IG-01-007

AUDIT REPORT

COST SHARING FOR ENVIRONMENTAL CLEANUP EFFORTS

December 8, 2000

National Aeronautics and
Space Administration

OFFICE OF INSPECTOR GENERAL

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Acronyms

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CoE	Corps of Engineers
DoD	Department of Defense
ECRP	Environmental Compliance and Restoration Program
EPA	Environmental Protection Agency
FUDS	Formerly Used Defense Site
GAO	General Accounting Office
IPO	Institutional Program Office
NIP	NASA Industrial Plant
NPG	NASA Procedures and Guidelines
NPL	National Priorities List
OIG	Office of Inspector General
PRP	Potentially Responsible Party
RCRA	Resource Conservation and Recovery Act of 1976

SSFL	Santa Susana Field Laboratory

W December 8, 2000

TO: A/Administrator

FROM: W/Inspector General

SUBJECT: INFORMATION: Cost Sharing for Environmental Cleanup Efforts
Report Number IG-01-007

The NASA Office of Inspector General (OIG) has completed an audit of NASA's implementation of the requirements of NASA Procedures and Guidelines (NPG) 8850.1,[1] "Environmental Investigation and Remediation - Potentially Responsible Party (PRP) Identification and Analysis." The NPG established requirements, responsibilities, procedures, and guidelines for identifying PRP's and for developing cost sharing or cost recovery arrangements between responsible parties. We found that the Agency has made considerable progress in meeting the NPG requirements which was not the case when we began our field work. During this audit, many of the reviewed Centers and component facilities accelerated their planned or ongoing efforts to identify PRP's for sharing environmental costs with the Agency, which has led to NASA establishing cost sharing arrangements. However, NASA has at least 44 contaminated sites that require a preliminary PRP analysis that has yet to be either started or completed and two additional sites that require the completion of a full PRP analysis.[2] Until NASA completes the preliminary and/or full PRP analysis for all these sites, management cannot determine the extent to which it should be seeking cost sharing or cost recovery arrangements with PRP's for about $140.7 million that will be required to clean up these sites. We estimated that NASA may be able to avoid as much as $37.9 million in cleanup costs through cost sharing agreements for these sites. We also found that the NASA Centers and component

[1] Examples of PRP's include past owners and operators of NASA-owned facilities, as well as transporters of hazardous waste to and from the facilities.

[2] A preliminary PRP analysis identifies PRP's, the contaminates, general causes for the contamination, and when it occurred. A full PRP analysis is conducted for any site for which the PRP is known to be an entity other than NASA and includes PRP searches and cost sharing or cost recovery evaluations of PRP's. Details on both analyses are in Appendix F.

facilities audited did not always coordinate the PRP analysis and subsequent actions with the Institutional Program Offices (IPO's)[3] who provide the key management control in ensuring compliance with the NPG.

Background

NASA established NPG 8850.1 in response to a General Accounting Office report[4] that concluded NASA needed such a policy because the Agency was not adequately determining which PRP's should be sharing in the costs of cleaning up NASA contaminated sites. The NPG established requirements, responsibilities, procedures, and guidelines for identifying PRP's and for developing cost sharing or cost recovery arrangements between responsible parties.

Recommendation

NASA management should ensure that all preliminary and full PRP analyses are promptly completed and should clarify existing guidance to better define the types of projects subject to NPG 8850.1 requirements and to identify Center and component facility IPO's.

Management Response and OIG Evaluation

Management did not concur with our recommendations. Management explained that it could concur if the first recommendation addressed only those sites with adequate site data to support the conclusions of the PRP analysis. NASA agreed, however, to send a letter to the affected NASA Centers/facilities requesting them to submit preliminary PRP analyses within 6 months. The letter will review the requirements for conducting preliminary PRP analysis for sites expected to cost $500,000 or more to clean up and for submitting the PRP analysis to the proper IPO's. Management will send the letter to the responsible IPO's as additional clarifying guidance in addressing implementation of NPG 8850.1.

Management's planned actions are responsive to the intent of the recommendations. In making our recommendations, we did not intend for NASA to expedite the completion of the preliminary and full PRP analyses in those cases for which schedules already exist or determinations were pending from regulatory authorities. In such cases, we agree that NASA is actively working to implement the NPG requirements. Our concern relates to those sites for which NASA personnel were not gathering sufficient data to complete the required PRP analysis. The actions NASA planned in response to the recommendations show a strong

[3] To ensure alignment between programs and institutional capabilities, the NASA Administrator normally designates the Enterprise Associate Administrator for the predominant activity at each Center as that Center's IPO. As an IPO, the Associate Administrator is responsible for ensuring that the Center has the capability to meet its programmatic and functional commitments and long-term responsibilities in a safe and effective manner. The IPO is also responsible for implementation, conformance, and assurance of safe and efficient functional operations.

[4] GAO issued Audit Report GAO/NSIAD-97-98 entitled, "Environmental Cleanup Costs: NASA Is Making Progress in Identifying Contamination, but More Effort Is Needed," in June 1997.

management commitment toward arriving at a final determination for the many sites still requiring a completed preliminary or full PRP analysis. However, management did not concur with our estimate of $37.9 million potential cost avoidance by having NASA agree to cost sharing or cost recovery arrangements with other PRP's for those sites still needing to be cleaned up. We will continue to work with management to resolve this amount.

Details on the status of the recommendations are in the finding section of the report.

[original signed by]
Roberta L. Gross

Enclosure
Final Report on Audit of Cost Sharing for Environmental Cleanup Efforts

FINAL REPORT
AUDIT OF COST SHARING FOR ENVIRONMENTAL CLEANUP EFFORTS

W December 8, 2000

TO: J/Associate Administrator for Management Systems

FROM: W/Assistant Inspector General for Auditing

SUBJECT: Final Report on the Survey of Cost Sharing for Environmental Cleanup Efforts
Assignment Number A9902800
Report Number IG-01-007

The subject final report is provided for your information and use. Please refer to the Executive Summary for the overall audit results. Our evaluation of your response is incorporated into the body of the report. The recommendations will remain open for reporting purposes until corrective action is completed. Please notify us when action has been completed on the recommendations, including the extent of testing performed to ensure corrective actions are effective.

If you have questions concerning the report, please contact Mr. Chester A. Sipsock, Program Director, Environmental and Financial Management Audits, at (216) 433-8960, or Mr. Fredrick E. Angle, Auditor-in-Charge, at (256) 544-0070. We appreciate the courtesies extended to the audit staff. See Appendix I for the final report distribution.

[original signed by]
Russell A. Rau

Enclosure

cc:
B/Chief Financial Officer
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BF/Director, Financial Management Division
G/General Counsel
JM/Acting Director, Management Assessment Division
JE/Director, Environmental Management Division

ARC/Director, Ames Research Center
GRC/Director, John H. Glenn Research Center

GSFC/Director, Goddard Space Flight Center
KSC/Director, John F. Kennedy Space Center
MSFC/Director, Marshall Space Flight Center
MAF/Manager, Michoud Assembly Facility
SSC/Director, John C. Stennis Space Center
WFF/Director, Wallops Flight Facility

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SSC/Audit Liaison Representative
WWF/Audit Liaison Representative
W/GRC/C. Sipsock
W/GSFC/R. Dix
W/MSFC/R. Angle

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NASA Office of Inspector General

IG-01-007 **December 8, 2000**
A9902800

Cost Sharing for Environmental Cleanup Efforts

Executive Summary

Background. In 1997, the U.S. General Accounting Office (GAO) reviewed NASA's environmental cleanup costs in response to a congressional request.[5] GAO reported that NASA had not developed an overall policy for determining the potential for cost recovery and that NASA generally had not determined which PRP's should be sharing cleanup costs. GAO recommended that NASA issue a policy statement concerning PRP's and cost recovery. In June 1997 in response to GAO's review, NASA issued NPG 8850.1, "Environmental Investigation and Remediation - Potentially Responsible Party Identification and Analysis," to be in effect for 5 years.

Prior to issuance of the NPG, NASA had some success in identifying PRP's and in successfully negotiating cost sharing arrangements. For example, in 1994 and 1996, NASA efforts resulted in the successful negotiation of three cost sharing arrangements with other PRP's for 27 contaminated sites (see Appendix B). As a result of those arrangements, NASA avoided an estimated $89.6 million in environmental cleanup costs that were paid by other responsible parties.

Objectives. The overall audit objective was to determine whether NASA is adequately implementing the requirements of NPG 8850.1. The specific objectives were:

- to assess whether NASA has ensured that environmental cleanup costs have been and will be shared among the responsible parties and
- to identify sites for which NASA should be seeking cost sharing or cost recovery arrangements.

The objectives, scope, and methodology are discussed in detail in Appendix A.

Results of Audit. Although NASA has made some progress in identifying PRP's and in sharing site cleanup costs, NASA has not fully implemented the requirements of NPG 8850.1. Specifically, some Centers/facilities audited have not conducted the preliminary analysis necessary to start the PRP identification and cost sharing agreement process for 44 of 78 contaminated sites that require the preliminary PRP analysis and have not involved IPO's in the

[5] The former Chairman and Ranking Minority Member of the Subcommittee on National Security, International Affairs, and Criminal Justice Committee on Government Reform and Oversight, House of Representatives, requested the GAO review.

process, as required by the NPG. Also, one Center had not completed a full PRP analysis for two contaminated sites. As a result, NASA has not identified all contaminated sites for which it should be seeking cost sharing or cost recovery arrangements. Foster Wheeler[6] estimated the cleanup costs to total about $140.7 million[7] at sites for which a preliminary or full PRP analysis has not yet been completed. We estimated that NASA may be able to avoid up to $37.9 million in cleanup costs through cost sharing agreements for those sites.

Recommendations. NASA management should ensure full implementation of NPG 8850.1 by:

- expediting the completion of the preliminary and full PRP analyses;
- providing guidance supplementing NPG 8850.1 to better define the types of projects subject to NPG requirements and to identify the IPO's for each NASA Center/facility; and
- emphasizing to the IPO's the Agency's policy regarding their responsibilities to ensure completion of the PRP analyses for their Centers, review the PRP analyses, approve the proposed agreements, and coordinate review of proposed agreements with the appropriate Headquarters offices.

[6] Foster Wheeler is an environmental consulting firm under contract to the NASA Environmental Management Division, Office of Management Systems. One of the contract tasks was for Foster Wheeler to determine the estimated cost to clean up NASA-owned contaminated sites and to help NASA comply with environmental laws and regulations.

[7] This estimate includes Foster Wheeler's estimates totaling $129.7 million to clean up 44 sites that require a preliminary PRP analysis and estimates totaling $11.0 million to clean up 2 sites that require a full PRP analysis. Completion of the PRP analysis for all 46 sites should identify how much of the total cost of clean up could be avoided through cost sharing negotiations or cost recovery actions. See Appendix D.

Introduction

NASA is responsible for compliance with Federal environmental laws, including the Resource Conservation and Recovery Act (RCRA) of 1976 and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended.[8] RCRA regulates the generation, transportation, storage, disposal, and cleanup of hazardous wastes. Both laws impose a responsibility for site cleanup on the owner and/or operator of a facility. Under CERCLA, the party carrying out a cleanup may seek cost reimbursement from other parties the law would hold liable. These parties include past owners, operators, contractors, and a broad range of other PRP's. A Federal agency can use the provisions for cost recovery under CERCLA to recover costs from PRP's for an RCRA[9] site. However, NASA Environmental Management Division officials stated that the ability for cost recovery under RCRA has several substantial limitations.

[8] The CERCLA applies to contaminated sites identified by the Environmental Protection Agency (EPA) on the National Priorities List (NPL). The EPA generally includes sites that have been abandoned and sites that pose the most severe environmental threat on the NPL. The RCRA generally applies to sites that are not identified by EPA on the NPL.

[9] Pursuant to 42 United States Code 9607 (a), Subsection (4), a Federal agency can recover cleanup costs for removal or remedial actions for contaminated sites not listed on the NPL. EPA regulations for cost recovery are found in 40 Code of Federal Regulations 300.

Finding and Recommendations

Sharing Environmental Cleanup Costs

NASA has not fully implemented the requirements of NPG 8850.1. Specifically, some NASA Centers/facilities have not conducted the preliminary analyses to start the PRP identification and cost sharing agreement process and have not involved IPO's in the process, as required by the NPG. These conditions occurred primarily because the Agency has not emphasized completion of PRP analyses and because Agency policy does not identify the IPO's for each of the Centers/facilities. Consequently, NASA has not initiated cost sharing or cost recovery arrangements with other parties who share responsibility for cleanup costs at 46 of 78 sites estimated to total about $140.7 million (see Appendix D). With cost sharing or cost recovery arrangements, NASA may be able to avoid up to $37.9 million of the total costs (see Appendix E).

NPG 8850.1 Requirements

NPG 8850.1 contains two important requirements that must be complied with in order to meet the objectives of identifying PRP's and developing cost sharing or cost recovery arrangements with the PRP's. One requirement is for Center Environmental Office officials to conduct preliminary PRP analyses for contaminated sites that are expected to result in projects under the Environmental Compliance and Restoration Program (ECRP).[10] The preliminary PRP analysis is a critical first step in the PRP identification and cost sharing agreement process. Appendix F describes NPG requirements for preliminary and full PRP analysis and for cost sharing/cost recovery agreements.

Another requirement is for Center Environmental Office officials to provide a preliminary and full PRP analysis and proposed cost sharing or cost recovery agreements to the IPO's for review and approval. The IPO's are responsible for (1) ensuring completion of the PRP analyses at the Centers, (2) reviewing the PRP analyses, (3) approving proposed agreements, and (4)

[10] The Facilities Project Implementation Handbook, NPG 8820.2C, addresses ECRP. Chapter 8 of the NPG states the following concerning NASA's ECRP:

- The ECRP provides field installations with the necessary resources to plan, develop, and execute required environmental studies and projects to achieve and maintain compliance with environmental laws and regulations in conformance with NASA's environmental policy.
- The ECRP is a separate program within the NASA Construction of Facilities Program.
- An ECRP project in the NASA Construction of Facilities Program either addresses (1) the construction or modification of facilities, as required for environmental compliance; (2) the cleanup and remediation of hazardous substance contaminated sites; or (3) a single environmental study effort or a study necessary to support a planned environmental project and study estimated to cost $500,000 or more.

coordinating review of proposed agreements with appropriate Headquarters officials. The IPO's provide the key management control to ensure that the NPG requirements are followed. While the NPG requires preparation of a preliminary PRP analysis for contaminated sites expected to result in projects under the ECRP, the NPG does not explain that an analysis is to be prepared for sites expected to cost $500,000 or more to clean up. Also, although the NPG requires NASA to provide PRP analyses and proposed cost sharing or cost recovery agreements to the IPO's, the policy does not provide a link to existing Agency policy that identifies the IPO's for each NASA Center/facility.[11]

NPG 8850.1 Implementation

Since issuance of NPG 8850.1 in June 1997, some NASA Centers and facilities have made progress in implementing the new policy requirements. At the same time, however, other Centers and facilities have not completed a preliminary PRP analysis for many qualifying contaminated sites, and most Centers and facilities have excluded the IPO's from the PRP analysis and cost sharing/cost recovery agreement process.

Preliminary PRP Analysis. As of July 31, 2000, Environmental Office officials at 6 of the 12 NASA Centers/facilities we reviewed had completed a preliminary PRP analysis for 34 (43.6 percent) of the 78 contaminated sites expected to result in projects (see Appendix C). NASA determined it was the sole responsible party for 26 of the 34 sites. NASA negotiated cost sharing arrangements with other PRP's for six of the remaining eight sites. As a result of these efforts, NASA has avoided an estimated $39.0 million in environmental cleanup costs (see Appendix B). For two sites, NASA has started a full PRP analysis to determine how cost sharing or cost recovery arrangements should proceed.

Although NASA's efforts are commendable, NASA has not begun a preliminary PRP analysis for 44 eligible sites. In its August 1999 cost study, Foster Wheeler estimated the costs to clean up the 44 sites at about $129.7 million. The 44 sites involve 6 of the 12 NASA Centers/facilities reviewed (see Appendix C). In addition, another two sites with an estimated cleanup cost of $11.0 million require completion of a full PRP analysis based on the results of previously completed preliminary analyses. Until the preliminary and full PRP analyses are completed for these sites, NASA cannot determine how much of the cleanup costs can be shared with other responsible parties. Appendix D shows the NASA Centers/facilities that need to complete the PRP analyses.

Environmental officials at most of the locations reviewed stated that completing the requirements of NPG 8850.1 has been a low priority. At some of the locations, officials said they did not

[11] Our review included work at seven NASA Centers and five NASA component facilities. Examples of component facilities are the Michoud Assembly Facility (Michoud) and the Wallops Flight Facility (Wallops). The NASA Centers and component facilities are identified in Appendix A.

prepare preliminary PRP analyses for contaminated sites because they knew NASA was the sole PRP for site clean up. Additionally, one Center responsible for a contractor-operated facility believed that the contractor had complied with the NPG requirements. However, contractor officials stated they had not complied with the NPG because they believed that NASA had already done so.

IPO Role in the PRP Process. Involvement of the IPO's during the PRP process is a key management control mandated by NPG 8850.1. Chapter 2 of NPG 8850.1 requires the IPO's to review the preliminary and full PRP analyses and to review and approve any cost sharing or cost recovery agreements. However, environmental officials did not involve the IPO's in the PRP identification and cost sharing agreement process.

Since the NPG was issued in June 1997, NASA has completed a preliminary PRP analysis for 34 sites and a full PRP analysis for 5 sites and has negotiated 3 cost sharing agreements. Only five preliminary analyses and one proposed cost sharing agreement were coordinated with the responsible IPO.

The primary reason for the exclusion of the IPO's from the PRP process was confusion over who is to fulfill the role of the IPO. In some cases, the environmental officials believed they were to function as the IPO. Almost no one interviewed knew who the IPO was for their location.

NPG 1000.2, "NASA Strategic Management Handbook," issued February 2000, discusses IPO responsibilities. Paragraph 2.3.1.6 of the NPG states that the Enterprise[12] Associate Administrator for the predominant activity at each Center is normally designated as the IPO for that Center. For example, since the predominant activity at Kennedy is Space Flight, the Associate Administrator for the Office of Space Flight would serve in an IPO capacity, unless the NASA Administrator chose to designate another Enterprise Associate Administrator to assume the IPO responsibilities. NPG 8850.1 does not identify the IPO and does not provide a cross-reference to NPG 1000.2.

By excluding the IPO's from the PRP process, the environmental officials have eliminated the primary oversight control intended by NPG 8850.1.

Estimate of Cost Avoidance

Until NASA implements the NPG requirements for preliminary and full PRP analyses, NASA cannot determine what portion of the estimated cleanup costs for the affected sites will be available for cost sharing or cost recovery.

[12] The NASA Administrator has divided the Agency into five major functional areas called Strategic Enterprises. The Strategic Enterprises include Aerospace Technology, Biological and Physical Research, Earth Science, Human Exploration and Development of Space, and Space Science.

Relying on historical data, we attempted to estimate the amount of cost avoidance NASA could realize from completing the required PRP analyses and negotiating cost sharing or cost recovery agreements. Environmental Office officials at six NASA Centers/facilities negotiated eight cost sharing agreements from 1992 through July 31, 2000 (the audit cutoff date), that will result in an estimated cost avoidance of $128.6 million (see Appendix B) in past and future environmental cleanup costs (96.9 percent of the total cost to clean up the sites). After the policy was issued, Environmental Office officials completed preliminary PRP analyses for 34 sites (see Appendix C). Of the 34 sites, 8 or 23 percent of the sites, required full PRP analyses. The Environmental Office officials negotiated cost sharing agreements for six of the eight sites that resulted in a cost avoidance of $39.0 million. The Environmental Office officials are likely to negotiate cost sharing agreements for the remaining two sites with estimated clean up costs of $11.0 million.

Environmental Office officials did not prepare preliminary PRP analyses for 6 of 44 sites that were projected to result in projects because the officials concluded that NASA is the PRP for these sites. We did not verify their conclusions and included only the other 38 sites in the cost avoidance calculations. The 38 sites are estimated to cost $122.3 million to clean up. In calculating the potential cost avoidance, we first assumed that NASA would determine that cost sharing or cost recovery agreements would be indicated for 9 (23 percent) of the 38 sites. We based this assumption on NASA's past experience with the 34 sites discussed earlier for which preliminary PRP analyses had been completed. We then assumed that NASA could arrange for other PRP's to pay 96.9 percent of the cleanup costs based on the experience with the eight cost sharing agreements negotiated from 1992 through July 31, 2000. We estimated that NASA could experience a cost avoidance of as much as $27.3 million ($122.3 million times 23 percent times 96.9 percent). Appendix E shows the details of our calculations.

Environmental Office officials at one NASA Center have not completed full PRP analyses for two sites that are expected to result in projects under the ECRP. In the August 1999 cost study, Foster Wheeler estimated that those sites would cost NASA a total of $11.0 million. We estimated that NASA could avoid costs of as much as $10.7 million ($11.0 million times 96.9 percent) by completing full PRP analyses and negotiating cost sharing agreements for the two sites. Appendix E shows the details of our calculations.

We also conducted a Monte Carlo[13] simulation analysis to calculate the estimated cost avoidance from completing the preliminary and full PRP analyses and negotiating the appropriate cost sharing and cost recovery agreements. The Monte Carlo analysis identified a cost avoidance that was greater than the cost avoidance identified in the estimate we calculated

[13] Simulation is any analytical method that is meant to imitate a real-life system. Monte Carlo simulation is a system that uses random numbers to measure the effects of uncertainty in a spreadsheet model. The software randomly generates values for uncertain variables over and over to simulate a model. The simulation calculates numerous scenarios by repeatedly picking values from the probability distribution for the uncertain variables and using those values to develop a frequency distribution of the results. After hundreds or thousands of trials, you can view sets of values and the certainty of any particular value.

using historical data. To be conservative, we chose to use the historical data calculations for our estimate.

Recommendations, Management's Response, and Evaluation of Response

The Associate Administrator for Management Systems should ensure full implementation of NPG 8850.1 by:

1. **Expediting the completion of the preliminary and full PRP analyses at those Centers/facilities that have not yet completed the analyses.**

2. **Providing guidance supplementing NPG 8850.1 to better define the types of projects subject to NPG requirements and to identify the IPO's for each NASA Center/facility.**

3. **Emphasizing to the IPO's that NPG 8850.1 requires them to ensure completion of the PRP analyses for their Centers, review the PRP analyses, approve the proposed agreements, and coordinate review of proposed agreements with the appropriate Headquarters offices.**

Management's Response. Nonconcur. Management explained that it could concur if the first recommendation addressed only those sites with adequate site data to support the conclusions of the PRP analysis. However, NASA agreed to send a letter to five Centers/component facilities[14] requesting submittal of the preliminary PRP analyses within 6 months for the sites with enough information to prepare the analyses. The letter will review the requirements for conducting preliminary PRP analyses for sites expected to cost $500,000 or more to clean up and for submitting the PRP analyses to the respective IPO's. The letter will also request that Centers identify those sites for which sufficient data has not yet been obtained to complete the PRP analysis. Management will also send another letter and a copy of this report to the IPO's.

Management disagreed with our estimated potential cost avoidance of $49.5 million and believed that $7.5 million was a more accurate amount. Management also provided various other comments for improving report accuracy and presentation.

The complete text of management's response is in Appendix G.

Evaluation of Response. We believe the planned actions are responsive to the intent of the recommendations and show a strong management commitment toward arriving at a final determination for the many sites still requiring a completed preliminary or full PRP analysis. In making our recommendations, we did not intend for NASA to expedite the completion of the preliminary and full PRP analyses in those cases where schedules already existed or

[14] The five Centers/component facilities receiving letters are the John H. Glenn Research Center at Lewis Field, the Goddard-Space Flight Center Wallops Flight Facility, the Lyndon B. Johnson Space Center, the John F. Kennedy Space Center, and the Michoud Assembly Facility.

determinations were pending from regulatory authorities. For those cases, we agree that NASA is actively working toward implementing the requirements of NPG 8850.1. However, our audit work provided strong evidence that not all NASA Centers were aggressively working toward gathering the data necessary to move the PRP process forward in a timely manner for certain sites. Consequently, we reaffirm our conclusion that NASA cannot determine the extent to which it should seek cost sharing or cost recovery arrangements with affected PRP's until management makes a final determination for these sites.

With regard to our estimated potential cost avoidance, we revised our original estimate of $49.5 million to $37.9 million based on updated information in management's response. For example, we were able to verify management's position that the Stennis Space Center had completed negotiations for a cost sharing agreement with the Air Force in July 2000. Absent any additional data that we could readily verify and relying on data obtained from NASA's environmental consulting firm, we believe that our revised potential cost avoidance of $37.9 million, which is based on NASA's historical experience, is more realistic at this time than the $7.5 million being advocated by management. We reaffirm that a better estimate of a cost avoidance cannot be known until NASA completes all the PRP analyses required by NPG 8850.1.

Appendix H contains our detailed responses to the additional comments made by NASA management.

Appendix A. Objectives, Scope, and Methodology

Objectives

The overall audit objective was to determine whether NASA was adequately implementing the requirements of NPG 8850.1. The specific objective was to assess whether NASA Environmental Office officials were ensuring that environmental cleanup costs have been and will be shared among the PRP's and were identifying sites where NASA should be seeking cost sharing or cost recovery arrangements.

Scope and Methodology

We selected 12 NASA Centers/facilities for review: Ames Research Center (Ames), John H. Glenn Research Center at Lewis Field (Glenn), Goddard Space Flight Center (Goddard), Lyndon B. Johnson Space Center (Johnson), John F. Kennedy Space Center (Kennedy), George C. Marshall Space Flight Center (Marshall), Michoud Assembly Facility (Michoud), NASA Industrial Plant (NIP), Yellow Creek Production Facility (Yellow Creek), John C. Stennis Space Center (Stennis), Wallops Flight Facility (Wallops), and White Sands Test Facility (White Sands). We selected Ames, Stennis, Marshall, Kennedy, and White Sands because Foster Wheeler's estimates of cleanup costs for those sites were significant. We included the NIP and Wallops at the request of management. We reviewed Michoud and Yellow Creek because Marshall is responsible for those facilities. We reviewed Johnson and Goddard because those Centers are responsible for work at the NIP, White Sands, and Wallops. We reviewed Glenn in order to increase the coverage of the sites expected to result in projects. We did not include the Jet Propulsion Laboratory or the Santa Susana Field Laboratory (SSFL) in the review because we had previously reviewed those facilities and issued separate reports on cost sharing activities at those facilities.[15] Marshall is responsible for the SSFL engine testing facility.

From the 12 NASA Centers/facilities, we selected 78 sites for review that were projected to cost $500,000 or more each to clean up as noted in the August 1999 Foster Wheeler cost study (see footnote 5). Foster Wheeler estimated the cleanup costs for the 78 sites to total about $603.6 million (see Appendix C).

We provided questions addressing the requirements of NPG 8850.1 to the Environmental Office managers at each of the NASA Centers/facilities identified above. Each of the managers responded and provided documentation supporting (1) preliminary and full PRP analyses of NASA contaminated sites and (2) cost sharing and/or cost recovery agreements with the PRP's for the sites. We then made follow-up visits to five locations

[15] The NASA Inspector General issued report IG-97-024, "Cost Sharing For Cleanup Activities at JPL [Jet Propulsion Laboratory]," dated June 6, 1997; and report IG-98-024, "Cost Sharing for Santa Susana Field Laboratory Cleanup Activities," dated August 18, 1998.

to conduct survey work. We verified compliance with NPG 8850.1 by reviewing the answers to the questions and supporting documentation and by discussions with NASA officials.

Management Controls Reviewed

We reviewed management controls related to (1) the preparation and completion of preliminary and full PRP analyses for NASA-owned facilities and (2) the negotiation of cost sharing or cost recovery agreements for the contaminated sites requiring such agreements. Management control weaknesses are addressed in the finding section of this report.

Computer-Processed Data

Computer-processed data did not play a significant role in this review relative to the development of the audit findings. Therefore, the validity and reliability of such data is not an issue for this report.

Audit Field Work

We conducted field work from September 1999 through June 2000 at the NASA Centers/ facilities identified in the scope section. We performed this audit in accordance with generally accepted government auditing standards.

Appendix B. Summary of Negotiated Cost Sharing Agreements as of July 31, 2000

Centers/Facilities	Year of Cost Sharing Agreement	No. of Sites	Estimated Total Cost for Site Clean Up	NASA's Share of Cleanup Cost	Estimated Cost Avoidance for NASA
Cost Sharing Agreements Negotiated after NPG 8850.1 Was Issued in June 1997					
Ames Research Center[1]	1992 & 1998	2	$30,000,000	$0	$30,000,000
Kennedy Space Center[2]	1998	1	$3,181,739	$1,306,739	$1,875,000
Stennis Space Center[3]	2000	1	$8,470,000	$2,795,100	$5,674,900
Wallops Flight Facility[4]	1998	2	$1,500,000	$0	$1,500,000
Total cost avoidance negotiated after policy issued		**6**	**$43,151,739**	**$4,101,839**	**$39,049,900**
Cost Sharing Agreements Negotiated before NPG 8850.1 Was Issued					
Glenn Research Center[5]	1996	8	$76,600,000	$0	$76,600,000
Marshall Space Flight Center[6]	1994	13	$10,000,000	$0	$10,000,000
Yellow Creek[7]	1994	6	$3,000,000	$0	$3,000,000
Total cost avoidance negotiated before policy was issued		**27**	**$89,600,000**	**$0**	**$89,600,000**
Total cost avoidance negotiated both before and after policy was issued		**33**	**$132,751,739**	**$4,101,839**	**$128,649,900**
Cost sharing percentages			**100%**	**3.1%**	**96.9%**

In summary, NASA officials at six NASA Center/facilities negotiated eight cost sharing arrangements from 1992 through July 31, 2000. These cost sharing arrangements were negotiated at (1) Ames in 1992 and 1998; (2) Kennedy in 1998; (3) Stennis in 2000; (4) Wallops in 1998; (5) Glenn in 1996; and (6) Marshall in 1994 for sites at Marshall and Yellow Creek. These cost sharing arrangements will allow NASA to avoid $128.6 million of past and future environmental cleanup cost (96.9 percent of the total cost to clean up the sites of $132.8 million).

[1]Ames officials negotiated cost sharing agreements with the Navy in 1992 and with the Navy and a contractor in 1998. These agreements covered the same two sites. The officials stated that they did not provide copies of the preliminary or full PRP analyses to the IPO for Ames. The officials did provide a copy of the proposed 1998 cost sharing agreement to the Environmental Management Division, Office of Management Systems, and to the IPO for Ames. Based on input from the Navy, Ames officials estimated that the agreements will save NASA $30 million.

[2]Kennedy officials negotiated a cost sharing agreement with the Air Force in 1998. Based on input from the Air Force, Kennedy officials estimated that this agreement will save NASA $1.9 million. The officials did not provide a PRP analysis or the proposed cost sharing agreement to the IPO for Kennedy.

[3]Stennis officials negotiated a cost sharing agreement with the Air Force on July 19, 2000. We estimated that this agreement will result in cost avoidance for NASA of $5.7 million based on the agreement and Foster Wheeler's August 1999 estimate of the cost to cleanup this site. The agreement requires NASA to pay one third of the cleanup cost and the Air Force to pay two thirds for this site. We computed the cost avoidance for NASA by multiplying the Air Force's share (67 percent) times Foster Wheeler's estimate of $8.5 million to clean up this site.

Appendix B

[4]Wallops officials negotiated a cost sharing agreement with the Corps of Engineers (CoE) in 1998. However, the officials did not get CoE officials to sign the agreement because they agreed to fund cleanup of this site with Formerly Used Defense Site (FUDS) program funds. The Congress approved FUDS program funds to clean up formerly Department of Defense (DoD)-owned facilities that were contaminated by the DoD. Based on input from the Air Force, Wallops officials estimated that this agreement will save NASA $1.5 million. Wallops officials did not provide PRP analyses or the proposed cost sharing agreement to the IPO for Wallops.

[5]Glenn officials negotiated a cost sharing agreement with the CoE for eight Glenn sites at Plum Brook, Ohio, in 1996. However, the officials did not get CoE officials to sign the agreement because CoE officials agreed to fund cleanup of these sites with FUDS funds. Based on input from the CoE, Glenn officials estimated that this agreement will save NASA $76.6 million.

[6]Marshall officials negotiated a cost sharing agreement with the Army in 1994. Based on input from the Army, Marshall officials estimated that this agreement will save NASA $10 million.

[7]Marshall officials negotiated a cost sharing agreement with the Tennessee Valley Authority in 1994. Based on input from the Tennessee Valley Authority, MSFC officials estimated that this agreement will save NASA $3 million.

Appendix C. Summary of NASA's Actions as of July 31, 2000, to Implement the PRP Analysis Requirements of NPG 8850.1

The dollar amounts shown are in millions.

	ARC	GRC	GSFC	JSC	KSC	MSFC	MAF	NIP	YC	SSC	WFF	WS	TOTAL
No. of sites meeting NPG criteria for a preliminary PRP analysis	12	1	5	3	24	3	6	0	0	12	10	2	**78**
Estimated cleanup costs for sites that need a preliminary PRP analysis	$53.6	$.8	$8.4	$4.3	$92.1	$3.1	$15.4	$0	$0	$50.3	$18.6	$357	**$603.6**
No. of sites where a preliminary PRP analysis was not completed	0	1	0	3	23	3	6	0	0	0	8	0	**44**
Estimated cleanup costs for sites where preliminary PRP analysis was not completed	$0	$.8	$0	$4.3	$89	$3.1	$15.4	$0	$0	$0	$17.1	$0	**$129.7**
No. of sites with preliminary PRP analyses since issuance of NPG 8850.1	12	0	5	0	1	0	0	0	0	12	2	2	**34**
No. of sites with preliminary PRP analyses since issuance of NPG 8850.1 where it was determined that a full PRP analyses was not needed	10	0	5	0	0	0	0	0	0	9	0	2	**26**
No. of sites with preliminary PRP analyses since issuance of NPG 8850.1 where full PRP analyses were completed and cost sharing arrangements were negotiated	2	0	0	0	1	0	0	0	0	0	2	0	**5**
Estimated cost avoidance where cost sharing arrangements were negotiated since issuance of NPG	$30	$0	$0	$0	$1.9	$0	$0	$0	$0	$0	$1.5	$0	**$33.4**
No. of sites with preliminary PRP analyses since issuance of NPG 8850.1 where cost sharing arrangements should be negotiated	0	0	0	0	0	0	0	0	0	2	0	0	**2**
Estimated costs to clean up sites where cost sharing arrangements may be negotiated	$0	$0	$0	$0	$0	$0	$0	$0	$0	$11.0	$0	$0	**$11.0**
No. of preliminary PRP analyses	0	0	5	0	0	0	0	0	0	0	0	0	**5**

provided to IPO													

Legend

ARC - Ames Research Center	GRC - Glenn Research Center	GSFC - Goddard Space Flight Center	JSC - Johnson Space Center
KSC - Kennedy Space Center	MSFC - Marshall Space Flight Center	MAF - Michoud Assembly Facility	NIP - NASA Industrial Plant
YC - Yellow Creek	SSC - Stennis Space Center	WFF - Wallops Flight Facility	WS - White Sands

Appendix D. Summary of Sites Meeting NPG Criteria for PRP Analysis That Have Not Been Completed as of July 31, 2000

Sites Meeting NPG Criteria for a Preliminary PRP Analysis:

Centers/Facilities	Number of Sites	Sites that Require Completion of PRP Analysis	Estimated Site Cleanup Costs
Glenn Research Center	1	Preliminary PRP Analysis	$799,000
Johnson Space Center	3	Preliminary PRP Analysis	$4,345,000
Kennedy Space Center	23	Preliminary PRP Analysis	$88,958,000
Marshall Space Flight Center	3	Preliminary PRP Analysis	$3,089,000
Michoud Assembly Facility	6	Preliminary PRP Analysis	$15,405,000
Wallops Flight Facility	8	Preliminary PRP Analysis	$17,122,000
Total Sites Requiring Preliminary PRP Analyses	**44**		**$129,718,000**

Sites Requiring Completion of a Full PRP Analysis:

Stennis Space Center	2	Full PRP Analysis	$11,015,000
Total Sites Requiring Full PRP Analyses	**2**		**$11,015,000**
Total Sites Requiring PRP Analyses	**46**		**$140,733,000**

Appendix E. Summary of Estimated Potential Cost Avoidance

Recommendation 1 results in as much as $37.9 million in funds put to better use.

Center	Type of PRP Analysis Required or Negotiations	No. of Sites	Estimated Total Cleanup Cost	Estimated Sites Where Preliminary PRP Analyses Will Require Full PRP Analysis (23%)	NASA's Share of the Cost to Clean Up (3.1%)[1]	Estimated Cost Avoidance for NASA (96.9%)[2]
Require Preliminary and, if Necessary, Full PRP Analysis[3]:						
KSC	Preliminary and Full	23	$88,958,000	$20,460,340	$634,271	$19,826,069
WFF	Preliminary and Full	8	$17,122,000	$3,938,060	$122,080	$3,815,980
MAF	Preliminary and Full	6	$15,405,000	$3,543,150	$109,838	$3,433,312
GRC	Preliminary and Full	1	$799,000	$183,770	$5,697	$178,073
Subtotals[4]		**38**	**$122,284,000**	**$28,125,320**	**$871,886**	**$27,253,434**
Require Full PRP Analysis[5]:						
SSC	Full	**2**	**$11,015,000**			**$10,673,535**
Total Estimated Cost Avoidance		**40**	**$133,299,000**			**$37,926,969**

Legend

GRC - Glenn Research Center
KSC - Kennedy Space Center
MAF - Michoud Assembly Facility
SSC - Stennis Space Center
WFF - Wallops Flight Facility

[1]See percentage under the "NASA's Share of Cleanup Cost" column in Appendix B.

[2]See percentage under the "Estimated Cost Avoidance for NASA" column in Appendix B.

[3]Using historical data, we calculated the estimated cost avoidance of $27.3 million that would result from completing the preliminary PRP analyses for the 38 NASA sites identified and from necessary full PRP analyses and cost sharing negotiations. We used the cost sharing agreements NASA negotiated from 1992 through 2000 (see Appendix B) and the results of preliminary analyses conducted after NPG 8850.1 was issued for 34 NASA-owned sites. We used the following assumptions:

- cost sharing agreements for the 38 sites will result in savings comparable to the amount realized through agreements that were negotiated from 1992 through 2000 (NASA will realize a cost avoidance of about 96.9 percent of the total cleanup costs) (see Appendix B) and
- results of preliminary PRP analyses of sites at other Centers will be similar to the findings for the preliminary PRP analyses conducted for 34 NASA-owned sites (about 23 percent of the sites will be candidates for cost sharing) (see Appendix C).

[4]The subtotals do not include six sites that meet the criteria for preparing preliminary PRP analyses because NASA Environmental Office officials have determined that NASA is the PRP without input from the IPO's.

[5]We identified two sites at Stennis for which Environmental Office officials should complete full PRP analyses and provide them to the IPO for Stennis. Stennis should complete negotiations of cost sharing agreements with the Army

for the two sites after receiving instructions from the Stennis IPO. We calculated the estimated cost avoidance of $10.7 million for these sites by multiplying 96.9 percent times the total $11.0 million estimated clean-up costs for these sites.

Appendix F. Requirements of NASA Procedures and Guidelines 8850.1

This appendix summarizes NASA's general requirements for PRP analyses and cost sharing or cost recovery agreements.

Preliminary PRP Analysis. NPG 8850.1 requires Center Environmental Office officials to conduct preliminary PRP analyses for contaminated sites that are expected to result in projects under the ECRP. The preliminary analysis includes identifying PRP's, the contaminates, the general causes for the contamination, and when the contamination occurred. While conducting the preliminary analysis, Center officials may find that some of the contaminated sites are the result of direct actions by NASA or of past actions by unknown parties. Further PRP analysis is not required when NASA is clearly the only responsible party for contaminated sites or when there is no information available to identify other PRP's. NPG 8850.1 requires Center Environmental Office officials to document determinations that no further PRP analysis is warranted and to report the results to their IPO's. For sites that do not warrant a further PRP analysis, Center officials are required to furnish copies of the determination and supporting documentation to the NASA Office of General Counsel, the Office of Management Systems, and the Office of Inspector General. NPG 8850.1 requires the IPO to review each determination to ensure that (1) a further PRP analysis is not warranted and (2) there are no conflicts of interest with the support contractors or NASA officials conducting the preliminary PRP analysis.

Full PRP Analysis. NPG 8850.1 requires Center Environmental Office officials to conduct a full PRP analysis for any site for which the PRP is known to be someone other than NASA. Full PRP analyses include PRP searches and cost sharing or cost recovery evaluations of the PRP's. NPG 8850.1 requires the Center Environmental Office officials to provide the results of a full PRP analysis to the cognizant IPO, the Chief Financial Officer, the Office of General Counsel, the Office of Procurement, and the Office of Management Systems at NASA Headquarters. The IPO's are required to review the information to determine whether to pursue negotiations of a cost sharing arrangement based on the full PRP analysis. The IPO's must provide instructions to the Center Environmental Office officials (as to whether to begin negotiations) within 30 days of receipt of results on a full PRP analysis.

Cost Sharing or Cost Recovery Agreements. NPG 8850.1 requires Center Directors to designate Center officials to lead negotiations with PRP's when appropriate. The lead negotiators are to negotiate (1) cost sharing agreements so that future environmental cleanup costs are shared among the PRP's and (2) cost recovery agreements so that past environmental cleanup costs are shared among the PRP's. The NPG allows the Center/facility lead negotiators to begin negotiations if their IPO's have not given contrary direction after 30 days. These negotiations may result in proposed cost sharing or cost recovery agreements. The NPG requires Center Directors to submit proposed cost

sharing agreements to their IPO's for approval. It also requires the IPO to coordinate the proposed cost sharing agreements with the Chief Financial Officer, the Office of General Counsel, the Office of Procurement, and the Office of Management Systems for concurrence. Depending on the circumstances of the proposed agreements and pursuant to the advice of the Office of General Counsel, the IPO's may be required to request concurrence from the Department of Justice. The IPO's are required to publish Notices of Proposed Settlements in the *Federal Register*. The Center Directors may enter into agreements for NASA only after the IPO's have fulfilled these requirements.

Appendix G. Management's Response

Headquarters

SEP 1 5 2000

JE

TO: W/Assistant Inspector General for Auditing

FROM: J/Associate Administrator for Management Systems

SUBJECT: Draft Audit Report, Cost Sharing for Environmental Cleanup Efforts, Report No. A9902800

We have reviewed the Draft Audit Report, Cost Sharing for Environmental Cleanup Efforts, dated August 11, 2000. Enclosed are our detailed comments on the report. Following is our response to the recommendations:

Recommendations: NASA management should ensure full implementation of NPG 8850.1 by:

1. Expediting the completion of the preliminary and full Potentially Responsible Party (PRP) analysis;
2. Providing guidance supplementing NPG 8850.1 to better define the types of projects subject to NPG requirements and to identify the Institutional Program Offices (IPOs) for each NASA Center/facility; and
3. Emphasizing to the IPO's the Agency's policy regarding their responsibilities to ensure completion of the PRP analyses for their Centers, review the PRP analyses, approve the proposed agreements, and coordinate review of proposed agreements with the appropriate Headquarters offices.

NASA Response: We do not concur with the recommendations as currently written, specifically the 1st element. Depending upon the status of remedial activities for individual sites, some Centers may not have sufficient information to complete the PRP analyses for some of their sites, particularly a full PRP analysis. Several of the sites are still in the investigation phase where schedules are based on safety, regulatory review and budget constraints. Furthermore, several sites are awaiting a determination from regulatory authorities on the need for further remedial action. We do not believe it is appropriate to revise schedules for the sole purpose of expediting completion of the PRP analysis. We could concur provided that the 1st element ended with the phrase ". . . for sites with adequate site data to support the conclusions of the PRP analysis."

In any case, following are the actions we will take in response to the recommendations:

1. The Environmental Management Division will send a letter to Glenn Research Center (GRC), Goddard Space Flight Center-Wallops Flight Facility (GSFC-WFF), Johnson Space Center, Kennedy Space Center (KSC), and Marshall Space Flight Center-Michoud Assembly Facility (MSFC-MAF), with a copy to the IPOs, requesting submittal of the preliminary PRP analyses within 6 months for sites with sufficient information. The letter will review the definition of "project" and the submittal process. The letter will request that those sites be identified where sufficient data has not yet been obtained to complete the PRP analysis.

2. Stennis Space Center (SSC) is likely the only Center that might need to prepare a full PRP analysis. SSC is aware of the NPG requirements. SSC recently negotiated a cost-sharing agreement with the Air Force for 1 site that was reviewed by appropriate Headquarters organizations. SSC anticipates submitting the full PRP analysis soon that will address the remaining 2 sites.

3. The IPOs are aware of their responsibilities regarding PRP analysis. The IPOs have been involved in approval of past agreements. The Office of Space Flight recently sent a letter to their Centers regarding the NPG requirements. Copies of this report and letter, and the letter cited above, will be sent to the other IPOs to help them address the issue similarly. We believe that this will address the recommendation.

See Appendix H, OIG Comment 1

You also requested our comment on the potential cost avoidance estimate of $49.5 million. We believe that this estimate is incorrect.

This estimate is based on 41 sites located at KSC, GSFC-WFF, MSFC-MAF, GRC, and SSC, with 23 of the 41 located at KSC alone (Appendix E). The estimate for these sites is based on past experience, where a different set of 32 sites were reviewed and analyzed. Of the 32 sites, where cost sharing arrangements were negotiated, NASA clearly had minimal responsibility. In contrast, with reference to the 41 sites in Appendix E, KSC, GRC, and MSFC-MAF believe that NASA has significant responsibility for the sites located on those facilities and do not anticipate pursuing other PRPs. At GSFC-WFF, the Corps is already conducting remedial activities at sites where they are the responsible entity. Only SSC has concluded that it has a basis to pursue PRPs. SSC has negotiated an agreement with a PRP for one of the sites, and is preparing a full PRP analysis for the other 2 sites. The cost avoidance at these 2 sites is estimated to be $7.5 million. Therefore, we believe that the $7.5 million represents the potential cost avoidance available to NASA and that the final report should reflect the $7.5 million.

We appreciate the opportunity to review the draft report.

Jeffrey E. Sutton

Enclosure

3

cc
B/Mr. Holz
G/Mr. Frankle
H/Mr. Luedtke
JM/Ms. Tynan (Acting)
M/Mr. Rothenberg
R/Mr. Venneri
W/Mr. Sipsock
Y/Dr. Asrar

Appendix G

NASA Comments on the Draft Audit Report
Cost Sharing for Environmental Cleanup Efforts
Report No. A9902800

Page *ii*, Results of Audit; page 2 1st paragraph, last sentence; pages 4 – 5, Estimate of Cost Avoidance; and Appendix E: A comment on the cost estimate is included in the cover letter per your request.

Page *ii*, Recommendations, 3rd paragraph, and page 6, 3rd recommendation: We believe that the Institutional Program Offices (IPO's) are aware of their responsibilities regarding PRP analysis. The IPO's have been involved in approval of past agreements. The Office of Space Flight recently sent a letter to their Centers regarding the requirements of the NPG. In addition, this report and follow-up correspondence has been or will be sent to the IPO's.

Page *ii*, Footnote 5: "NASA Environmental Assessment Division" should read "NASA Environmental Management Division."

Page *iii*, Introduction, last sentence: The ability for cost recovery under RCRA has several substantial limitations.

Page 2, 1st paragraph, 2nd sentence: This is all inclusive statement that suggests NASA has not implemented the NPG at all. In fact, 7 Centers/facilities have completed a preliminary PRP analysis. Cost sharing arrangements have been negotiated at 7 Centers/facilities. The IPO's were involved in many of these actions. We note that the Executive Summary used "Some Centers/facilities …."

Page 2, 1st paragraph, 3rd sentence: The IG states, "Agency policy is not clear on who is responsible for the IPO functions." We believe that the policy is clear. We suspect that the more likely scenario is that some of the individuals contacted by the IG were not fully aware of the requirements of the policy.

See Appendix H, OIG Comment 3

Page 2, 1st paragraph, 4th sentence: The reported value of $506.2 million should be revised to reflect the later comment on Appendices C and D regarding the completion of the preliminary PRP analysis by Marshall Space Flight Center (MSFC) and White Sands Test Facility (WSTF).

See Appendix H, OIG Comment 2

Page 3, NPG 8850 Implementation, and page 4, IPO Role: The report concludes that the Centers/facilities have excluded the IPO's from the PRP analysis and cost sharing/cost recovery agreement process. We believe that the report overstates this limited problem. Preliminary PRP analyses completed by Dryden Fight Research Center, Goddard Space Flight Center, Marshall Space Flight Center and Langley Research Center were submitted to the IPO as required. Although Ames Research Center and Stennis Space Center did not submit their preliminary PRP analyses directly to the IPO, both of these Centers have negotiated cost sharing agreements that were coordinated with their IPO. The Wallops

Enclosure

Flight Facility cost sharing arrangement with the Corps of Engineers did not require a signed agreement; thus, it did not require IPO coordination. In any case, the Environmental Management Division will send a letter to the several Centers where coordination may be an issue.

The conclusion about the Center personnel not knowing who are the IPO's may be a matter of semantics. We suspect that Center personnel normally use Enterprise to refer to their Headquarters organization. As noted in the previous comment, most of the Centers that have submitted a PRP analysis or negotiated an agreement have followed the correct process.

See Appendix H, OIG Comment 2

Page 3, 4th paragraph, 2nd sentence: The number of sites and reported value of $486.7 million should be revised to reflect the later comment on Appendices C and D regarding the completion of the preliminary PRP analysis by MSFC and WSTF.

See Appendix H, OIG Comment 3

Appendix B: SSC also has negotiated a cost sharing arrangement with the Air Force for one of its sites.

See Footnote 16

Appendices C and D - The site data and cost values need to be revised to correct the following information:

See Appendix H, OIG Comment 3

MSFC submitted a letter to the Office of Space Flight on June 6, 2000, with a copy to the Inspector General, explaining that the Memorandum of Agreement with the Army addressed all PRP issues at MSFC. Therefore, the requirements of the NPG were satisfied. We concur with this conclusion. Appendices C and D should be reporting for MSFC that the preliminary PRP analysis has been completed and number of sites and estimated cleanup cost should be 0 sites and $0, respectively.

WSTF submitted a preliminary PRP analysis to Johnson Space Center on June 15, 1999, and provided a copy to Rick Angle on June 16, 1999, in response to the OIG's data request. Although JSC did not complete submittal to the Office of Space Flight, the Environmental Management Division has reviewed the analysis and found it to be acceptable. Appendices C and D should be reporting for WSTF that the preliminary PRP analysis has been completed and number of sites and cleanup cost should be 0 sites and $0, respectively.

Appendix E: The following comments should be considered in the final report:

In providing comments to your report, KSC has determined that: "At KSC, the land has always been under NASA ownership and operations were conducted under the specific guidance and oversight of NASA employees. KSC has never operated in a government owned/contractor operated mode. NASA has always had the responsibility for operations on KSC property. Consequently PRP's do not exist for cost sharing at KSC remediation sites."

SSC has negotiated a cost sharing agreement with the Air Force for one of the 3 sites. For the remaining 2 sites, SSC is preparing a full PRP analysis that will recommend pursuing a PRP. The potential cost avoidance is estimated to be $7.5 million.

At WFF, the Corps of Engineers has accepted responsibility for the sites that were used exclusively by the Navy that require remedial action. Several of the sites have been used by NASA and are NASA's responsibility. For several other sites, the need for remedial action has not yet been confirmed. If any of these sites require remedial action and are clearly the responsibility of the Navy, NASA anticipates that the Corps will continue remedial activities.

One site is listed for Glenn Research Center (GRC). GRC completed remediation work on the Resource Conservation and Recovery Act site in August 1994, prior to issuance of NPG 8850.1. GRC was not aware of any other PRP's and concluded that an analysis was not necessary.

In providing comments to your report, the environmental coordinator for Michoud Assembly Facility reported that "The Army did an analysis many years ago and said that they were not a PRP."

Appendix H. OIG Comments on Management's Response

In addition to providing comments on the OIG recommendations in this report, NASA commented on the validity of our estimated potential cost avoidance. NASA also provided other comments to improve report accuracy or presentation. We have incorporated management's comments into the report as necessary. The following presents management's comments and our evaluation of those comments for those matters that we consider significant and for which we did not make a change to the report.

Management's Comment. NASA management believes the OIG potential cost avoidance estimate of $49.5 million is incorrect. Management stated that this estimate is based on 41 sites located at the John F. Kennedy Space Center (Kennedy), Wallops Flight Facility (Wallops), Michoud Assembly Facility (Michoud), John H. Glenn Research Center at Lewis Field (Glenn), and John C. Stennis Space Center (Stennis), of which 23 sites are at Kennedy. The estimate for those sites is based on past experience, where a different set of 32 sites were reviewed and analyzed. Of the 32 sites for which cost sharing arrangements were negotiated, NASA clearly had minimal responsibility. In contrast, with reference to the 41 sites in Appendix E, Kennedy, Glenn, and Michoud environmental officials believe that NASA has significant responsibility for the sites located on those facilities and do not anticipate pursuing other PRP's. At Wallops, the Corps of Engineers is already conducting remedial activities at sites for which it is the responsible entity. Only Stennis has concluded that it has a basis to pursue PRP's. Stennis has negotiated an agreement with a PRP for one of the sites and is preparing a full PRP analysis for the other two sites. The cost avoidance at those sites is estimated at $7.5 million. Therefore, the $7.5 million represents the potential cost avoidance available to NASA and the final report should reflect only the $7.5 million as a legitimate cost avoidance.

1. OIG Comments. We based our estimated potential cost avoidance of $49.5 million on NASA's historical experience in negotiating cost sharing agreements for other Agency facilities. We revised this estimate to $37.9 million based on new information NASA provided after the draft report was issued.[16] We continue to believe that the Agency's past record of accomplishments provides a sound basis for estimating future potential cost avoidances. As discussed in the report, we purposely adopted a conservative approach to developing our estimate as the application of a sophisticated mathematical analysis resulted in an even higher estimate of cost avoidance. NASA's opposition to our estimate of cost avoidance is based on management's perception that NASA will have the significant responsibility for the cleanup costs for those sites still requiring a completed preliminary PRP analysis. While this position eventually may prove valid, we continue to believe that the true potential for cost avoidance cannot be known until NASA determines which sites will require a preliminary and full PRP analyses and then completes the required analyses, as required under the Agency's existing PRP policy.

[16] We revised our estimate based on the results of the completed preliminary PRP analysis for two White Sands Test Facility sites in New Mexico and on a completed full PRP analysis for one of the Stennis sites.

Preliminary PRP analyses still need to be completed for the Kennedy, Wallops, and Michoud sites, and a full PRP analysis needs to be completed for the two Army sites at Stennis. By negotiating cost sharing agreements, NASA should be able to avoid costs of about $11 million for clean-up for the two sites at Stennis that were contaminated by the Army. We base this estimate on Foster Wheeler's August 1999 cost estimates and NASA's historical experience with cost sharing agreements. We reaffirm our cost avoidance estimate of $37.9 million and the need to complete the preliminary and full PRP analyses in a timely manner.

Management's Comment. The report concludes that the Centers/facilities have excluded the IPO's from the PRP analysis and cost sharing/cost recovery agreement process. We believe that the report overstates this limited problem. NASA personnel submitted the preliminary PRP analyses completed by Dryden Flight Research Center, Goddard Space Flight Center, Marshall Space Flight Center and Langley Research Center to the IPO as required. Although Ames Research Center and Stennis Space Center did not submit their preliminary PRP analyses directly to the IPO, both of those Centers have negotiated cost sharing agreements that had been coordinated with their IPO's. The Wallops Flight Facility cost sharing agreement with the Corps of Engineers did not require a signed agreement, thus it did not require IPO coordination. In any case, the Environmental Management Division will send a letter to several Centers where coordination may be an issue. This letter will be similar to the one that the Office of Space Flight recently sent to the Centers under its jurisdiction regarding the requirements of the NPG.[17] In addition, management will send this OIG report and the follow-up correspondence to the IPO's.

2. OIG Comments. We did not include Dryden and Langley in our review of 12 NASA Centers/facilities and cannot comment on whether they properly coordinated with their respective IPO's. As discussed in the report, our conclusions concerning the lack of coordination with IPO's for the locations reviewed were supported by discussions with Center environmental officials. For example, officials at Glenn, Kennedy, Marshall, and Wallops stated that they did not provide copies of PRP analyses or proposed cost sharing agreements for their sites to their IPO because they did not know who the IPO's were for those sites. Although Ames officials stated that they provided a copy of the proposed cost sharing agreement to their IPO, the IPO for Ames could not remember receiving and approving the agreement. We discussed IPO responsibilities with representatives from the Office of Space Flight and the Office of Aerospace Technology. As a result of those discussions, we concluded that representatives from the Office of Space Flight were knowledgeable of IPO responsibilities. However, representatives from the Office of Aerospace Technology were not as knowledgeable. We commend the Office of Space Flight for sending a clarification letter to its Centers as a result of discussions with the OIG auditor. We also believe that the corrective actions planned by management should improve the level of coordination originally intended by the NPG.

[17] This letter was sent to five locations -- the Lyndon B. Johnson Space Center, John F. Kennedy Space Center, George C. Marshall Space Flight Center, John C. Stennis Space Center, and White Sands Test Facility.

Management's Comment. The reported value of $506.2 million should be revised to reflect the later comment (on Appendixes C and D) regarding completion of the preliminary PRP analysis by Marshall and the White Sands Test Facility.

3. OIG Comment. We revised Appendixes C and D and other portions of the report as appropriate based on the completed preliminary PRP analyses provided for the White Sands Test Facility sites. However, we did not change any data in the appendixes related to the Marshall sites because the new information provided by NASA management addressed sites that differed from the ones referenced in the appendixes.

Appendix I. Report Distribution

National Aeronautics and Space Administration (NASA) Headquarters

A/Administrator
AI/Associate Deputy Administrator
B/Chief Financial Officer
B/Comptroller
BF/Director, Financial Management Division
G/General Counsel
H/Associate Administrator for Procurement
HK/Director, Contract Management Division
HS/Director, Program Operations Division
J/Associate Administrator for Management Systems
JM/Acting Director, Management Assessment Division
L/Associate Administrator for Legislative Affairs
M/Associate Administrator for Space Flight
R/Associate Administrator for Aerospace Technology
Y/Associate Administrator for Earth Science

NASA Centers

Director, Ames Research Center
Director, John H. Glenn Research Center
Director, Goddard Space Flight Center
Director, John F. Kennedy Space Center
Director, George C. Marshall Space Flight Center
Manager, Michoud Assembly Facility
Director, John C. Stennis Space Center
Director, Wallops Flight Facility

Non-NASA Federal Organizations and Individuals

Assistant to the President for Science and Technology Policy
Deputy Associate Director, Energy and Science Division, Office of Management and Budget
Branch Chief, Science and Space Programs Branch, Energy and Science Division, Office of Management and Budget
Associate Director, National Security and International Affairs Division, Defense Acquisitions Issues, General Accounting Office
Professional Assistant, Senate Subcommittee on Science, Technology, and Space

Appendix I

Chairman and Ranking Minority Member – Congressional Committees and Subcommittees

Senate Committee on Appropriations
Senate Subcommittee on VA, HUD, and Independent Agencies
Senate Committee on Commerce, Science, and Transportation
Senate Subcommittee on Science, Technology, and Space
Senate Committee on Governmental Affairs
House Committee on Appropriations
House Subcommittee on VA, HUD, and Independent Agencies
House Committee on Government Reform and Oversight
House Subcommittee on Government Management, Information, and Technology
House Subcommittee on National Security, Veterans Affairs, and International Relations
House Committee on Science
House Subcommittee on Space and Aeronautics, Committee on Science

Congressional Member

Honorable Pete Sessions, U.S. House of Representatives

NASA Assistant Inspector General for Auditing
Reader Survey

The NASA Office of Inspector General has a continuing interest in improving the usefulness of our reports. We wish to make our reports responsive to our customers' interests, consistent with our statutory responsibility. Could you help us by completing our reader survey? For your convenience, the questionnaire can be completed electronically through our homepage at http://www.hq.nasa.gov/office/oig/hq/audits.html or can be mailed to the Assistant Inspector General for Auditing; NASA Headquarters, Code W, Washington, DC 20546-0001.

Report Title: Cost Sharing For Environmental Cleanup Efforts

Report Number: _____ **Report Date:** _____

Circle the appropriate rating for the following statements.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	N/A
1. The report was clear, readable, and logically organized.	5	4	3	2	1	N/A
2. The report was concise and to the point.	5	4	3	2	1	N/A
3. We effectively communicated the audit objectives, scope, and methodology.	5	4	3	2	1	N/A
4. The report contained sufficient information to support the finding(s) in a balanced and objective manner.	5	4	3	2	1	N/A

Overall, how would you rate the report?

Excellent Fair
Very Good Poor
Good

If you have any additional comments or wish to elaborate on any of the above responses, please write them here. Use additional paper if necessary. _____

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How did you use the report? _____

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How could we improve our report? _____

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How would you identify yourself? (Select one)

Congressional Staff	Media
NASA Employee	Public Interest
Private Citizen	Other: _____

Government: _____ Federal: _____ State: _____ Local: _____

May we contact you about your comments?

Yes: _____ **No: _____**

Name: _____

Telephone: _____

Thank you for your cooperation in completing this survey.

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