
D-D-6	Industrial Safety Appraisal Report		CH-ES&H		11/15-19/93
D-D-7	Industrial Hygiene Appraisal Report		CH-ES&H		11/15-19/93
D-D-8	Corrective Action Plan Summary Status Report		Ames Laboratory		9/8/94

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SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-D-9	Ames Laboratory Waste Management Program Manual		Ames Laboratory		3/8/94
D-D-10	Executive Summary of the Ames Laboratory Waste Minimization and Pollution Prevention Plan		Ames Laboratory		
D-D-11	DOE organization charts to illustrate the Ames Lab reporting relationships to CH; EM; ER		Ames Laboratory		
D-D-12	Purchasing Chemical Inventory		Ames Laboratory		8/16/94
D-D-13	Letter re: Release of hydrocide cast-off from release by Woodruff Construction on Ames Lab construction site, Iowa State University campus, Ames, Iowa. DNR release #04293RK1608	L. Mathison	Ames Laboratory	Iowa Division of Natural Resources (DNR)	5/8/93
D-D-14	Letter re: Hydraulic fluid release		Ames Laboratory	DNR	7/9/93
D-D-15	Letter re: Release of diesel fuel by Woodruff Construction on Ames Lab construction site, Iowa State University campus, Ames, Iowa. DNR release #0826WPW0852	L. Mathison	Ames Laboratory	DNR	8/31/92
D-D-16	Ames Laboratory Emergency Plan		Ames Laboratory		9/27/93
D-D-17	Memo to Group Leaders; Subject: Review of Chemical Purchases	L. Mathison	Ames Laboratory	Group leaders	4/20/93
D-D-18	Waste Disposal Building Water Tank Discharges and DOE EML QAP Program		Ames Laboratory		7/22/93
D-D-19	ISU Pretreatment & Ames Laboratory Baseline Sample Results		Ames Laboratory		1992
D-D-20	GET information, handouts, and overheads		Ames Laboratory		1993
D-D-21	Transportation Safety Manual		Ames Laboratory		7/1/93
D-D-22	ES&HG Review Procedure for Purchase Requisitions		Ames Laboratory		
D-D-23	Emergency Awareness Training Form		Ames Laboratory		9/20/93
D-D-24	Ames Laboratory Stores Stock Catalog		Ames Laboratory		1994
D-D-25	ES&H Readiness Review of Activities		Ames Laboratory		5/1/93

SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-D-26	Pesticide Applicator License		Diam, Inc.		12/18/93
D-D-27	Draft Asbestos Management Policy		Ames Laboratory		9/1/94
D-D-28	Ames Laboratory Policy for Working with Asbestos		Ames Laboratory		1/1/89
D-D-29	Contractor requirements		Ames Laboratory		
D-D-30	Letter re: Laboratory Activity Toxic Chemical Usage Report and EPCRA Form R	L. Mathison	Ames Laboratory	J. Fletcher	6/25/94
D-D-31	Memo re: Mercury disposal	K. Hannasch	Ames Laboratory	J. Cummings	1/21/93
D-D-32	Ames Laboratory Chemical Hygiene Plan		Ames Laboratory		1/1/93
D-D-33	Tiger Team Assessment of Ames Laboratory		DOE		1992
D-D-34	Ames Laboratory Hazards Assessment		Systems Research and Applications Corp.	Ames Laboratory	12/92
D-D-35	Waste Management Program Manual		Ames Laboratory		3/9/94
D-D-36	Draft Environment, Safety, and Health Program Manual		Ames Laboratory		8/1/94
D-D-37	Emergency telephone record		Ames Laboratory		
D-D-38	Call list for chemical spills		Ames Laboratory		5/16/94
D-D-39	ADS No. A9400008: <u>Creating a Strict Materials Balance for Chemicals</u>		Ames Laboratory		5/18/94
D-D-40	Letter re: SARA Section 355.30	L. Mathison	Ames Laboratory	Iowa Emergency Response Commission	5/15/87
D-D-41	Letter re: SARA Section 311	L. Mathison	Ames Laboratory	City of Ames Fire Department	10/13/87
D-D-42	Letter re: SARA Section 311	L. Mathison	Ames Laboratory	Story County Local Emergency Planning Committee (LEPC)	10/13/87

SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-D-43	Letter re: SARA Section 311	L. Mathison	Ames Laboratory	Iowa Emergency Response Commission	10/13/87
D-D-44	Letter re: SARA Section 311	L. Mathison	Ames Laboratory	DNR	6/24/94
D-D-45	Letter re: SARA Section 311	L. Mathison	Ames Laboratory	City of Ames Fire Department	6/24/94
D-D-46	Letter re: SARA Section 311	L. Mathison	Ames Laboratory	Story County LEPC	6/24/94
D-D-47	Environmental Protection Program Implementation Plan		Ames Laboratory		9/93
D-D-48	Memo re: CH-ES&H appraisal (emergency response)	M. Godar	Ames Laboratory	Emergency Team Leaders	11/22/93
D-D-49	Letter re: Pre-fire plan inspections	W. Leek	City of Ames Fire Department	T. Barton	5/25/94
D-D-50	Letter re: Hazardous materials awareness training	M. Godar	Ames Laboratory	Story County Emergency Management Agency	6/6/94
D-D-51	Procedure for SARA Tier II Reporting		Ames Laboratory		8/30/94
D-D-52	Letter re: 1993 Form R Reporting Under Section 313		Ames Laboratory	T. Barton	4/7/94
LISA A. BACI - WASTE MANAGEMENT					
D-E-1	Briefing Package for EH-24 Routine Environmental Audit		Ames Laboratory		6/7/94
D-E-2	Tiger Team Assessment of Ames Laboratory		DOE Office of Environment, Safety and Health (ES&H)		3/92

SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-E-3	Ames Laboratory Environmental Protection Implementation Plan, IS-5101, UC-11		Ames Laboratory Environment, Safety and Health Group (Ames-ES&HG)		9/93
D-E-4	Environmental Protection Program Appraisal Report		CH Environment, Safety and Health Division (CH-ES&H)		11/15-19/93
D-E-5	Letter re: Comments/corrective action plans for the November 1993 ES&H appraisal findings		Ames Laboratory Office of Assurance and Assessment (Ames-OAA)	J. Fletcher	1/26/94
D-E-6	<u>Corrective Action Plan</u> in response to the March 1992 Tiger Team Assessment of Ames Laboratory, DOE/CH - 9217		Ames Laboratory		8/21/92
D-E-7	Corrective Action Plan Summary Status Report		Ames Laboratory		6/2/94
D-E-8	Ames Laboratory Waste Management Program Manual		Ames Laboratory		3/8/94
D-E-9	Letter re: Description of corrective actions taken and/or to be taken in response to the Notice of Violation issued to Ames Laboratory on 4/14/94, with attachments: ●NOV ●Receipt for documents and samples	T. Wessels	Ames-OAA	L. Harrington, EPA, Region VII	4/22/94
D-E-10	The Ames Laboratory Waste Minimization and Pollution Prevention Plan (Draft)		Ames Laboratory		
D-E-11	Memo re: Document request	K. Hannasch	Ames Laboratory	T. Wessels	8/16/94
D-E-12	Draft Needs Assessment Procedure		Ames-OAA		
D-E-13	Draft Training Needs Questionnaire		Ames-OAA		
D-E-14	Draft Contingency Plan		Ames Laboratory		7/15/94

SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-E-15	Ames Laboratory Standard Operations Document, Ames Doc. No. 10200.001		Ames-OAA		12/93
D-E-16	1993 Radioactive Waste Shipment to Scientific Ecology Group, Log of Correspondence		Ames Laboratory		6/29/93-3/11/94
D-E-17	Transmittal letter and Radioactive Waste License-for-Delivery	R. Struss	Ames Laboratory	Director, Div. of Radiological Health, TN Dept. of Environment and Conservation (TDEC)	10/4/93
D-E-18	Letter re: Acknowledgement of receipt of the application for License-for-Delivery and requiring Certificate of Liability Insurance	M. Page	TDEC Division of Radiological Health	R. Struss	11/9/93
D-E-19	Letter re: Followup to the 11/9/93 letter, with attachments: ●9/27/93 letter from MAP to Scientific Ecology Group ●11/9/93 letter from MAP to R. Struss	M. Page	TDEC Division of Radiological Health	R. Struss	1/10/94
D-E-20	Record of telephone calls	V. Prouty, Counsel	CH	M. Page	1/18/94
D-E-21	Letter	J. Graves	TDEC Division of Radiological Health	R. Struss	2/22/94
D-E-22	Notice of Noncompliance	J. Sullivan	TDEC Division of Radiological Health	R. Struss	3/3/94
D-E-23	E-mail message re: Response to the TDEC letter of 2/22/93 [sic-94]	V. Prouty, Counsel	CH	J. Fletcher, et al	3/4/94
D-E-24	Letter re: Response to the 2/22/94 letter	R. Struss	Ames Laboratory	J. Graves	3/17/94
D-E-25	Letter re: Response to 3/3/94 Notice of Noncompliance	R. Struss	Ames Laboratory	J. Sullivan	3/21/94
D-E-26	Letter re: Responding to 3/21/94 letter	J. Sullivan	TDEC Division of Radiological Health	R. Struss	4/8/94

SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-E-27	Emergency Preparedness Appraisal Report		CH-ES&H		11/15-19/93
D-E-28	Letter re: Arthur D. Little information request	P. Waters	Ames Laboratory		8/11/94
D-E-29	Position description: Director		Ames Laboratory		
D-E-30	Position description: Laboratory Operations Specialist		Ames Laboratory		
D-E-31	Duties and Responsibilities for the following people: Struss; Brazelton; Godos; Hokel; Mathison; Waters; Hannasch; and Withers		Ames Laboratory		
D-E-32	Description of the Waste Tracking System Version 1.0 and some sample reports		Idaho National Engineering Lab		7/93
D-E-33	Ames Laboratory Emergency Plan		Ames Laboratory		9/27/93
D-E-34	Memo re: Environment, Safety, and Health Management Plan Activity Data Sheet (ADS) Ranking	L. Mathison	Ames-ES&HG	M. Godar, T. Wessels	3/2/94
D-E-35	Environment, Safety, and Health Management Plan ADSs, (Contact W-7405-eng-82)	L. Mathison	Ames-ES&HG	J. Fletcher	5/24/94
D-E-36	Organization Chart and U.S. Department of Energy Work Breakdown Structure Dictionary Part I, Part II		CH		
D-E-37	Environmental Management FY 1996 Field Submission Activity Data Sheet		CH		4/16/94
D-E-38	Environmental Restoration and Waste Management Five Year Plan Activity Data Sheet FY 1995-FY 1999		CH		7/9/93
D-E-39	ER Safety and Health Five Year Plan Activity Data Sheets		Ames Laboratory		3/25/93
D-E-40	Summary Ames Laboratory Environment, Safety and Health Management Plan FY 1996-FY 2000		Ames Laboratory		
D-E-41	Letter re: Environmental Restoration and Waste Management (EM) Plans and Reporting Requirements Contract No. W-7405-ENG-82 re: Your letter April 6, 1993		Ames Laboratory		4/21/94

SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-E-42	Fax of a letter re: 8608309(01), 2,000 gallon diesel UST removal, Ames Lab. Also, two sheets listing tanks.	W. Waters	Ames Laboratory	S. Papps	1/5/94
D-E-43	Ames Action Plan No: AAP007; Title: UST Records		Ames Laboratory		1/26/94
D-E-44	Memo re: Appraisal Team Action Plan Completion Report	P. Waters	Ames Laboratory	T. Wessels	2/2/94
D-E-45	Three pictures and Notification of Tank Closure or Change-in-Service		Ames Laboratory		6/5/91
D-E-46	Procedure for signing EPA Hazardous Waste Manifests	K. Hannasch	Ames-ES&HG		4/21/94
D-E-47	Hazardous Waste Inspection Procedure and Log	K. Hannasch	Ames-ES&HG		4/21/94
D-E-48	ES&HG Waste Acceptance Procedure	K. Hannasch	Ames-ES&HG		4/21/94
D-E-49	Safe Hazardous Waste Disposal Practices, Materials Chemistry Program, Electrochemistry Group	D. Johnson	Ames Laboratory		8/17/94
D-E-50	Procedure for Handling Chemical Waste, Processes & Techniques Program, Trahanovsky Group	J. Ferguson	Ames Laboratory		11/10/93
D-E-51	Waste Procedure, E.S. Yeung Group	S. Lillard	Ames Laboratory		
D-E-52	Employee Hazardous Waste Disposal Practices Manual for the Ames Laboratory Fossil Energy Program	G. Norton	Ames Laboratory		6/13/94
D-E-53	Procedure for Transportation of Hazardous Wastes from Transportation Safety Manual		Ames Laboratory		7/01/93
D-E-54	Employee Hazardous Waste Disposal Practices for Facilities Services		Ames Laboratory		2/92
D-E-55	Hazardous Waste Inspection Log - B55 SPH		Ames Laboratory		
D-E-56	Copy of overheads used for hazardous waste management training	K. Hannasch	Ames-ES&HG	Not routinely distributed to trainees	1994
D-E-57	Draft Radioactive & Mixed Waste Disposal Policy	B. Hokel	Ames-ES&HG		7/15/94

SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-E-58	Draft Procedures for Disposing of Radioactive & Mixed Waste	B. Hokel	Ames-ES&HG		7/15/94
D-E-59	Information request re: Management of hazardous waste	J. Callier	EPA, Region IV	T. Wessels	9/12/94
D-E-60	Form for requesting Ames Laboratory Associateship		Ames Laboratory		
D-E-61	Memo re: Quarterly Action Plan Progress Reports	K. Hannasch	Ames-ES&HG	T. Wessels	5/9/94
D-E-62	Memo re: Quarterly Action Plan Progress Reports	K. Hannasch	Ames-ES&HG	T. Wessels	7/2/93
D-E-63	Employee termination form - ES&HG		Ames-ES&HG		
D-E-64	Memo re: Hazardous waste generation	G. Norton	Ames Laboratory, Fossil Energy Program	W. Buttermore	4/19/94
D-E-65	Selected Internal Waste Manifests	Various	Ames Laboratory	Ames-ES&HG	Various
D-E-66	Hazardous Chemical Waste Manifest	D. Delaney	Ames Laboratory	Ames-ES&HG	8/11/94
D-E-67	1993 Biennial Report		Ames Laboratory	EPA, Region VII	2/14/94
D-E-68	Waste Minimization/Pollution Prevention Crosscut Plan, M94-GT-0092-01	H. O'Leary	DOE Office of the Secretary of Energy		1994
D-E-69	Pollution Prevention in the Federal Government		EPA Office of Federal Facilities Enforcement		4/94
CHRISTOPHER B. MARTEL - ENVIRONMENTAL MONITORING, ENVIRONMENTAL QUALITY ASSURANCE					
D-F-1	IS-5080, UD-20E, Ames Laboratory Site Environmental Report, CY 1991		Ames Laboratory		
D-F-2	IS-5101, UC-11, Ames Laboratory Environmental Protection Implementation Plan (11/9/93-11/9/94)		Ames Laboratory Environment, Safety and Health Group (Ames-ES&HG)		9/93
D-F-3	IS-5098, UC-20e, Ames Laboratory Site Environmental Report, CY 1992		Ames Laboratory		

SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-F-4	Environmental Protection Program Appraisal Report		CH Environment, Safety and Health Division (CH-ES&H)		11/15-19/93
D-F-5	1993 Radioactive Waste Shipment to Scientific Ecology Group Log of Correspondence		Ames Laboratory		6/29/93-3/11/94
D-F-6	Transmittal letter and Radioactive Waste License-for-Delivery	R. Struss	Ames Laboratory	Director, Div. of Radiological Health, TN Dept. of Environment and Conservation (TDEC)	10/4/93
D-F-7	Notice of Noncompliance	J. Sullivan	TDEC Division of Radiological Health	R. Struss	3/3/94
D-F-8	DOE/CH-9217 <u>Corrective Action Plan</u> in response to the March 1992 Tiger Team Assessment of Ames Laboratory		ISU		8/21/92
D-F-9	Corrective Action Plan Summary Status Report				9/8/94
D-F-10	Memo re: Environmental Monitoring Program		Ames Laboratory		3/8/94
D-F-11	Memo re: Underground Storage Tank; ADS No. CH-5201 (EM-40)				6/13/94
D-F-12	Air Emission Program Plan		Ames Laboratory		8/1/94
D-F-13	Groundwater Protection Management Plan		Ames ES&HG		8/1/94
D-F-14	Ames Laboratory Site Environmental Report CY 1993		Ames ES&HG		
D-F-15	U.S. Dept of Energy DOE Chicago Field Office Subject: Article 94: Environmental Protection				
D-F-16	Ames Laboratory Incident Report				7/9/93
D-F-17	Letter re: Release of hydrocide cast-off from release by Woodruff Construction on Ames Lab construction site, Iowa State University campus, Ames, Iowa. DNR release #04293RK1608	L. Mathison	Ames-ES&HG	DNR	4/30/93

SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-F-18	Letter re: Release of diesel fuel by Woodruff Construction on Ames Lab construction site, Iowa State University campus, Ames, Iowa. DNR release #0826WPW0852	L. Mathison	Ames-ES&HG	DNR	8/31/92
D-F-19	Waste Management Program Manual	K. Hannasch	Ames Laboratory	Distribution	1/1/94
D-F-20	Waste Management Program Manual correction	J. Haugen	CH	K. Hannasch	6/16/94
D-F-21	Waste Type Determination Flow Chart	K. Hannasch	Ames Laboratory	File	6/16/94
D-F-22	Environmental Monitoring Plan	W. Waters	Ames Laboratory	Distribution	9/1/94
D-F-23	Safety Analysis Report: Alpha Operations Facility	B. Hokel	Ames Laboratory	CH	4/20/94
D-F-24	NESHAP Compliance Procedure	B. Hokel	Ames Laboratory	File	6/30/94
D-F-25	Radiological Survey of the Old Waste Water Treatment Facility		ORISE	Ames Laboratory	6/94
D-F-26	Investigative Work Plan Inactive Waste Sites, Ames, Iowa		RUST Environmental and Infrastructure, Inc.	Ames Laboratory	3/93
D-F-27	Chronology of the Assessment of the Old Waste Water Treatment Facility in Ames, Iowa		Ames Laboratory	File	6/94
D-F-28	Letter re: General comments on the RUST report	S. Marquess	EPA	Ames Laboratory	4/12/94
D-F-29	Ames Laboratory Policy for Working with Asbestos		Ames Laboratory	Distribution	1/1/89
D-F-30	Standard Operating Document	T. Wessels	Ames Laboratory	Distribution	12/1/93
D-F-31	Investigative Report Ames Laboratory Inactive Waste Sites, Ames, Iowa		RUST Environmental and Infrastructure, Inc.	Ames Laboratory	10/93
D-F-32	Groundwater Well Sampling			File	
D-F-33	Field Procedures manual		Fox	Fox	8/94
LEROY H. BANICKI - FORMALITY OF ENVIRONMENTAL PROGRAMS					
D-G-1	Recommendation for the Preparation of environmental assessments and environmental impact statements		DOE Office of NEPA Oversight	Department-wide	5/93

SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-G-2	Writing Formal Procedures		Ames Laboratory Office of Assurance and Assessment (Ames-OAA)	Laboratory-wide	7/93
D-G-3	Standard operations document		Ames-OAA	Laboratory-wide	12/93
D-G-4	Writing Stand Alone Policy		Ames-OAA	Laboratory-wide	7/93
D-G-5	Writing Plans		Ames-OAA	Laboratory-wide	7/93
D-G-6	Writing Manuals		Ames-OAA	Laboratory-wide	7/93
D-G-7	Policy and Procedure for Implementation of the National Environmental Policy Act		Ames Laboratory Environment, Safety and Health Group (Ames- ES&HG)	Laboratory-wide	9/94
D-G-8	Tiger Team Corrective Action Plan		Ames Laboratory	DOE-HQ	8/92
RAEANN REID - FORMALITY OF ENVIRONMENTAL PROGRAMS					
D-H-1	Institutional Plan/FY 1994-FY 1999		Ames Laboratory		2/94
D-H-2	Ames Doc. No. 10200.001, Ames Laboratory Standard Operations Document		Ames Laboratory Office of Assurance and Assessment (Ames-OAA)		12/93
D-H-3	Table of Organization		Ames Laboratory Environment, Safety and Health Group (Ames- ES&HG)		3/17/94
D-H-4	Organization		Ames Laboratory		3/94
D-H-5	IS-5080, UD-20E, Ames Laboratory Site Environmental Report, CY 1991		Ames Laboratory		
D-H-6	IS-5101, UC-11, Ames Laboratory Environmental Protection Implementation Plan (11/9/93-11/9/94)		Ames-ES&HG		9/93

SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-H-7	IS-5098, UC-20a, Ames Laboratory Site Environmental Report, CY 1992		Ames Laboratory		
D-H-8	Environmental Protection Program Appraisal Report		CH Environment, Safety and Health Division (CH-ES&H)		11/15-19/93
D-H-9	1993 Radioactive Waste Shipment to Scientific Ecology Group Log of Correspondence		Ames Laboratory		6/29/93-3/11/94
D-H-10	Letter: Description of corrective actions taken and/or to be taken in response to the Notice of Violation issued to Ames Laboratory on 4/14/94, with attachments: ●NOV ●Receipt for documents and samples ●etc.		Ames-OAA	L. Harrington, EPA, Region VII	4/22/94
D-H-11	DOE/CH-9217 <u>Corrective Action Plan</u> in response to the March 1992 Tiger Team Assessment of Ames Laboratory		ISU		8/21/92
D-H-12	Letter re: Comments/corrective action plans for the November 1993 ES&H appraisal findings		Ames-OAA	J. Fletcher	1/26/94
D-H-13	Fiscal Year 1994 EM-40 Current Year Work Plan for Ames Laboratory, Iowa State University				
D-H-14	Organization Chart and U.S. Department of Energy Work Breakdown Structure Dictionary Part I, Part II		CH		3/94
D-H-15	"Reports Due" logs	P. Joab	Ames-ES&HG	ES&HG	3-7/94
D-H-16	Self-Inspection Checklist	G. Jones	Ames-ES&HG		4/21/93
D-H-17	Memo re: Environmental Audit of the Ames Laboratory	T. O'Toole	DOE Office of the Assistant Secretary for Environment, Safety and Health (EH-1)	M. Krebs	9/9/94

SITE DOCUMENTS REVIEWED BY THE AUDIT TEAM (continued)

Document #	Title/Description	Author	Organization	Recipient	Document Date
D-H-18	Factsheet: Closed Chemical Disposal Site		Ames Laboratory Office of Public Affairs	Release to public	6/94
D-H-19	Factsheet: Underground Storage Tank Site		Ames Laboratory Office of Public Affairs	Release to public	4/94
D-H-20	Factsheet: Nine Former and Formerly Suspected Ames-Area Waste Contamination Sites		Ames Laboratory Office of Public Affairs	Release to public	6/94
D-H-21	Manager Walk-Through Checklist/QA Performance Objectives		Ames Laboratory		
D-H-22	Example "Correspondence Tracking" log	P. Joab	Ames-ES&HG	Ames-ES&HG	9/6-12/94
D-H-23	Example ES&HG file index	P. Joab	Ames-ES&HG	Ames-ES&HG	
D-H-24	Forms management	T. Wessels	Ames-OAA	Distribution	6/1/93
D-H-25	Occurrence Reports Inventory		Ames-ES&HG	Ames-ES&HG	1/10/83- 4/14/94
D-H-26	Ames Laboratory Occurrence Reporting Plan		Ames-ES&HG		3/12/93
D-H-27	Memo re: Revision of Ames Laboratory Occurrence Reporting Plan with 9/30/94 version of the plan (circulating for approval)	L. Mathison	Ames-ES&HG	R. Struss	9/6/94
D-H-28	Attachment III to Ames Laboratory Occurrence Reporting Plan, Short Form Incident Report		Ames-ES&HG		9/30/94
D-H-29	Attachment IV to Ames Laboratory Occurrence Reporting Plan, Notification Report		Ames-ES&HG		9/30/94
D-H-30	Attachment V to Ames Laboratory Occurrence Reporting Plan, Occurrence Report		Ames-ES&HG		9/30/94

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CONTACTS/INTERVIEWS CONDUCTED BY THE AUDIT TEAM

Ref. #	Date	Organization	Topic
JOSEPH C.P. SELLE - ORGANIZATIONAL STRUCTURE, INTERNAL AND EXTERNAL COMMUNICATION			
I-A-1	9/12/94	Institute for Physical Research and Technology (IPRT)	IPRT environmental roles and responsibilities
I-A-2	9/12/94	Ames Laboratory Operations Division	Environmental roles and responsibilities, internal and external communication
I-A-3	9/12/94	Ames Laboratory Environment, Safety, and Health Group (Ames-ES&HG)	Organizational structure, roles and responsibilities, internal communication
I-A-4	9/12/94	IPRT	Organizational structure, external communication
I-A-5	9/13/94	Ames Laboratory Public Affairs and Information	External communication
I-A-6	9/13/94	ISU Department of Environmental Health and Safety (ISU-EH&S)	Relationship of ISU-EH&S to Ames-ES&HG, roles and responsibilities
I-A-7	9/13/94	Ames Laboratory Office of Assurance and Assessment (Ames-OAA)	Organizational structure, roles and responsibilities, internal communication
I-A-8	9/13/94	Ames-ES&HG	Organizational structure, roles and responsibilities, interaction between ISU-EHS and Ames-ES&HG
I-A-9	9/13/94	Ames Laboratory	Organizational structure, external communication
I-A-10	9/14/94	Ames-ES&HG	Organizational structure, roles and responsibilities
I-A-11	9/14/94	Ames Laboratory Science and Technology Division	Safety Coordinators and Representatives, environmental roles and responsibilities within the Division
I-A-12	9/14/94	DOE Office of Basic Energy Sciences (ER-10)	Role of ER organizations in environmental oversight of Ames Laboratory
I-A-13	9/14/94	Ames Laboratory Environmental Sciences Program	Environmental role of Safety Coordinators and Hazardous Waste Representatives, organizational structure
I-A-14	9/14/94	Ames Laboratory Facilities Services	Environmental roles and responsibilities, environmental procedures
I-A-15	9/14/94	Materials Chemistry Program	Environmental roles and responsibilities, environmental procedures
I-A-16	9/15/94	Ames-ES&HG	Hazardous Waste Coordinators, Safety Representatives, environmental roles and responsibilities

CONTACTS/INTERVIEWS CONDUCTED BY THE AUDIT TEAM (continued)

Ref. #	Date	Organization	Topic
I-A-17	9/15/94	Ames Laboratory Purchasing and Property Services	Environmental roles and responsibilities
I-A-18	9/15/94	CH Environmental Protection Branch	Environmental role of CH, including Ames Laboratory Management Office
I-A-19	9/15/94	Ames Laboratory Citizen Advisory Group	External communication
I-A-20	9/15/94	Ames Laboratory Personnel Office	Personnel information questionnaires and job descriptions
I-A-21	9/16/94	Iowa Division of Natural Resources (DNR)	Communication between Ames Laboratory and DNR, external communication
TODD A. RHODES - ENVIRONMENTAL COMMITMENT, ENVIRONMENTAL PLANNING AND RISK MANAGEMENT			
I-B-1	9/12/94	Ames Laboratory	Commitment
I-B-2	9/12/94	Ames Laboratory Administrative Services Division	Commitment and planning
I-B-3	9/12/94	Ames Laboratory Science and Technology Division	Commitment
I-B-4	9/12/94	Ames Laboratory Planning and Technology Application Division	Commitment
I-B-5	9/13/94	Ames Laboratory	Planning
I-B-6	9/13/94	Ames Laboratory	Planning
I-B-7	9/13/94	Ames Laboratory	Risk management
I-B-8	9/13/94	Ames Laboratory Environment, Safety, and Health Group (Ames-ES&HG)	Commitment and planning
I-B-9	9/13/94	DOE Office of Basic Energy Sciences (ER-10)	Planning
I-B-10	9/14/94	Ames Laboratory	Commitment
I-B-11	9/14/94	Ames Laboratory	Commitment
I-B-12	9/14/94	Ames-ES&HG	Purchasing review procedure
I-B-13	9/14/94	Ames Laboratory	Commitment
I-B-14	9/14/94	Ames Laboratory Operations Division	Commitment and planning
I-B-15	9/14/94	Ames Laboratory	Commitment
I-B-16	9/14/94	Ames Laboratory	Commitment

CONTACTS/INTERVIEWS CONDUCTED BY THE AUDIT TEAM (continued)

Ref. #	Date	Organization	Topic
I-B-17	9/14/94	Ames Laboratory	Planning
I-B-18	9/15/94	Ames Laboratory	NEPA program
I-B-19	9/15/94	Ames Laboratory	Commitment
I-B-20	9/15/94	Ames Laboratory	Commitment
I-B-21	9/15/94	Ames Laboratory	Commitment
I-B-22	9/15/94	Ames Laboratory	Risk management
I-B-23	9/15/94	Ames Laboratory Office of Assurance and Assessment (Ames-OAA)	Environmental policies and risk management
I-B-24	9/16/94	CH Nuclear Safety Branch	Risk management - review of system appraisal report review
I-B-25	9/16/94	Ames Laboratory	Readiness Review and SAR
I-B-26	9/19/94	Ames-ES&HG	Ranking of indirect activities
I-B-27	9/19/94	Ames Laboratory	Ranking of indirect activities
JOANNE P. FICHERA - STAFF RESOURCES, TRAINING AND DEVELOPMENT; PROGRAM EVALUATION, REPORTING AND CORRECTIVE ACTION			
I-C-1	9/12/94	Ames Laboratory	Staff resources and development
I-C-2	9/12/94	Institute for Physical Research and Technology (IPRT)	Environmental Health and Safety oversight
I-C-3	9/12/94	Ames Laboratory Office of Assurance and Assessment (Ames-OAA)	Training
I-C-4	9/12/94	Ames Laboratory Operations Division	Resources, training, and assessment
I-C-5	9/12/94	Ames-OAA	Staffing and oversight
I-C-6	9/13/94	Ames Laboratory Environment, Safety, and Health Group (Ames-ES&HG)	Staff resources, training, development, program evaluation, reporting, and corrective actions
I-C-7	9/13/94	ISU	ISU-EHS oversight
I-C-8	9/13/94	Ames Laboratory Facilities Services	Training and assessments
I-C-9	9/13/94	Ames Laboratory	Staff resources, training, development, and assessments
I-C-10	9/14/94	DOE Office of Energy Research (ER)	Environmental oversight

CONTACTS/INTERVIEWS CONDUCTED BY THE AUDIT TEAM (continued)

Ref. #	Date	Organization	Topic
I-C-11	9/14/94	CH Environmental Protection Branch	Environmental oversight
I-C-12	9/14/94	Ames Laboratory	Training and assessments
I-C-13	9/14/94	Ames Laboratory	Staff resources, training and program evaluation, reporting, and corrective actions
I-C-14	9/14/94	CH	Environmental oversight
I-C-15	9/14/94	Ames Laboratory	Training
I-C-16	9/14/94	Ames Laboratory	Training
I-C-17	9/15/94	Ames-OAA	Corrective action process
I-C-18	9/15/94	Institute for Physical Research and Technology	Environmental oversight
I-C-19	9/15/94	CH	Environmental oversight, corrective action process, staffing resources
I-C-20	9/16/94	Ames Laboratory	Staff resources, training and development and inspections
I-C-21	9/16/94	Ames Laboratory	Staff resources, training and development and inspections
I-C-22	9/19/94	CH	Corrective action process
KATHRYN J. NOBREGA - TOXIC AND CHEMICAL MATERIALS			
I-D-1	9/12/94	Ames Laboratory Environment, Safety, and Health Group (Ames-ES&HG)	Hazard and chemical inventories, asbestos, toxic and chemical materials (TCM) procedures
I-D-2	9/12/94	Ames-ES&HG	Spill response
I-D-3	9/12/94	Ames-ES&HG	SARA reporting, chemical inventories and procurement, emergency response
I-D-4	9/13/94	Ames-ES&HG	Release notification, spill plans and response, underground storage tanks, Iowa Division of Natural Resources contacts
I-D-5	9/13/94	Ames-ES&HG	Ames-ES&HG priorities, readiness review
I-D-6	9/13/94	Ames Laboratory Purchasing and Property Services	Ames Laboratory stores, TCM storage
I-D-7	9/13/94	Ames Laboratory Facilities Services	Emergency response, asbestos, pesticides, PCBs
I-D-8	9/13/94	Ames Laboratory Purchasing and Property Services	Contracts
I-D-9	9/14/94	Ames Laboratory Materials Chemistry	TCM management

CONTACTS/INTERVIEWS CONDUCTED BY THE AUDIT TEAM (continued)

Ref. #	Date	Organization	Topic
I-D-10	9/14/94	Ames Laboratory Purchasing and Property Services	DOT procedures, TCM management, warehouse
I-D-11	9/14/94	Ames-ES&HG	Emergency response, corrective action plan, TCM management
I-D-12	9/14/94	Ames Laboratory Facilities Services	PCBs, asbestos, pesticides
I-D-13	9/15/94	Ames Laboratory	TCM management, hydrogen fluoride handling
I-D-14	9/15/94	Ames Laboratory Purchasing and Property Services	TCM purchasing, database, warehouse
I-D-15	9/16/94	Ames-ES&HG	Hazardous waste storage area, chemical inventory
I-D-16	9/16/94	Ames-ES&HG	NFPA signage, emergency response
I-D-17	9/19/94	Ames-ES&HG	SARA Title III/Iowa right-to-know reporting, chemical inventory
LISA A. BACI - WASTE MANAGEMENT PROGRAM			
I-E-1	8/5/94	Ames Laboratory Environment, Safety, and Health Group (Ames-ES&HG)	Waste management programs
I-E-2	9/12/94	Ames-ES&HG	Waste management programs
I-E-3	9/12/94	Ames Laboratory Office of Assurance and Assessments (Ames-OAA)	Waste management programs
I-E-4	9/12/94	Ames Laboratory	Waste management practices
I-E-5	9/13/94	Ames-ES&HG	Waste management practices
I-E-6	9/13/94	Ames Laboratory	Waste management programs and practices
I-E-7	9/13/94	Ames Laboratory Facilities Services	Waste management practices
I-E-8	9/14/94	Ames Laboratory	Waste management practices
I-E-9	9/14/94	Ames Laboratory	Waste management practices
I-E-10	9/14/94	Ames-ES&HG	Waste management programs
I-E-11	9/15/94	Ames-ES&HG	Waste management programs
I-E-12	9/15/94	Ames-ES&HG	Waste management programs
I-E-13	9/15/94	Ames Laboratory	Waste management practices
I-E-14	9/16/94	Ames-ES&HG	Waste management programs

CONTACTS/INTERVIEWS CONDUCTED BY THE AUDIT TEAM (continued)

Ref. #	Date	Organization	Topic
I-E-15	9/16/94	Ames-OAA	Waste management programs
I-E-16	9/16/94	Ames-ES&HG	Waste management programs
I-E-17	9/16/94	Ames Laboratory	Waste management practices
I-E-18	9/19/94	Ames Laboratory-OAA	Waste management programs
I-E-19	9/19/94	Ames Laboratory-ES&HG	Waste management programs
CHRISTOPHER B. MARTEL - ENVIRONMENTAL MONITORING/QUALITY ASSURANCE PROGRAM			
I-F-1	8/30/94	Ames Laboratory Environment, Safety, and Health Group (Ames-ES&HG)	Environmental monitoring
I-F-2	9/12/94	Ames Laboratory Office of Assurance and Assessments (Ames-OAA)	Quality assurance
I-F-3	9/12/94	Ames-ES&HG	Environmental monitoring
I-F-4	9/12/94	Ames-ES&HG	Environmental monitoring
I-F-5	9/12/94	Ames-ES&HG	Instrument calibration
I-F-6	9/12/94	Ames-ES&HG	Asbestos
I-F-7	9/13/94	Ames-ES&HG	Radioactive waste
I-F-8	9/13/94	Ames-ES&HG	Inactive waste sites
I-F-9	9/13/94	Ames-ES&HG	Tour of rad areas
I-F-10	9/14/94	Ames Laboratory Operations Division	Inactive waste sites
I-F-11	9/14/94	Ames-ES&HG	Radioactive- and mixed-waste management
I-F-12	9/15/94	Ames-ES&HG	Radioactive- and mixed-waste determination
I-F-13	9/16/94	Ames-ES&HG	Radioactive waste storage
I-F-14	9/16/94	Ames-ES&HG	Radioactive waste storage
LEROY H. BANICKI - FORMALITY OF ENVIRONMENTAL PROGRAMS			
I-G-1	9/13/94	Ames Laboratory Environment, Safety, and Health Group (Ames-ES&HG)	Regulatory tracking; procedures
I-G-2	9/13/94	Ames-ES&HG	Regulatory tracking; procedures

CONTACTS/INTERVIEWS CONDUCTED BY THE AUDIT TEAM (continued)

Ref. #	Date	Organization	Topic
I-G-3	9/13/94	CH Environment, Safety and Health Division (CH-ES&H)	Regulatory tracking; procedures
I-G-4	9/14/94	Ames Laboratory Administrative Services Division	Regulatory tracking; procedures
I-G-5	9/14/94	Ames Laboratory	Regulatory tracking; procedures
I-G-6	9/14/94	CH Ames Laboratory Management Office	Regulatory tracking; procedures
I-G-7	9/14/94	CH	Regulatory tracking; procedures
I-G-8	9/15/94	Ames-ES&HG	Regulatory tracking; procedures
I-G-9	9/15/94	Ames Laboratory Office of Assurance and Assessment	Regulatory tracking; procedures
RAEANN REID - FORMALITY OF ENVIRONMENTAL PROGRAMS			
I-H-1	9/12/94	Ames Laboratory Environment, Safety, and Health Group (Ames-ES&HG)	Overview of formal environmental management systems
I-H-2	9/12/94	Ames Laboratory Office of Assurance and Assessments (Ames-OAA)	Program for implementation of consistent policies, programs, plans, procedures, and forms.
I-H-3	9/13/94	Ames-ES&HG	Environmental records management
I-H-4	9/13/94	Ames-ES&HG	Mechanisms to investigate report, correct, track, and monitor trends
I-H-5	9/13/94	Ames-ES&HG	Records retention policies
I-H-6	9/13/94	Ames Laboratory Facilities Services	Testing and maintenance of pollution control equipment
I-H-7	9/13/94	Ames Laboratory Facilities Services	Testing and maintenance of pollution control equipment
I-H-8	9/13/94	Ames Laboratory Facilities Services	Testing and maintenance of pollution control equipment
I-H-9	9/13/94	Ames-OAA	Program for implementation of consistent policies, programs, plans, procedures, and forms.
I-H-10	9/14/94	Ames-ES&HG	Topical Appraisals
I-H-11	9/14/94	Ames Laboratory Metallurgy and Ceramics Program	Rotolone scrubber maintenance and inspection
I-H-12	9/15/94	Ames-ES&HG	PCB records
I-H-13	9/15/94	Ames-ES&HG	Underground storage tank records
I-H-14	9/15/94	Ames-ES&HG	Records indexing

CONTACTS/INTERVIEWS CONDUCTED BY THE AUDIT TEAM (continued)

Ref. #	Date	Organization	Topic
I-H-15	9/15/94	Ames-ES&HG	Incident recordkeeping and reporting
I-H-16	9/15/94	Ames-ES&HG	Management meetings, records of CH oversight, incident recordkeeping and reporting
I-H-17	9/15/94	Ames Laboratory Facilities Services	Underground storage tank records
I-H-18	9/16/94	Ames Laboratory Facilities Services	Underground storage tank records
I-H-19	9/16/94	Ames Laboratory Facilities Services	Pollution control equipment maintenance
I-H-20	9/15/94	Ames-ES&HG	Incident recordkeeping
I-H-21	9/16/94	Ames-ES&HG	Occurrence Reporting Processing System reporting

APPENDIX F

REGULATIONS, REQUIREMENTS, AND GUIDELINES USED IN EVALUATING AMES LABORATORY

**REGULATIONS, REQUIREMENTS, AND GUIDELINES
USED IN EVALUATING THE AMES LABORATORY**

Requirements/ Guidelines	Sections/Title	Authority
Executive Orders 11514 and 11991	Protection and Enhancement of Environmental Quality	Office of the President
Executive Order 12088	Federal Compliance with Pollution Control Standards	Office of the President
Executive Order 12580	Superfund Implementation	Office of the President
Executive Order 12856	Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements	Office of the President
Executive Order 12843	Procurement Requirements and Policies for Federal Agencies for Ozone-Depleting Substances	Office of the President
Public Law 94-52	National Environmental Policy Act	CEQ
Public Law 99-499	Superfund Amendments and Reauthorization Act (SARA) Title III, Emergency Planning and Community Right-to-Know Act	EPA
Public Law 102-386	Federal Facilities Compliance Act	EPA
15 U.S.C. 2601 et seq.	Toxic Substances Control Act	EPA
33 U.S.C. 1251 et seq.	Clean Water Act	EPA
40 U.S.C. 9601	Comprehensive Environmental Response, Compensation, and Liability Act	EPA
42 U.S.C. 6901 et seq.	Resource Conservation and Recovery Act	EPA
42 U.S.C. 7401 et seq.	The Clean Air Act	EPA
42 U.S.C. 13101- 13109	Pollution Prevention Act	EPA
DOE 1000.3B	Internal Control Systems	DOE
DOE 5000.3B	Occurrence Reporting and Processing of Operations Information	DOE
DOE 5100.3	Field Budget Process	DOE

**REGULATIONS, REQUIREMENTS, AND GUIDELINES
USED IN EVALUATING AMES LABORATORY (continued)**

Requirements/ Guidelines	Sections/Title	Authority
DOE 5400.1	General Environmental Protection Program	DOE
DOE 5400.2A	Environmental Compliance Issue Coordination	DOE
DOE 5400.3	Hazardous and Radioactive Mixed Waste Program	DOE
DOE 5400.4	Comprehensive Environmental Response, Compensation, and Liability Act Requirements	DOE
DOE 5400.5	Radiation Protection of the Public and the Environment	DOE
DOE 5440.1E	National Environmental Policy Act Compliance Program	DOE
DOE 5480.1B	Environment, Safety, and Health Program for DOE Operations	DOE
DOE 5480.4	Environmental Protection, Safety and Health Protection Standards	DOE
DOE 5480.19	Conduct of Operations Requirements for DOE Facilities	DOE
DOE 5480.20	Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities	DOE
DOE 5481.1B	Safety Analysis and Review System	DOE
DOE 5482.1B	Environment, Safety, and Health Appraisal Program	DOE
DOE 5484.1	Environmental Protection, Safety, and Health Protection Information Reporting Requirements	DOE
DOE 5500.2B	Emergency Categories, Classes, and Notification and Reporting Requirements	DOE
DOE 5500.3A	Planning and Preparedness for Operational Emergencies	DOE
DOE 5700.6B,C	Quality Assurance	DOE
DOE 5700.6C	Quality Assurance	DOE
DOE 5820.2A	Radioactive Waste Management	DOE

**REGULATIONS, REQUIREMENTS, AND GUIDELINES
USED IN EVALUATING AMES LABORATORY (continued)**

Requirements/ Guidelines	Sections/Title	Authority
DOE 6430.1A	General Design Criteria	DOE
DOE N5480.6	Radiological Control	DOE
DOE/EH-0125	DOE Environmental Audit Manual	DOE
DOE/EH-0173T	Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance	DOE
DOE/EH-0256T	Radiological Control Manual	DOE
DOE/EH-0326	Protocols for Conducting Environmental Management Assessments of DOE Organizations	DOE
DOE/EH-0358	Performance Objectives and Criteria for Conducting DOE Environmental Audits	DOE
Interim Guide March 8, 1991	DOE Guidance on the Procedures in Applying the ALARA Process for Compliance with DOE 5400.5	DOE
December 1992 Guidance	Self-Assessment Guidance Document	DOE
January 1994 Draft Final	DOE Environmental Audit Program Guidance	DOE
Implementation Guidance	Implementation Guidance for DOE Order 5400.1	DOE
10 CFR 834 (Draft January 8, 1991)	Radiation Protection of the Public and Environment	DOE
40 CFR 61 Subpart H	National Emission Standards for Emissions of Radionuclides Other Than Radon from DOE Facilities	EPA
40 CFR 61 Subpart T	National Emission Standards for Radon Emissions from the Disposal of Uranium Mill Tailings	EPA
40 CFR 112	Oil Pollution Prevention	EPA
40 CFR 122	National Pollutant Discharge Elimination System (NPDES)	

**REGULATIONS, REQUIREMENTS, AND GUIDELINES
USED IN EVALUATING AMES LABORATORY (continued)**

Requirements/ Guidelines	Sections/Title	Authority
40 CFR 136	Guidelines Establishing Test Procedures for the Analysis of Pollutants	
40 CFR 165	Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), Pesticide Storage/Disposal Regulations	EPA
40 CFR 191	Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes	
40 CFR 243	Guidelines for the Storage and Collection of Residential, Commercial, and Institutional Solid Waste	EPA
40 CFR 261	Identification and Listing of Hazardous Waste	EPA
40 CFR 262	Standards Applicable to Generators of Hazardous Waste	
40 CFR 265	Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities	
40 CFR 268	Land Disposal Restrictions	
40 CFR 300	National Oil and Hazardous Substances Contingency Plan	EPA
40 CFR 302	Designation, Reportable Quantities, and Notification	EPA
40 CFR 355	Emergency Planning and Notification	EPA
40 CFR 370	Hazardous Chemical Reporting: Community Right-To-Know	EPA
40 CFR 372	Toxic Chemical Release Reporting: Community Right-To-Know	EPA
40 CFR 373	Reporting Hazardous Substance Activity when Selling or Transferring Federal Real Property	EPA
40 CFR 403	General Pretreatment Regulations for Existing and New Sources of Pollution	

**REGULATIONS, REQUIREMENTS, AND GUIDELINES
USED IN EVALUATING AMES LABORATORY (continued)**

Requirements/ Guidelines	Sections/Title	Authority
40 CFR 761	Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions	EPA
49 CFR 171, 173, 177, 178, and 397	Transportation of Hazardous Materials, Packaging, Marking, Spill Reporting, etc.	DOT
CERCLA/SARA	Section 103-Notices, Penalties	EPA
CERCLA/SARA	Section 120-Federal Facilities	EPA
Iowa Administrative Code, Section 89B.12	Iowa Hazardous Chemicals Risks Right-to- Know Act	IDNA
Iowa Administrative Code Chapter 135 and 136	Underground Storage Tank Regulations	IDNA

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APPENDIX G

ACRONYMS AND ABBREVIATIONS

ACRONYMS AND ABBREVIATIONS

Acronym	Definition
AD	DOE Office of Administration
ADS	Activity Data Sheet
ALARA	As low as reasonably achievable
ALMO	Ames Laboratory Management Office
Ames-ES&HG	Ames Laboratory Environment, Safety and Health Group
Ames-OAA	Ames Laboratory Office of Assurance and Assessments
ASC	Applied Sciences Center
CAG	Community Advisory Group
CAMS	Computer Aided Maintenance System
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CH*	DOE Chicago Operations Office
CH-ES&HD	CH Environment, Safety and Health Division
DOE*	U.S. Department of Energy
DNR	Iowa Department of Natural Resources
DP	DOE Office of Defense Programs
EC	Environmental Commitment
EE	DOE Office of Energy Efficiency
EH	DOE Office of Environment, Safety and Health
EH-1	DOE Office of the Assistant Secretary for Environment, Safety and Health
EH-24	DOE Office of Environmental Audit
EM	DOE Office of Environmental Management (formerly Office of Environmental Restoration and Waste Management)
EM-30	DOE Office of Waste Management
EM-40	DOE Office of Environmental Restoration
EML	Environmental Measurements Laboratory
EMP	Environmental Monitoring Plan
EPA*	U.S. Environmental Protection Agency

ACRONYMS AND ABBREVIATIONS (continued)

Acronym	Definition
EP	Environmental Protection Programs
EPCRA	Emergency Planning and Community Right-to-Know Act
EQ	Environmental Monitoring and Quality Assurance Programs
EQAB	Environmental Quality Advisory Board
EQAP	Environmental Quality Assurance Program
ER*	DOE Office of Energy Research
ER-10	DOE Office of Basic Energy Sciences
ES&H	Environment, safety, and health
FE	DOE Office of Fossil Energy
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FP	Formality of Environmental Programs
FTE	Full-time equivalent
FY	Fiscal Year
GPMP	Groundwater Protection Management Plan Program
HEPA	High Efficiency Particulate Air
HMTA	Hazardous Materials Transportation Act
IC	Internal and External Communication
IDNA	Iowa Department of Natural Resources
IPRT	Institute for Physical Research and Technology
ISU*	Iowa State University
ISU-EH&S	ISU Environmental Health and Safety
MSDS	Material Safety Data Sheet
NE	DOE Office of Nuclear Energy
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFPA	National Fire Prevention Association
ORISE	Oak Ridge Institute for Science and Education
ORPS	Occurrence Reporting and Processing System
OS	Organizational Structure

ACRONYMS AND ABBREVIATIONS (continued)

Acronym	Definition
OSHA	Occupational Safety and Health Act
PCB	Polychlorinated biphenyl
PE	Program Evaluation, Reporting, and Corrective Action
PIQ	Personnel Information Questionnaire
PPA	Pollution Prevention Act
PPR	Performance Planning Review
QA	Quality Assurance
RCRA	Resource Conservation and Recovery Act
RM	Environmental Planning and Risk Management
SAA	Satellite accumulation area
SAR	Safety Analysis and Review
SARA	Superfund Amendments and Reauthorization Act
SOD	Standard Operations Document
SR	Staff Resources, Training, and Development
SRC	Safety Review Committee
TAA	Temporary accumulation area
TASF	Technical and Administrative Support Facility
TCM	Toxic and Chemical Materials
TDEC	Tennessee Department of Environment and Conservation
TPQ	Threshold planning quantity
TRI	Toxic Release Inventory
TSCA	Toxic Substances Control Act
UST	Underground storage tank
WAA	Waste accumulation area
WM	Waste Management
WM/PP	Waste Minimization/Pollution Prevention
WMPM	Waste Management Program Manual

*These commonly used acronyms are spelled out only on first reference in the report. All others are spelled out on first reference in each subsection.

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