

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE _____ PAGE OF PAGES
 2. AMENDMENT/MODIFICATION NO. 01 3. EFFECTIVE DATE November 14, 2002 4. REQUISITION/PURCHASE REQ. NO. _____ 5. PROJECT NO. (If applicable) _____

6. ISSUED BY _____ CODE _____ 7. ADMINISTERED BY (If other than Item 6) _____ CODE _____

Procurement Office
 George C. Marshall Space Flight Center
 National Aeronautics and Space Administration
 Marshall Space Flight Center, AL 35812

AUTOMATED INVOICE PAYMENT INFORMATION: (256) 544-5566

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State, and Zip Code)
 TO ALL POTENTIAL QUOTERS

9A. AMENDMENT OF SOLICITATION NO. 8-1-1-A4-00155
 9B. DATED (SEE ITEM 11) November 4, 2002
 10A. MODIFICATION OF CONTRACT/ORDER NO. _____
 10B. DATED (SEE ITEM 13) _____

CODE _____ FACILITY CODE _____

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers is extended, is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing items 8 and 15, and returning 3 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)
 N/A

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

(x) A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
 B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
 C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
 D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor is not, is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

The purposes of this Amendment are to (1) provide responses to questions received November 4 through November 13, 2002 (2) provide a revised Attachment 4-9, Past Performance Form Letter Example, with a corrected due time of 12 noon instead of 10 A.M. and (3) provide an updated table 2.4.1, Workload Historical Data, for Attachment 6-1, Historical Background.

This information is provided in the following pages.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print) _____ 16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) _____
 15B. CONTRACTOR/OFFEROR _____ 15C. DATE SIGNED _____ 16B. UNITED STATES OF AMERICA _____ 16C. DATE SIGNED _____
 (Signature of person authorized to sign) _____ BY _____ (Signature of Contracting Officer)

A. Responses to questions received November 4, 2002 through November 13, 2002 are provided below:

1. **QUESTION:** Section 4, Subfactor MA 5 requires a Total Compensation Plan for the Prime and Major Subcontractors.
 - a. The amount of data required is significant and to properly provide will require at least 5 pages per plan. Recommend Compensation Plans be made an Appendix to Volume 1 and a page limit per company applied.
 - b. Many companies consider compensation plans proprietary and submit with their sealed packages. This makes it difficult to account for the pages if it a page limited item.

RESPONSE: a. The page limit for Volume 1 is considered adequate.

RESPONSE: b. The potential quoters will need to communicate with their major subcontractors about the number of pages.

2. **QUESTION:** Submittal I is currently due on Monday 18 November. Monday 11 November is a Government holiday. This gives our customers less than 2 weeks to return the questionnaires. Would you consider making submission I due on Wednesday 20 Nov?

RESPONSE: No extension is granted for the submittals from the potential quoters. The completed questionnaires may be submitted later than November 18, 2002 as long as MSFC's copy of the Attachment 4-9, Past Performance Form Letter, and Section 1 of Attachment 4-10, Past Performance Interview/Questionnaire Form, are submitted by the submittal I due date.

3. **QUESTION:** There is a requirement in the PWS to perform an annual physical inventory of all MSFC controlled equipment (7.2.B.2.a.(7)). Are there any other physical inventories required?

RESPONSE: No.

4. **QUESTION:** It appears that small furniture requirements will be fulfilled through the retail store (provided the requirement cannot be fulfilled from existing on hand Government stock). Will the contractor be expected to meet major furniture procurement requirements through the store as well? If yes, will those requirements be handled with something other than a credit card?

RESPONSE: Yes. See paragraph 7.2.A.6.a.(5) of the Performance Work Statement, Attachment 1.

5. **QUESTION:** The expenses that must be rolled up into the cost of goods to be sold in the retail store will be significant. If the company operating the retail store has a GSA Schedule for the same goods, is the Company bound to offer the goods in the retail store at the same prices it has for those same items on Schedule?

RESPONSE: After talking to GSA, the prices should be equal to or less than the prices on the GSA Schedule.

6. **QUESTION:** GSA advises that NAICS 561210 corresponds to SIN 874-507. Must a company possess SIN 874-507 in order to compete?

RESPONSE: According to GSA, all potential quoters have applied or are applying for SIN 874-507.

7. **QUESTION:** The Size Standard for this procurement is stated as being \$6 million. Must a company meet that size standard in order to be considered SDB (for the purposes of being able to qualify for the Price Evaluation Adjustment)?

RESPONSE: According to GSA, when a company submits a proposal for SIN 874-507, the North American Industry Classification System (NAICS) that represents the preponderance of estimated average annual sales will be designated as the single NAICS for the contract award, and thereby the size standard of the firm as it relates to the contract award.

8. **QUESTION:** Does the Size Standard have any implication on company designations as SDB for subcontracting purposes?

RESPONSE: See paragraph D of Provision 4-3.

9. **QUESTION:** Ref Paragraph 4-5 B QUOTATION PAGE LIMITATIONS, states “ Diagrams, charts, and photographs may be reduced but still must be clearly legible, and if necessary, run landscape or folded to eliminate oversize pages. Text in diagrams, charts, and photographs shall be no smaller than 12-point type and Times New Roman font.”

This appears to be in conflict as a reduced diagram or chart will be less than 12 point. Please clarify if font in diagrams, charts, and photographs can be smaller than 12Pt and other than Times New Roman font. Also are Tables and Figures considered “diagrams and charts?”

RESPONSE: Tables and Figures are considered diagrams and charts. If text in a diagram or chart is originally greater than 12-point, it shall be reduced to 12-point.

10. **QUESTION:** Reference RFQ No. 8-1-1-A4-00155, Section 4, paragraph 4-5.B. This referenced paragraph requires that “Text in diagrams, charts, and photographs shall be no smaller than 12-point type....” This restriction makes it extremely difficult to develop usable flow charts, organizational charts, etc., to provide the evaluators graphics giving them a simplified, one-look aspect to organizations and processes. We note that the most recent COSS solicitation Section L instructions permitted 8-point type on diagrams, charts and photographs.

Request offers be permitted to use 8-point type of larger on diagrams, charts and photographs in proposals responding to referenced solicitation. This would significantly facilitate the ability of the offers to provide graphic representations to assist evaluators.

RESPONSE: See response to Question 9.

11. **QUESTION:** One of our subcontractors has a contract and the PCO is out of the office until 19 November. He will complete the questionnaire as soon as possible after he gets back and will send it to NASA immediately. Is there a problem with him submitting this late.

RESPONSE: See response to Question 2.

12. **QUESTION:** We are having a problem getting access to materials referenced in the RFQ. Attachment 11 of the final RFQ gives a list of URL web addresses to obtain required information critical to preparing our proposal.

RESPONSE: The URL for MSFC directives has been updated to <https://respository.msfc.nasa.gov/directives/directives.htm>. The two Organizational Work Instructions are included in this amendment.

The following questions came from the Work Control System Workshop.

13. **QUESTION:** Is a LAN-A account adequate for access to these computer database systems?

RESPONSE: The LAN-A account would satisfy the network access, but there are additional desktop software requirements needed to access and operate these databases and systems.

14. **QUESTION:** Does the NEMS system (Logistics/Property Tracking) work in concert with the COSMIS system to generate delivery orders for materials?

RESPONSE: No, the COSMIS system is an MSFC internal system that is not related to the NEMS system.

15. **QUESTION:** Is the equipment tag like a bar code tag?

RESPONSE: Yes.

16. **QUESTION:** What does "super natural" refer to?

RESPONSE: Code.

17. **QUESTION:** How do we get paid for flight hardware?

RESPONSE: The Contractor will be funded through IDIQ portion of the contract.

18. **QUESTION:** What will be the impact and workload requirements and schedule for the contractor to support NASA's IFMP/SAP systems conversion, implementation, and maintenance efforts?

RESPONSE: For the Core Finance module of IFM, the Contractor's workload requirement would be to utilize the system, which is already implemented. For the Integrated Asset

Management (IAM) module of IFM, any potential requirement changes will be negotiated at the appropriate time.

19. **QUESTION:** Is there a database to track repair actions and scheduled repairs on GSA vehicles?

RESPONSE: No, there is not a database. However, there is a maintenance schedule provided by GSA.

20. **QUESTION:** On customer feedback (in the Work Control System): Does the contractor "close" work orders only after customer approval? If yes, how is delayed customer response figured into performance metrics?

RESPONSE: Prior to closing work orders, the Contractor should ensure that the work performed actually met the customer requirements. The Contractor shall enter closure information (e.g., work order completion date and time) into the Work Control System, which then triggers a notification (including survey) to the Customer that the service provider considers the work complete. The Customer has a specified period of time to complete the survey. If the survey is not completed within the set timeframe then the system automatically closes the work order. Delayed customer response to the Work Control System survey will impact the performance metrics if it is determined that the delay is attributed to poor service.

21. **QUESTION:** How many cardholders in NASA? Are all limited to \$2500? Is there a daily limit on the credit card?

RESPONSE: Currently, there are 430 cardholders at MSFC. Since this is a MSFC contract only, information is not needed for NASA. Currently, cardholders who would procure from the retail store are limited to the statutory \$2500 single purchase limit. No, there is not a daily limit, only the single and monthly limits as listed in MWI 5113.1.

22. **QUESTION:** On the flight hardware system, who is responsible for programming changes to the Access database?

RESPONSE: This Contractor is responsible.

23. **QUESTION:** SOW requires 60-day turnover of disposal property, some GSA limits require turnover exceeding 60 days. Which is correct?

RESPONSE: The solicitation requirements are correct.

24. **QUESTION:** How does the NSMS system relate to the retail store?

RESPONSE: There is no relation. The NSMS system will be utilized for warehousing and furniture assets in this procurement. The Contractor is required to develop an electronic system for the retail store.

25. **QUESTION:** Who determines the (NDPMS) Fair Market Value?

RESPONSE: GSA and the Government determines the Fair Market Value

26. **QUESTION:** Will NSMS be replaced SAP module?

RESPONSE: Yes.

27. **QUESTION:** Is there Government provided space for excess property?

RESPONSE: : No. However, there are items, which will not be transported to the Contractor's offsite disposal facility and are sold in place based on approval by the Government

28. **QUESTION:** Is the Contractor liable for credit card purchases in relation to the Government credit card limit?

RESPONSE: Yes, the Contractor is liable. The Contractor shall follow the requirements of MWI 5113.1, which states limits on credit card usage. In addition when the Contractor contacts the banks to verify the credit card, the system should indicate if the cardholder has exceeded any limits.

29. **QUESTION:** Is the Government card a Mastercard?

RESPONSE: Currently, the Government card is a Mastercard.

30. **QUESTION:** Is the Contractor responsible for creating records in the NEMS and subsequent?

RESPONSE: Yes.

31. **QUESTION:** Do we manage or do we work for the PDO?

RESPONSE: All work for this order is performed for the Government, which includes the Property Disposal Officer (PDO).

32. **QUESTION:** Who certifies the users in NEMS?

RESPONSE: The Government.

33. **QUESTION:** Is there a direct crosswalk between the codes in NPDMS and the Army?

RESPONSE: Yes.

34. **QUESTION:** If an item doesn't have a NSN, who assigns or how do you determine a stock number?

RESPONSE: The Contractor will utilize available resources to assign or validate the stock number.

35. **QUESTION:** Can you use a federal stock number for NEMS?

RESPONSE: No.

36. **QUESTION:** Who procures flight hardware?

RESPONSE: The Contractor.

37. **QUESTION:** Will we be doing inventory control on flight hardware stock?

RESPONSE: Yes.

38. **QUESTION:** Is there involvement in the maintenance of GSA vehicles?

RESPONSE: Yes, this Contractor delivers GSA vehicles to the service/maintenance provider and back to the Government user site.

39. **QUESTION:** Do we have to log data into SAP and the NEMS system?

RESPONSE: Yes.

B. A revised Attachment 4-9, Past Performance Letter Example, is provided with the correct due time of 12 noon.

C. An updated table for Section 2.4.1 of Attachment 6-1, Historical Background is provided below:

Historical Data on M&R related to \$1500 IDIQ Work

	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01
Work Order <\$1500	1619	1666	1804	1829	1712	1381
Work Order >\$1500	86	712	949	853	810	716
Total Work Order	1705	2378	2753	2682	2522	2097
Average IDIQ per year	5%	30%	34%	32%	32%	34%

Assumptions: Labor cost and material cost are included in each work order calculated.

File 6-1A contains the complete list of work.

PAST PERFORMANCE FORM LETTER EXAMPLE

Logistics Services Procurement RFQ 8-1-1-A4-00155

CLIENT AUTHORIZATION LETTER: FORMAT

[Date of Letter]

[Name and Address of proposed company's customer]

Attention: *[Name and Designation of Customer's Contract Manager or Appropriate Contact]*

Dear *[Contact Name]*:

We are currently responding to the NASA, Marshall Space Flight Center Request for Quotation for Logistics Services. NASA is requesting that clients of entities responding to their request be identified and their participation in the evaluation process requested. In the event you are contacted for information on work we have performed, you are hereby authorized to respond to those inquiries. Your cooperation with this effort is greatly appreciated. Please direct any questions to *[Name and Phone Number of Company's Point-of-Contact]*.

We have included our work for your agency as a past performance reference. A Past Performance Questionnaire is enclosed. Please complete Sections II and III of the enclosed evaluation and return the signed, completed document to:

NASA/Marshall Space Flight Center
Attention: Daniel Fuller, PS31-E
Marshall Space Flight Center, AL 35812

Please forward the completed evaluation to NASA at the above address to ensure it is received prior to 12 noon Central Time on November 18, 2002.

In order to maintain the integrity of this process, please **DO NOT** return the questionnaire to us. Return it to NASA/MSFC at the address listed above.

Sincerely,

[Name of Signer]

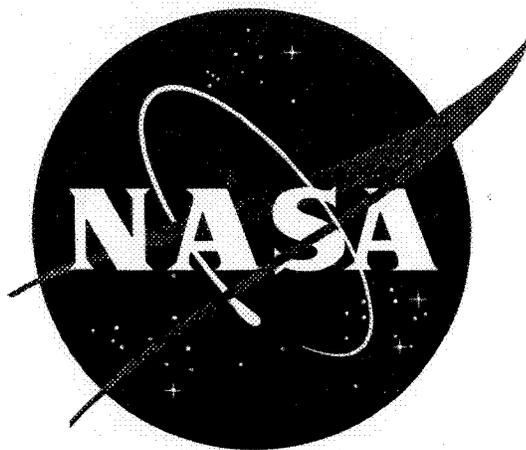
[Designation of Signer]

cc:

NASA/Marshall Space Flight Center
Attention: Elaine W. Hamner, PS30
Marshall Space Flight Center, AL 35812

Consolidated Environmental Response Plan

Organizational Work
Instruction AD10-OWI-001
Environmental Engineering
Department



National Aeronautics and Space Administration
George C. Marshall Space Flight Center

Spill Prevention, Control, and Countermeasures
Storm Water Pollution Prevention Plan
Resource Conservation and Recovery Act Contingency Plan

AD10-OWI-001

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George C. Marshall Space Flight Center
Marshall Space Flight Center, Alabama 35812

AD10-OWI-001
BASELINE
August 1999

ORGANIZATIONAL WORK INSTRUCTION

AD10-OWI-001

Environmental Engineering
Department

Consolidated Environmental Response Plan

Spill Prevention, Control, and Countermeasures Plan
Storm Water Pollution Prevention Plan
Resource Conservation and Recovery Act Contingency Plan

APPROVING
AUTHORITY

NAME

TITLE

ORG

DATE

Original Signed, Dr. Rebecca McCaleb	Manager, Environmental Engineering Department	AD10	9.29.99
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Marshall Space Flight Center Organizational Work Instruction AD10-OWI-001		
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DOCUMENT HISTORY LOG

Status (Baseline/ Revision/ Canceled)	Document Revision	Effective Date	Description
Baseline	Baseline	August 1999	New OWI

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Consolidated Environmental Response Plan

SPCC Certification

CERTIFICATION OF COMPLIANCE WITH 40 CFR 112 REQUIREMENT
I hereby certify that I have examined the facility, and being familiar with the provisions of 40 CFR 112, attest that this Consolidated Environmental Response Plan (includes Spill Prevention, Control, and Countermeasures) has been prepared in accordance with good engineering practices.
Original Plan: August 1999
Name of Registered Professional Engineer: J. P. Martin
Registered State and Number: Alabama P.E. # 14200
Signature: Original Signed
Certification Date: 8/17/99
Revision No. 1:
Name of Registered Professional Engineer:
Registered State and Number:
Signature:
Certification Date:
Revision No. 2:
Name of Registered Professional Engineer:
Registered State and Number:
Signature:
Certification Date:
Revision No. 3:
Name of Registered Professional Engineer:
Registered State and Number:
Signature:
Certification Date:

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Plan Certification

Plan Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.

Original Signed _____

9/2/99 _____

Dr. Rebecca McCaleb
Manager of EED

Date

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Applicability of Substantial Harm Certification Form

40 CFR 112 Requirement

Facility Name: National Aeronautics and Space Administration (NASA) Marshall
Space Flight Center (MSFC)

1. Does the facility have a maximum storage capacity greater than or equal to 42,000 gallons *and* do the operations include over water transfers of oil to or from vessels? YES ___ NO X.
2. Does the facility have a maximum storage capacity greater than or equal to one million (1,000,000) gallons *and* is the facility without secondary containment for any aboveground storage area sufficiently large to contain the capacity of the largest aboveground storage tank within the storage area? YES ___ NO X.
3. Does the facility have a maximum storage capacity greater than or equal to one million (1,000,000) gallons *and* is the facility located at a distance (as calculated using the appropriately formula in Attachment C-III to 40 CFR Part 112 or an alternative formula¹ considered acceptable the Regional Administrator) such that a discharge from the facility could cause injury to an environmentally sensitive area as defined in Appendix D to 40 CFR Part 112? YES ___ NO X.
4. Does the facility have a maximum storage capacity greater than or equal to one million (1,000,000) gallons *and* is the facility located at a distance (as calculated using the appropriate formula in Attachment C-III to 40 CFR Part 112 or an alternative formula¹ considered acceptable by the Regional Administrator) such that a discharge from the facility would shut down a public drinking water intake? YES ___ NO X.
5. Does the facility have a maximum storage capacity greater than or equal to one million (1,000,000) gallons *and* within the past 5 years; has the facility experienced a reportable spill in an amount greater than or equal to 10,000 gallons? YES ___ NO X.

Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals responsible for obtaining this information, I believe that the submitted information is true, accurate, and complete.

Original Signed _____

Signature

Dr. Rebecca McCaleb _____

Name (please type or print)

Manager of EED _____

Title

9/2/99 _____

Date

¹ If an alternative formula is used, documentation of the reliability and analytical soundness of the alternative formula must be attached to this form.

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Facility General Information

Name: National Aeronautics and Space Administration (NASA) Marshall Space Flight Center (MSFC)

EPA ID #: AL1800013863

Type of Facility: MSFC encompasses approximately 1,840 acres within the boundaries of the U.S. Army Redstone Arsenal (RSA) military installation in Madison County, Alabama.

MSFC was established by Presidential Executive Order in March 1960 to support a national program for the exploration of space. MSFC is used to design, fabricate, and test rocket vehicles, engines, and spacecraft components. Support operations in propellant handling, process development, and basic research are conducted in the related aerospace activities. MSFC, NASA's primary center for propulsion systems development, has extensive laboratory facilities for the design, development, testing, and evaluation of large launch vehicles, space systems, and small precision space experiments.

MSFC's combined facilities and expertise are used to conceive, analyze, and simulate data systems. MSFC has been involved in developing technology in the areas of digital computers, telemetry systems, simulation systems, and software systems.

MSFC also has a hazardous waste storage facility (HWSF) for temporary (less than 90 day) storage of hazardous waste until offsite disposal or treatment can be arranged.

Location: MSFC, Alabama

County: Madison

Name of Responsible Official:

Marshall Space Flight Center
Art Stephenson
Director

MSFC Center Operations
Mrs. Sheila S. Cloud
Director of Center Operations Directorate (COD)

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Name of Person Accountable for Spill Prevention and Emergency Response at the Facility:

Mr. Pete Allen
Director, Facilities/Engineering Department

Name of Person Ensuring that a Plan is in Place for Spill Prevention and Storm Water Pollution Prevention:

Dr. Rebecca McCaleb
Director, Environmental Engineering Department (EED)

Names of Persons Responsible for Plan Content:

Resource Conservation and Recovery Act Contingency Coordinator
Farley Davis (EED)

Spill Prevention, Control, and Countermeasures Coordinator
Arthur Patrick (EED)

Storm Water Pollution Prevention
Arthur Patrick (EED)

Name of Incident Commander:

All Incidents:

Duty Officer
Redstone Arsenal Fire Department (RSA FD)

A more descriptive list of emergency contacts is provided in Section 4 and Appendix A, including onsite and offsite phone numbers.

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1.0 Scope

1.1 Scope of this Plan

This document fulfills the requirements for the Storm Water Pollution Prevention Plan (SWP3) required by Marshall Space Flight Center's (MSFC's) National Pollutant Discharge Elimination System (NPDES) permit; the Spill Prevention, Control, and Countermeasures (SPCC) Plan required by 40 *Code of Federal Regulations* (CFR) 112; and the Resource Conservation and Recovery Act Contingency Plan (RCRA-CP) required by 40 CFR 265 for MSFC.

This Plan identifies and evaluates potential sources of oil and hazardous material pollution and potential storm water pollution sources at MSFC and describes measures to prevent and/or contain accidental discharges of said materials resulting from fires, explosions, or any unplanned sudden or non-sudden releases. The plan also describes pollution prevention measures (best management practices [BMPs]) and the implementation of these measures.

A copy of this Plan will be accessible at all oil and hazardous material storage facilities of MSFC if the facilities normally are attended at least 8 hours per day. MSFC storage facilities that are not normally attended will have a copy of this Plan at the nearest field office associated with these storage facilities. In addition, the Plan will be distributed to local police departments, fire departments, hospitals, and state and local emergency response teams that may be called on to provide emergency services.

1.2 Purpose

The purpose of this Plan is to define a pollution prevention program scope to 1) provide MSFC with a practical guide to preventing spills and storm water pollution and 2) provide operational procedures for the response to and the collection and containment of oil or hazardous material spills that may result from operations at MSFC. The first objective will be accomplished by identifying and evaluating potential sources of spills and other sources of storm water pollution and then describing and implementing pollution reduction measures. The second objective will be accomplished by MSFC's organization of resources and a written commitment of manpower, equipment, and materials necessary to control and remove oil and hazardous materials discharges at the facility in the event of a spill. Successful implementation of this Plan will fulfill regulatory requirements, enhance environmental awareness, and improve the overall water quality at MSFC.

1.3 Applicability

The Federal Water Pollution Control Act of 1972 requires the Regional Administrator of the U.S. Environmental Protection Agency (EPA) and other federal, state, and interstate agencies to enter into programs designed to prevent, reduce, or eliminate pollution of navigable waters of the United States.

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Title 40 CFR Part 112, "Oil Pollution Prevention Non-transportation Related Onshore and Offshore Facilities," and Section 311(j)(1)(C) of the Federal Water Pollution Control Act Amendments of 1972 require the establishment of procedures, methods, and equipment to prevent and contain discharges of harmful quantities of oil. SPCC plans that address spill prevention and control of unauthorized oil discharges must be written and put into effect to satisfy these regulations where they apply.

Title 40 CFR Part 110, "Prevention of Environmental Discharge of Oil," defines a "harmful quantity" as those discharges that will cause a sheen or discoloration of the surface of the water or that will cause a sludge or emulsion to be deposited beneath the surface of the water. The regulatory definition of "oil" means oil of any kind or in any form including, but not limited to, petroleum, fuel oil, sludge, oil refuse, vegetable oil, animal oil, and oil mixed with wastes other than dredged spoil. "Discharge" includes, but is not limited to, any spilling, leaking, pumping, pouring, emitting, emptying, or dumping of oil.

Title 40 CFR Part 122, Subpart B, "Permit Application and Special NPDES Program Requirements," requires an individual permit for storm water discharges associated with industrial activity. The NPDES permit program for the state of Alabama is governed by the Alabama Department of Environmental Management (ADEM). MSFC is regulated under NPDES permit AL0000221. Part IV of the NPDES permit regulates storm water. Under this part, MSFC is required to develop and implement a BMP Plan or SWP3 to prevent or minimize the potential for the release of pollutants from ancillary activities.

The United States Congress enacted RCRA in 1976; this Act required "Cradle to Grave" tracking of hazardous waste. It also required that standards be set for hazardous waste treatment, storage, disposal, and operation. This plan has been written to satisfy the state and federal requirements for the storage of large quantities of hazardous waste for less than 90 days.

Title 40 CFR Part 265, Subpart C, "Preparedness and Prevention," requires generators of hazardous waste to maintain and operate facilities to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water.

Title 40 CFR Part 265, Subpart D, "Contingency Plan and Emergency Procedures," requires a generator of hazardous waste to have a contingency plan to minimize hazards from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water. One element of Subpart D, 40 CFR 265.52 (b), allows owners or operators with a prepared SPCC Plan to incorporate the hazardous waste management provisions required by Part 265.

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Title 40 CFR 300, "EPA National Oil and Hazardous Substances Pollution Contingency Plan under [Comprehensive Environmental Response, Compensation, and Liability Act] CERCLA of 1980," provides the organizational structure and procedures to be followed in preparing for and responding to releases of oil, hazardous substances, pollutants, and contaminants. Subpart B defines the roles and responsibilities for response team members, along with their relationship to other governmental agencies and the public. Subpart C details emergency preparedness activities, including how facility contingency plans relate to federal contingency plans and local contingency planning under the Superfund Amendments and Reauthorization Act (SARA), Title III. Subpart D provides the operational response phases for oil releases. Subpart E details hazardous substance responses.

Title 40 CFR 302, "EPA Designation, Reportable Quantities, and Notification Requirements for Hazardous Substances Under CERCLA," identifies reportable quantities for hazardous substance releases. In addition, notification requirements for releases of hazardous substances are provided.

Title 40 CFR 355, "EPA Regulations for Emergency Planning and Notification Under CERCLA," establishes a list of extremely hazardous substances, planning quantities, and facility notification responsibilities necessary for implementing local response plans.

The State of Alabama established statutory authority for substantially the same requirements (335-14-3-.03(5)(a)(4), 335-14-5-.03, and 335-14-5-.04) by Code of Alabama 1975, 22-30-11, 22-30-12, 22-30-14, and 20-30-16, and as amended.

This *Consolidated Environmental Response Plan* fulfills the combined requirements of these regulations, including requirements for an RCRA-CP, SPCC Plan, and SWP3.

1.4 Plan Revisions

The Plan will be reviewed and immediately amended, if necessary, whenever:

- Applicable regulations are revised.
- The Plan fails in an emergency.
- The facility changes in its design, construction, operation, maintenance, or other circumstances in a way that materially increases the potential for fire, explosion, or releases of oil, hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency.

Amendments to the Plan to reflect changes listed above will be implemented fully no later than 6 months after the change occurs. The Plan will be reviewed and evaluated at least once every 3 years. As a result of the review and evaluation, MSFC will amend the Plan within 6 months to include more effective prevention and control technology if the technology significantly will reduce the likelihood of a spill event and if such technology

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has been field proven at the time of the review. A Professional Engineer, in accordance with the requirements of 40 CFR 112.3(d), must certify amendments to the Plan.

Inspections required by the plan may result in changes to the sources and contacts listed in the Plan. Table 1-1 presents the schedule of Plan updates.

TABLE 1-1
Schedule of Plan Updates

Plan Component	Location	Update Frequency	Person Responsible
The list of emergency coordinators	Appendix A	Quarterly	SPCC Coordinator
List of ASTs	Appendix B	Quarterly	SPCC Coordinator
List of USTs	Appendix B	Quarterly	SPCC Coordinator
List of potential spill sources or storm water pollution sources	Appendix C	Annually	SWP3 Coordinator
Locations of ASTs, USTs, and potential spill sources or storm water pollution sources	Appendix D	Annually	SPCC Coordinator
The list of emergency equipment	Appendix E	Annually	SPCC Coordinator
Members of the SPPT	Appendix A, Appendix C	Annually	SWP3 Coordinator
Notes: AST—Aboveground Storage Tank UST—Underground Storage Tank SPPT—Storm Water Pollution/spill Prevention Team			

These changes will not be considered amendments to the Plan and the Plan will not be recertified if the above sections are revised during the 3-year period before the required recertification date.

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2.0 Applicable Documents

Marshall Procedures and Guidelines (MPG) 8800.3 (Draft)

Federal Regulations

40 CFR 112
40 CFR 122
40 CFR 265
40 CFR 300
40 CFR 302
40 CFR 355

State of Alabama Regulations

335-6-6
335-14-3-.03(5)(a)(4)
335-14-5-.03
335-14-5-.04

MSFC NPDES Permit No. AL0000221

MSFC State Indirect Discharge (SID) Permit No. IU 4500027

Storm Water Management for Industrial Activity: Developing Pollution Prevention Plans and Best Management Practices. EPA, September 1992.

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3.0 Definitions and Acronyms

AC	Area coordinator
ADEM	Alabama Department of Environmental Management
AST	Aboveground storage tank
BMP	Best management practice
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	<i>Code of Federal Regulations</i>
COD	Center Operations Directorate
COSS	Center Operations Support Service
CPS	Cathodic protection system
CSC	Customer Support Center
DOT	U.S. Department of Transportation
EED	Environmental Engineering Department
EHS	Extremely hazardous substance
EMD	Emergency Management Director
EMS	Environmental Management Support
EOC	Emergency Operations Center
EPA	U.S. Environmental Protection Agency
EPO	Emergency Preparedness Officer
EWS	Emergency warning system
FEMA	Federal Emergency Management Agency
HAZMAT	Hazardous material
HEMSI	Huntsville Emergency Medical Services, Inc.
HWSF	Hazardous waste storage facility
IC	Incident Commander (Emergency Coordinator)
ICS	Incident Command System
IDW	Investigation-derived waste
IOSC	Incident On-scene Coordinator
ISCP	Installation Spill Contingency Plan
IST	Industrial Safety Team
IWTF	Industrial wastewater treatment facility
MPG	Marshall Procedures and Guidelines
MRD	Media Relations Department
MSDS	Material safety data sheet
MSFC	Marshall Space Flight Center
NASA	National Aeronautics and Space Administration
NPDES	National Pollutant Discharge Elimination System
NSWD	Non-storm water discharge
OMEHS	Occupational Medicine and Environmental Health Services
OSHA	Occupational Safety and Health Administration
POC	Point of contact
PPE	Personal protective equipment

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psi	Pounds per square inch
PSM	Protective Services Manager
RCRA-CP	Resource Conservation and Recovery Act Contingency Plan
RP	Rocket propellant fuel
RQ	Reportable quantity
RSA FD	Redstone Arsenal Fire Department
RSA	Redstone Arsenal
SARA	Superfund Amendments and Reauthorization Act
SI	Storm Water Inspector
SID	State Indirect Discharge
SOP	Standard operating procedures
SPCC	Spill prevention, control, and countermeasures
SPPT	Storm Water Pollution/Spill Prevention Team
SWC	Storm Water Coordinator
SWP3	Storm Water Pollution Prevention Plan
TOC	Total organic carbon
TSDF	Treatment, storage, and disposal facility
UPOC	User Point of Contact
UST	Underground storage tank
USWC	User Storm Water Coordinator

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4.0 Instructions—Emergency Spill Procedures

MSFC has incorporated a written commitment of the manpower, equipment, and materials necessary to control and remove oil and hazardous materials discharges at the facility in the event of a spill. This commitment is described in the following subsections through MSFC's manpower organization, its emergency response procedures, and its post-emergency procedures.

4.1 Incident Response Team

When a release or potential for a release, fire, or explosion occurs, Chapter 8 of MSFC's Emergency Plan MPG 1040.3F is to be implemented. The Emergency Plan establishes policies, responsibilities, and authority for maintaining a state of readiness with respect to disastrous situations that could confront MSFC and surrounding areas. The Emergency Plan provides expeditious courses of action to be taken in minimizing the effects of a disaster on MSFC personnel and property.

A summary of emergency personnel responsibilities is included in Table 4-1. Figure 4-1 provides an emergency response communication flowchart based on MSFC's Emergency Plan. Appendix A, Tables A-1 and A-2, present the telephone lists for the personnel fulfilling the responsibilities listed below.

The following describes the responsibilities of the key groups or persons involved in implementing and maintaining this Plan.

4.1.1 Incident Commander (IC)

At all times, at least one employee who has the responsibility for coordinating all emergency response measures is either on the MSFC premises or on call (available to respond to an emergency by reaching MSFC within a short time). This emergency coordinator is thoroughly familiar with all aspects of MSFC's Plan, all operations and activities at the facility, locations and characteristics of waste handled, locations of all records within the facility, and its layout.

The IC has the authority to commit the resources needed to carry out the Plan. The Redstone Arsenal Fire Department (RSA FD) is to direct appropriate responses as the IC until relieved by the NASA IC. In addition to being the primary responder to all potential environmental incidents, the RSA FD is tasked by the Army/MSFC Support Agreement to respond to fires, explosions, and chemical releases and to provide the First Responder Materials Team.

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**TABLE 4-1
Emergency Personnel Responsibilities**

Person	Respond to Scene?	Emergency Actions	Post-emergency Actions
Security Dispatcher	Security Guard Only	<ul style="list-style-type: none"> • Record emergency information from caller • Request caller remain at site to inform Incident Commander (IC) and Incident On-scene Commander (IOSC) • Notify RSA FD and HEMSI if not a 911 call • Notify CSC • Dispatch security guard to scene 	
Customer Support Center (CSC)	No	<p>Automatic notification of:</p> <ul style="list-style-type: none"> • NASA IOSC • Environmental Engineering Department (EED) • MSFC Center Operations Support Service (COSS) Contractor • Occupational Medicine and Environmental Health Services (OMEHS) • MSFC Industrial Safety Team (IST) • MSFC Chemistry Branch • MSFC Emergency Management Director (EMD) • MSFC Emergency Preparedness Office (EPO) <p>Act as the central communications point during the emergency. When requested by the IC, notification of:</p> <ul style="list-style-type: none"> • Protective Services Manager (PSM) • Media Relations Department (MRD) 	<ul style="list-style-type: none"> • Maintain communications

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**TABLE 4-1
Emergency Personnel Responsibilities**

Person	Respond to Scene?	Emergency Actions	Post-emergency Actions
RSA Incident Commander (RSA IC) Redstone Arsenal Fire Department (RSA FD) [IC or alt is on call 24 hours per day]	Yes	<ul style="list-style-type: none"> • Evaluate the emergency situation and implement the Plan, if necessary • Direct response activities to assess, mitigate, or remediate releases and to dispose of hazardous waste • Commit resources as needed • Coordinate response activities with NASA IC/IOSC • Transfer IC duties to NASA IC 	<ul style="list-style-type: none"> • Ensure that Redstone Arsenal Fire Department (RSA FD) equipment is decontaminated after use and ready for reuse
NASA IC (Emergency Coordinator)	Yes	<ul style="list-style-type: none"> • Coordinate response activities with RSA FD • Assume IC duties when RSA FD leaves scene • Inform EMD, as required • Direct the EED to notify regulatory agencies within 24 hours if required 	<ul style="list-style-type: none"> • Direct containment and cleanup of the incident • Gather pertinent information on the spill incident for follow-up reporting to regulatory agencies • Arrange for remediation, storage, and disposal of material generated
Incident On-scene Coordinator (IOSC) Environmental Engineering Department (EED)	Yes	<p>When NASA IC is a contractor, IOSC reverts to EED and duties include:</p> <ul style="list-style-type: none"> • Coordinate response activities between NASA personnel and IC • Direct NASA personnel <p>EED duties include:</p> <ul style="list-style-type: none"> • Assist the IC in assessment of hazards to human health or the environment from the incident • Arrange for chemical sampling and analysis when necessary • Assist in determining the reportable quantity (RQ) • Conduct 24-hour notification of regulatory agencies when required 	<ul style="list-style-type: none"> • Direct the COSS Contractor to complete an MSFC After-Action Incident Report form • Prepare follow-up reports to regulatory agencies as required. See Appendix F. • Determine if spill site cleanup activities meet regulatory requirements • Advise on proper disposal methods

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**TABLE 4-1
Emergency Personnel Responsibilities**

Person	Respond to Scene?	Emergency Actions	Post-emergency Actions
		<ul style="list-style-type: none"> • Maintain the MSFC chemical inventory and maps showing storage locations • If needed, contact the RSA Support Activities Environmental and Master Planning Director for assistance 	
COSS Contractor	Yes	<ul style="list-style-type: none"> • Control and contain releases of hazardous substances, remediate release, and decontaminate the site; and support the RSA FD as needed • Assist in handling, storage, identification, and disposal of material generated • Provide supplies and equipment to complete the above tasks • Provide levels D through A emergency response • Keep the IC apprised of activities and progress 	<ul style="list-style-type: none"> • Prepare MSFC After-Action Incident Report form and provide copies to the Chief, Operations and Maintenance Group; Director, OMEHS; Director, EED; Director, IST; and EMD • Maintain a current record of hazardous waste stored at the Hazardous Waste Storage Facility (HWSF) and a map of storage areas
Emergency Management Director (EMD)	If needed	<ul style="list-style-type: none"> • Authorize commitment of resources • Keep Center Operations Directorate (COD), the MSFC Director, and other officials apprised of the situation during and after the incident 	
Redstone Arsenal Fire Department (RSA FD)	Yes	<ul style="list-style-type: none"> • Assume role of IC • Coordinate response activities with NASA IOSC • Provide first responder hazardous material team • Extinguish fires • Provide resources for controlling the spill • Conduct search and rescue operations • Provide emergency response 	

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**TABLE 4-1
Emergency Personnel Responsibilities**

Person	Respond to Scene?	Emergency Actions	Post-emergency Actions
Occupational Medicine and Environmental Health Services (OMEHS) Contractor	Yes	<ul style="list-style-type: none"> • Provide industrial hygiene support and advice on personal protective equipment • Conduct air monitoring, if necessary • Provide Material Safety Data Sheets (MSDSs) • Assist in determining safe reentry to the site • Keep Medical Director apprised of situation 	<ul style="list-style-type: none"> • Maintain Hazard Communication and Respirator Fit-Test programs
Industrial Safety Team (IST)	Yes	<ul style="list-style-type: none"> • Assist IC with equipment, operations, personnel, safety, and evacuations • Apprise IST Director of situation • Determine if incident is a mishap under MPG 1700.1 and proceed accordingly 	<ul style="list-style-type: none"> • Ensure proper transfer of control of the scene to the investigation board chairman if required
Medical Center	Ambulance only	<ul style="list-style-type: none"> • Provide medical assistance and ambulance service • Relay information to offsite hospitals or medical units as needed 	
Operations and Maintenance Group	If needed	<ul style="list-style-type: none"> • Support site cleanup through contractors • Provide portable lighting, if needed 	
Chemistry Group	Yes	<ul style="list-style-type: none"> • Provide appropriate support and equipment for chemical analysis of materials. 	
Emergency Preparedness Officer (EPO)	No	<ul style="list-style-type: none"> • Report to Emergency Operations Center (EOC), monitor emergency radio station, and provide support as requested. 	<ul style="list-style-type: none"> • Emergency planning • Coordinate with NASA Headquarters, Federal Emergency Management Agency (FEMA) Region 4, and other federal, state, and local governments
MSFC Protective Services Manager (PSM)	Yes	<ul style="list-style-type: none"> • Coordinate RSA security forces • Provide site security 	
MSFC Director	No		<ul style="list-style-type: none"> • Oversee emergency response organization

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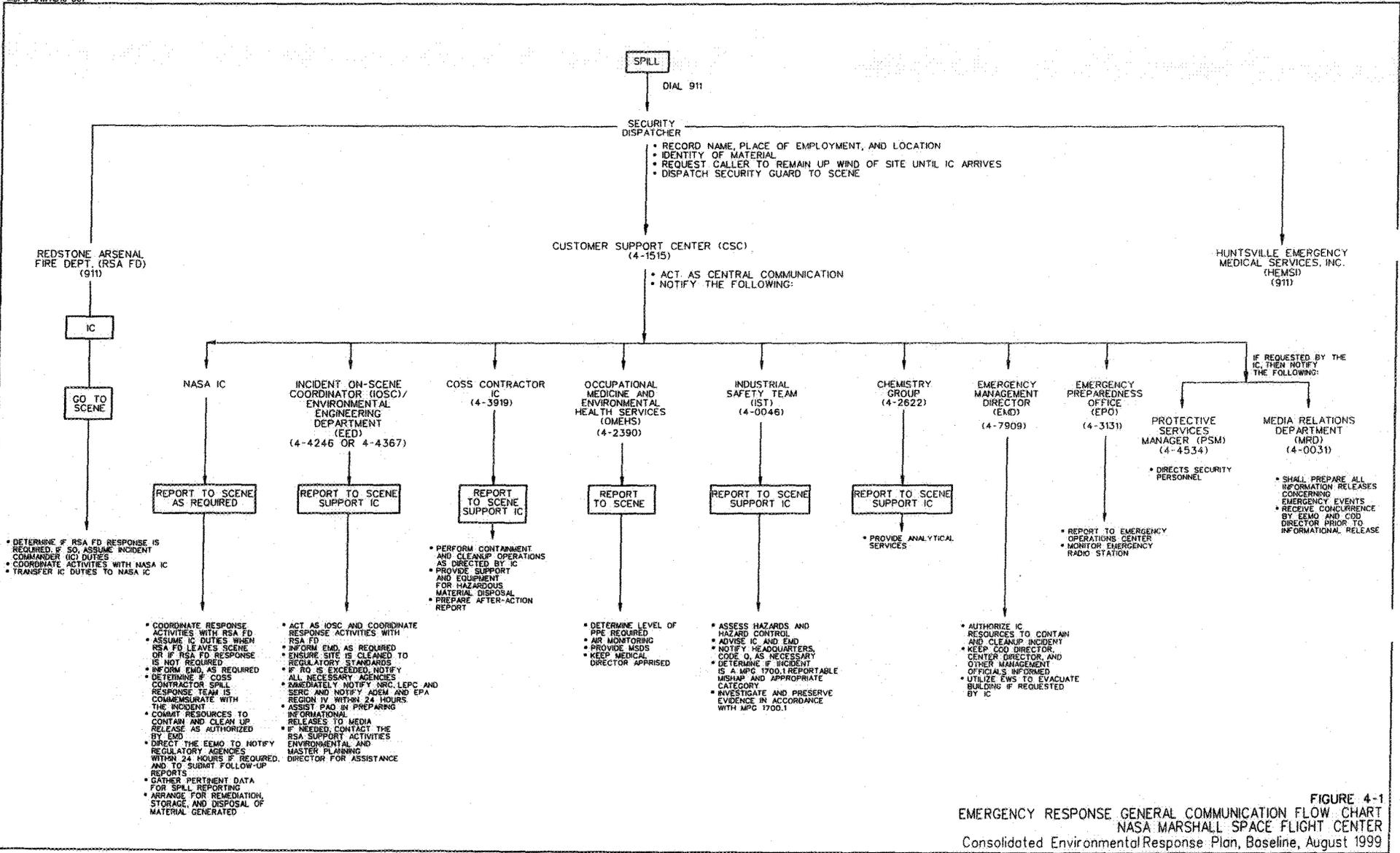


FIGURE 4-1
EMERGENCY RESPONSE GENERAL COMMUNICATION FLOW CHART
NASA MARSHALL SPACE FLIGHT CENTER
Consolidated Environmental Response Plan, Baseline, August 1999

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4.1.2 NASA Incident Commander (IC) (Emergency Coordinator)

The NASA IC assumes IC duties when the RSA FD leaves the scene and directs containment and cleanup operations. In addition, the NASA IC informs the Emergency Management Director (EMD) as required, determines if Center Operations Support Services (COSS) Contractor response is commensurate with the environmental incident, and commits resources to contain and clean up as authorized by the EMD.

4.1.3 Environmental Engineering Department (EED) Incident On-scene Coordinator (IOSC)

The Manager of the EED is accountable for updating and implementing this Plan. The EED is responsible for administrative oversight and implementation of the environmental programs at MSFC, including the COSS Contractor. A representative of the EED will respond immediately to the release site and assist the IC in containment and cleanup operations. In addition, the EED will determine if the incident released the reportable quantity (RQ) of the spilled substance. The EED also is responsible for all notifications of regulatory agencies as required for release reporting. He or she will ensure that the incident site is restored to meet regulatory requirements. If needed, the EED will contact the RSA Support Activities Environmental and Master Planning Director.

If the NASA IC is a contractor and not a NASA employee, a member of the EED will serve as the IOSC. The IOSC is a NASA employee who coordinates response activities between the NASA IC and other NASA contractors during environmental incidents.

4.1.4 Security Dispatcher

When 911 is dialed at the facility, a three-way call with the security dispatcher, RSA FD, and Huntsville Emergency Medical Services, Inc. (HEMSI), is connected. The security dispatcher will record pertinent information including name of caller, place of employment, location of incident, and type of materials involved. The dispatcher then will dispatch a security guard to the scene, dispatch the RSA FD and HEMSI if needed, and notify the Customer Support Center (CSC). The dispatcher will request that the caller remain at the site at a safe, upwind distance and, when the IC arrives, give the IC the same information.

4.1.5 Customer Support Center (CSC)

The CSC becomes the central communications center for the emergency, relaying information as necessary. The CSC will notify the NASA IC, IOSC/EED, COSS Contractor, Occupational Medicine and Environmental Health Services (OMEHS), Industrial Safety Team (IST), Chemistry Branch, EMD, and Emergency Preparedness Officer (EPO) and will maintain communications between all members of the spill response team.

4.1.6 Center Operations Support Services (COSS) Contractor

The COSS Contractor is responsible for supporting the IC in controlling and containing releases and spills of oil and hazardous substances. The contractor also is responsible for remediation and decontamination of the spill/release area. During emergencies, the contractor is responsible for keeping the IC or IOSC informed about the status of response

**CONSOLIDATED SPACE OPERATIONS CONTRACT
 NAS 9-98100
 PROCUREMENT EXTENSION SCHEDULE
 For GSFC, MSFC, and KSC**

MILESTONE	SCHEDULE
PROCUREMENT START DATE	APRIL 7, 2003
SYNOPSIS ISSUED	APRIL 14, 2003
MASTER BUY PLAN SUBMISSION	APRIL 14, 2003
WORK DESCRIPTIONS RECEIVED (Including SOW, FSA, and Mission Set Revisions)	MAY 9, 2003
MASTER BUY PLAN APPROVAL	MAY 14, 2003
ACQUISITION PLAN APPROVAL	MAY 19, 2003
JOFOC APPROVAL	MAY 19, 2003
RFP LETTER ISSUED	MAY 23, 2003
PROPOSAL RECEIVED	JULY 25, 2003
TECH. EVALUATIONS COMPLETE (Evaluations to be completed at GSFC, MSFC, and KSC)	AUGUST 29, 2003
PRENEGOTIATION POSITION APPROVAL	SEPTEMBER 19, 2003
NEGOTIATIONS COMPLETED (Includes time for Lockheed to update proposal based on negotiations)	OCTOBER 30, 2003
SUBMISSION OF CERT OF CURRENT COST OR PRICING	NOVEMBER 13, 2003
MODIFICATION APPROVAL	NOVEMBER 21, 2003
MODIFICATION SIGNED	NOVEMBER 24, 2003

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4.1.2 NASA Incident Commander (IC) (Emergency Coordinator)

The NASA IC assumes IC duties when the RSA FD leaves the scene and directs containment and cleanup operations. In addition, the NASA IC informs the Emergency Management Director (EMD) as required, determines if Center Operations Support Services (COSS) Contractor response is commensurate with the environmental incident, and commits resources to contain and clean up as authorized by the EMD.

4.1.3 Environmental Engineering Department (EED) Incident On-scene Coordinator (IOSC)

The Manager of the EED is accountable for updating and implementing this Plan. The EED is responsible for administrative oversight and implementation of the environmental programs at MSFC, including the COSS Contractor. A representative of the EED will respond immediately to the release site and assist the IC in containment and cleanup operations. In addition, the EED will determine if the incident released the reportable quantity (RQ) of the spilled substance. The EED also is responsible for all notifications of regulatory agencies as required for release reporting. He or she will ensure that the incident site is restored to meet regulatory requirements. If needed, the EED will contact the RSA Support Activities Environmental and Master Planning Director.

If the NASA IC is a contractor and not a NASA employee, a member of the EED will serve as the IOSC. The IOSC is a NASA employee who coordinates response activities between the NASA IC and other NASA contractors during environmental incidents.

4.1.4 Security Dispatcher

When 911 is dialed at the facility, a three-way call with the security dispatcher, RSA FD, and Huntsville Emergency Medical Services, Inc. (HEMSI), is connected. The security dispatcher will record pertinent information including name of caller, place of employment, location of incident, and type of materials involved. The dispatcher then will dispatch a security guard to the scene, dispatch the RSA FD and HEMSI if needed, and notify the Customer Support Center (CSC). The dispatcher will request that the caller remain at the site at a safe, upwind distance and, when the IC arrives, give the IC the same information.

4.1.5 Customer Support Center (CSC)

The CSC becomes the central communications center for the emergency, relaying information as necessary. The CSC will notify the NASA IC, IOSC/EED, COSS Contractor, Occupational Medicine and Environmental Health Services (OMEHS), Industrial Safety Team (IST), Chemistry Branch, EMD, and Emergency Preparedness Officer (EPO) and will maintain communications between all members of the spill response team.

4.1.6 Center Operations Support Services (COSS) Contractor

The COSS Contractor is responsible for supporting the IC in controlling and containing releases and spills of oil and hazardous substances. The contractor also is responsible for remediation and decontamination of the spill/release area. During emergencies, the contractor is responsible for keeping the IC or IOSC informed about the status of response

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activities. Appendix A, Table A-3, contains the COSS Contractor spill response team organizational chart.

MSFC also contracts the operational task of managing hazardous waste generated at MSFC to the COSS Contractor. The COSS Contractor is responsible for identifying, handling, storing, disposing, treating, and managing hazardous wastes generated at MSFC, including other contractor-generated wastes; for keeping accurate and up-to-date records; for preparing the hazardous waste generator's biennial report; and for maintaining MSFC's Hazardous Waste Storage Facility (HWSF).

4.1.7 Occupational Medicine and Environmental Health Services (OMEHS) Contractor

MSFC contracts the provision of general health care, industrial hygiene/environmental health services, and emergency medical response to the OMEHS Contractor. The OMEHS Contractor is responsible for providing MSFC with industrial hygiene support, for selecting personal protective equipment (PPE), and for providing material safety data sheets (MSDSs) for all materials used at the facility. When necessary, the OMEHS Contractor conducts air monitoring for the facility. The Occupational Health Officer assists the IC in determining when it is safe to reenter the site after emergency evacuations and also makes certain that the Medical Director is apprised of emergency situations.

4.1.8 Industrial Safety Team (IST)

The IST responds to all spills, consistent with its role as MSFC's safety office. IST will provide a safety representative on the scene of a spill and provide support to the IC as needed. IST will determine if the incident is a reportable mishap under MPG 1700.1 and the appropriate category, if necessary. IST also will notify Headquarters, Code Q, as necessary, so that the Occupational Safety and Health Administration (OSHA) can be notified within the 8 hours required by law.

4.1.9 Chemistry Group

The Chemistry Group is responsible for reporting to the scene of the incident to support the IC in providing analytical services.

4.1.10 Emergency Management Director (EMD)

The EMD or his/her designated alternate will authorize resources to the IC to contain and clean up the incident. The EMD continually informs the Center Operations Director (COD) and other management officials of the situation. In addition, the EMD will use the Emergency Warning System (EWS) to evacuate the building, if requested by the IOSC or IC.

4.1.11 Emergency Preparedness Officer (EPO)

If necessary, the EPO reports to the Emergency Operations Center (EOC) and monitors the emergency radio station. He or she also will provide support to the IC as requested. Following the incident, the EPO will coordinate with the National Aeronautics and Space Administration (NASA) HQ, the Federal Emergency Management Agency (FEMA), and other federal, state, and local governments if needed.

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4.1.12 Arrangements with Emergency Response Organizations

Arrangements have been agreed to by local security departments, fire departments, hospitals, contractors, and state and local emergency response teams, pursuant to 40 CFR 264.37. Descriptions of local emergency service arrangements with outside agencies and organizations are documented and retained by RSA. Appropriate emergency response service organizations have been given a copy of this Plan, along with relevant background information. Arrangements have been made to familiarize security, fire departments, and emergency response teams with the following:

- The overall MSFC facility layout, with emphasis on the HWSF layout
- The properties of wastes handled and stored at the facility and their associated hazards
- Places where personnel usually are working
- Entrances
- Transportation routes
- Possible evacuation routes

No state or local authorities have declined to enter into arrangements to provide support or assistance during implementation of this Plan. MSFC will document any such refusal in the operations record.

4.1.12.1 Security Departments

The MSFC Protective Services Manager (PSM) is informed of the potential hazardous, safety, and security concerns associated with the HWSF and oil storage facility areas. The MSFC PSM is responsible for coordinating with the RSA Provost Marshall Office Chief to cordon off the affected area, to provide traffic control at the spill area, and to assist in evacuation until remediation is accomplished.

4.1.12.2 Fire Departments

The RSA FD will be the initial IC of every emergency call, including all environmental incidents. It will make an initial evaluation of the situation to determine if its level of support is required. If it is not required, IC responsibility is transferred to the NASA IC once the RSA FD leaves the scene. The RSA FD will provide the first responder hazardous material team, assume IC duties, direct containment and clean up of the incident, and coordinate response activities with the NASA IC or IOSC.

4.1.12.3 Medical

The MSFC Medical Center, Building 4249, will provide general health care and emergency response to MSFC. The Medical Center has a contract agreement with a subcontractor to provide MSFC with 24-hour ambulance service coverage.

4.1.12.4 Contractors

The MSFC COSS Contractor will respond to each environmental incident site; however, it will provide a supporting responder role to the primary response of the RSA FD. If directed by the IC, the Contractor will perform containment and cleanup operations at the site.

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4.1.12.5 State and Local Response Teams

The EMD will coordinate with RSA and the state emergency response team if such assistance is needed in an emergency.

4.2 Spill Response Implementation

This Plan is to be implemented whenever an emergency situation occurs that could cause a potential hazard to human health or the environment from the hazardous materials storage facilities or from the discharge of oil into navigable waters or adjoining shorelines. If the incident is minor or controllable and presents no potential hazard to human health or the environment, this Plan may not be implemented. When the Plan will be implemented depends on the individual situation. Some conditions under which this Plan is to be implemented include the following:

- When there is a fire, an explosion, or an unplanned non-sudden or sudden release of oil, hazardous waste, hazardous constituents, or hazardous substances to air, soil, surface water, or groundwater that threatens human health or the environment.
- When there is a fire at other locations onsite that might spread and could affect hazardous waste operations or areas containing hazardous materials.
- When there is a possibility that fire suppression water runoff could result in contamination of the environment or could present a human health threat.

Other details related to implementing (or not implementing) the Plan are provided below.

4.2.1 Natural Disaster

A natural disaster itself is not a basis for implementing this Plan. However, if a natural disaster results in the release of oil, toxic, or hazardous wastes to air, water, or soil, or causes a fire or explosion that results in any of the above circumstances, then this Plan should be implemented.

4.2.2 Degree of Implementation

There are degrees of implementation, depending on the nature of the release. If the release is to the environment but does not present a threat to human health, the local emergency assistance contact portions of these emergency procedures do not need to be implemented. However, the remaining applicable procedures would be implemented.

4.2.3 Authorized Person to Implement Plan

NASA's IC (Emergency Coordinator) or alternate is authorized by the EMD to implement this Plan. However, the Manager of the EED maintains overall accountability for this Plan.

4.3 Spill/Emergency Response

Employees discovering a spill, leaking container or tank, oily sheen on water, fumes, smoke, fire, explosion, or any other potential emergency situation are instructed to follow the

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procedures specified in MPG 1040.3F (or latest version). These procedures also are posted in the HWSF. The procedures direct employees to take the following steps:

1. Take measures to protect one's personal safety and the safety of others in the vicinity. If necessary, evacuate the immediate vicinity.
2. Report spills of pollutants, dangerous or unknown materials, or hazardous wastes, as well as fire and explosion incidents, by dialing 911 or by pulling the fire alarm. When reporting an emergency, the employee is to provide the following information:
 - Person's name
 - Place of employment
 - Location of incident
 - Telephone number
 - Nature and extent of the incident
 - Type of material involved in the incident, if known
 - Personnel in the immediate area who might be in danger
3. Remove injured persons, if it can be done safely, and give first aid.
4. After an emergency incident has been reported, account for all personnel from an area upwind from the situation. Do not reenter the area until told by the IC that the area is safe to reenter.
5. The person reporting an emergency must meet with and brief the IC and IOSC when they arrive on the scene.
6. If it can be done safely, dike, plug, or cover any sewers down-slope of the release.
7. Clear an access area for the emergency response team, if it can be done safely.

During an emergency due to a release, fire or explosion, the IC is responsible for coordinating all emergency response measures. The following subsections describe the emergency response procedures to be followed, the notification and reporting requirements, and the procedures to be taken after the situation has been stabilized.

4.3.1 Emergency Response Procedures

The four basic steps to initiate in the event of a spill are as follows:

1. **Locate and shut off spill source**
2. **Contain the spill**
3. **Remove oil from water or land areas**
4. **Restore contaminated land areas**

These steps and other response actions that should be taken are discussed in the following subsections.

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4.3.1.1 Shutdown of Operations

If a fire, explosion, release, or other emergency prompts the shutdown of an operation or area, the IC or an appointed designee will monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, whenever appropriate.

4.3.1.2 Site Security and Control

Site control procedures are standard methods used by emergency response organizations to reduce hazards and to protect personnel at the scene of an incident. The site control procedures are based on restriction zones. The boundaries of the zones depend on the degree of hazard and function. The IC establishes the restriction zones as soon as possible. The boundaries of the zones may change during a spill or emergency response, depending on the nature of the spill or emergency and the changing environmental conditions.

Releases or emergencies require a minimum of three contamination reduction zones or restriction zones (an Exclusion Zone [hot], a Decontamination Zone [warm], and a Support Zone [cold]) and a maximum of four (Security Zones). Depending on the hazards involved, even small spills may require four zones to be established. Restriction zones are to be cordoned off by means of barrier tape, barricades, or security vehicles. A security patrol usually will control access to the security zone, with the RSA FD and MSFC Spill Response Team controlling the inner restriction zones.

The purposes of restriction zones are as follows:

1. Protect the public or surrounding work areas.
2. Reduce the level of exposure for emergency response personnel to a minimum.
3. Prevent contamination of personnel and the environment beyond the original spill or emergency area.
4. Reduce confusion in the area.
5. Prevent others, including response personnel, from unknowingly entering a contaminated area.

4.3.1.3 Identification of Hazards

Whenever there is a release, fire, or explosion, the IC is to identify the character, exact source, amount released, and real extent of any released materials immediately. The IC may do this by observation, portable monitoring equipment, or review of facility records or manifests and, if necessary, by chemical analysis.

MSFC operations and their mission support contractor operations generate hazardous waste from approximately 250 sources. MSFC maintains a continuous inventory of hazardous wastes through a software system known as Fingerprint. MSFC's COSS contractor maintains this system. Each generator of hazardous waste is required to document its waste on the annual Fingerprint waste stream profile. This profile is used to document the characteristics (chemical and physical) of the waste stream. This information is put into the

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Fingerprint software, where programmatic steps are implemented to manage and control that waste stream from the point of generation through transfer to the HWSF, to ultimate disposal or treatment. This information may be accessed to evaluate the hazards present to human health or the environment.

In addition to tracking hazardous waste generated at MSFC, the COSS Contractor maintains an inventory of all chemicals that have been declared hazardous through federal listing, including the following:

- Substances that are declared hazardous if released are listed in 40 CFR Part 302.
- Substances determined to be hazardous by definition under OSHA 29 CFR Part 1910.1200.
- Substances listed in the toxic chemical list in 40 CFR Part 372.
- Extremely hazardous substances (EHSs) listed in 40 CFR Part 355, Appendixes A and B.

In addition to these chemicals defined as hazardous, pesticides and sources of radiation are regulated.

4.3.1.4 Assessment of Hazards to Human Health or the Environment

Concurrent to the identification of hazards, the IC is to assess possible hazards to human health or the environment that may result from the chemical or oil release, fire, or explosion. This assessment should consider both direct and indirect effects of the release, fire, or explosion; the effects of any toxic, irritating, or asphyxiating gases that are generated; or the effects of any hazardous surface water runoffs from water or chemical agents used to control fire and heat-induced explosions. A general discussion of hazards from MSFC chemicals is provided in Appendix G.

4.3.1.5 Control of Emergency Situations

During an emergency, the IC will take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other areas at the facility. These measures will include, where applicable, stopping processes and operations, collecting and containing released materials, and removing or isolating containers.

4.3.1.6 Separation of Incompatibles

The IC will ensure that, in the affected area(s) of the facility, incompatible released material will be collected, treated, stored, or disposed separately. The EED will ensure that MSFC properly designates, treats, stores, or disposes released residues in accordance with state and EPA hazardous waste regulations.

Release residues include any material contaminated with the released substances. Sampling and testing of the released substances or contaminated materials may be required to designate the wastes properly and to determine proper remediation and disposal. The MSFC COSS Contractor will direct the packaging, labeling, marking, transport, and disposal of the waste material on the site.

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4.3.1.7 Emergency Medical Treatment and First Aid

The MSFC Medical Center provides general health care and emergency response to MSFC. The MSFC OMEHS staffs and operates the MSFC Medical Center. The MSFC Medical Center has a contract agreement with HEMSI to provide MSFC with 24-hour ambulance service coverage every day.

4.3.1.8 Evacuation Procedures Plan

The NASA IC, IOSC, Safety, or RSA FD (IC) members are authorized to call for a partial or complete evacuation of the facility in response to an emergency situation that threatens the health and safety of facility personnel. The evacuation decision will be based on personal analysis of the situation in coordination with the RSA FD, MSFC Spill Response Team, OMEHS, and other appropriate organizations. Site-specific evacuation facility routes are posted in most buildings at MSFC. If an evacuation plan is not posted, personnel will use the nearest "safe" exit.

When the IC orders a site evacuation, the following actions are taken:

1. The IOSC or IC contacts the EMD to initiate evacuation through the EWS for the affected area.
2. The IC determines which routes will be used for evacuation, depending on the location of the incident, wind direction, and occupancy by personnel.
3. The IC signals evacuation through the manual fire alarm system or EWS. Security personnel, fire vehicles' public address systems, EWS, or portable loudspeakers transmit evacuation directions at the scene.
4. Personnel, visitors, and contractors are directed to leave the site through designated exits.
5. Personnel will be directed to regroup at the areas specified by the IC during evacuation instructions.
6. Shop supervisors will be directed to account for personnel and to report any absence to the IC. The IC directs and coordinates all attempts to rescue or find missing persons.

Reentry Procedures. No one is to reenter the facility until authorized by the IC. Facility activities are resumed only when the hazards that caused the evacuation are controlled and the area has been declared safe to reenter. The IC, in consultation with IST, OMEHS, EED, and other outside emergency service agencies, makes the determination of when the facility may safely be reoccupied. Typically, leaders of each sector of evacuated employees will be instructed by the IC to give their staff an all clear to reenter their buildings.

Offsite Evacuation. If the IC's assessment indicates that an evacuation of local offsite areas around the facility is required, the IC will notify the EMD, EPO, RSA's Security, and Director of Engineering and Housing, and other outside emergency response agencies as necessary. The RSA FD and Security then will proceed to the designated areas and assist in evacuation procedures.

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4.3.2 Reporting and Notification Requirements

During a release or emergency, several notifications may be required. A spill release decision tree is provided for regulatory agency reporting procedures in Figure 4-2. In all cases, 911 should be dialed immediately. An emergency checklist also is included as Table 4-2 to serve as a guide to effective spill response. The Security Guard Dispatcher will notify the IC of the situation and will serve as the initial communications point during the emergency situation.

Appendix A provides the phone numbers of emergency agencies and personnel for both onsite and offsite contacts. The Security Guard Dispatcher, the IC, and the COSS Contractor (if applicable) will note in their operating records the time, date, and details of any incident.

Where written reporting is required for regulatory agencies, an incident report should contain the information listed in Appendix E. MSFC's EED is responsible for producing all such written reports. In addition, the COSS Contractor is responsible for providing immediate notification of reportable quantity spills and monthly spill reports to the EED.

The EED will notify the EPA Region IV Administrator and appropriate state and local authorities that the emergency has been terminated, the release remediated, and the emergency equipment refurbished before operations are resumed in the affected area(s) of the facility.

4.3.2.1 Offsite Release

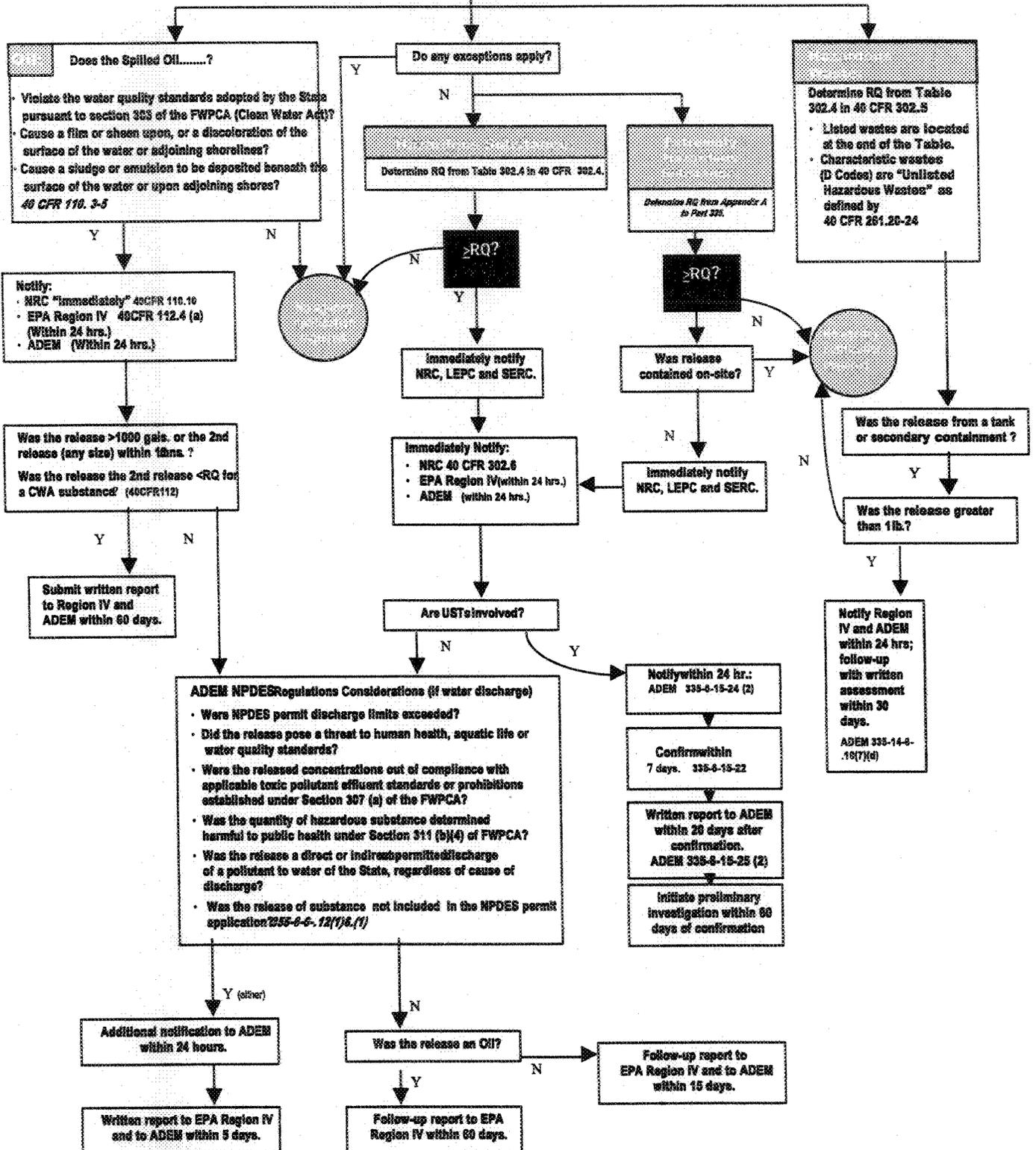
If there is a significant offsite release or potential offsite release, the EED will be notified and will notify outside agencies. The RSA Emergency Planning Committee will be notified when an EHS has been released.

4.3.2.2 Determination of Reportable Quantity

Table 302.4 of 40 CFR 302.4 provides a list of hazardous substances. An RQ is the amount of a spilled hazardous material considered to be harmful or a threat to the environment; it must be reported to the National Response Center. To determine the RQ for a single constituent for a listed hazardous substance, refer directly to the table in Appendix H. Appendix I provides a list of hazardous wastes typically found at MSFC. Determining the RQ of a mixture of listed hazardous substances is more involved, as described below:

1. If the quantity of all constituents in the mixture or solution is known, then the RQ for each constituent in the mixture applies, and notification is required if the amount released of any of the constituents in the mixture equals or exceeds the respective RQs for the constituents.
2. If the quantity of all of the constituents of the mixture or solution is not known, then:
 - The RQ for the mixture is the RQ for the constituent with the lowest RQ.
 - Notification is required if the amount of the mixture release equals or exceeds the RQ for the mixture. EHSs are provided in 40 CFR 355. A list of these substances and their RQs stored at MSFC is provided in Appendix H.

Release of a Hazardous Material, Hazardous Substance, Hazardous Waste, or Oil (Petroleum, Vegetable, or Animal)



- ADEM - Alabama Department of Environmental Management (334) 943-6178, (334) 271-7834
- EPA - Environmental Protection Agency - (404) 347-4662
- LEPC - Local Emergency Planning Committee
- SERC - State Emergency Response Commission
- FWPCA - Federal Water Pollution Control Act
- NRC - National Response Center - 1-800-424-8802
- RQ - Reportable Quantity

Figure 4-2
State of Alabama Regulatory Agency Reporting Decision Tree
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TABLE 4-2
Environmental Emergency Reporting and Communication Checklist

Action	Time	Notes
Gather available FACTS about the emergency (Take note of SPECULATION). <ul style="list-style-type: none"> • Name of reporting party • Name of area supervisor • Material and quantity spilled • Time and date of spill • Is there a fire? • Have personnel been evacuated? 		
Notify Redstone Arsenal (RSA) Fire Department		
Activate facility alarms or communication systems to notify personnel of dangers		
Assess possible hazards to human health or the environment and initiate evacuation if necessary		
MSFC Center Operations Support Service (COSS) Contractor notified and responding		
Request mutual aid from offsite resources if necessary		
Incident Commander (IC)/Incident On-scene Coordinator (IOSC) determine if the following should be notified: <ul style="list-style-type: none"> • Protective Services Manager (PSM) • Media Relations Department (MRD) 		
Inform the Emergency Management Director (EMD) as required		
Determine the Reportable Quantity (RQ) and notify state and local agencies if required		
For Fires or Explosions		
Notify RSA Fire Department		
Have the Customer Support Center (CSC) dispatcher notify those persons on the SECOND response list		
For Medical Emergencies related to fires, explosions, or chemical exposure		
Request medical assistance		
Notify hospital of incoming patient and describe any special circumstances (burn victim, chemical exposure)		
Send an MSFC employee with the injured to describe the accident or exposure to the doctor		
Send copies of Material Safety Data Sheets (MSDSs) to the hospital with the injured		

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Reportable spills for oil include those that meet one of the following criteria:

- Discharges more than 25 gallons of oil products
- Contaminates more than 25 cubic feet of soil
- Reaches a water of the State
- Is at least the second significant spill within 12 months
- Has affected water quality or put a sheen on a navigable water

If it is determined that a spill is reportable, the EED must contact the following agencies:

- EPA National Response Center
- ADEM Field Office (during normal business hours)
- Department of Public Safety (after normal business hours)
- Alabama Emergency Management Office

4.4 Post-emergency Procedures

Once the emergency situation is under control, remediation and disposal of release residues and any materials contaminated by the release are performed by the MSFC COSS Contractor. Remedial actions are controlled by the EED.

The following general remediation guidelines are to be followed:

1. Personnel are not to enter a contaminated area until the required PPE is donned.
2. Personnel are not to perform actions unless they have proper back-up personnel and use the "buddy system."
3. Personnel are to use only clay or commercially available adsorbents ("Floor Dry" or equivalent) to contain a spill, *not* materials such as sawdust, rags, or dirt.
4. Personnel are to contain, label, mark, and dispose of contaminated materials and wastes according to approved procedures.
5. Personnel are to obtain approval from the OMEHS and IST before allowing employees to reenter the area.

A summary of the post-emergency activities is provided in the Post-emergency Checklist in Table 4-3.

The COSS Contractor will conduct a follow-up investigation at the spill location to verify that the site has been returned to baseline conditions. The COSS Contractor will inform the EED of its findings.

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TABLE 4-3
Post-emergency Checklist

Action	Notes
Brief Media Relations Department (MRD) on information to be released.	
Arrange remediation, storage, and disposal of materials generated.	
Ensure that emergency equipment is decontaminated and fit for the intended use.	
Ensure that agencies required to be notified within 24 hours have been contacted.	
Collect site and event information to complete follow-up reporting to regulatory agencies.	
Prepare follow-up reporting to regulatory agencies.	
Collect samples of spilled material, contaminated media, or decontaminated areas as appropriate.	
If needed, conduct a post-mortem for reportable spills for the parties involved in the emergency incident.	

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4.4.1 Decontamination

The MSFC COSS Contractor guides the development of decontamination procedures, with support from the EED and the OMEHS. The procedures developed are specific and based on the character of the released substances. The COSS Contractor stocks decontamination supplies and equipment such as a steam cleaner, wash tubs, and detergents.

4.4.2 Emergency Equipment Returned to Use

After an emergency incident, the IC and/or ISOC or designee will inspect all emergency equipment to ensure that it is fit for its intended use. Equipment maintenance and restocking of supplies used for emergency response activities are to be conducted by the RSA FD and MSFC COSS Contractor. The IC usually delegates emergency equipment decontamination, maintenance, and resupply to the COSS Contractor.

Before operations are resumed after an emergency, the EED personnel will notify appropriate local authorities that:

1. Incompatible incident material will not be treated, stored, or disposed until cleanup procedures are completed.
2. All emergency equipment listed in this contingency plan is fit for its intended use before operations are resumed.

4.4.3 Critique of Response and Follow-up

After the response, emergency response actions will be critiqued by the SPCC coordinator concerning their effectiveness and efficiency. If deficiencies are noted, corrective measures will be recommended and followed up to ensure that the deficiencies are corrected. If necessary, the NASA IC, IOSC/EED, RSA FD, EMD, EPO, OMEHS, COSS Contractor, and RSA Security will participate in a post-mortem. If required, changes to this Plan should be incorporated per Section 1.4.

ERROR: limitcheck
OFFENDING COMMAND: sethalftone

STACK:

-dictionary-

Jones, Vann

From: McElyea, Dale
Sent: Tuesday, April 15, 2003 8:13 AM
To: Jones, Vann
Cc: Grubbs, Rodney
Subject: FW: FW: Telly Awards Cost Spreadsheet

Vann, any word on this one?

-----Original Message-----

From: Grubbs, Rodney
Sent: Monday, April 14, 2003 12:01 PM
To: McElyea, Dale
Subject: RE: FW: Telly Awards Cost Spreadsheet

any word on this one?

>Rodney, I've got procurement looking at this because I believe as you do
>that appropriated funds can not be used for this. I will let you know as
>soon as I hear from them. thanks

>

>-----Original Message-----

>From: Rodney Grubbs [mailto:rodney.p.grubbs@nasa.gov]
>Sent: Thursday, March 27, 2003 12:49 PM
>To: Dale McElyea
>Cc: raymond.downward@msfc.nasa.gov
>Subject: Fwd: FW: Telly Awards Cost Spreadsheet

>

>

>Dale,

>Every year we encourage our contractor team to submit some of our
>productions for awards. This year several of our projects one awards
>(kind of like the oscars for corporate and documentary video).
>Please see below and attached from Sarah regarding trophies and
>certificates. On the one hand, I think it's a great morale booster
>for them to have a trophy or certificate to hang on the wall, on the
>other hand, is this an appropriate thing to do with appropriated
>funds? Any thoughts?

>

>>From: "Moquin, Sarah" <Sarah.Moquin@msfc.nasa.gov>
>>To: "Downward, Raymond" <Raymond.T.Downward@nasa.gov>
>>Cc: "Grubbs, Rodney" <Rodney.P.Grubbs@nasa.gov>
>>Subject: FW: Telly Awards Cost Spreadsheet
>>Date: Tue, 25 Mar 2003 08:40:41 -0600

>>

>>Ray,

>>

>>This year the team would like to purchase Telly's for the office (to
>>keep here in our area for clients to see) and certificates for them at
>>their desk.

>>

>>The cost is shown below.

>>

>>I would like to know you approve before we do the PR - will this be OK?

>>

>>Thanks in advance,

>>

>>Sarah

>>

>>

>>> <<Telly Awards Costs.xls>>

>>>

>>>
>>>
>>
>
>
>--
>****
>"Lust for the future, but treasure the past"--Jimmy Buffet
>
>Rodney Grubbs
>Chairman, NASA DTV Working Group
><http://www1.msfc.nasa.gov/DTV/>
>256-544-4582
>256-603-3270 (cellular)
>2566033270@wireless.bellsouth.com (phone email)

--

"Lust for the future, but treasure the past"--Jimmy Buffet

Rodney Grubbs
Chairman, NASA DTV Working Group
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5.3.2.1 Aboveground Storage Tanks/ Underground Storage Tanks

MSFC has constructed containment structures for all of the aboveground storage vessels operating at MSFC that have a reasonable potential to discharge a large quantity of oil in the event of a spill. These structures have been designed to contain and prevent a discharge caused by equipment or tank failure from entering a navigable watercourse.

These containment systems consist of earthen dikes with impermeable liners or concrete pads surrounded by concrete retaining walls or curbing coated with impervious, elastic sealer. Containment systems are designed for a holding capacity that exceeds 110 percent of the largest tank's contents. In the case of HWSF containment systems, the containment areas have applied coatings that are compatible with the wastes being stored.

Concrete curbing designed to hold 110 percent of the tank's capacity encloses emergency generators with fuel tanks.

Any discharges from a containment area must be documented on the inspection log sheet indicating the estimated volume of discharge. If floating product or a sheen is observed in the storm water collected in the containment area, the SI or UPOC will contact the EED AC for guidance.

Portable tanks are used for a short period of time and then are returned to their home location. Home locations for portable tanks do provide secondary containment when tanks are not in use.

As required by UST regulations, the regulated USTs in service at MSFC receive cathodic protection system (CPS) testing to evaluate the integrity of the tank systems and associated piping. The results of these tests are kept on file at the EED. Currently, there is no requirement to conduct tightness testing on the USTs. Four are associated with generators, which are deferred from testing (Buildings 4200, 4201, 4202, and 4207). One is exempt because it is a flow-through tank (Building 4704). One is for temporary storage of waste fuel from rocket engine tests (Building 4673). One has an automatic sensing device that does self testing and one contains Anderol and 98 percent water and is not regulated (Building 4647).

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Inspection Checklist for Aboveground Storage Tanks and Underground Storage Tanks

Inspection frequency: Biweekly and after significant rainfall unless specified otherwise by EED

- No signs of tanks and fixtures leaking
 - Punctures
 - Cracks
 - Corrosion
- Spill kit available
- Tanks should be properly labeled
- Bypass valves properly sealed or closed
- No visible contamination (sheen) on water collected in containment
- Spill prevention controls and containment in good condition
- No sign of spillage from material handling operations
- Warning signs present and legible as appropriate
- Erosion prevention satisfactory at drain valve
- Overfill prevention controls in place/effective

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5.3.2.2 Hazardous Waste/Material Storage Areas and Investigation-derived Waste (IDW)

Hazardous waste/material storage areas are any areas where hazardous waste/material is stored and can include drums, sheds, clamshells, yellow flammable cabinets, and temporary storage areas. The general rule for hazardous waste/material storage areas is to minimize the possibility that any chemical, oil, or waste will come into contact with the ground (soil or concrete) or with water (ditches, rainfall, or ponds), or will escape to the air. The following BMPs should be implemented and monitored at hazardous waste/material storage areas as applicable:

- Containers (including tanks) with hazardous materials should be located in areas protected from the weather. Containers stored outdoors must be placed on a secondary containment system with a cover to prevent rainfall from entering the containment area.
- Secondary containment for containers must be inspected to ensure that the containment areas have not leaked, that drain plugs are secure, and that rainfall (if any) is drained only if uncontaminated. For petroleum products, a visual inspection is adequate. For water-soluble chemicals, a chemical analysis is required. If a sheen is visible or chemical contamination has occurred, the contents of the containment area must be pumped out for proper treatment or disposal. The volume of storm water released from the containment area must be documented in the proper log sheet.
- All containers must be labeled so that the contents and appropriate safety labels of the containers are readily visible and readable without having to move the container to identify the contents. Unreadable labels must be replaced with new labels.
- During material handling, products should be transferred out of containers and into containers without spilling any materials. Appropriately trained personnel should clean up all drips and spills immediately.
- The generating activity (point of contact [POC] and personnel who place hazardous waste into the container) is responsible for 1) ensuring that the container is sealed properly during periods of inactivity, including lunch breaks; 2) ensuring that only the waste identified on the label of the waste accumulation container is placed into the container; and 3) contacting the MSFC COSS Contractor to have full containers removed for disposal and to obtain replacement containers.
- Signs should be posted at accumulation areas identifying the standard operating procedures (SOPs), as appropriate.
- Containers should be stored on a level surface.
- Incompatible waste materials must not be mixed during storage or placed where there is a high potential for their mixing during a spill event. Incompatible materials should be segregated within separate containment systems.
- Damaged pallets used for container storage should be replaced as appropriate.

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Hazardous Waste/Material Storage Areas/IDW (cont'd)

- Damaged containers must be replaced or put into overpack containers to prevent leakage.
- Container materials used for the storage of hazardous waste/material must be compatible with the hazardous material contained within.
- The EED and the MSFC COSS Contractor must be notified of any new waste streams that require disposal. The types of wastes that must be managed include, but are not limited to, organic solvents, acids, caustics, paints or coatings, aerosol cans, and petroleum products. Any materials (such as gloves or rags) that have been in contact with any of these types of liquids listed above also must be handled as a waste. The COSS Contractor will ensure that the appropriate disposal is provided.
- Spill kits, along with absorbent materials, should be conveniently available. Prompt cleanup of used absorbent materials from around containers after the cleanup of a spill is necessary.
- Onsite personnel should clean up small spills if the personnel are properly trained and the cleanup can be done safely. Small spills are defined as amounts below the RQ listed in 40 CFR 302 and that onsite personnel have the proper equipment to handle (Appendix H). Onsite personnel should have spill response equipment (absorbent, booms, and so forth) to clean up small spills for the types of materials they handle.
- Large spills that onsite personnel are unable to handle should be reported immediately to the Security Guard Dispatcher (911) to initiate the MSFC Emergency Plan.
- Containers should not be stacked on top of each other unless space limitations make it necessary to stack them to keep them under cover. Under no circumstances should containers be stacked more than two containers high. Furthermore, containers must be securely stacked to prevent tipping.
- Dispensing systems at outdoor storage areas must be covered and contained.
- Containers being temporarily stored outdoors at a facility after delivery must be temporarily diked until materials are moved to the designated storage area.
- Provide for neat and orderly storage of all chemicals within the covered containment area. Maintaining a clean and orderly work environment reduces the possibility of accidental spills caused by misloading of equipment and materials and readily allows for the detection of spills and leaks.
- Lids should be kept on paint cans, degreasers, and so forth to limit off-gassing of the products and potential contact with rainfall.

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Hazardous Waste/Material Storage Areas/IDW (cont'd)

- Empty containers must be turned into the MSFC COSS Contractor, including 5-gallon through 55-gallon containers. Empty container guidelines are available from the MSFC COSS Contractor. Some empty containers must be triple rinsed before pickup (pesticides or acutely toxic substances).
- "Empty" container means that the original product has been removed using common practices to remove materials from that type of container (pouring, pumping, or aspirating).
- Empty containers must be kept sealed, and empty labels must be placed on the containers until they are picked up for disposal.
- Empty containers must not be used as general trashcans. Contact the Facilities Office for these types of containers.
- Drip pans must be emptied frequently into the appropriate waste accumulation container. Provide covers over all drip pans located outdoors to prevent rainwater from entering and causing an overflow.
- Yellow flammable materials storage cabinets and hazardous materials stored in sheds also will need to be inspected and BMPs implemented.

MSFC currently is conducting remedial investigation activities. These activities produce IDW that will need to be disposed. The following BMPs should be implemented and monitored as needed:

- Potentially hazardous solid material will be contained in 55-gallon, open-top-type, 1A2 DOT-approved steel drums.
- Potential hazardous liquid material will be contained in 55-gallon closed top (bung) drums.
- Labels must be marked in permanent marker. Labels must record the description of the media, origin of the media, date placed in container, site number, station location ID, date container sealed, and drum control number.
- All containers will be sealed at the end of the day and during periods of inactivity, including lunch breaks.
- Drums will be removed within 1 week of completing operations at each site.

Appendix J, Environmental Management Guidelines, presents additional BMPs that should be applied at hazardous waste storage areas.

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Inspection Checklist for Hazardous Material/Waste Storage Areas/Investigation-derived Waste

Inspection frequency: Monthly for contained outdoor storage areas

Monthly for storage sheds

Monthly for self-contained drum storage units (clamshells)

Weekly for IDW

Daily for loose containers without secondary containment

Unless specified otherwise by EED

- Containers are protected from weather
- Containers have secondary containment
- Containment system in good condition
- Containment valves closed
- No liquid in secondary containment
- Containers labeled
- Storage area neat and orderly
- No evidence of spillage from material handling operations
- Containers sealed and bearing identification marks
- Containers in good condition
- Appropriate BMP signage in place as appropriate
- No damaged pallets
- No damaged containers
- Spill kit available
- Erosion and sedimentation control measures in place for remedial investigations
- Containers not stacked more than two containers high
- Drip pan not overflowing
- Yellow flammable storage cabinets closed and no visible signs of leakage

IDW inspections will be conducted by the investigating contractor.

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5.3.2.3 Storage Yards

Storage yards are outdoor storage areas for equipment, materials, and excess property. BMPS for chemical storage within a storage yard are discussed in Section 5.3.2.2. The following BMPs should be implemented and monitored at storage yard areas as applicable:

- Equipment to be stored outdoors for an extended period of time and excess property to be disposed of must be drained, whenever possible, and cleaned before being stored if equipment was used with or contained at some time any solvents, oils, or other hazardous chemicals. Liquids drained from equipment must be placed in containers and properly disposed. Cleaning should include triple rinsing and proper disposal of rinsate.
- All incoming materials should be inspected before being placed in the storage yard. Visible residual solvents or oils must be cleaned from material before storage.
- Store materials off the ground (on pallets) when possible.
- Employees should conduct routine visual inspections of the yard to check for leaks and to review and identify exposed potential contaminants. Inspections should include walking down each aisle of stored materials to look for visible indications of potential storm water pollution sources (leaking equipment, residual solvents, or oil).
- Vehicles parked in storage yards must be inspected monthly for leaks.
- Vehicles parked in storage yards must be positioned away from inlets.
- Items stored in boneyards must be kept in view (keep material out of wooded overgrown areas).

Inspection Checklist for Storage Yards

Inspection frequency: Monthly unless specified otherwise by EED

- No sign of leakage from stored equipment
- No visible sign of contamination on equipment in storage yard
- Materials stored neatly
- Appropriate material stored in yard
- Appropriate BMP signage posted at entrance to storage yard as appropriate

Other checklists may apply if necessary.

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5.3.2.4 Construction Activities

Construction activities have the potential to affect storm water at MSFC. Before each construction project, the EED will review the project. The EED will determine if the project warrants the contractor submitting a specific SWP3 for the construction project. If the EED determines that an SWP3 is necessary, the Environmental Compliance Specification 02202 will include the Storm Water Management Practices for Construction Sites to be completed by the contractor. Regardless of whether a specific construction SWP3 is to be submitted, each contractor must comply with the intent of MSFC's *Consolidated Environmental Response Plan*.

Inspection Checklist for Construction Activities

Inspection frequency: Daily during construction activities unless specified otherwise by EED

- Erosion and sediment control measures in place
- Hazardous waste/materials stored and handled appropriately
- Site free of excessive debris
- No leaking vehicles or equipment
- Empty containers handled appropriately

Construction activity may also include sandblasting, painting/depainting operations, buried pipeline maintenance, erosion, and hazardous material/waste storage. Additional checklists should be used for construction site-specific activities.

Inspections will be conducted by the construction contractor.

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5.3.2.5 Erosion Control

The SPPT must ensure that good erosion control practices are maintained at each facility. During the periodic inspections, inspectors must look for localized erosion areas, lack of topsoil or vegetation, and sediment buildup in structural storm water controls (such as inlets or ditches). Erosion and sediment control deficiencies must be corrected promptly. Erosion controls will follow guidelines published in *Storm Water Management for Industrial Activity: Developing Pollution Prevention Plans and Best Management Practices*.

Inspection Checklist for Erosion Control

Inspection frequency: Monthly

- No signs of excessive erosion
- Erosion controls are effective and in good condition
- No sediment buildup in storm water structures (inlets, ditches)

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5.3.2.6 Sandblast Areas

Sandblast activities should be conducted only in designated areas, if possible. If contact with storm water cannot be avoided, then proper measures to control runoff such as silt fencing, catch basins, or settling basins to retain sand and paint particles must be provided.

Inspection Checklist for Sandblast Areas

Inspection frequency: Monthly

- Measures in place to prevent or to minimize contact with storm water
- Control measures in place to retain sand and paint particles resulting from sandblasting operations
- Control measures maintained in good condition

Inspections of Sandblast Areas will be conducted by the UPOC or construction contractor during sandblast operations.

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5.3.2.7 Materials Handling/Fueling Areas

Materials handling can take place anywhere loading and unloading activities take place. In accordance with 49 CFR 177 of DOT regulations, qualified MSFC personnel monitor all fuel loading and unloading operations. The monitoring is conducted until the loading and unloading process has been completed to ensure that the tank truck does not depart before the fueling process is complete. Monitoring should include the material level in the receiving vessel, couplings, connection points, and other areas where spills are most likely to occur.

Personnel are responsible for examining the loading and unloading operation to observe possible leaks or equipment failure that could cause a spillage of oil. Personnel have been instructed in the necessary actions to take to minimize an oil or hazardous materials release. Personnel involved in materials handling should be adequately trained in appropriate spill response measures. Furthermore, personnel should be trained to store significant materials in a manner that will not expose the materials to storm water.

MSFC has constructed diked loading and unloading areas for the ASTs located at Buildings 4611, 4640 (Hazardous Waste), 4660, 4673, 4675, and 4817. These areas receive and store the largest quantities of fuel at the facility and supply fuel for the majority of MSFC operations. If practical, the containment systems are designed to hold a minimum of 110 percent of the tanker truck total capacity. In some cases, due to space limitations, it may not be possible to provide 110 percent containment for tanker trucks.

Additional BMPs that should be followed include the following:

- Unload materials under covered areas (such as building overhangs at loading docks) whenever possible to reduce exposure of materials, vehicles, and equipment to rain.
- Curb the area around the loading area to direct run-on away from the unloading area.
- Position roof downspouts so that storm water is directed away from the loading area.
- Discourage topping off at fueling areas
- Consider installing spill and overflow protection equipment
- Reduce storm water exposure
- Use dry cleanup methods
- Clean up spillage appropriately

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Inspection Checklist for Materials Handling / Fueling Areas

Inspection frequency: When material handling operations occur.

- No sign of spillage from material loading and unloading operations
- Measures in place and effective to prevent contact with storm water during material handling operations
- Appropriate BMP signage in place
- Spill kits available
- Spill and overflow protection equipment working properly

Inspections will be conducted by the UPOC during Material Handling/Fueling Operations.

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5.3.2.8 Motor Pools/Vehicle and Equipment Maintenance/ Mobile Equipment

Maintenance activities should be conducted indoors where possible, and precautions should be taken against potential spills reaching storm drains for outdoor maintenance activities (for example, cover inlets, temporarily dike maintenance areas during activity, and position equipment away from inlets).

Clean up leaks, drips, and other spills without washing down with water. Use rags for small spills, a damp mop for general cleanup, and dry absorbent material for larger spills. Avoid hosing down work areas. Collect leaking or dripping fluids in drip pans or containers, and promptly transfer used fluids to the proper waste or recycling containers. Do not pour liquid wastes into floor drains, sinks, outdoor storm drain inlets, or other storm drains or sewer connections.

Each motor pool/vehicle and equipment maintenance area should keep sorbents prominently located in the shop and adjacent to the designated fueling or materials handling areas. Containers for sorbents should be clearly labeled. Containers also must be provided and clearly labeled for used sorbents. Personnel must be trained in the proper handling of materials and in spill response. Signs should be posted to remind personnel of proper pollution prevention practices.

Mobile equipment and mobile emergency generators and tanks are used throughout MSFC and may leak if not properly maintained.

Inspection Checklist for Motor Pools/Vehicles and Equipment Maintenance/ Mobile Equipment

Inspection frequency: Monthly

- Maintenance activities conducted indoors, where possible
- Control measures taken to minimize storm water contamination during outdoor maintenance operations (inlets covered, maintenance area diked)
- No sign of spillage of leaks
- All spillage appropriately cleaned up
- No leaking vehicles or leaking equipment outdoors
- Fluids used in maintenance activities are stored or managed appropriately (see Hazardous Waste/Hazardous Materials BMPs)
- Spill kits available
- BMP signage in place as appropriate
- Secondary containment areas or drip pans are used when available
- Equipment is positioned away from storm inlets

Inspections will be conducted by the UPOC.

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5.3.2.9 Vehicle and Equipment Washing

Vehicles and large equipment that must be washed outdoors should be washed within the curbed portions of a wash rack that is routed to the sanitary sewer or in a bermed area where the washwater can be collected. Vehicle and equipment washwaters are not allowed into the storm drain system. Trash and solid waste should be removed from the vehicle or equipment before it is washed. It is unacceptable to dispose of significant materials (such as waste oil, waste fuel, or solvents) at a wash rack. Consider filtering and recycling vehicle washwater. If recycling is not practical, the wastewater can be discharged to the sanitary sewer.

Inspection Checklist for Vehicle and Equipment Washing

Inspection frequency: Monthly

- Vehicle washing confined to wash area
- Washwater routed to sanitary sewer
- Appropriate BMP signage in place as appropriate
- Catch basins in wash area maintained (not clogged with sediment or debris)

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5.3.2.10 Painting and Depainting Operations

New and waste materials must be stored indoors or within covered and contained areas. Whenever possible, keep painting activities indoors if this can be done safely. Avoid sanding in windy weather when possible. Enclose outdoor sanding areas with tarps or plastic sheeting. Provide adequate ventilation and personal safety equipment. Collect wastes and dispose of them properly. Paint stripping residues must be collected and disposed as hazardous waste. MSFC does not permit chemical stripping except in indoor areas within containment. Only physical stripping is conducted outdoors. Paint operators need training in correct spraying techniques to reduce the amount of paint needed per job. If possible, avoid spraying on windy days. When spraying outdoors, use a drop cloth or ground cloth to collect and dispose of overspray. Look for opportunities to recycle paint, paint thinner, and solvents.

Inspection Checklist for Painting and Depainting Operations

Inspection frequency: Daily during painting/depainting operations

- New and used materials protected from the weather
- Measures taken to minimize overspray and windblown particles
- Measures in place to retain particles generated from sanding operations

Inspections will be conducted by the UPOC or construction contractor during Painting/Depainting Operations.

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5.3.2.11 Buried Pipelines

Buried pipelines installed for the transfer of materials at MSFC have protective wrapping and are cathodically protected to prevent corrosion damage. When these pipelines are uncovered during a construction project or for any other reason, the piping is visually inspected for signs of deterioration. If evidence of corrosion is found, the pipe section is repaired or replaced based on the magnitude of the damage.

Pipelines that are not in service or are in standby service for an extended period of time are capped or blank flanged, and are marked to identify their origin.

Inspection Checklist for Buried Pipelines

Inspection frequency: When uncovered

- Inspect for signs of deterioration
- Inspect for signs of corrosion
- Pipelines that are not in service or in standby service are capped or blank flanged
- Pipeline status recorded on Master Plans and provided to EED

Inspections will be performed by the UPOC or construction contractor at the time the pipeline is unburied.

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5.3.2.12 Outdoor Garbage Dumpsters

To minimize contact with rainfall, the following should be observed:

- Each dumpster should be covered whenever practical.
- Plugs should be kept in place so that fluids cannot be discharged from garbage bins.
- The dumpster and surrounding areas should be kept neat and clean. If the interior of a dumpster requires cleaning, use a cleaning method that does not require rinsing with water. Otherwise, this rinse water should be collected and disposed in an EED-approved manner.
- Keep dumpsters in good condition and replace dumpsters that have poor structural integrity.
- When appropriate, leaks or spills from a dumpster should be cleaned up properly.
- Notify EED (4-1873) of any dumpsters without lids.

Inspection Checklist for Outdoor Garbage Dumpsters

No documented inspection

- Dumpster is covered nightly and on weekends and remainder of time whenever practical
- Drain plugs are in place
- Area is neat and clean
- Dumpster is in good condition
- No signs of leakage

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6.0 Instructions—Inspections

Inspections are designed to reduce the spill potential and the potential contamination of storm water from operations at MSFC by early detection and correction. Visual inspections by assigned personnel, quarterly inspections by EED personnel, and an annual site compliance evaluation will help prevent spills and minimize the conveyance of potential pollutants to storm water.

Recommended improvements to reduce the risk of storm water contamination are presented in Appendix C, along with the party responsible for implementing the improvement.

6.1 Spill and Storm Water Source Inspections

State regulations require inspections of BMPs and of each facility in general. The purpose of these inspections is to make sure that BMPs, both structural and procedural, are implemented and effective. Table 6-1 presents the frequency of inspections for potential spill sources and storm water pollution sources at MSFC.

TABLE 6-1
Inspection Frequency for Potential Spill/Storm Water Pollution Sources

Source	Inspection Frequency	Inspector
AST/UST	Biweekly and after significant rainfall	COSS Contractor
Contained Hazardous Material or Waste Storage	Monthly	COSS Contractor
Loose Hazardous Material or Hazardous Waste Containers without Secondary Containment	Daily	COSS Contractor
Investigation-derived Waste	Weekly	Investigation Contractor
Storage Yards	Monthly	COSS Contractor
Construction Sites	Daily	Construction Contractor
Erosion	Monthly	COSS Contractor
Sandblast Areas	Monthly	UPOC/Construction Contractor
Fueling Areas/Material Handling Areas	When operations occur	UPOC
Mobile Equipment/Motor Pools/Vehicle and Equipment Maintenance Areas	Monthly	UPOC
Vehicle or Equipment Washing Areas	Monthly	COSS Contractor
Painting/Depainting	Daily	UPOC/Construction Contractor
Buried Pipeline	When uncovered	UPOC/Construction Contractor
Outdoor Dumpster	N/A	N/A

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State regulations also require that a record of these inspections be kept at the facility. Inspection records must be maintained on file for 3 years. Appendix K, Table K-1, presents an inspection record that will be used to record inspections. This log must be maintained by the SI for review upon request by the EED or ADEM. The Inspection Checklists provided in Section 5 should be used as guidelines for inspections. Table K-1 also documents the release of accumulated storm water in AST containment areas.

MSFC has designated personnel responsible for the inspection and operation of these discharge valves when accumulated rainfall must be released. Each diked storage area is inspected visually at least biweekly and after each rainfall event to minimize the chance of oil discharge when the valves are opened.

If the visual inspection indicates that no release has occurred, the valve is opened to allow the rainwater to drain out. The valves are closed and locked after water has drained completely from the containment system.

If a visible sheen is discovered on the surface of the water in the containment area during the inspection process, the contents held within the containment will not be discharged. Instead, the following procedures will be implemented:

- The visible sheen will be removed from the diked area using a skimmer or similar device or absorbent materials.
- If large amounts of oil/fuel-water mixture are encountered, the EED is contacted for assistance in removing the contents.
- The storage tank system will be examined to determine the source of the release.
- After the cause has been identified, remedial actions will be taken to prevent further release of materials.
- Containment area contents will continue to be removed for disposal until the remedial action has been implemented.

During each inspection, an inspection form is completed that documents the findings of the inspection. This inspection form includes the following information:

- Date and time of discharge
- Estimated volume of discharge
- Description of the appearance of discharge
- Description of remedial action taken, if any
- Name and signature of person conducting the inspection and authorizing the discharge

Each inspection is documented by completing an inspection form provided in Appendix K.

Inspection summary reports documenting the results of these inspections will be submitted to the EED for review. These monitoring records will be kept on file at the EED for a minimum of 3 years.

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Any visible leaks resulting from storage equipment failure are noted on an inspection form. The SPCC coordinator is notified, and then notifies the COSS Contractor. Appendix K, Table K-2, will be completed if any cleanup activities are initiated. The UPOC is responsible for the cleanup of any released materials and for the repair of the storage system.

The EED is notified immediately when routine inspections indicate an equipment failure that has resulted in an accumulation of materials in a diked area. The COSS Contractor is dispatched promptly to the area of concern to remove and properly dispose of released materials and to repair the system to prevent further release.

6.2 HWSF Inspections

The MSFC COSS Contractor conducts routine preventive maintenance and performs system checks on the HWSF communications equipment, alarm system, fire suppression equipment, spill control equipment, and decontamination equipment. Testing during inspections and routine maintenance ensure that the equipment will operate properly during an emergency. Maintenance records for this equipment are maintained at Building 4640. Table 6-2 shows the maintenance and testing frequency for each type of equipment.

TABLE 6-2
HWSF Inspection Schedule

Inspection	Frequency
Inspect Containers	Weekly
Inspect Containment Systems for Leaks and Deterioration	Weekly
Inspect Tanks and Sumps	Daily
Inspect Tank Containment Systems	Daily
Check Tank Overflow Alarm Systems	Monthly
Check Communication Equipment	Monthly
Check Alarm Systems	Monthly
Check Eye Washers and Safety Showers	Monthly
Inspect First Aid Equipment	Monthly
Inspect Spill Equipment	Monthly
Inspect Decontamination Equipment	Monthly
Inspect Fire Suppression Equipment	Monthly

At least weekly, the COSS Contractor inspects the aboveground less-than-90-day hazardous waste storage tanks and sumps. Tank and sump inspection includes the overfill/spill equipment to ensure good working order, the detection of corrosion or release from the

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tank, the retrieval of data from monitoring equipment, and the detection of corrosion or release from the secondary containment system. If a sump contains water or hazardous waste, its contents are removed and placed in proper containers, stored, and disposed.

At least weekly, the COSS Contractor inspects the storage areas for leaking or deteriorating containers and containment systems caused by corrosion or other factors. Container inspection includes proper labeling; compatibility; presence of leaks, spills, or corrosion; properly sealed during inactivity; container damage; and timely disposal of containers.

6.3 Quarterly Inspections

Each potential source identified in this Plan will be inspected quarterly by the SPPT EED AC identified in Appendix A to assess the effectiveness of the BMP covering that source. Appendix K, Table K-3, will be used to document the quarterly source inspections.

The objectives of the quarterly inspection by the AC include the following:

- Identify exposed materials.
- Identify additional pollution sources since the last inspection.
- Identify needed housekeeping procedures.
- Identify leaks and spills that have occurred since the last inspection.
- Review inspection records of designated SIs.
- Promote awareness of BMP concepts.
- Identify properly implemented BMPs and commend those responsible.
- Provide training for SIs and UPOCs.

As BMPs are evaluated and identified, members of the SPPT should be aware of the most significant high-risk areas for storm water contamination, as follows:

- Loading and unloading operations
- Outdoor storage activities
- Outdoor processing activities
- Significant dust or particulate-generating activities
- Onsite waste disposal, treatment, or storage practices
- Fueling stations
- Vehicle and equipment maintenance and cleaning areas
- Liquid storage tanks
- Hazardous waste sites (any areas where hazardous wastes or materials are handled)

When new sources are identified, the SPPT will develop new BMPs, if necessary, and incorporate them into this Plan's Appendix C. Records from quarterly inspections should be retained in the files of the EED SWC for 3 years.

6.4 Annual Site Compliance Evaluation

The SWC will conduct an annual comprehensive inspection to evaluate the overall effectiveness of this Plan regarding whether measures to reduce pollutant loadings

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identified in this Plan are adequate and properly implemented or whether additional control measures are needed.

The process for conducting the annual evaluation will be as follows:

- Review the current Plan.
- Review facility operations for the past year to determine if areas should be included or removed from the Plan based on activities of the previous year. Also, determine if any existing areas were modified and thus require Plan modifications.
- Conduct a comprehensive inspection to determine if all spill prevention/storm water pollution prevention measures 1) are accurately identified in the Plan and 2) are in place and working properly. Appendix K, Table K-4, is an Annual Site Evaluation Checklist.
- Assess the performance of SPPT members and make changes to the SPPT as needed. Training needs should be identified and planned for SPPT members.
- Document findings in a brief report summarizing the scope of the inspection, personnel making the inspection, date(s) of the inspection, and major observations relating to the implementation of the Plan.

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7.0 Notes—Spill History

MSFC has had 13 known reportable spill events since 1989. As required by 40 CFR 112.7(a), a description of each discharge event, including the location of the event, date of occurrence, corrective action taken, and plans implemented to prevent recurrence, is included in Table 7-1.

TABLE 7-1
Discharge Events

Date	Quantity	Description	Corrective Action Taken	Plans for Preventing Recurrence
10/19/90	Unknown	Gasoline—underground fuel line (Bldg. 4611)	Groundwater and soil contamination investigation conducted. Contaminated soil removed from site.	Underground fuel line taken out of service and replaced by aboveground fuel lines.
8/27/91	400 gallons	RP-1—UST spill (Bldg. 4597)	Groundwater and soil contamination investigation conducted. Contaminated soil removed from site.	Leaking fuel line drained and capped. Tank is no longer in service and has been removed.
3/13/92	2,500 gallons	Diesel—fuel release from tanks (Bldg. 4567)	Groundwater and soil contamination investigation conducted. Contaminated soil removed from site.	Secondary containment installed around tank. Underground fuel lines removed and replaced with aboveground lines.
6/23/92	500 gallons	#5606 Hydraulic Oil—leak from hydraulic pump at Test Stand 116.	Spilled hydraulic oil removed with adsorbents and booms.	Equipment that malfunctioned was repaired.
4/23/93	40 cubic yards	SOFI Foam Fire—Two 20-yard dumpsters (Bldg. 4707)	Garbage in dumpster burned. Materials were analyzed and found to be nonhazardous, and disposed of accordingly.	Foam piece sizes are restricted and allowed to cure before placement in dumpster. Dumpster is designated for foam only, and personnel are instructed not to place garbage in dumpster.
5/28/93	7,000 gallons	Sulfuric Acid Spill (Bldg. 4761)	Material neutralized and disposed of at a TSDF.	Tank was replaced and facilities modified to reduce extent of potential spills.
6/8/94	50 gallons	JP-8 Aviation fuel (4800 Area)	Spilled fuel absorbed and soil removed.	Operator instructed to remain with transfer truck to monitor operations.
5/15/95	400 gallons	50% Sodium Hydroxide (Bldg. 4700)	Pumped NaOH to tanks and neutralized residues.	Installation of secondary containment around tank.
12/15/96	900 gallons	Diesel—fuel supply line to emergency generator ruptured (Bldg. 4207)	Spilled fuel removed with absorbents and booms.	Supply line replaced.
2/18/98	50 gallons	Diesel—fuel supply valve failed on emergency generator (Bldg. 4493)	Spilled fuel removed with absorbents.	Valve replaced.

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TABLE 7-1
Discharge Events

Date	Quantity	Description	Corrective Action Taken	Plans for Preventing Recurrence
5/21/98	100 gallons	Fuel-rubber seal on fuel supply line leaked (Bldg. 4207)	Spilled fuel removed with absorbents.	Seal replaced. Fuel line rerouted.
10/14/98	50 gallons	Premature shutdown of engine caused RP spillage (Bldg. 4670)	Spill removed with absorbents.	Spill contained in diversionary pond as planned.
2/18/99	50 gallons	Diesel fuel spilled during filling operation (Bldg. 4567)	Spilled fuel removed with absorbents and soil was excavated.	Tank containment improvements were made. A truck containment area is in design.
Note: RP = Rocket Propellant Fuel; UST = Underground Storage Tank; TSDF = Treatment, Storage, and Disposal Facility; NaOH = Sodium Hydroxide				

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8.0 Safety Precautions and Warning Signs

None.

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9.0 Appendixes, Data, Reports, and Forms

See appendixes.

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10.0 Records

- Storm water source inspection/release form
- Quarterly AC inspection
- EED storm water release records
- After-action reports
- Regulatory reports
- Annual hazardous waste profiles

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11.0 Tools, Equipment, and Materials

MSFC maintains emergency equipment selected for the hazards posed by the materials and wastes handled. This equipment is dedicated for use during oil spills, hazardous materials releases, and related emergencies. A list of the types of emergency response equipment maintained at MSFC is provided in Appendix E of this Plan.

The equipment located at MSFC is described in the following subsections.

11.1 Communications System and Alarm System

MSFC personnel can alert emergency response personnel of an emergency situation that has occurred within the facility either by telephone (911) or by manual pull fire alarms located throughout the facility. The telephone is used to report emergency situations to MSFC's Security Guard Dispatcher, RSA FD, and HEMSI. The manual fire pull alarm activates an alarm signal at the RSA Fire Hall (Building 4424), Communications Building (Building 4207), and NASA Security Building (Building 4312) to signify that fire fighting and emergency response is needed.

11.2 Fire Control Equipment

11.2.1 Hazardous Waste Storage Facility

The HWSF is equipped with fire control equipment to suppress and extinguish small fires at the HWSF. Hoses for the HWSF are kept in Building 4640. Fire suppression water from hydrants is available throughout the facility. The water pressure at these HWSF hydrants ranges from 60 to 70 pounds per square inch (psi). The water flow rate is 1,368 gallons per minute. Figure 11-1 provides the location of the HWSF fire hydrants and extinguishers.

Figure 11-1 also shows the evacuation route from the HWSF.

11.2.2 RSA FD

The RSA FD has additional fire fighting equipment and vehicles. Appendix E also contains a list of emergency response equipment maintained by the RSA FD.

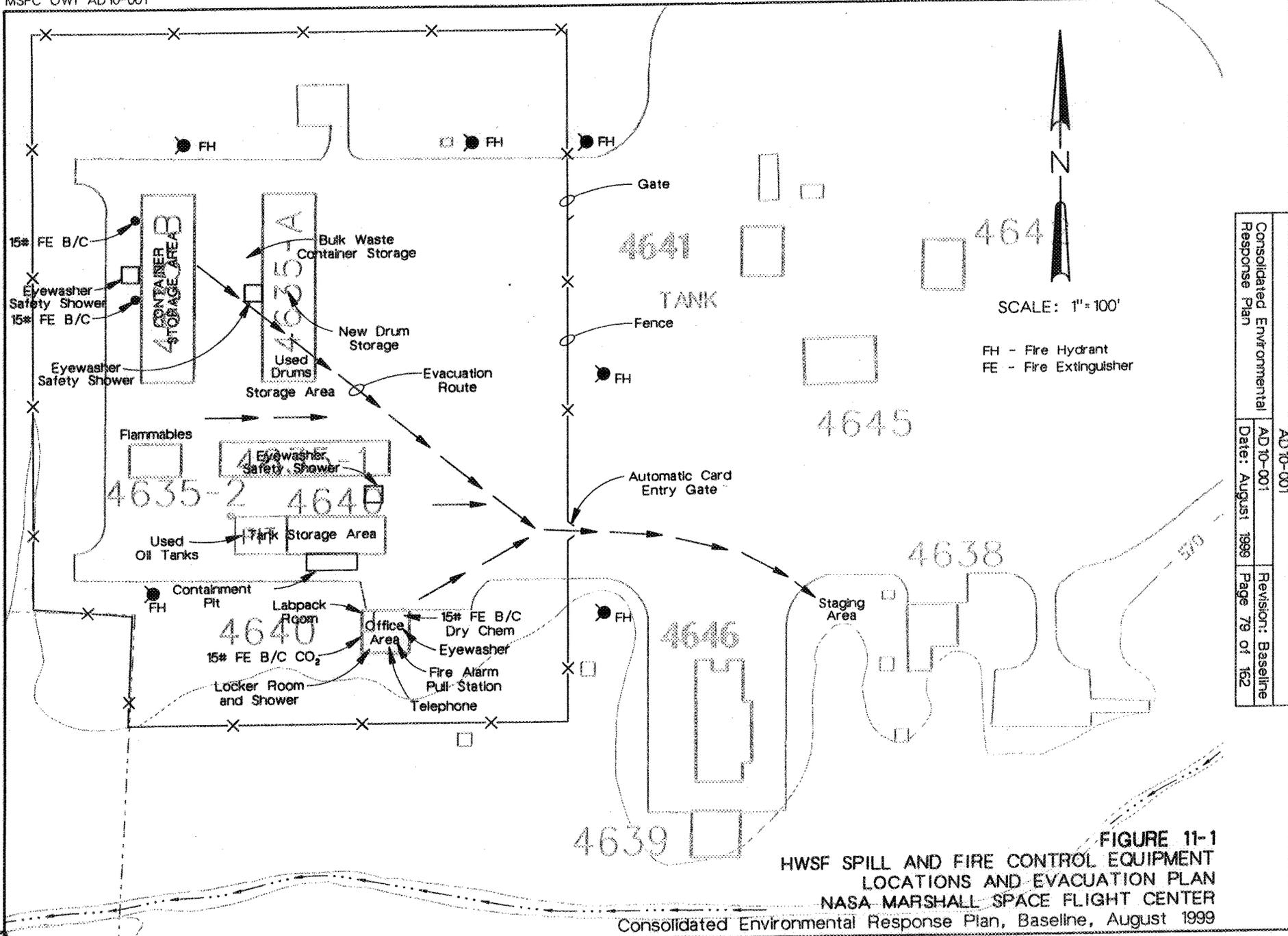
11.2.3 Facility Buildings

Portable fire extinguishers are provided throughout the facility.

11.3 Emergency Medical Equipment

Emergency eye washes and safety showers are provided at the corrosive bulk tank storage and hazardous waste container storage buildings at the HWSF. An emergency eye wash area, first aid equipment, and personnel shower are located in Building 4640. Additional emergency medical equipment and services are provided by MSFC's Medical Center in Building 4249. Miscellaneous emergency medical equipment, including eyewashes and safety showers, are located at various sites throughout the facility.

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FIGURE 11-1
HWSF SPILL AND FIRE CONTROL EQUIPMENT
LOCATIONS AND EVACUATION PLAN
NASA MARSHALL SPACE FLIGHT CENTER
 Consolidated Environmental Response Plan, Baseline, August 1999

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11.4 Personal Protective Equipment

The MSFC OMEHS Contractor keeps a master copy of the MSDSs and also maintains respiratory and hearing PPE. The MSFC OMEHS Contractor provides Hazard Communication training in accordance with OSHA 1910.1200 for all employees and supervisors involved with the management, handling, transportation, and storage of hazardous waste and materials. The MSFC OMEHS Contractor also provides selection and fitting of respiratory protection devices. Through the MSFC supply store and/or offsite store, other equipment such as gloves, rubber boots, and coveralls are available. Each employee is responsible for keeping this equipment readily available at all times.

11.5 Spill Control Equipment

At the HWSF, adsorbent materials, transfer pumps, hoses, plugs, shovels, and other spill response equipment to contain and clean up spills of hazardous waste are stored in the storage bays of Buildings 4635-3, 4650, and 4761. Vehicles used to transport hazardous waste are equipped with one 55-gallon, type 17-H, open-top drum containing a minimum of 250 pounds of adsorbent material and a shovel for spreading the adsorbent. MSFC's COSS Contractor and the RSA FD provide additional spill response equipment and personnel to other areas (see the equipment lists in Appendix E).

11.6 Decontamination Equipment

Cleaning solvents, rubber gloves, wiping rags, neutralizing material, and acids are available in Building 4640 for rinsing and cleaning contaminated equipment. Dirty rags, used gloves, spent absorbent, and soiled clothing will be placed in properly designated, closed, and labeled containers, and shipped offsite for proper disposal.

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12.0 Personnel Training and Certification

The following information presents guidance for training the spill response team, the spill prevention/storm water pollution prevention team, and other facility personnel.

12.1 SPPT Training Requirements

The SWC will be responsible for providing the necessary training for the personnel at MSFC. Personnel training is essential to the successful implementation of a pollution prevention program. Training of the SPPT will be conducted to emphasize the importance of executing this Plan. All members of the SPPT should receive training in the following areas:

- Storm water rules
- Basic storm water pollution prevention and spill prevention concepts
- Thorough coverage of the contents of this Plan
- Overview of storm water pollution and spill causes and effects

The SWC must evaluate training needs on an individual basis for SPPT members. The SWC must then schedule and facilitate this training and maintain a record of all training.

The ACs also are responsible for transmitting the information obtained during training to the employees within the members' respective jurisdictions. The thrust of the training should be focused on day-to-day implementation of pollution prevention activities. The quarterly inspection is an effective time to promote awareness of this Plan to employees within their jurisdiction. This quarterly inspection time also could be used to train the UPOCs at the facility.

12.2 Spill Response Team Training

Division Chiefs, Branch Chiefs, and Supervisors are responsible for providing proper training and management of facility personnel in the operation and maintenance of equipment to prevent discharges of materials and to ensure compliance with applicable pollution control regulations. The training and management will include, but are not necessarily limited to, the following:

- Designating personnel who will receive specialized training, including attending EPA and NASA training programs, as well as other applicable training programs related to this Plan (a summary of required training is provided in Table 12-1.
- Properly instructing their personnel.

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TABLE 12-1
Training Requirements for Emergency Personnel

Training Subject	IC	COSS Contractor	EMD	IOSC/EED	OMEHS	IST
Familiarization with emergency response personnel and alternates	X	X	X	X	X	
Evaluation of safety hazards at an emergency	X					X
Materials used or stored at MSFC	X	X		X	X	X
Use of personal protective equipment (PPE)	X	X			X	X
MSFC standard operating procedures and safe work practices	X	X	X	X	X	X
Medical surveillance requirements	X	X			X	
Site security and control measures	X	X	X			
Decontamination procedures	X	X	X	X		
Information sources	X	X	X	X	X	X
Plan and emergency response equipment	X	X	X	X	X	X
24-hour hazardous waste training	X	X	X	X	X	X
8-hour hazardous waste manager/supervisory training (annual refresher)	X	X	X			
Emergency response training	X	X		X		
Incident Command System (ICS)	X	X	X	X	X	X
Site safety and health organization	X	X	X	X	X	X
Hazard communication	X	X	X	X	X	X
Hazardous waste storage facility (HWSF) layout and operations	X	X		X		
Respiratory protection	X	X			X	X
Containment and cleanup of hazardous substances	X	X		X		
Drum and container handling	X	X		X		
Engineering controls and equipment	X	X	X	X		

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TABLE 12-1
Training Requirements for Emergency Personnel

Training Subject	IC	COSS Contractor	EMD	IOSC/ EED	OMEHS	IST
Confined space entry procedures	X	X			X	X
Monitoring equipment and methods	X	X		X	X	X
Site risk assessment and characterization	X	X		X		
40-hour hazardous waste training (annual 8-hour refresher)	X	X		X		
Federal, state, and local emergency plan	X	X	X	X		
RSA Emergency Planning Committee	X	X	X	X		

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- Scheduling and conducting spill prevention briefings for personnel to ensure understanding of the SPCC portions of this Plan.
- Designating person(s) who is accountable for oil spill prevention and reports to management.

12.3 Spill Prevention Briefings

Spill prevention briefings will be held annually by the SPCC coordinator to ensure that personnel adequately understand this Plan. Facility personnel responsible for the operation and maintenance of equipment covered in this Plan are required to attend these meetings. These briefings will cover the following areas:

- Loading and unloading procedures
- Site drainage
- Spill response procedures
- Applicable pollution control laws and regulations
- Known spill events or failures, malfunctioning storage components, and recently developed precautionary measures

12.4 Pre-emergency Planning and Event Simulations

This Plan was developed to be implemented to handle onsite emergencies before remedial operations begin (spill through containment operations). The notification procedures described in this Plan are simulated at least annually. During simulation, notification of an incident is given by the EPO and the Plan then is put into action. If a spill event has taken place in the past year, the tabletop exercise is not conducted. Each response element of the Plan is simulated, including the following:

- Pre-emergency planning
- Personnel roles, lines of authority, training, and communications
- Emergency recognition and prevention
- Safe distances and places of refuge
- Site security and control
- Evacuation routes and procedures
- Decontamination
- Emergency medical treatment and first aid
- Emergency notification and response procedures
- Critique of response and follow-up
- PPE and emergency equipment
- Inspections and records

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13.0 Flow Diagram

See Figures 4-1 and 5-1.

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APPENDIX A

MSFC Contact Lists

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TABLE A-1
Emergency Telephone Numbers—Agencies

ONSITE Telephone Numbers	
FIRE – Redstone Arsenal Fire Department at MSFC	911
SECURITY – Security Dispatcher	911
Ambulance/Medical Aid	911
Security (non-emergency)	544-4357
Customer Support Center (CSC) Dispatcher	544-1515
Emergency Operations Center	544-3131
Facility Repair	544-3919
Occupational Medicine and Environmental Health Services (Onsite)	544-2390
Safety Hotline	544-0046
OFFSITE Telephone Numbers	
Police / Fire / Medical	
RSA Military Police	876-2222/3/4
Huntsville Fire Department	(256) 722-7120
Huntsville City Police Department	(256) 722-7100
Huntsville Hospital	(256) 533-8020
Ambulance Service and Rescue Squad	(256) 536-6658
Madison County Sheriff	(256) 772-7181
Alabama Poison Control Center	(800) 462-0800
Alabama State Troopers	(256) 533-4202
Regulatory Agencies	
National Response Center	(800) 424-8802
Alabama Department of Environment Management (ADEM) Field Office (Reportable Spills during normal work hours)	(334) 280-2700
Department of Public Safety (Reportable Spills after hours)	(334) 242-4378
Alabama Emergency Management Office	(800) 943-0699
Alabama Department of Environmental Management (ADEM)	(334) 271-7700
Alabama Department of Environmental Management	(800) 843-0699
U.S. EPA, Region IV (Atlanta, GA) – 24 hour	(404) 562-8700
State of Alabama, Department of Fish and Game	(256) 353-2634
Redstone Arsenal	
RSA Emergency Operations Center	876-4105
RSA Environmental Office/Installation On-scene Coordinator	876-3814
RSA Facilities Director	876-3516
MIGOM Safety Office	876-2944
Environmental Support	
RSA Environmental Office/Installation On-scene Coordinator	876-3814
Chemtrec Emergency Hotline	(800) 424-9300
Decatur Water Treatment Plant	(256) 552-1480
Wheeler National Wildlife Refuge	(256) 353-7243
Emergency Management Agencies	
RSA Emergency Operations Center	876-4105
Huntsville Emergency Management	(256) 532-7290
Huntsville - Madison County 911 Center	(256) 722-7140
RSA Emergency Planning Committee	876-3814

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TABLE A-1
Emergency Telephone Numbers—Agencies

Information	
U.S. EPA, Emergency Preparedness and Right-to-Know Hotline	(800) 535-0202
Chemtrec Center (Non-emergency)	(800) 262-3200
U.S. Department of Transportation – Assistant Administrator of Hazardous Material Safety	(202) 366-0656
National Weather Service	(256) 664-3010
Area code is 256 unless otherwise indicated	

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TABLE A-2
Onsite/Offsite Emergency Telephone Numbers—Personnel

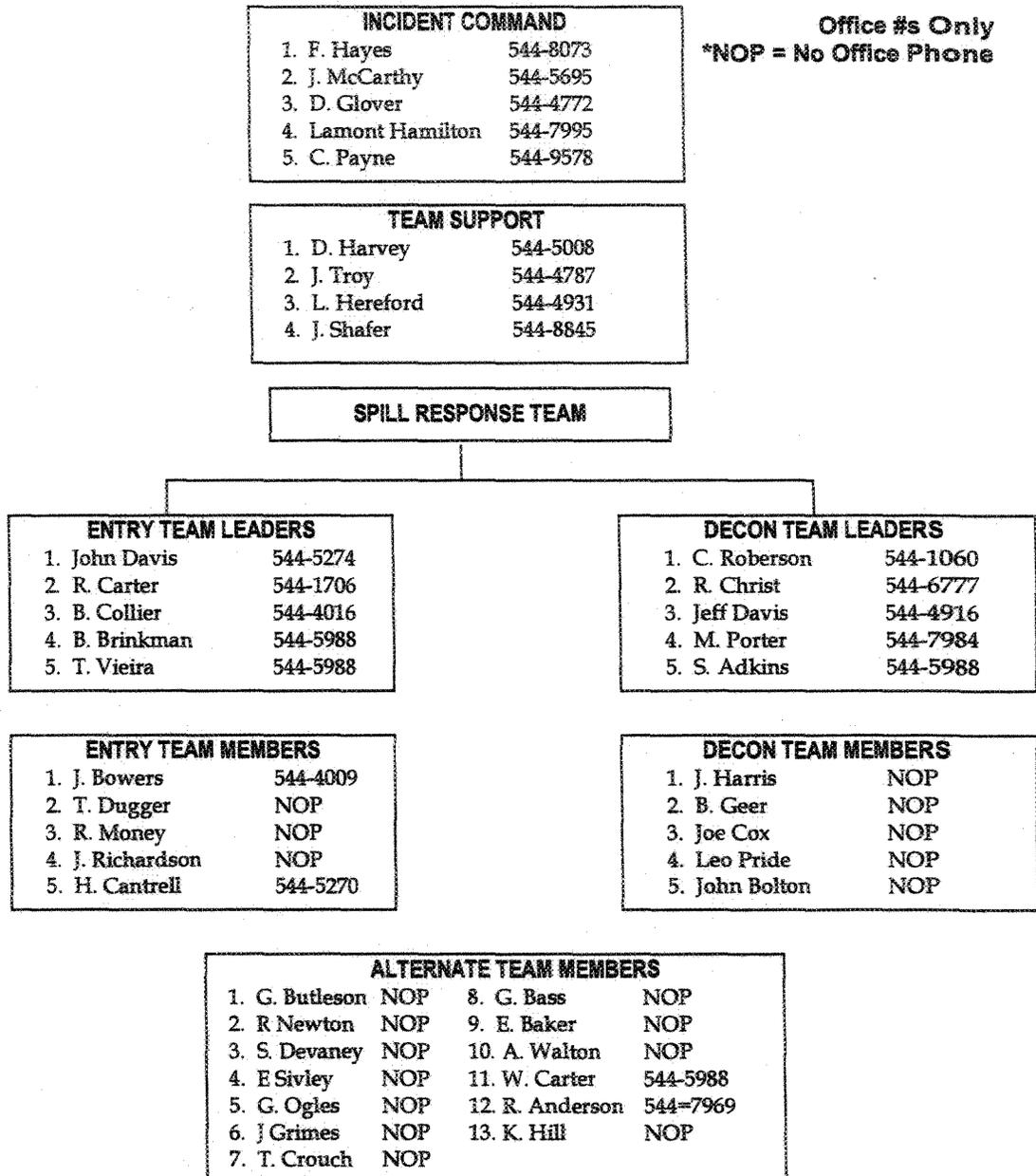
Position/Office	Name/Address	Work Number	Home Number
NASA Incident Commander (NASA IC) (Emergency Coordinator)	Rebecca McCaleb 6645 Steeplechase Drive Huntsville, AL 35806	544-4367/4246	830-6954
NASA IC EC 1st Alternate	Allen Elliott—417 Chicken Creek Rd. Frankenwing, TN 38959	544-0662	(931) 732-4195
NASA IC EC 2nd Alternate	Skip Hayes—100 Levorn Lane Huntsville, AL 35806	544-8073	830-6857
NASA IC EC 3rd Alternate	Jim McCarthy 10880 Country Corner Rd. Athens, AL 35614	544-5695	614-1102
RSA Incident Commander (RSA IC)	Redstone Arsenal Fire Chief	911	
Customer Support Center (CSC)	Day Officer	544-1515	
Occupational Health Officer	David L. Thaxton	544-8371	685-0747
Occupational Medicine and Environmental Health Services (OMEHS)	Eddie Phillips—Primary	544-2390	772-8081
	Greg Smith	544-2390	350-9672
Incident On-Scene Coordinator (IOSC)/ Environmental Engineering Department (EED)	Rebecca McCaleb—Primary	544-4367/4246	830-6954
	Allen Elliott—1st Alt.	544-0662	(931) 732-4195
	Farley Davis—2nd Alt.	544-6935	837-3192
Center Operations Support Services (COSS) Contractor (Spills and Hazardous Waste)	John Troy (EG&G)—Primary	544-4787	(931) 732-4917
	David Glover (EG&G)—Alt.	544-4772	776-3578
Industrial Safety Team (IST)	Dennis Davis	544-2485	574-5025
Emergency Management Director (EMD)	Pete Allen—Primary	544-7909	895-9536
	Edwin Jones—Alt.	544-7927	882-2776
Emergency Preparedness Officer (EPO)	Joyce Davis	544-5187	880-2270
Protective Services Manager (PSM)	W.B. Waits, Chief	544-4534	498-5343
Media Relations Department (MRD)	J.B. Taylor, Manager	544-0031	881-7843
Operations and Maintenance Group (OMG)	Ron Burns, Manager	544-4124	353-4922
Center Operations Directorate (COD)	Sheila S. Cloud, Director	544-0120	881-4535
MSFC Director	Art Stephenson	544-1910	
Medical Center	Dr. William Dye	544-2390	880-3975
Procurement (GP01)	Steve Beale	544-0257	880-7204
Counsel (CC01)	Bill Hicks	544-0010	353-3229
Area Code is 256 unless otherwise indicated			

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Table A-3

**EG&G SPILL RESPONSE TEAM
ORGANIZATIONAL CHART**



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TABLE A-4
Key Members of SPPT

Storm Water Coordinator: A. Patrick/EED: 4-1873		
Coordinator	Area Responsibilities	Telephone Extension
D. Adams/EED	4500 (Primary) 4600-West Test Stand (Alternate)	4-1614
G. Burns/EED	4700 (Primary) 4600-North (Alternate)	4-5214
F. Davis/EED	4100 (Primary) 4200 (Primary) 4800 (Primary) Construction (Alternate)	4-6935
D. Holland/EED	4600-North (Primary) 4700 (Alternate)	4-7201
A. Keith/EED	4400 (Primary) 4300 (Alternate)	4-7434
A. Patrick/EED	4600-West Test Stand (Primary) 4500 (Alternate)	4-1873
M. Reynolds/EMMO	Construction (Primary) 4100 (Alternate) 4200 (Alternate) 4800 (Alternate)	4-9606
S. Scroggins/EED	4300 (Primary) 4400 (Alternate)	4-7932
David Glover/EG&G	Storm Water Source Inspector Coordinator	4-4772

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APPENDIX B
Tank Inventory

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TABLE B-1

MSFC

Aboveground Storage Tank Inventory

ADEM Tank Identification	NASA MSFC ID	Location Area/Bldg.	Product Stored	Capacity (Gal.)	Containment	Major Type of Failure	Predicted Quantity **(Gal.)	Flow Rate *** (Gal./Min.)	Responsible Organization	P.O.C.	MSFC Phone #
Unregistered	4200 (1) EM	4200/4203	Diesel	200	Concrete pad and curbing	R/L	200	60	EG&G	David Glover	4-4772
Unregistered	4203 (1) EM	4200/4203	Diesel	500	Concrete pad and curbing	R/L	500	69	EG&G	David Glover	4-4772
3538	4207 (1)	4200/4207	Diesel	212	Concrete pad and curbing	R/L	212	60	EG&G	David Glover	4-4772
Unregistered	4207 (2)	4200/4207	Diesel	2,000	Concrete pad and curbing	R/L	2000	87	EG&G	David Glover	4-4772
Unregistered	4207 (3) [EM]	4200/4207	Diesel	200	Concrete pad and curbing	R/L	200	60	EG&G	David Glover	4-4772
3539	4249 (1)	4200/4249	Diesel	100	Concrete pad and curbing	R/L	100	53	EG&G	David Glover	4-4772
3540	4249 (2)	4200/4249	Diesel	100	Concrete pad and curbing	R/L	100	53	EG&G	David Glover	4-4772
3541	4250 (1) [EM]	4200/4250	Diesel	275	Concrete pad and curbing	R/L	275	63	EG&G	David Glover	4-4772
Unregistered	4312 [EM]	4300/4312	Diesel	250	Concrete pad and curbing	R/L	250	62	EG&G	David Glover	4-4772
Unregistered	4313 (1)	4300/4313	Gasoline	500	Concrete pad and curbing	R/L/O	500	69	SCSC	Bill Edens	4-4763
3544	4436 (1)	4400/4436	Used Oil	250	Concrete pad/dike	R/L	250	62	ROC	Richard Calhoun	4-3899
Unregistered	4464 (1) [EM]	4400/4471	Diesel	200	Concrete pad and curbing	R/L	200	60	EG&G	David Glover	4-4772
3545	4471 (1) [EM]	4400/4471	Diesel	180	Concrete pad and curbing	R/L	180	59	EG&G	David Glover	4-4772
Inactive	4475 (1)	4400/4475	Used Acid	80	AST in concrete vault	R/L	80	51	NASA-EB74	Eric Lowery	4-0080

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ADEM Tank Identification	NASA MSFC ID	Location Area/Bldg.	Product Stored	Capacity (Gal.)	Containment	Major Type of Failure	Predicted Quantity ** (Gal.)	Flow Rate *** (Gal./Min.)	Responsible Organization	P.O.C.	MSFC Phone #
Unregistered	4475 (2) [EM]	4400/4475	Diesel	500	Concrete pad and curbing	R/L	500	69	EG&G	David Glover	4-4772
3546	4476 (1)	4400/4476	Used Oil	500	Built in containment with rain shield	R/L/O	250	62	NASA - ED19	Joey Butler	4-3808
3553	4481 (1) [EM]	4400/4481	Diesel	85	Concrete pad/dike	R/L	85	52	EG&G	David Glover	4-4772
Unregistered	4481 (2) [EM]	4400/4481	Diesel	200	Concrete pad/dike	R/L	200	60	EG&G	David Glover	4-4772
N/A	4483 (1)	4400/4483	Used Oil	500	Built in containment with rain shield	R/L/O	500	69	SCSC	Joe Stiles	4-4460
Inactive	4487 (1)	4400/4487	Used Oil	250	Concrete pad/dike	R/L	250	62	NASA	Joey Butler	4-3808
Unregistered	4487 (2) [EM]	4400/4487	Diesel	250	Concrete pad and curbing	R/L	250	62	EG&G	David Glover	4-4772
Unregistered	4487 (3) [EM]	4400/4487	Diesel	250	Concrete pad and curbing	R/L	250	62	EG&G	David Glover	4-4772
Unregistered	4493 (1)	4400/4493	Diesel	1000	Built in containment with rain shield	R/L	1000	78	EG&G	David Glover	4-4772
Unregistered	4523 (1)	4500/4523	Hyd. Oil	100	Metal Pan w/ roof	R/L/O	100	53	LB&B	Sean McMyler	4-7120
Unregistered	4524 (1)	4500/4523	Diesel	100	Metal Pan w/ tarp cover	R/L/O	100	53	LB&B	Sean McMyler	4-7120
Unregistered	4540 (1)	4500/TS116	RP-1	3,000	Concrete pad and curbing	R/L	3,000	94	LB&B	Tommy Barron	4-1282
Unregistered	4540 (2)	4500/TS116	Hyd. Oil	400	Concrete pad and curbing	R/L	400	67	LB&B	Tommy Barron	4-1282
Inactive	4548 (1)	4500/4548	Hyd. Oil	185	Indoors	N/A	185	59	NASA	Thomas Piff	4-4322
Inactive	4550 (7 tanks)	4500/4550	Hyd. Oil	185-1,395	6 Indoors 1 outdoors	N/A	185	59	NASA	Preston Jones	4-5716

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ADEM Tank Identification	NASA MSFC ID	Location Area/Bldg.	Product Stored	Capacity (Gal.)	Containment	Major Type of Failure	Predicted Quantity ** (Gal.)	Flow Rate *** (Gal./Min.)	Responsible Organization	P.O.C.	MSFC Phone #
Unregistered	4566 (1) EM	4500/4567	Diesel	100	Concrete pad and curbing	R/L	100	53	EG&G	David Glover	4-4772
3555	4567 (1)	4500/4567	#2 Diesel	14,000	Concrete pad/retaining wall	R/L	14,000	121	EG&G	Roger Anderson	4-7969
3556	4567 (2)	4500/4567	#2 Diesel	3,000	Concrete pad/retaining wall	R/L	3,000	94.0	EG&G	Roger Anderson	4-7969
Unregistered	4567 (3)	4500/4567	Diesel	3,000	Built in containment with rain shield	R/L	3,000	94.0	TBE	John Nugent	4-9472
N/A	*4567	4500/4567	Diesel	7@250 Ea.	Indoors	N/A	N/A	N/A	TBE	John Nugent	4-9472
Unregistered	4583-portales	4500/4583	Hyd. Oil	3 x 500	Concrete pad and curbing	R/L	500	69	TD71	Wendell Rylant	4-1249
3547	4583 (1)[EM]	4500/4583	Diesel	120	Concrete pad and curbing	R/L	180	55	EG&G	David Glover	4-4772
Unregistered	4597 (1)	4500/4597	Diesel	10000	Built in containment with rain shield	R/L	10,000	114.0	TBE	John Nugent	4-9472
Unregistered	4607	4700/4706	Used Oil	3000	Concrete pad/dike	R/L	3,000	94	TBE	John Nugent	4-9472
3548	4610 (1)	4600/4610	Diesel	1,067	Concrete pad/retaining wall	R/L	1,067	79	EG&G	David Glover	4-4772
Unregistered	4611 (1)	4600/4611	Diesel	20,000	Concrete pad and concrete	R/L	20,000	128	SCSC	Joe Stiles	4-4460
Unregistered	4611 (2)	4600/4611	Gasoline	20,000	Concrete pad and concrete	R/L	20,000	128	SCSC	Joe Stiles	4-4460
Unregistered	4612 (1) EM	4600/4612	Diesel	500	Concrete pad and concrete	R/L	500	69	EG&G	David Glover	4-4772
Unregistered	4618 (1)	4600/4618	Hyd. Oil	1,000	In construction	R/L	1,000	78	NASA	Ricky Wilbanks	4-4147
Unregistered	4618 (2)	4600/4618	Hyd. Oil	1,000	In construction	R/L	1,000	78	NASA	Ricky Wilbanks	4-4147

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3551	4619 (1) [EM]	4600/4619	Diesel	80	Concrete pad/dike	R/L/O	80	51	SCSC	Joe Stiles	4-4460
3552	4632 (1)	4600/4611	Gasoline	20,000	Earthen berm with plastic liner surrounds these three tanks	R/L	20,000	128.0	SCSC	Joe Stiles	4-4460
3557	4633 (1)	4600/4611	Gasoline	20,000		R/L	20,000	128.0	SCSC	Joe Stiles	4-4460
3558	4636 (1)	4600/4611	Diesel	15,000		R/L	15,000	122.0	SCSC	Joe Stiles	4-4460
Unregistered	4635	4600/4635	Oily wastewater	3,000	Self-contained	O	350	5	EG&G	Chuck Payne	4-9578
Unregistered	4640 (6) (Bay 6)	4600/4640	Used Oil	10,000 & 7,000	Concrete pad/dike	R/L	10,000	114	EG&G	Chuck Payne	4-9578
Unregistered	4640 (1) (Bay 1)	4600/4640	Hazardous waste	3,000	Concrete pad/dike	R/L	3,000	94	EG&G	Chuck Payne	4-9578
Unregistered	4640 (2) (Bay 2)	4600/4640	Hazardous Waste	1,500	Concrete pad/dike	R/L	1,500	83	EG&G	Chuck Payne	4-9578
Unregistered	4640 (4&5) (Bay 4&5)	4600/4640	Hazardous Waste	7,000	Concrete pad/dike	R/L	7,000	108	EG&G	Chuck Payne	4-9578
Unregistered	4649 (1) [EM]	4600/4649	Diesel	100	Concrete pad/dike	R/L	100	53	EG&G	David Glover	4-4772
Unregistered	4649 (2) [EM]	4600/4649	Diesel	250	Concrete pad/dike	R/L	250	62	EG&G	David Glover	4-4772
3559	4653 (1) [EM]	4600/4653	Diesel	120	Concrete pad/dike	R/L/O	120	55	EG&G	David Glover	4-4772
N/A	4656 (1)	4600/4656	Hyd. Oil	280	Concrete pad/dike	R/L	280	63	NASA	Lemuel Vaughn	4-7140
3560	4658 (1) [EM] [P]	4500/4658	Diesel	400	In construction	R/L/O	400	67	EG&G	David Glover	4-4772
Unregistered	4660 (1)	4600/4660	Diesel	20,000	Concrete pad/dike	R/L	20,000	128	EG&G	Roger Anderson	4-7969
Unregistered	4660 (2)	4600/4660	Diesel	20,000	Concrete pad/dike	R/L	20,000	128	EG&G	Roger Anderson	4-7969

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Pending	4663 (1)	4600/4663	Diesel	6,000	Built in containment with rain shield	R/L	6,000	105	EG&G	David Glover	4-4772
3561	4663 (2)	4600/4663	Diesel	1,100	Concrete pad/retaining wall	R/L	1,100	79	EG&G	David Glover	4-4772
Unregistered	4663 (3) [EM]	4600/4663	Diesel	1000	In construction	R/L/O	1,000	78	EG&G	David Glover	4-4772
Unregistered	4663 (4) [EM]	4600/4663	Diesel	80	In design	R/L/O	80	51	EG&G	David Glover	4-4772
Unregistered	4663 (6)	4600/4663	Diesel	2000	In construction	R/L/O	2,000	87	EG&G	David Glover	4-4772
Inactive	4666 (1) [EM]	4600/4666	Diesel	200	Concrete pad/dike	R/L/O	200	60	EG&G	David Glover	4-4772
Pending	*4667 (1)	4600/4667	Diesel	13@210 Ea.	Indoors	N/A	N/A	N/A	TBE	John Nugent	4-9472
Unregistered	4673 (1)	4600/4673	#2 Diesel	20,000	Built in containment with rain shield	R/L	20,000	128	TBE	John Nugent	4-9472
Inactive	4674 [EM]	4600/4674	Diesel	345	Concrete pad and curbing	R/L	345	65	EG&G	David Glover	4-4772
Unregistered	4675 (1)	4600/4675	#2 Diesel	20,000	Concrete pad and curbing	R/L	20,000	128	EG&G	Roger Anderson	4-7969
Unregistered	4676 (1)	4600/4676	Compressor Blowdown	200	Built in containment and rain shield	R/L	200	60	TBE	John Nugent	4-9472
Unregistered	4680 (trailers)	4600/4680	RP-1	2@5000 Ea.	Concrete pad and curbing	R/L	5,000	102	TBE	John Nugent	4-9472
Unregistered	4692 [EM]	4600/4692	Diesel	200	Concrete pad/dike	R/L/O	200	60	EG&G	David Glover	4-4772

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ADEM Tank Identification	NASA MSFC ID	Location Area/Bldg.	Product Stored	Capacity (Gal.)	Containment	Major Type of Failure	Predicted Quantity ** (Gal.)	Flow Rate *** (Gal./Min.)	Responsible Organization	P.O.C.	MSFC Phone #
Unregistered	4696	4600/4696	Diesel	100	Metal pan	R/L/O	100	53	NASA	Mat Bevill	4-6941
Pending	4697	4600/4697	Diesel	600	Concrete pad/dike	R/L/O	600	72	EG&G	David Glover	4-4772
Unregistered	4699 (1)	4600/4699	Hyd. Oil	200	Concrete pad and curbing	R/L/O	200	60	NASA	Scottie Barnes	4-4761
Unregistered	4700 (1)	4700/4700	93% H ₂ SO ₄	4,000	Concrete pad/dike	R/L	4,000	98	EG&G	John Troy	4-4787
Unregistered	4700 (2)	4700/4700	50% NaOH	5,000	Concrete pad/dike	R/L	5,000	102	EG&G	John Troy	4-4787
Unregistered	4700 (3)	4700/4700	NaOH rinse 4-5%	8,000	Concrete pad/dike	R/L	7,000	108	EG&G	John Troy	4-4787
Inactive	4705	4700/4705	Freon 113	500	Built in containment with rain shield	R/L	500	69	NASA	Kathy McGee	4-1056
Unregistered	4705 (7) (P)	4700/4705	Used Coolant	500	In design	R/L			ASRI	Kendal Coker	4-1065
Inactive	4705 [EM]	4700/4705	Diesel	20	Concrete pad/dike	R/L/O	20	20	EG&G	David Glover	4-4772
Unregistered	4707 (1) [EM]	4700/4707	Diesel	100	Concrete pad/dike	R/L/O	100	53	EG&G	David Glover	4-4772
Unregistered	4707 (2)	4700/4707	Hyd. Oil	50	In design	R/L/O	50	47	NASA	Charles Henderson	4-2727
Unregistered	4707 (3)	4700/4707	Kerosene	100	In design	R/L/O	100	53	NASA	Frank Zimmerman	4-4958
Unregistered	4708 (1)	4700/4708	Diesel	1000	Built in containment with rain shield	R/L	1,000	78	EG&G	David Glover	4-4772
Unregistered	4708 (2) [EM]	4700/4708	Diesel	200	Concrete pad/dike-indoors	R/L/O	N/A	N/A	EG&G	David Glover	4-4772
Unregistered	4712 [EM]	4700/4712	Diesel	200	Concrete pad/dike	R/L/O	200	60	EG&G	David Glover	4-4772
Unregistered	4718 (1)	4700/4718	Diesel	2000	Built in containment with rain shield	R/L	2,000	87	EG&G	David Glover	4-4772

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ADEM Tank Identification	NASA MSFC ID	Location Area/Bldg.	Product Stored	Capacity (Gal.)	Containment	Major Type of Failure	Predicted Quantity ** (Gal.)	Flow Rate *** (Gal./Min.)	Responsible Organization	P.O.C.	MSFC Phone #
Unregistered	4718A (1)	4700/4718	Diesel	1000	Built in containment with rain shield	R/L	1,000	78	EG&G	David Glover	4-4772
Unregistered	4732 (1)	4700/4732	Terpentine-Tetrin	250	Concrete pad/retaining wall	R/L	250	62	NASA	Rhonda Pepper	4-5432
Unregistered	4732 (2)	4700/4732	Terpentine-Tetrin	2,500	Concrete pad/retaining wall	R/L	2,500	91	NASA	Rhonda Pepper	4-5432
Unregistered	4734	4700/4734	Used Oil	200	Built in containment with rain shield	R/L	200	60	NASA	Rhonda Pepper	4-5432
Unregistered	4744	4700/4744	Anderol	10,000	Concrete pad/retaining wall	R/L	10,000	114	EG&G	John Troy	4-4787
Pending	4755 (1)	4700/4755	Diesel	2,160	Concrete pad/retaining wall	R/L	2,160	89	EG&G	Roger Anderson	4-6979
Pending	4755 (2)	4700/4755	#2 Diesel	2,000	Concrete pad/retaining wall	R/L	2,000	87	EG&G	Roger Anderson	4-6979
Unregistered	4755 (3) EM	4700/4755	#2 Diesel	200	Concrete pad/retaining wall	R/L	200	60	EG&G	David Glover	4-4772
Unregistered	4761	4700/4761	93% H ₂ SO ₄	110	Concrete pad/dike	R/L	110	54	EG&G	John Troy	4-4787
Unregistered	4761 (2)	4700/4761	Diesel	200	Concrete pad/dike-inside	N/A	N/A	N/A	EG&G	David Glover	4-4772
Unregistered	4817 (1)	4800/4817	JP-8	40000	Concrete pad/retaining wall	R/L	34,500	144	SCSC	Ernie Graham	4-1617

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Aboveground Storage Tank Inventory

ADEM Tank Identification	NASA MSFC ID	Location Area/Bldg.	Product Stored	Capacity (Gal.)	Containment	Major Type of Failure	Predicted Quantity ^{**} (Gal.)	Flow Rate ^{***} (Gal./Min.)	Responsible Organization	P.O.C.	MSFC Phone #
Unregistered	4817 (2)	4800/4817	JP-8	40000	Concrete pad/retaining wall	R/L	34,500	144	SCSC	Ernie Graham	4-1617

Notes:
 Direction of flow from storage tanks and NPDES outfall are shown on associated figures in the Consolidated Environmental Response Plan.
 1) * Indicates storage tanks located indoors
 2) R/L = rupture or leak
 3) R/L/O = rupture, leak, or overflow
 4) N/A—Not applicable

Anderol—waste compressor condensate (99% water)
^{**}Predicted quantity based on leak being undetected for a period of 4 hours.
^{***}Predicted flow rate based on a 2-inch hole at base of the tanks with no containment and rate discharged through an 2-inch open discharge valve for tanks with containment.

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Aboveground Storage Tank Inventory

ADEM Tank Identification	NASA MSFC ID	Location Area/Bldg.	Product Stored	Capacity (Gal.)	Containment	Major Type of Failure	Predicted Quantity ** (Gal.)	Flow Rate *** (Gal./Min.)	Responsible Organization	P.O.C.	MSFC Phone #
Unregistered	4817 (2)	4800/4817	JP-8	40000	Concrete pad/retaining wall	R/L	34,500	144	SCSC	Ernie Graham	4-1617

Notes:

Direction of flow from storage tanks and NPDES outfall are shown on associated figures in the Consolidated Environmental Response Plan.

- 1) * Indicates storage tanks located indoors
- 2) R/L = rupture or leak
- 3) R/L/O = rupture, leak, or overflow
- 4) N/A--Not applicable

Anderol--waste compressor condensate (99% water)

**Predicted quantity based on leak being undetected for a period of 4 hours.

***Predicted flow rate based on a 2-inch hole at base of the tanks with no containment and rate discharged through an 2-inch open discharge valve for tanks with containment.

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TABLE B-2
MSFC
Underground Storage Tank Inventory

ADEM Tank Identification	NASA MSFC I.D.	POC	Responsible Organization	Phone #	Location Area/Bldg.	Product Stored	Capacity (gal.)	Comments
Unregistered	4200 [G]	David Glover	EG&G	4-4772	4200/4200	Diesel	600	Active
Unregistered	4201 [G]	David Glover	EG&G	4-4772	4200/4201	Diesel	500	Active
Unregistered	4202 [G]	David Glover	EG&G	4-4772	4200/4202	Diesel	600	Active
23349	4207 [G]	David Glover	EG&G	4-4772	4200/4207	Diesel	6,000	Active
Unregulated	4647	John Nugent	TBE	4-9472	4600/4647	Anderol	4,500	Inactive
Unregulated	4667	John Nugent	TBE	4-9472	4600 n /4667	Diesel	12,000	Active
Unregistered	4673	John Nugent	TBE	4-9472	4600/4673	RP-1	150	Empty
Unregulated	4704	Wyatt Poe	NASA	4-1052	4700/4704	Oil	3,000	Storage
Unregulated	4760	Wayne Ellenberg	ASRI	4-1054	4700/4760	Cyanide	500	Empty/Abandoned

Notes:
[G] Indicates fuel tanks associated with generators
JP-Jet Propulsion fuel
Anderol-Waste compressor condensate (99 percent water)

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APPENDIX C
Potential Sources of Storm Water Contaminants

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Area 4200

Potential Sources of Storm Water Contaminants and Recommended Corrective Actions

Area	Bldg. No.	Source	Comment	BMP	User POC	Extension
18	4200	Underground Storage Tank (1)	Repaint label	Implement UST BMP	David Glover (EG&G)	4-0623
		Aboveground Storage Tank (EM)		Implement AST BMP	David Glover (EG&G)	4-4772
	4201	Underground Storage Tank (1)	Broken handle, Repaint label	Implement UST BMP	David Glover (EG&G)	4-4772
	4202	Underground Storage Tank (1)	Repaint label	Implement UST BMP	David Glover (EG&G)	4-4772
	4203	Aboveground Storage Tank (EM)	Put up No Smoking sign	Implement AST BMP	David Glover (EG&G)	4-4772
	4207	Aboveground Storage Tank (4)	Replace sign, clean out containment areas, southern AST is oily around fittings.	Implement AST BMP	David Glover (EG&G)	4-4772
		Underground Storage Tank (1)		Implement UST BMP	David Glover (EG&G)	4-4772
	4249	Aboveground Storage Tank (2 tanks)	Evidence of leaks, Service generator, Reseal curbing	Implement AST BMP	David Glover (EG&G)	4-4772
4250	Aboveground Storage Tank (1)		Implement AST BMP	David Glover (EG&G)	4-4772	

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TABLE C-2

Area 4300

Potential Sources of Storm Water Contaminants and Recommended Corrective Actions

Area	Bldg. No.	Source	Comment	BMP	Contact	Extension
18	4312	Aboveground Storage Tank (EM)	Clean out containment area, put rain shields back on	Implement AST BMP	David Glover (EG&G)	4-4772
	4313	Aboveground Storage Tank (1) Storage Yard	Put rain shields back on. Remove trash and debris	Implement AST BMP Implement Storage Yard BMP.	Bill Edens (SS) Steve Rapiage(Boeing)	4-4763 5-4913
7	M1 Yard	Storage Yard		Implement Storage Yard BMP.	David Glover (EG&G)	4-4772
	M2 Yard	Storage Yard		Implement Storage Yard BMP.	David Glover (EG&G)	4-4772
		Hazardous Material Storage		Implement HazMat BMP	Carl Fried (EG&G)	4-4020
	4319	Storage Yard, equip parking		Implement Storage Yard BMP.	Joe Stiles (SCSC)	4-4460
4348	Storage Yard			Implement Storage Yard BMP.	Ernest Holland (CSI)	4-4014
	Hazardous Material Storage	Pesticides		Implement HazMat BMP	Charles Demers (CSI)	4-4901

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TABLE C-3

Area 4400

Potential Sources of Storm Water Contaminants and Recommended Corrective Actions

Area	Bldg. No.	Source	Comment	BMP	Contact	Extension
18	4436	Aboveground Storage Tank (1)		Implement AST BMP.	Richard Calhoun (ROC)	4-3899
	4470	Aboveground Storage Tank (1)		Implement AST BMP	David Glover (EG&G)	4-4772
	4471	Aboveground Storage Tank (1)	Clean out containment area	Implement AST BMP.	David Glover (EG&G)	4-4772
	4472	Drum storage NE of 4472 Hazardous Waste Storage		Implement Haz Mat storage BMP.	Dewey Brown (ASRI)	4-4747
			Repair hose/drum connection	Implement Haz Waste storage BMP.	Dewey Brown (ASRI)	4-4747
	4475	Aboveground Storage Tank #2 Aboveground Storage Tank #1	Clean out containment area	Implement AST BMP	David Glover (EG&G)	4-4772
			Mark inactive acid tank clearly	Implement AST BMP.	Eric Lowery (ED11)	4-0080
	4476	Aboveground Storage Tank (1)		Implement AST BMP.	Joey Butler (ED19)	4-3808
	4479	Hazardous Material Storage		Implement Haz Mat storage BMP.	John Harris (CORTEZ)	4-5606
	4487	Aboveground Storage Tank (2,3)	NE generator: oil in containment area, stains outside of drain valve, repair generator and containment area. NW generator: Clean out containment area.	Implement AST BMP.	David Glover (EG&G)	4-4772
Implement AST BMP.				Joey Butler (ED19)	4-3808	
Implement Haz Mat storage BMP.				Keith Smith (ED19)	4-3818	
Implement Haz Mat storage BMP.				Dion Jones (ED16)	4-8637	
Implement Haz Waste storage BMP.				Dave Lehner (SD73)	4-9033	
7	Storage Yard		Implement Storage Yard BMP.	Dave Lehner (SD73)	4-9033	
			Implement AST BMP.	David Glover (EG&G)	4-4772	
			Evidence of leaks, no containment.	Implement Haz Mat storage BMP.	Joe Stiles (SCSC)	4-4460
				Implement Storage Yard BMP.	Joe Stiles (SCSC)	4-4460
			E. Generator is wet around valve	Implement AST BMP.	David Glover (EG&G)	4-4772

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TABLE C-3

Area 4400

Potential Sources of Storm Water Contaminants and Recommended Corrective Actions

Area	Bldg. No.	Source	Comment	BMP	Contact	Extension
7 (cont'd)	4481 (cont.)	Haz Waste/Haz Material Storage	Gap between doors of clamshell	Implement Haz Waste storage BMP.	Don Lovell (MEV)	4-7792
	4482	Vehicle Wash Rack		Implement Vehicle Washing BMP.	Joe Stiles (SCSC)	4-4460
	4483	Aboveground Storage Tank Vehicle Maint. outside bldg. Vehicle parking, leaking oil Dumpster for scrap metal		Implement AST BMP.	Joe Stiles (SCSC)	4-4460
				Cover storm drain inlets, clean up spills	Joe Stiles (SCSC)	4-4460
				Repair leaks and inspect equipment	Joe Stiles (SCSC)	4-4460
				Cover Dumpster with tarp	Joe Stiles (SCSC)	4-4460
	4490	Storage Yard		Implement Storage Yard BMP.	Carl Fried (EG&G)	4-4020
	4493	Aboveground Storage Tank Erosion	Evidence of tank overflow and generator leaks. Service and remove used absorbents	Implement AST BMP.	David Glover (EG&G)	4-4772
			South of new bldg. addition	Implement Erosion BMP	David Glover (EG&G)	4-4772
4498	Storage Yard		Implement Storage Yard BMP.	Rob Barnes (SCSC)	4-4775	
4499	Storage Yard		Implement Storage Yard BMP.	Rob Barnes (SCSC)	4-4775	

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TABLE C-4

Area 4500

Potential Sources of Storm Water Contaminants and Recommended Corrective Actions

Area	Bldg. No.	Source	Comment	BMP	Contact	Extension
8	4566	Aboveground Storage Tank	Clean out containment area.	Implement AST BMP.	David Glover (EG&G)	4-4772
	4567	Aboveground Storage Tank (3)	West, AST valve is leaking, evidence of product in containment area.	Implement AST BMP.	John Nugent (TBE)	4-9472
		Aboveground Storage Tank (1,2)		Implement AST BMP.	Roger Anderson (EG&G)	4-7969
10	4515	Storage yard, equip. parking		Implement Storage Yard BMP	Carlos Wray (LB&B)	4-8699
		Crane leaking oil on ground		Inspect containment area monthly.	Carlos Wray (LB&B)	4-8699
12	4514	Storage yard		Implement Storage Yard BMP	Wendell Rylant (TD71)	4-1249
	4539	Hazardous Waste Storage		Implement Haz Waste storage BMP.	Tommy Barron (LB&B)	4-1283
	4540	Aboveground Storage Tank (2) Hazardous Material Storage RP-1 fuel storage trailer		Implement AST BMP.	Tommy Barron (LB&B)	4-1283
				Implement Haz Mat storage BMP.	Tommy Barron (LB&B)	4-1283
				Implement AST BMP.	John Nugent (TBE)	4-9472
	4548	Hazardous Material Storage Hydraulic oil tank Mobile equipment (fork lift) Hazardous Waste Storage	Drums under cover, no containment.	Implement Haz Mat storage BMP.	Thomas Piff (LMC)	4-4322
			No containment.	Implement AST BMP.	Thomas Piff (LMC)	4-4322
			Portable generator leaking, absorbent underneath.	Inspect for leaks monthly.	Thomas Piff (LMC)	4-4322
	TPTA	Drum storage Equipment Parking	Unlabeled drum, no containment.	Implement Haz Mat storage BMP.	Carlos Wray (LB&B)	4-8699
				Implement Storage Yard BMP	Carlos Wray (LB&B)	4-8699
4553	Hazardous Waste Storage		Implement Haz Waste storage BMP.	Carlos Wray (LB&B)	4-8699	
4554	Hazardous Material Storage		Implement Haz Mat storage BMP.	Thomas Piff (LMC)	4-4322	
4583	Aboveground Storage Tank Process equipment Hazardous Material Storage		Implement AST BMP.	David Glover (EG&G)	4-4772	
			Implement AST BMP.	Tommy Barron (LB&B)	4-1283	
		Clean up used absorbent	Implement Haz Mat storage BMP.	Tommy Barron (LB&B)	4-1283	

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Area 4500
Potential Sources of Storm Water Contaminants and Recommended Corrective Actions

Area	Bldg. No.	Source	Comment	BMP	Contact	Extension	
12 (cont'd)	4584	Hazardous Material Storage		Implement Haz Mat storage BMP.	Dolphe Mills (LB&B)	4-3142	
		Aboveground Storage Tank	Portable	Implement AST BMP.	Wendell Rylant (TD71)	4-1249	
	4588	Storage Yard		Implement Storage Yard BMP	Thomas Piff (LMC)	4-4322	
	4597	Aboveground Storage Tank		Implement AST BMP.	John Nugent (TBE)	4-9472	
13	4585	Hazardous Material Storage		Implement Haz Mat storage BMP.	Wendell Rylant (TD71)	4-1249	
		Storage yard, equip. parking		Implement Storage Yard BMP	Wendell Rylant (TD71)	4-1249	
16	4523	Aboveground Storage Tank		Implement AST BMP.	Sean McMyler (LB&B)	4-8711	
	4524	Aboveground Storage Tank		Implement AST BMP.	Sean McMyler (LB&B)	4-8711	
		Hazardous Material Storage	Paint cans and batteries outside, no containment.	Implement Haz Mat storage BMP.	Sean McMyler (LB&B)	4-8711	
		Hazardous Waste Storage		Implement Haz Waste storage BMP.	Sean McMyler (LB&B)	4-8711	
	4532	Storage Yard, Equip Parking			Implement Storage Yard BMP	Sean McMyler (LB&B)	4-8711
			Haz Waste Storage		Implement Haz Waste storage BMP.	David Cole (LB&B)	4-8742
	4550	Portable Generators			Implement AST BMP.	Carlos Wray (LB&B)	4-8699
Aboveground Storage Tanks (7)		Six indoors, one outside		Implement AST BMP.	Preston Jones (NASA)	4-5716	
Hyd Hill		Storage Yard, Equip Parking		Implement Storage Yard BMP	Wendell Rylant (TD71)	4-1249	

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TABLE C-5

Area 4600–West Test

Potential Sources of Storm Water Contaminants and Recommended Corrective Actions

Area	Bldg. No.	Source	Comment	BMP	Contact	Extension
O-8	W. of 4680	Storage Area, equip parking		Implement Storage Yard BMP	Carlos Wray (LB&B)	4-8699
	W. of 4680	Tanker Truck Parking Area		Implement AST BMP	John Nugent (TBE)	4-9472
8	4666	Aboveground Storage Tank	Clean out containment area.	Implement AST BMP	David Glover (EG&G)	4-4772
	4667	Underground Storage Tank	Pump leaking	Implement UST BMP	John Nugent (TBE)	4-9472
		Oil filters Vehicle Fueling Station	Evidence of past release	Implement Fueling Area BMP	John Nugent (TBE)	4-9472
	W. of Lem Rd	Storage Yard		Implement Storage Yard BMP	Scottie Barnes (TD71)	4-4761
	Boneyard	Storage yard (Rylant Yard)		Implement Storage Yard BMP	Wendell Rylant (TD71)	4-1249
19	4658	Portable Generator	No containment	Implement AST BMP	David Glover (EG&G)	4-4772
	4671	Storage Yard		Implement Storage Yard BMP	Tony Yarbrough (CII)	4-8358
		Hazardous Waste Storage	Drums not in containment	Implement Haz Waste Storage BMP	Tony Yarbrough (CII)	4-8358
	4673	Aboveground Storage Tank		Implement AST BMP	John Nugent (TBE)	4-9472
		Underground Storage Tank Fuel loading area		Implement UST BMP Manage according to SPCC Plan.	John Nugent (TBE) John Nugent (TBE)	4-9472 4-9472
	4674	Aboveground Storage Tank		Implement AST BMP.	David Glover (EG&G)	4-4772
4675	Aboveground Storage Tank		Implement AST BMP.	Roger Anderson (EG&G)	4-7969	
	4676	Aboveground Storage Tank	Cleanup soil around tank	Implement AST BMP	John Nugent (TBE)	4-9472
		Groundwater Treatment System		Inspect Monthly for Leaks and Maintenance	David Glover (EG&G)	4-4772
9	Boneyard	Storage yard (Gilesby Flats)		Implement Storage Yard BMP	Wendell Rylant (TD71)	4-4916
O-22B	4692	Aboveground Storage Tank		Implement AST BMP	David Glover (EG&G)	4-4772
O-22G	4696	Aboveground Storage Tank	Pump out containment area	Implement AST BMP	Mat Bevill (NASA)	4-6941
O-6	4699	Hydraulic Tank	Pump out containment area	Implement AST BMP	Scottie Barnes (TD71)	4-4761

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Area 4600-North

Potential Sources of Storm Water Contaminants and Recommended Corrective Actions

Area	Bldg. No.	Source	Comment	BMP	Contact	Extension
18	4607	Aboveground Storage Tank		Implement AST BMP.	John Nugent (TBE)	4-9472
	4610	Aboveground Storage Tank (2)		Implement AST BMP.	David Glover (EG&G)	4-4772
	4611	Aboveground Storage Tank (2) Vehicle Fueling Area		Implement AST BMP.	Joe Stiles (SCSC)	4-4460
					Joe Stiles (SCSC)	4-4460
	4612	Aboveground Storage Tank (EM) Drum Storage Haz Material/Waste storage		Implement AST BMP. Implement Haz Waste Storage BMP	David Glover (EG&G) Nance Jo Ogozalek (ED33)	4-4772 4-8933
				Implement Haz Mat/Waste storage BMP.	Mark Talton (ED33)	4-2584
	E. of 4616	Storage Yard		Implement Storage Yard BMP.	Randy Stephens (ED26)	4-1336
	4618	Aboveground Storage Tank (2)		Implement AST BMP.	Greg Osburn (ED27)	4-2368
	4619	Storage yard Storage yard Aboveground Storage Tank (EM) Haz Material storage Haz Material/Waste storage		Implement Storage Yard BMP	Victor Davis (ED27)	4-9013
			East of bldg.	Implement Storage Yard BMP	Victor Davis (ED27)	4-9013
				Implement AST BMP.	Joe Stiles (SCSC)	4-4460
			South of bldg.	Implement Haz Material Storage BMP	Randy Stephens (ED26)	4-1336
			SW of bldg.	Implement Haz Mat/Waste storage BMP.	Randy Stephens (ED26)	4-1336
	E. of 4620	Haz Material/Waste storage		Implement Haz Mat/Waste storage BMP.	Randy Stephens (ED26)	4-1336
4632	Aboveground Storage Tank		Implement AST BMP.	Joe Stiles (SCSC)	4-4460	
4633	Aboveground Storage Tank		Implement AST BMP.	Joe Stiles (SCSC)	4-4460	
4636	Aboveground Storage Tank		Implement AST BMP.	Joe Stiles (SCSC)	4-4460	
4640	AST storage for Haz Waste (6 bays) Drum Storage Contaminated Soil Storage Haz Waste Storage Storage yard		Implement Haz Waste Storage BMP	Chuck Payne (EG&G)	4-9578	
			Implement Haz Waste Storage BMP	Chuck Payne (EG&G)	4-9578	
			Implement Haz Waste Storage BMP	Chuck Payne (EG&G)	4-9578	
			Implement Haz Waste Storage BMP	Chuck Payne (EG&G)	4-9578	
			Implement Storage Yard BMP	Chuck Payne (EG&G)	4-9578	

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TABLE C-6
Area 4600-North
Potential Sources of Storm Water Contaminants and Recommended Corrective Actions

Area	Bldg. No.	Source	Comment	BMP	Contact	Extension
18 (cont'd)	4645 S.	Storage yard		Implement Storage Yard BMP	David Glover (EG&G)	4-4772
	4649	Aboveground Storage Tank (2)		Implement AST BMP.	David Glover (EG&G)	4-4772
	4650	Storage Yard, equip parking		Implement Storage Yard BMP.	David Glover (EG&G)	4-4772
	4653	Storage yard		Implement Storage Yard BMP	John Nugent (TBE)	4-9472
	4663	Aboveground Storage Tank (6)		Implement AST BMP.	David Glover (EG&G)	4-4772
16	4647	Underground Storage Tank		Implement UST BMP.	John Nugent (TBE)	4-9472
	4660	Aboveground Storage Tank (2) Storage yard, equip parking		Implement AST BMP. Implement Storage Yard BMP	Roger Anderson (EG&G) Roger Anderson (EG&G)	4-7969 4-7969
17	4653	Aboveground Storage Tank		Implement AST BMP.	David Glover (EG&G)	4-6023
	4655	Storage yard		Implement Storage Yard BMP.	Scott Barnes (TD71)	4-4761
	4656	Storage yard Aboveground Storage Tank		Implement Storage Yard BMP Implement AST BMP.	Lemuel Vaughn (TD55) Lemuel Vaughn (TD55)	4-9472 4-9472
23	4623	Storage yard		Implement Storage Yard BMP	Frieda Lowery (ED36)	4-2507
		Haz Material/Waste storage		Implement Haz Mat/Waste storage BMP.	Frieda Lowery (ED36)	4-2507
25	4628	Pipelines/ASTs		Implement AST BMP.	Bob Jacobs (IITRI)	4-9539
4	4648	Storage Yard		Implement Storage Yard BMP	John Nugent (TBE)	4-9472

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TABLE C-7

Area 4700

Potential Sources of Storm Water Contaminants and Recommended Corrective Actions

Area	Bldg. No.	Source	Comment	BMP	Contact	Extension	
22	4700	3 ASTs with Haz Mat Storage		Implement AST BMP/ Haz Mat BMP.	John Troy (EG&G)	4-4787	
	4703	Hazardous Waste Storage		Implement Haz Waste BMP	Carl Roberson (EG&G)	4-1060	
	4704	Underground Storage Tank		Implement UST BMP.	Wyatt Poe (ASRI)	4-1052	
		Aboveground Storage Tank		Implement AST BMP.	Wyatt Poe (ASRI)	4-1052	
	4705	Storage Yard		Implement Storage Yard BMP.	Clarence Yell (ASRI)	4-1062	
		Aboveground Storage Tank	Emergency generator, clean out containment area	Implement AST BMP.	David Glover (EG&G)	4-4772	
		Aboveground Storage Tank	TCE	Implement AST BMP.	Kathy McGee (ASRI)	4-1056	
		Aboveground Storage Tank	2 portable tanks	Implement AST BMP.	Kendal Coker (ASRI)	4-1065	
		Metal Shavings Bin			Kathy McGee (ASRI)	4-1056	
	4707	Haz Mat/Haz Waste Storage	Drums not in containment	Implement Haz Mat/Waste BMP.	Kathy McGee (ASRI)	4-1056	
		4707	Storage Yard	Southwest	Implement Storage Yard BMP.	Charles Henderson (ED34)	4-2727
		Storage Yard	Southeast	Implement Storage Yard BMP.	Charles Henderson (ED34)	4-2727	
		Aboveground Storage Tank #2	No containment	Implement AST BMP.	Frank Zimmerman (EH23)	4-4958	
		Aboveground Storage Tank #1		Implement AST BMP.	David Glover (EG&G)	4-4772	
	4708	Aboveground Storage Tank #3	No cover, no containment	Implement AST BMP.	Charles Henderson (ED34)	4-2727	
Aboveground Storage Tank (2)		Cleanup absorbent under Centravac	Implement AST BMP,	David Glover (EG&G)	4-4772		
	Haz Material/Waste Storage	Grease vat area needs to be cleaned. Southwest area under cover but no containment.	Implement Haz Mat/waste BMP.	John Peirson or Kay Rains (BAC)	461-2670		

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Area 4700
Potential Sources of Storm Water Contaminants and Recommended Corrective Actions

Area	Bldg. No.	Source	Comment	BMP	Contact	Extension
22 (cont'd)		Storage Yard		Implement Storage Yard BMP.	John Peirson or Kay Rains (BAC)	461-2670
	4711	Storage Yard	Clean up metal shavings around bin area.	Implement Storage Yard BMP.	Jeff Norris (LMC)	4-1716
	4712	Aboveground Storage Tank	Service generator	Implement AST BMP.	David Glover (EG&G)	4-4772
	4716	Haz Mat/Haz Waste Storage	Clean up paint trash	Implement Haz Mat/Waste BMP.	Rhonda Pepper (TD74)	4-5432
	4718	Aboveground Storage Tank (3)	Containment valve opened. Diesel supply shows evidence of dripping. Generator needs servicing.	Implement AST BMP.	David Glover (EG&G)	4-4772
	4718-3	Aboveground Storage Tank (2)		Implement AST BMP.	David Glover (EG&G)	4-4772
	4723	Haz Material Storage		Implement Haz Material Storage BMP	Jimmy Motes (CORTEZ III)	4-2198
	4731	Storage Yard		Implement Storage Yard BMP	Wayne Ellenburg (ASRI) or Jada Brown	4-1054
	4732	Aboveground Storage Tank		Implement AST BMP	Rhonda Pepper (TD74)	4-5432
	4734	Aboveground Storage Tank		Implement AST BMP.	Rhonda Pepper (TD74)	4-5432
	4739	Empty Drum Storage		Implement Material Storage BMP	Wayne Ellenburg (ASRI)	4-1054
	4744 W.	Aboveground Storage Tank & Oil Water Separator		Implement AST BMP.	John Nugent (TBE)	4-9472
	South	Drum Storage		Implement Haz Material Storage BMP.	Rhonda Pepper (TD74)	4-5432
	4745	Haz Waste Storage		Implement Haz Waste BMP	Wayne Ellenburg (ASRI) or Jada Brown	4-1054
	4745	Sandblasting Operations		Implement Sand Blasting BMP	David Glover (EG&G)	4-4772

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Area 4700

Potential Sources of Storm Water Contaminants and Recommended Corrective Actions

Area	Bldg. No.	Source	Comment	BMP	Contact	Extension
22 (cont'd)	4747	Underground Storage Tank Empty	Pump has been leaking, clean up containment pad.	Implement UST BMP.	John Nugent (TBE)	4-9472
	4754	Haz Material/waste Storage		Implement Haz Mat/waste BMP.	John Peirson or Kay Rains (BAC)	461-2670
		Storage Yard		Implement Storage Yard BMP.	John Peirson or Kay Rains (BAC)	461-2670
	4755	Aboveground Storage Tank (2)	West, clean out containment area	Implement AST BMP.	Roger Anderson (EG&G)	4-7969
		Aboveground Storage Tank (1)	West, clean out containment area	Implement AST BMP.	David Glover (EG&G)	4-4772
		Aboveground Storage Tank (3)	North	Implement AST BMP.	David Glover (EG&G)	4-4772
	4758	Haz Material/Waste Storage		Implement Haz Mat/waste BMP.	Wayne Ellenburg (ASRI) or Jada Brown	4-1054
	4760	Underground Storage Tank		Implement UST BMP	Wayne Ellenburg (ASRI)	4-1054
	4765	Haz Mat Storage	No containment	Implement Haz Mat BMP.	John Pierson (Boeing)	461-2670
	4767	Haz Waste Storage	Haz Mat drums with no containment	Implement Haz Waste BMP	Louise Semmel (ED34)	4-3650
	4777	Storage Yard		Implement Storage Yard BMP	Rhonda Pepper (TD74)	4-5432
	Lagoon	Haz Waste Storage	Occasional Storage Area	Implement Haz Waste BMP	Amy Keith (AD10)	4-7434

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TABLE C-3

Area 4800

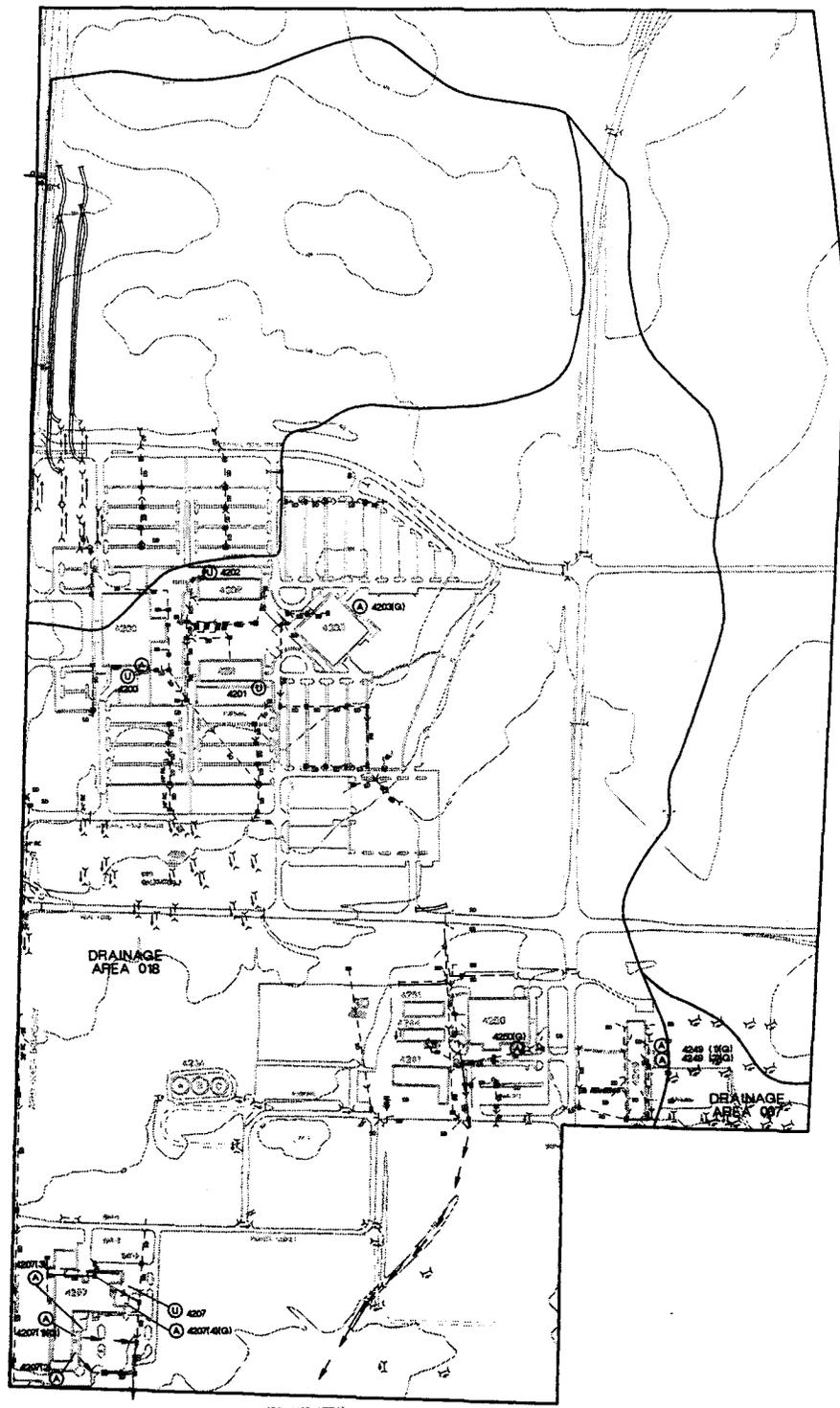
Potential Sources of Storm Water Contaminants and Recommended Corrective Actions

Area	Bldg. No.	Source	Comment	BMP	Contact	Extension
	4817	Aboveground Storage Tank (1)		Implement AST BMP	Ernie Graham (AD42)	4-1617
		Aboveground Storage Tank (2)		Implement AST BMP	Ernie Graham (AD42)	4-1617
		Hazardous Waste Storage		Implement Haz Waste Storage BMP	Ernie Graham (AD42)	4-1617

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APPENDIX D

Maps



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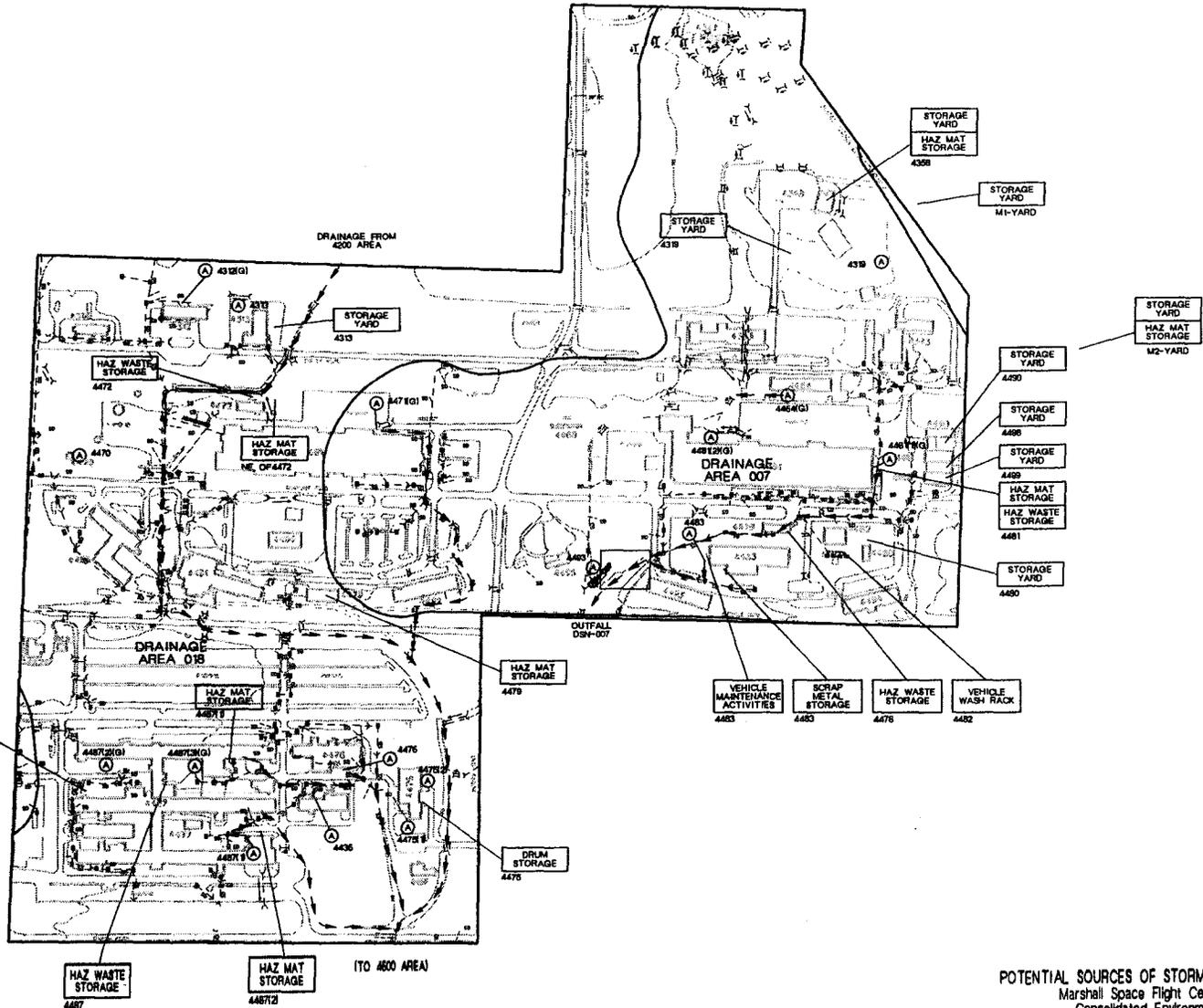
- LEGEND**
- BASIN BOUNDARIES
 - STORM WATER OUTFALL
 - STORM WATER INFALL
 - UNDERGROUND STORAGE TANK
 - ABOVEGROUND STORAGE TANK AND ID NO.
 - PREDICTED SPILL FLOW DIRECTION
 - STORMWATER CATCH BASIN
 - DRAINAGE
 - UNDERGROUND CULVERT



4200 AREA
 POTENTIAL SOURCES OF STORMWATER POLLUTION
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- LEGEND**
- BASIN BOUNDARIES
 - DSN-007 STORM WATER OUTFALL
 - I-7 STORM WATER INFALL
 - ⊕ UNDERGROUND STORAGE TANK
 - ⊙ ABOVEGROUND STORAGE TANK AND ID NO.
 - PREDICTED SPILL FLOW DIRECTION
 - ▣ STORMWATER CATCH BASIN
 - DRAINAGE
 - - - UNDERGROUND CULVERT

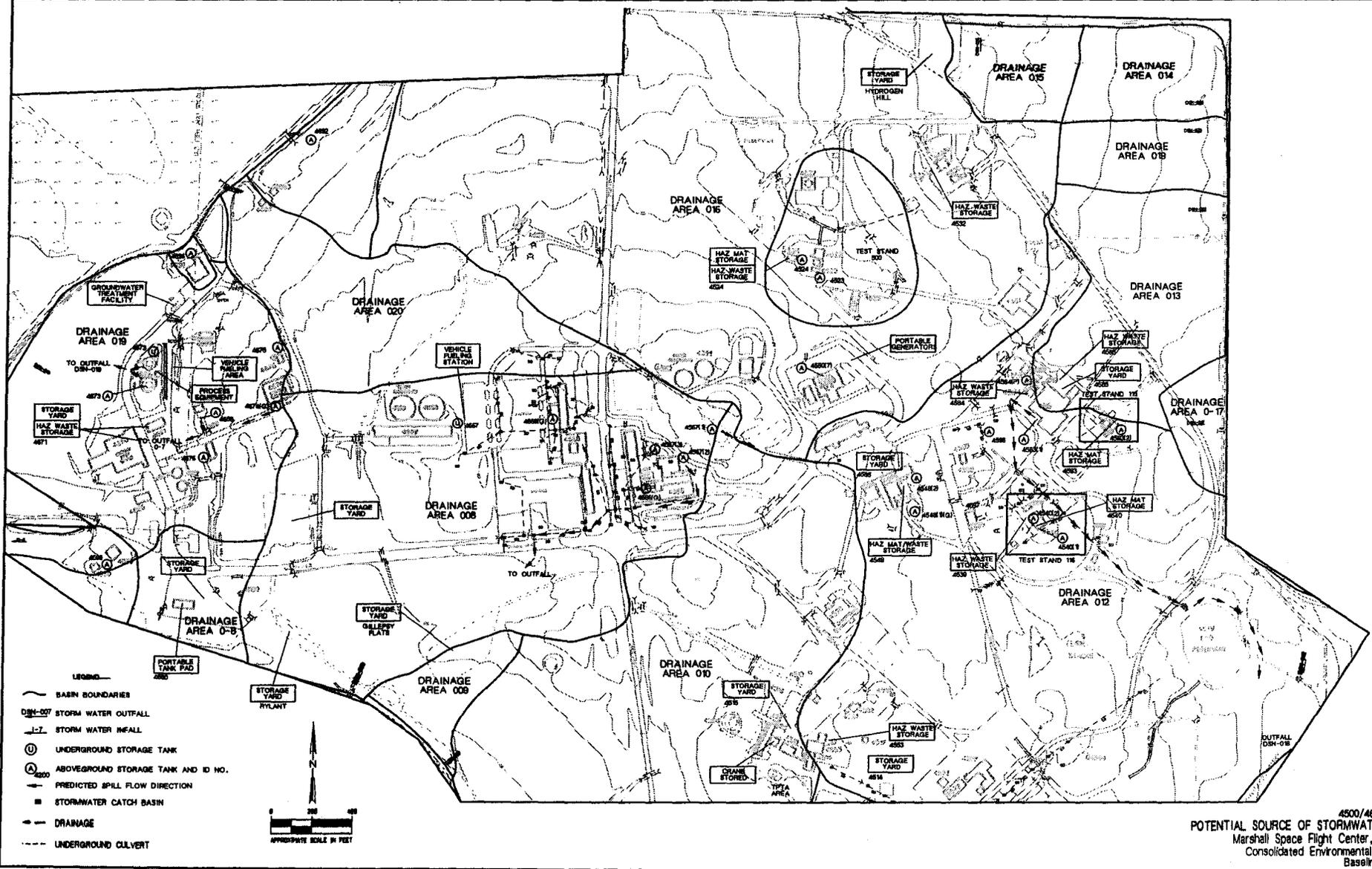


4300/4400 AREA
 POTENTIAL SOURCES OF STORMWATER POLLUTION
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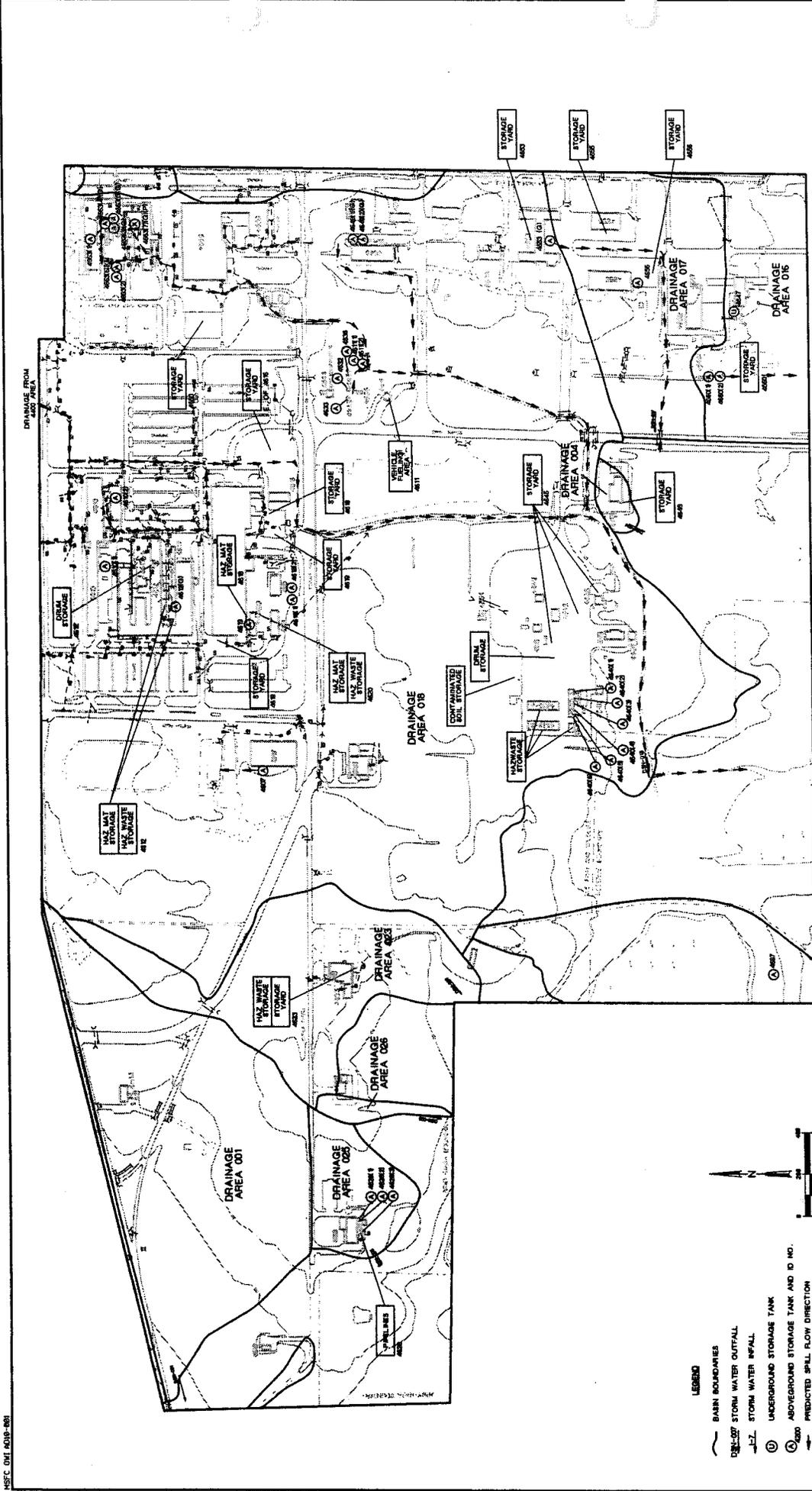
MSFC OVI AD10-001



4500/4600 TEST AREA
 POTENTIAL SOURCE OF STORMWATER POLLUTION
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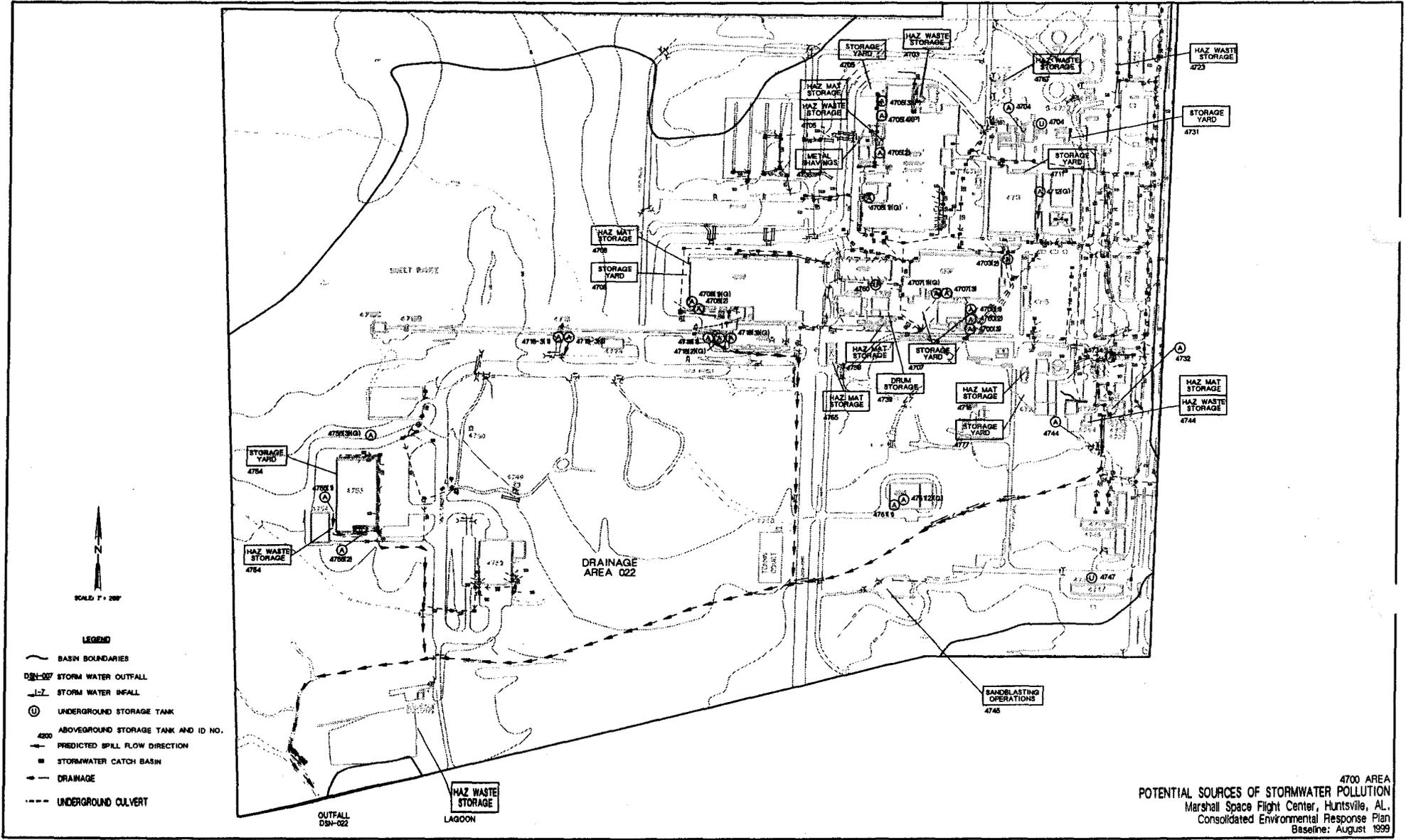


**4600 AREA
 POTENTIAL SOURCES OF STORMWATER POLLUTION**
 Marshall Space Flight Center, Huntsville, AL
 Consolidated Environmental Response Plan
 Baseline, August, 1999

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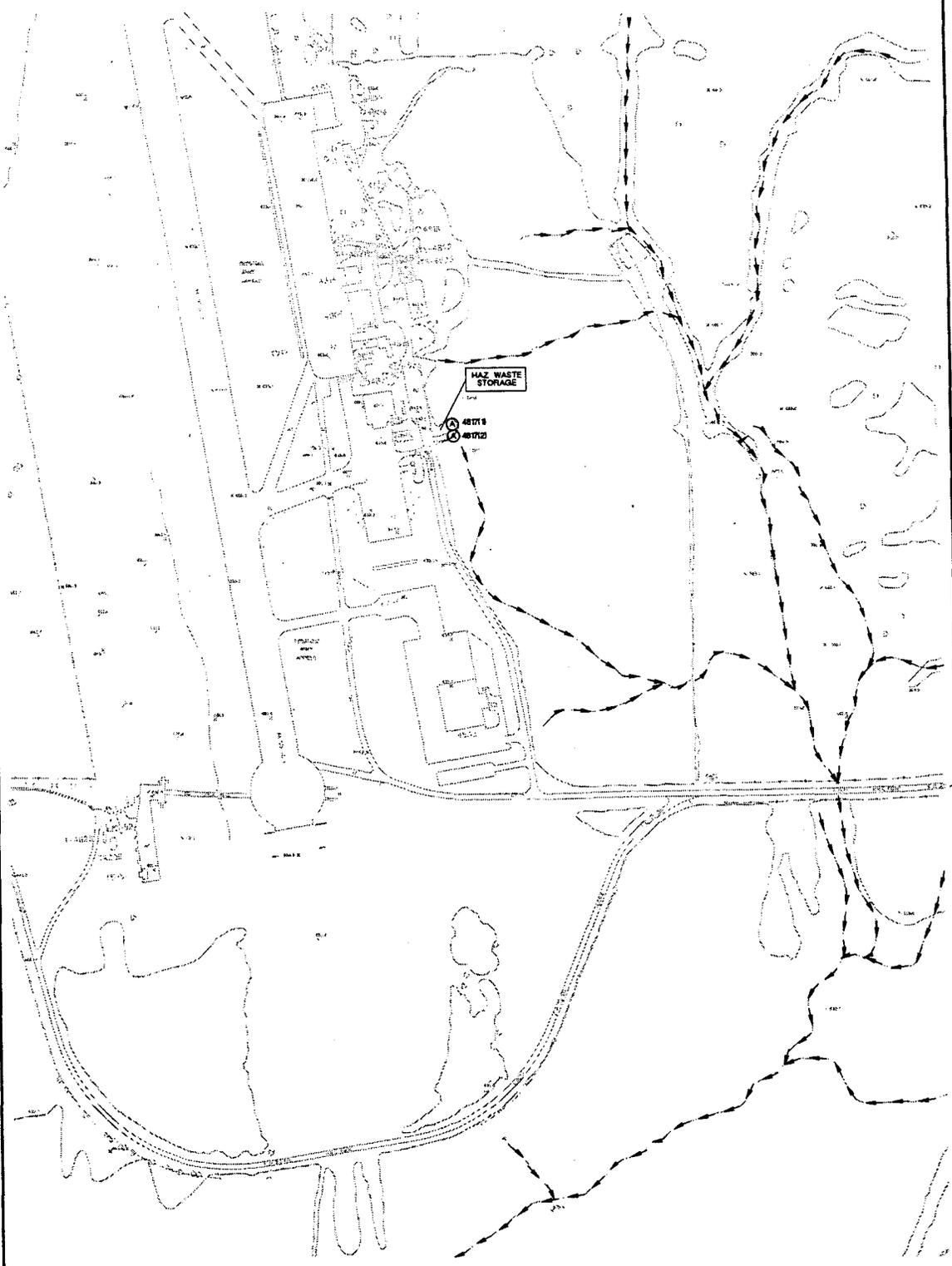
HSEC-DWG-4600-001

MSFC OMI AD10-001



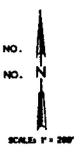
4700 AREA
 POTENTIAL SOURCES OF STORMWATER POLLUTION
 Marshall Space Flight Center, Huntsville, AL.
 Consolidated Environmental Response Plan
 Baseline: August 1999

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- LEGEND**
- BASIN BOUNDARIES
 - ① UNDERGROUND STORAGE TANK AT FACILITY NO.
 - ② ABOVEGROUND STORAGE TANK AT FACILITY NO.



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APPENDIX E

Equipment List

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APPENDIX E

Equipment List

Redstone Arsenal Fire Department
HAZMAT Unit
Equipment Inventory-General

Booms	Absorbent Pads
Sweeps	Decontamination Showers
Decon. Pools	Decon. Chemicals for acids, bases, poisons, hydrocarbons
Plastic Sheeting	Tarps. (Vinyl)
Oil Absorbents	Tool Kits (non-sparking & Regular)
Hand tools	Leak kits (Edwards & Cromwell)
Patch kits	Vent kits
Plug kits	Chlorine A & B kits
SCBA's	Emergency Medical Equipment
Confined space equipment	High Angle rescue equipment
Hurst Rescue equipment	Vetter plugs
Vetter lift bags	weather station
Laptop computer/printer	Cameo/aloha programs
Reference manuals	pH paper
Multi gas detectors	Cool vest
Various digging equip.	Level B suits
Level A suits	Flash covers for level A
Cryogenic suits	Gloves/boots/helmets
Transfer pumps	Brooms/brushes
Stokes basket	Back board
Blankets	

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Redstone Arsenal Fire Department
HAZMAT Unit
Equipment Inventory (cont'd)

Specialized Equipment	
Monitoring Equipment	Amount
AIM 3000 Gas Detectors	3
Chemtex Suit Alert Monitors	12
Davis Weather Monitor II (Wind Speed/Direction, Humidity)	1
Spylifter Chemical Classifier	8
pH Paper (rolls)	4
Vetter System Inflatable Pipe Plugs (4" to 48") with piping and manifolds	4
Foam System (Nozzle/tube, eductor, Stabilizer System with nozzle, AFFF, AFFF/ATC & foam stabilizer)	2
Barrier Tape (rolls)	6
Various Reference Books & Materials/Command Post Materials (Charts, timers, binoculars)	
Duct Tape (cases)	2
Poly-Overpack Salvage Drums	3
Plug 'n' Dike (dry gallons)	12
Suit Inflation Test Kit	1
Inside Suit Communication System	14
EMS Basic Life Support Kits (O2, Burn, Bandages, Splints, irrigation, etc.)	2
CAMEO System (Computer Aided Management of Emergency Operations) HAZMAT Database	1
UNIMAC Washer/Contaminant Extractor	1
Quartz Halogen Portable Lighting	1
Oxy-acetylene Welding/Cutting Torches	2
Vetter Lift Bag System (Tank Pressure Patch)	1
Personal Protective Equipment	
CHEMFAB 6000 Level A Teflon Suits (with Interspiro Pass-thru)	7
CHEMFAB Flash Covers	4
Lifeguard Responder Level A Disposable Suits	9
Lifeguard Flash Covers	4
Kappler Level B Encapsulating Suits (Disposable)	12
Kappler Splash Coveralls (Disposable) (Box)	4
Chemical Boots (pair)	7
Cryogenic Suits	4
Hard Hats	13
Gloves (Various Types & Sizes; Inner & Outer)	
Dust Masks (box)	1
Hospital Blankets	4
Interspiro One Hour SCBA with extra bottles	10
Nomex Coveralls (per responder)	1
Standard Firefighting Gear (per responder)	1

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**Redstone Arsenal Fire Department
HAZMAT Unit
Equipment Inventory (cont'd)**

Decontamination Equipment	
Garbage Cans	7
Kiddie Pool	1
Disposable Decon Pools	2
Decon Shower	3
Electric Transfer Pump	1
Hand Transfer Pump	2
Plastic Sheeting (10' & 20' rolls)	5
Tarps (10' x 10')	2
Tarp (20' x 20')	1
Disposable Decon Shower (Self-contained)	1
Plastic Buckets (5 gal.)	8
Aircraft Brushes (5' handle)	6
Tire Brushes (18" handle)	6
Plastic Milk Cases	6
PVC Water Manifold	1
Garden Hose with Nozzles, Sprinkler Wands & Cutoff Wyes	3
Absorbing/Neutralizing/Diking Supplies	
Pads, Booms, Sweeps & Pillows (bales) (for organic/inorganic/water insolubles)	8
Oil Dry (Clay) (bags)	24
Lockit System I (water insoluble hydrocarbons) (cans)	10
Lockit System II (water soluble) (cans)	5
Jeannesorb for Hydrocarbons on Water (bags)	5
Color Safe Dry Neutralizer for Acids (boxes)	3
Color Safe Dry Neutralizer for Caustics/Bases (boxes)	3
Sand Bags (for diking)	40
Chemicals & Cleaners	
Dry Lime (bags)	2
Sodium Carbonate (bucket)	1
Sodium Hydroxide-Lye (bucket)	1
Trisodium Phosphate (bucket)	1
HAZMAT Tools	
Complete Kits:	
Edwards & Cromwell Mfg.:	
Kit AE Universal Leak Control (standard)	2
Kit F Roll-over Kit (no-wrap around with wing nut wrenches)	1
Kit A-2 For Giant Holes (giant T-patch, ball plug & taper surface plug)	1

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**Redstone Arsenal Fire Department
HAZMAT Unit
Equipment Inventory (cont'd)**

Kit C-1 Vented Pipe Plugs with Valves (inside the pipe, 1" - 4")	1
Kit C-2 External Pipe Patching (1/2" - 4")	1
5" C-Plugs (vented)	2
Crash Kit (Crash/Fire/Rescue)	1
Red Box Kit (miscellaneous wrenches non-spark GSA)	1
Blue Box Kit (drum leaks, various non-spark tools)	1
Chlorine Institute A Kit (for 100-150 lb. cylinders)	1
Chlorine Institute B Kit (for 1 ton cylinders)	1
Plug Kit (wooden wedges, cones, etc.)	1
Plug Kit (rubber ball)	1
Other HAZMAT Tools:	
Tank Truck Dome Clamps (adjustable)	5
Pipe Wrenches (Sizes 8" - 36")	10
Chain Pipe Wrenches (40")	2
Bolt Cutters (36")	2
Pry Bars (38")	3
"C" Clamps (Range 4" - 24")	9
Shovels (Square, round, teflon, scoop, snow)	12
Push Brooms (Street)	2
Push Brooms (24")	2
Water Squeegees	2
Wheel Barrow	1
PVC Pipe (10' x 4")	2
PVC Pipe (10' x 8")	1
Rescue	
Hurst Spreader (Jaws of Life)	1
Hurst Palledin tool (spreader/cutter)	1
Hurst Pump Unit	1
Hurst tip Assortment	1
Airchisel Kit	1
Set Hurst chains	1
Complete set of Step Chocks for stabilization	1
Detection Equipment	
Weather pack weather station (works with cameo/Aloha programs)	1
AIM 3500 GAS Detection Wands	2
AIM 4501 GAS Detection Unit (internal pump)	1
Medical	
O ₂ Unit with assortment of masks	4

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Redstone Arsenal Fire Department
HAZMAT Unit
Equipment Inventory (cont'd)

Suction Unit	1
Oregon Spine Splint Unit	1
Stokes Baskets	2
Backboard	1
Reeve's sleeve backboard unit	1
Air Bottles	
Survivair 2216 psi Bottles (use with air chisel)	3
Inspiro 4500 psi Bottles	4
MSA 4500 psi Bottles and air Packs	5
Cool Suits	
Cool vest (submersible type)	10
Cool Scarves (submersible type)	10
Confined Space/High Angle Rescue Equipment	
Rescue tripod	1
Retractable Recovery System	1
Rescue Winch/Handle	1
3:1 System bag ½" Rope	1
4:1 System bag 5/8" Rope	1
Full Body Harness bag	1
Litter Attachment bag	1
Rappelling Harness bag	1
Hardware Bag	1
Anchor Bag	1
Rescue Rope bags	2
Venter Pipe Plugs	3
Foot Pump	3
Assorted Cribbin	1
Vetter Air Bags	3
Hurst Rams	2
Sawzall Kit	1
Laki A suits	18
Flash cover	8
Level B	8
Cryogenic Suits	4
Chemical Warfare	8
Level C	8
Boots	12
Rubber Gloves	25
Industrial Gloves	12

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**Spill Response Supplies/Equipment
HAZMAT Truck Inventory:**

Item/Description	Quantity Required
Vinyl Disposable Gloves	50 pair
Nitrile Gloves	48 pair
Neoprene Gloves	20 pair
Work Gloves	12 pair
Face Shield	4 each
Goggles	5 each
XXL Saranex Suits	5 each
XXL Tyvek Suits	20 each
Dust Mask	10 each
Ear Plugs	20 pair
Ear Muffs	4 pair
Flashlight, "D" cell	4 each
Repair Putty	1 box
Electrical Tape	1 roll
Duct Tape	6 rolls
Aluminum Tape	1 roll
Masking Tape	2 rolls
Chemical Reference Books	6 each
Rope	1 roll
Cheese Cloth	2 each
Scrub Brushes	4 each
Sample Bottles	2 glass/2 poly
Ground Wires	1 set
Joy Soap	2 bottles
Misc. Funnels/Scoops	6 each
Gap Seal (15 lbs.)	1 bucket
pH paper	2 boxes
Danger Tape	4 rolls
Caution Tape	4 rolls
Plastic Bags (trash)	1 box
Sample Bags	12 each
5-Gallon Lids	5 each
Wind Sock	1 each
Butyl Gloves	6 pair
Vinton Gloves	6 pair
Blue Multi-Chem Gloves	6 pair
Level A Suits	10 each
Escape Air (10 min.)	2 each
Hard Hats	6 each
Solo Cups	1 box
Eye Wash Bottle	6 each
Haz-Mat Boots	6 pair
Large Push Brooms	2 each
Pick Axes	2 each
Long-Handle Scrub Brush	2 each
Brooms (sweep)	2 each
Pipe Wrenches (24")	2 each
Brass Shovel	2 each
Plastic Shovels	2 each
Bolt Cutter	1 each

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**Spill Response Supplies/Equipment
HAZMAT Truck Inventory:**

Item/Description	Quantity Required
Chemical Grade Squeegee	2 each
Crow Bar	2 each
Spill Pads	4 bales
Oilup Sorbent Booms	2 packs
Fire Hydrant Coupling	1 each
Fire Hydrant Wrench	1 each
Fire Hose Nozzle	1 each
Hoses (fire)	2 each
Barrel Sling	1 each
Fire Hose/Garden Hose Adapter	1 each
Decon Containment	1 each
Hoses (water)	2 each
SCBA	4 each
Acid Neutralizer	5 gallons
Base Neutralizer	5 gallons
Buckets (3-gallon)	4 each
Portable Decon Shower	1 each
Plastic Sheeting	2 boxes
Drum Pump (manual)	1 each
Sand Bags	6 each
Portable Decon Sprayer	1 each
Pipe Patch Kit	1 each
Buckets (5-gallon plastic)	4 each
55-Gallon Open Top Drum	1 each
85-Gallon Overpack Drum	1 each
30-Gallon Open Top Poly Drum	1 each
Electric Drum Pump	1 each
Tank Tourniquet (suction)	1 each
Tank Tourniquet (magnetic)	1 each
Drum with Enretech	8 bags
Tool Box (brass tools)	1 each
Iron Rods	12 each
Drain Mat	1 each
Electrical Cord (extension)	1 each
Haz-Mat Response Kit	1 each

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Building 4761 Inventory

Item/Description	Quantity Required
Big Beam Flashing Light	1 each
Ultra Spill Berm	1 box
Master Flex Hose 073	4 boxes
Drain Cover	1 each
Sand Bags	20 each
Extension Cord	1 each
Level "A" Suit	4 each
Polyethylene Rope	1 roll
Cool Guard 200 Jacket	5 each
Pipe Patch Kit	1 each
Drum & Tank Kit	1 each
Brass Pipewrench	1 each
Brass Handtools (assorted)	1 each
Generator	1 each
Skilsaw	1 each
Peristaltic Pump	1 each
Fire Hose	2 each
Fire Hydrant Connector	1 each
Fire Hydrant Wrench	1 each
Barrel Sling	1 each
Absorbent Booms (small)	20 each
Oilup Sorbent Booms (5" x 10')	20 each
Oil Booms (10" x 10')	10 each
Danger Tape	2 rolls
Caution Tape	2 rolls
Face Shield	6 each
Goggles	6 each
Nitrile Gloves	24 pair
Work Gloves	12 pair
Absorbent Rolls	1 rolls
Absorbent Pads	10 packs
Haz-Sorb Pillows	10 each
Cheese Cloth	2 each
Ripple Cloth	2 rolls
M-8 Diaphragm Pump	2 each
M-4 Pump	2 each
Level "B" Suit	24 each
Level "C" Suit	24 each
Vise-Queen (20 x 100)	6 rolls
3-Gallon Buckets	5 each
5-Gallon Buckets w/Lids	10 each
Haz-Mat Boots	6 pair
Scoops (various sizes)	4 each
Funnels (various sizes)	4 each
Hardhat	10 each
Soda Ash (5 gallons)	4 each
Base Neutralizer	6 each
Push Brooms	2 each
Brooms (sweeping)	2 each
Brass Shovels	2 each
Plastic Shovels	2 each

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Building 4761 Inventory

Item/Description	Quantity Required
Chemical Squeegee	4 each
Inflatable Dike	1 each
Gas Can	1 each
Enretech 1	12 bags

HWSF INVENTORY

Item/Description	Quantity Required
Enretech 2	12 bags
Premium Floor Sweep	12 bags
Compressor	1 each

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APPENDIX F

**Worksheet for Alabama Department of Environmental
Management and the Environmental Protection Agency
Emergency Incident Reports**

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Appendix F

TABLE F-1
Information Needed for Follow-up Reporting to Regulatory Agencies

<p>Facility Information</p> <ul style="list-style-type: none"> • Name, address, and telephone number of the owner and operator • Name, address, and telephone number of the facility
<p>Material Information</p> <ul style="list-style-type: none"> • Name of substance • Characteristics of substance • Source of substance • Amount spilled and how that volume was determined
<p>Spill Site Information</p> <ul style="list-style-type: none"> • Description of the Spill Site <ul style="list-style-type: none"> – Size/extent of spill area – Secondary containment – Ground surface • Soils involved • Diversion/drainage channels involved • Surface waters affected • Sewers affected
<p>Event Information</p> <ul style="list-style-type: none"> • Date, time, and type of event • How was spill discovered? By whom? • Time of emergency report • Time at which spill was under control • Sampling done?
<p>Remediation Information</p> <ul style="list-style-type: none"> • Volume and description of contaminated materials generated • Disposal of materials generated including decontamination wastes • Site decontamination measures implemented

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**WORKSHEET FOR ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AND THE ENVIRONMENTAL PROTECTION AGENCY
EMERGENCY INCIDENT REPORTS**

Report the following required information when reporting emergencies to EPA and ADEM when human health or environment outside the facility could be threatened.

1. Name, Address, and Telephone Number of Owner/Operator	2. Name Address, and Telephone Number of Facility

EPA/State I.D. Number: _____

Date of Incident: ____/____/____

Time of Incident: _____

Description of Incident: _____

Dangerous Wastes Involved: _____

Quantity of Wastes Involved: _____

Extent of Injuries: _____

Disposition of Recovered Material (if any): _____

Estimated Quantity of Recovered Materials: _____

Assessment of actual or potential hazards to human health or the environment (when applicable):

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APPENDIX G
Summary of Hazards Associated with Typical MSFC Chemicals

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APPENDIX G

Summary of Hazards Associated with Typical MSFC Chemicals

Acids

Health Hazards

Skin, eyes, and clothing may become burned when they come into direct contact with liquid acid. Acid fumes, if inhaled, may burn the respiratory tract, including the mouth, nose, throat, and lungs. A fire may release acid fumes that are even more toxic than the acid itself. Untreated acid burns may be fatal. See material safety data sheet (MSDS) for specific information.

Physical Hazards

Acids react violently with alkalis, sulfides, cyanides, chlorinated organics, flammable organics, and metals. At high temperatures, acids may boil explosively if waste is applied. See MSDS for specific information.

Personal Protective Equipment

Eye protection can be achieved by using safety goggles or a full-face mask. Neoprene gloves, aprons or coats, and boots are appropriate. See MSDS for specific information.

Alkalis

Health Hazards

Alkalis burn the skin when in direct contact. Alkalis come in powder and liquid form and may also burn the eyes and mucous membranes on contact. Ingestion causes burning of the digestive tract. Inhalation causes burning of the nose, throat, and respiratory tract. See MSDS for specific information.

Physical Hazards

Alkalis react violently with acids, particularly if heated. See MSDS for specific information.

Personal Protective Equipment

Dry alkalis should be handled using gloves, goggles, aprons, and dust mask. Liquid alkalis should be handled using gloves, full-face mask, and coat with hood. See MSDS for specific information.

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Chlorinated Solvents

Health Hazards

There are two types of health effects associated with exposures to chlorinated solvents—acute and chronic. Acute effects of external contact include chloracne, dermatitis, and flaking skin. Ingestion causes poisoning and possible death. Inhalation at low levels may cause dizziness, nausea, headaches, and cyanosis. A high level may cause coma or death. Chronic effects from long-term exposure may cause permanent injury. Some chlorinated solvents are suspected carcinogens. See MSDS for specific information.

Physical Hazards

Chlorinated solvents generate toxic fumes (such as phosgene and hydrochloric acid) when burned. See MSDS for specific information.

Personal Protective Equipment

Protective equipment should be selected to prevent contact or inhalation. Gloves, goggles, and respirators should be worn.

Coolants

Health Hazards

Coolants (ethylene glycol, chlorodifluoromethane, and fluorotrichloromethane) may cause kidney failure, brain damage, and possible frostbite. See MSDS for specific information.

Physical Hazards

When burned, coolants may generate toxic gases. See MSDS for specific information.

Personal Protective Equipment

Rubber gloves and goggles should be worn, at a minimum.

Flammable Solvents

Health Hazards

Flammable solvents may cause dermatitis and dry skin, and are poisonous if ingested. Inhalation may cause narcosis, light-headedness, dizziness or euphoria, or nausea. Long-term exposure may cause kidney and liver damage. See MSDS for specific information.

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Physical Hazards

Flammable solvents may ignite if exposed to a heat source. Solvents are explosive over a wide range of concentrations in air; any leakage or vapors can cause fire to spread quickly. See MSDS for specific information.

Personal Protective Equipment

Gloves, goggles, aprons, and boots should be worn, at a minimum, when handling solvents. Solvents should be handled in a well-ventilated area. See MSDS for specific information.

Fuels-Gasoline/Diesel/RP

Health Hazards

Fuels may cause dermatitis and dry skin, and are poisonous if ingested. Inhalation may cause narcosis, light-headedness, dizziness or euphoria, or nausea. Vapors may irritate the eyes, nose, and throat. Long-term exposure may cause central nervous system, kidney, and liver damage. See MSDS for specific information.

Physical Hazards

Fuels may ignite if exposed to a heat source. Fuels are explosive over a wide range of concentrations in air; any leakage or vapors can cause fire to spread quickly. See MSDS for specific information.

Personal Protective Equipment

Gloves, goggles, and boots should be worn, at a minimum, when handling solvents. Solvents should be handled in a well-ventilated area. See MSDS for specific information.

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APPENDIX H
**Hazardous and Extremely Hazardous Substances
at MSFC**

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Appendix H

TABLE H-1
List of Hazardous and Extremely Hazardous Substances at MSFC Exceeding the Reportable Quantity
Sorted by Chemical (1997 Chemical Inventory)

Chemical Name	Building	Room	EHS	Maximum Stored (lbs)	RQ (lbs)
1,1,1-TRICHLOROETHANE	4621	CHEMICAL STORAGE		6895	1000
	4758	STORAGE		1710	1000
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	4705	ROOM# B119		6900	5000
1,4-DIOXANE	4621	CHEMICAL STORAGE		215	100
AMMONIA	4200	BASEMENT/WILLIA	X	680	100
	4479	GAS SHED	X	1500	100
	4491	ROOM# E-3	X	250	100
	4708	SOUTHSIDE	X	300	100
ARSENIC	4481	RM# 265/CLEAN RM.CAB# 1		6	1
		ROOM# 261C		4	1
	4483	CAGE		31	1
ARSENIC PENTOXIDE	4481	ROOM# 402A	X	8	1
ARSENIC TRIOXIDE	4612	ROOM# 1102		1	1
		ROOM# 1318		2	1
		ROOM# 1502		1	1
ASBESTOS	4621	CHEMICAL STORAGE		5	1
	4705	ROOM# B120		1	1
	4720	COOLER (THIOKOL)		50	1
	M-1 YARD	ARD/PM GROUP		300	1
BENZENE	4312	OUTSIDE		92	10
	4633	ABOVE GROUND TANKS		9990	10
	4692	SOUTH SIDE		56	10
	4693	UNDERGROUND TANKS		3203	10
	4708	STORAGE BLDG B		12	10
	4711	ROOM# W108		10	10
		ROOM# W179		10	10
CALCIUM HYPOCHLORITE	4760	HI-BAY WEST SIDE		190	10
CARBON TETRACHLORIDE	4481	ROOM# 261C		20	10
	4612	ROOM# 1504B-F2		10	10
CHLORINE	4761	HI-BAY	X	750	10
CHLOROFORM	4464	ROOM# 102	X	10	10
	4481	ROOM# 261C	X	30	10
	4612	ROOM# 1504B-F2	X	10	10
	4739	LTA	X	10	10

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TABLE H-1

List of Hazardous and Extremely Hazardous Substances at MSFC Exceeding the Reportable Quantity
Sorted by Chemical (1997 Chemical Inventory)

Chemical Name	Building	Room	EHS	Maximum Stored (lbs)	RQ (lbs)
CHLOROPYRIFOS	4650	CRANE SHOP		8	1
	4677	CHEMICAL STORAGE		17	1
CHROMIC ACID	4731	CHEMICAL STORAGE		221	10
	4758	STORAGE		90	10
	4760	TANK AREA		1222	10
CHROMIUM	4561	ROOM# 120		9000	5000
DIBUTYL PHTHALATE	8025	WAREHOUSE		13	10
		MARS SKEET CLUB	SKEET CLUB/MAGAZINE #1	10	10
DIMETHYLFORMAMIDE	4715	STORAGE		1000	100
ETHYLBENZENE	4633	ABOVE GROUND TANKS		6660	1000
	4693	UNDERGROUND TANKS		2135	1000
FLUORINE	4481	ROOM# 215	X	151	10
	4583	CELL# 110	X	10	10
FORMALDEHYDE	4720	COOLER (THIOL)	X	109	100
HYDROFLUORIC ACID	4731	CHEMICAL STORAGE		130	100
	4760	TANK AREA		807	100
LEAD	4483	CAGE		4710	10
	4570	ROOM# E-1		1980	10
	4612	ROOM# 1126		40	10
		ROOM# 1212		15	10
	4678	AUTO SHOP		315	10
LINDANE	4677	CHEMICAL STORAGE	X	50	1
MERCURY	4475	ROOM# 106		600	1
	4481	RM# 265/CLEAN RM.CAB# 1		7	1
		RM# 265/CLEAN RM.CAB# 2		2	1
		ROOM# 2		15	1
		ROOM# 261C		30	1
		ROOM# 265/CAB# 2		5	1
		ROOM# 409		3	1
	4612	ROOM# 1118		4	1
		ROOM# 1301		1	1
	4650	ROOM# 104		200	1
	4677	CHEMICAL STORAGE		4	1
METHYL ALCOHOL	4815	HANGER		7040	5000
METHYL TERT-BUTYL ETHER	4633	ABOVE GROUND TANKS		23310	1000
	4693	UNDERGROUND TANKS		7473	1000
METHYLENE CHLORIDE	4715	STORAGE		3200	1000
NICKEL	4561	ROOM# 120		4500	100

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Sorted by Chemical (1997 Chemical Inventory)

Chemical Name	Building	Room	EHS	Maximum Stored (lbs)	RQ (lbs)
	4612	ROOM# 1210		103	100
		ROOM# 1212		125	100
NICKEL AMMONIUM SULFATE	4731	CHEMICAL STORAGE		200	100
NICKEL CHLORIDE	4731	CHEMICAL STORAGE		100	100
	4760	TANK AREA		323	100
NICKEL SULFATE	4731	CHEMICAL STORAGE		118	100
NITRIC ACID	4760	TANK AREA	X	30693	1000
NITROGLYCERIN	MARS SKEET CLUB	SKEET CLUB/MAGAZINE #1		70	10
P-DICHLOROBENZENE	4251	HI-BAY ROOM# 16		143	100
	4471	SUBSTORE 85		356	100
PERCHLOROETHYLENE	4353	ROOM# 130		900	100
	4483	VEHICLE SHOP		140	100
	4621	CHEMICAL STORAGE		16825	100
	4705	ROOM# B119		1540	100
	4758	STORAGE		10500	100
	4760	TANK AREA		4200	100
PHOSPHORUS	4561	ROOM# 120	X	1000	1
SILVER NITRATE	4481	RM# 265/CLEAN RM.CAB# 1		1	1
		ROOM# 261C		1	1
		ROOM# 402A		1	1
		ROOM# 409		1	1
		ROOM# 413		1	1
	4487	ROOM# AB140		2	1
	4612	ROOM# 1116		2	1
		ROOM# 1301		1	1
		ROOM# 1318		6	1
		ROOM# 1504B		2	1
	4660	OFFICE/SHOP		1	1
SODIUM ARSENITE	4612	ROOM# 1038	X	1	1
SODIUM HYDROSULFIDE	4760	TANK AREA		18040	5000
SODIUM HYDROXIDE	4700	SOUTHSIDE		25000	1000
	4731	CHEMICAL STORAGE		3050	1000
	4758	STORAGE		3680	1000
	4760	TANK AREA		18519	1000
	4761	HI-BAY		1715	1000
SODIUM HYPOCHLORITE	4621	CHEMICAL STORAGE		400	100
SODIUM NITRITE	4475	ROOM# 124		158	100
	4618	HI-BAY		320	100

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Sorted by Chemical (1997 Chemical Inventory)

Chemical Name	Building	Room	EHS	Maximum Stored (lbs)	RQ (lbs)
	4647	CAGE AREA		100	100
	4761	HI-BAY		270	100
SODIUM PHOSPHATE MONOBASIC	4731	CHEMICAL STORAGE		425	100
	4758	STORAGE		765	100
STRONTIUM CHROMATE	4707	SOFI CELL		11	10
	4731	CHEMICAL STORAGE		15	10
	4739	LTA		10	10
	4756	PAINT STORAGE		16	10
	4760	TANK AREA		160	10
SULFURIC ACID	4483	CAGE	X	1830	1000
		VEHICLE SHOP	X	1200	1000
	4700	SOUTHSIDE	X	40000	1000
	4731	CHEMICAL STORAGE	X	1045	1000
	4760	TANK AREA	X	10756	1000
	4761	HI-BAY	X	1400	1000
TOLUENE	4633	ABOVE GROUND TANKS		49950	1000
	4693	UNDERGROUND TANKS		16013	1000
TRICHLOROETHYLENE	4640	YARD		800	100
	4705	ROOM# B119		6300	100
	4758	STORAGE		15600	100
TRICHLOROMONOFUOROMETHANE	8936	IGLOO		9600	5000
XYLENE	4312	OUTSIDE		366	100
	4633	ABOVE GROUND TANKS		39960	100
	4650	ROOM# 2 PAINT SHOP		189	100
	4677	CHEMICAL STORAGE		295	100
	4692	SOUTH SIDE		225	100
	4693	UNDERGROUND TANKS		12810	100
	4731	PAINT STORAGE		123	100
	8025	WAREHOUSE		384	100
	Dodd Rd near W Test Area	YARD/SHED		196	100

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Sorted by Location (1997 Chemical Inventory)

Building	Room	Chemical Name	EHS	Maximum Stored (lb)	RQ (lb)
4200	BASEMENT/WILLIA	AMMONIA	X	680	100
4251	HI-BAY ROOM# 16	P-DICHLOROBENZENE		142.56	100
4312	OUTSIDE	BENZENE		91.5	10
		XYLENE		366	100
4353	ROOM# 130	PERCHLOROETHYLENE		900	100
4464	ROOM# 102	CHLOROFORM	X	10	10
4471	SUBSTORE 85	P-DICHLOROBENZENE		356.4	100
4475	ROOM# 106	MERCURY		600	1
	ROOM# 124	SODIUM NITRITE		157.5	100
4479	GAS SHED	AMMONIA	X	1500	100
4481	RM# 265/CLEAN RM.CAB# 1	ARSENIC		6	1
		MERCURY		7.46	1
		SILVER NITRATE		1	1
	RM# 265/CLEAN RM.CAB# 2	MERCURY		2	1
	ROOM# 2	MERCURY		15	1
	ROOM# 215	FLUORINE	X	151	10
	ROOM# 261C	ARSENIC		4	1
		CARBON TETRACHLORIDE		20	10
		CHLOROFORM	X	30	10
		MERCURY		30	1
		SILVER NITRATE		1	1
	ROOM# 265/CAB# 2	MERCURY		5.46	1
	ROOM# 402A	ARSENIC PENTOXIDE	X	8	1
		SILVER NITRATE		1	1
	ROOM# 409	MERCURY		3	1
SILVER NITRATE			1	1	
ROOM# 413	SILVER NITRATE		1.01	1	
4483	CAGE	ARSENIC		31	1
		LEAD		4710	10
		SULFURIC ACID	X	1830	1000
	VEHICLE SHOP	PERCHLOROETHYLENE		140	100
		SULFURIC ACID	X	1200	1000
4487	ROOM# AB140	SILVER NITRATE		2	1
4491	ROOM# E-3	AMMONIA	X	250	100
4561	ROOM# 120	CHROMIUM		9000	5000
		NICKEL		4500	100

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Sorted by Location (1997 Chemical Inventory)

Building	Room	Chemical Name	EHS	Maximum Stored (lb)	RQ (lb)
		PHOSPHORUS	X	1000	1
4570	ROOM# E-1	LEAD		1980	10
4583	CELL# 110	FLUORINE	X	10	10
4612	ROOM# 1038	SODIUM ARSENITE	X	1	1
	ROOM# 1102	ARSENIC TRIOXIDE		1	1
	ROOM# 1116	SILVER NITRATE		2	1
	ROOM# 1118	MERCURY		4	1
	ROOM# 1126	LEAD		39.62	10
	ROOM# 1210	NICKEL		103	100
	ROOM# 1212	LEAD		14.85	10
		NICKEL		125	100
	ROOM# 1301	MERCURY		1	1
		SILVER NITRATE		1	1
	ROOM# 1318	ARSENIC TRIOXIDE		2	1
		SILVER NITRATE		6	1
	ROOM# 1502	ARSENIC TRIOXIDE		1	1
	ROOM# 1504B	SILVER NITRATE		2	1
	ROOM# 1504B-F2	CARBON TETRACHLORIDE		10	10
CHLOROFORM		X	10	10	
4618	HI-BAY	SODIUM NITRITE		320	100
4621	CHEMICAL STORAGE	1,1,1-TRICHLOROETHANE		6894.9	1000
		1,4-DIOXANE		215.46	100
		ASBESTOS		5.04	1
		PERCHLOROETHYLENE		16825	100
		SODIUM HYPOCHLORITE		400	100
4633	ABOVE GROUND TANKS	BENZENE		9990	10
		ETHYLBENZENE		6660	1000
		METHYL TERT-BUTYL ETHER		23310	1000
		TOLUENE		49950	1000
		XYLENE		39960	100
4640	YARD	TRICHLOROETHYLENE		800	100
4647	CAGE AREA	SODIUM NITRITE		100	100
4650	CRANE SHOP	CHLOROPYRIFOS		8	1
	ROOM# 104	MERCURY		200	1
	ROOM# 2 PAINT SHOP	XYLENE		189.35	100
4660	OFFICE/SHOP	SILVER NITRATE		1	1
4677	CHEMICAL STORAGE	CHLOROPYRIFOS		16.9	1
		LINDANE	X	50	1

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List of Hazardous and Extremely Hazardous Substances at MSFC Exceeding the Reportable Quantity
Sorted by Location (1997 Chemical Inventory)

Building	Room	Chemical Name	EHS	Maximum Stored (lb)	RQ (lb)
		MERCURY		4	1
		XYLENE		295.33	100
4678	AUTO SHOP	LEAD		315	10
4692	SOUTH SIDE	BENZENE		56.25	10
		XYLENE		225	100
4693	UNDERGROUND TANKS	BENZENE		3202.5	10
		ETHYLBENZENE		2135	1000
		METHYL TERT-BUTYL ETHER		7472.5	1000
		TOLUENE		16012.5	1000
		XYLENE		12810	100
4700	SOUTHSIDE	SODIUM HYDROXIDE		25000	1000
		SULFURIC ACID	X	40000	1000
4705	ROOM# B119	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		6900	5000
		PERCHLOROETHYLENE		1540	100
		TRICHLOROETHYLENE		6300	100
	ROOM# B120	ASBESTOS		1.4	1
4707	SOFI CELL	STRONTIUM CHROMATE		11	10
4708	SOUTHSIDE	AMMONIA	X	300	100
	STORAGE BLDG B	BENZENE		12	10
4711	ROOM# W108	BENZENE		10	10
	ROOM# W179	BENZENE		10	10
4715	STORAGE	DIMETHYLFORMAMIDE		1000	100
		METHYLENE CHLORIDE		3200	1000
4720	COOLER (THIOKOL)	ASBESTOS		50	1
		FORMALDEHYDE	X	109	100
4731	CHEMICAL STORAGE	CHROMIC ACID		221.25	10
		HYDROFLUORIC ACID		130	100
		NICKEL AMMONIUM SULFATE		200	100
		NICKEL CHLORIDE		100	100
		NICKEL SULFATE		117.8	100
		SODIUM HYDROXIDE		3050	1000
		SODIUM PHOSPHATE MONOBASIC		425	100
		STRONTIUM CHROMATE		15	10
		SULFURIC ACID	X	1045	1000
	PAINT STORAGE	XYLENE		122.78	100
4739	LTA	CHLOROFORM	X	10	10
		STRONTIUM CHROMATE		10	10

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Sorted by Location (1997 Chemical Inventory)

Building	Room	Chemical Name	EHS	Maximum Stored (lb)	RQ (lb)
4756	PAINT STORAGE	STRONTIUM CHROMATE		16	10
4758	STORAGE	1,1,1-TRICHLOROETHANE		1710	1000
		CHROMIC ACID		90	10
		PERCHLOROETHYLENE		10500	100
		SODIUM HYDROXIDE		3680	1000
		SODIUM PHOSPHATE MONOBASIC		765	100
		TRICHLOROETHYLENE		15600	100
		4760	HI-BAY WEST SIDE	CALCIUM HYPOCHLORITE	
	TANK AREA	CHROMIC ACID		1222	10
		HYDROFLUORIC ACID		807.2	100
		NICKEL CHLORIDE		322.56	100
		NITRIC ACID	X	30692.8	1000
		PERCHLOROETHYLENE		4200	100
		SODIUM HYDROSULFIDE		18040	5000
		SODIUM HYDROXIDE		18518.8	1000
		STRONTIUM CHROMATE		160	10
		SULFURIC ACID	X	10756.4	1000
4761	HI-BAY	CHLORINE	X	750	10
		SODIUM HYDROXIDE		1715.3	1000
		SODIUM NITRITE		270	100
		SULFURIC ACID	X	1400	1000
4815	HANGER	METHYL ALCOHOL		7040	5000
8025	WAREHOUSE	DIBUTYL PHTHALATE		12.8	10
		XYLENE		383.64	100
8936	IGLOO	TRICHLOROMONOFUOROMETH ANE		9600	5000
Dodd Rd near W Test Area	ARD/SHED	XYLENE		195.6	100
M-1 YARD	ARD/PM GROUP	ASBESTOS		300	1
MARS SKEET CLUB	SKEET CLUB/MAGAZINE #1	DIBUTYL PHTHALATE		10	10
		YARD/SHED		70	10

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APPENDIX I

Typical Hazardous Waste

Appendix I

TABLE I-1
Typical Hazardous Waste Generated at MSFC

Waste Description	EPA Hazardous Waste Codes	Treated or Disposed (on or offsite)	Quantity Generated (lbs)	
			1996	1997
Ignitable	D001/F003	Offsite	32,539	30,463
Corrosive	D002	Offsite	12,446	22,926
Reactive	D003	Offsite	450	644
Labpacks	P-Listed: P016, P029, P030, P068, P076, P098, P106, P120	Offsite	1,400	1,579
Labpacks	U-Listed: U044, U050, U133, U150, U151, U211, U223	Offsite	60	2,319
Labpacks	D-Listed: D002, D004, D006, D007, D009, D011	Offsite	175	2,306
Arsenic	D004	Offsite	85,501	258,971
Cadmium	D006	Offsite	85,501	258,971
Chromium	D007	Offsite	85,501	258,971
Lead	D008	Offsite	85,501	258,971
Mercury	D009	Offsite	85,501	258,971
Silver	D011	Offsite	85,501	258,971
Spent Halogenated Solvents	F001/F002	Offsite	4,915	7,255
Waste Water Treatment Sludges	F006	Offsite	0	0

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**TABLE I-2
EPA Hazardous Waste Codes Used at MSFC**

EPA Hazardous Waste Number	Contaminant, Waste Type, or Substance
D001	Exhibits the Characteristic of Ignitability (See 40 CFR 261.21)
D002	Exhibits the Characteristic of Corrosivity (See 40 CFR 261.22)
D003	Exhibits the Characteristic of Reactivity (See 40 CFR 261.23)
D004	Arsenic
D006	Cadmium
D007	Chromium
D008	Lead
D009	Mercury
D011	Silver
F001	The following spent halogenated solvents from degreasing: Tetrachloroethylene, Trichloroethylene, Methylene Chloride, 1,1,1-trichloroethane, Carbon Tetrachloride, and Chlorinated Fluorocarbons; all spent solvent mixtures/blends used in degreasing, containing, before use, a total of 10 percent or more (by volume) of one or more of the above halogenated solvents or those listed in F002, F004, and F005; and from the recovery of these solvents and spent solvent mixtures.
F002	The following spent halogenated solvents: Tetrachloroethylene, Trichloroethylene, Methylene Chloride, 1,1,1-trichloroethane, Chlorobenzene, 1,1,2, Trichloro-1,2,2-trifluoroethane, Orthodichlorobenzene, Trichlorofluoromethane, and 1,1,2-Trichloroethane; All spent solvent mixtures/blends containing, before use, a total of 10 percent or more (by volume) of one or more of the above halogenated solvents or those listed in F001, F004 or F005; and still bottoms from the recovery of these solvents and spent solvent mixtures.
F003	The following spent non-halogenated solvents: Xylene, Acetone, Ethyl Acetate, Ethyl Benzene, Ethyl Ether Methyl Isobutyl Ketone, N-Butyl Alcohol, Cyclohexanone, and Methanol; all spent solvent mixtures/blends containing, before use, one or more of the above non-halogenated solvents, and a total of 10 percent or more (by volume) of those solvents listed in F001, F002, F004 or F005; and still bottoms from the recovery of these solvents and spent solvent mixtures.
F006	Wastewater treatment sludges from electroplating operations except from the following processed: (1) Sulfuric Acid Anodizing of Aluminum; (2) Tin Plating on Carbon Steel; (3) Zinc Plating (Segregated Basis) on Carbon Steel; (4) Aluminum or Zinc-Aluminum Plating on Carbon Steel; (5) Cleaning/Stripping Associated with Tin, Zinc and Aluminum Plating Carbon Steel; and (6) Chemical Etching and Milling of Aluminum.
P016	Dichloromethyl ether
P029	Copper Cyanide
P030	Cyanides
P068	Methyl Hydrazine
P076	Nitric Oxide
P098	Potassium Cyanide
P106	Sodium Cyanide
P120	Vanadium Oxide
U044	Chloroform
U050	Chrysene
U133	Hydrazine
U150	L-Phenylalanine
U151	Mercury
U211	Carbon Tetrachloride
U223	Toluene Diisocyanate

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APPENDIX J

Environmental Management Guidelines

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APPENDIX J

Additional Environmental Management Guidelines

Container Management

Containers with Hazardous Material or Petroleum Products

Product containers must be kept sealed except when in use. This will prevent rainfall from entering and contaminating the product.

Containers of hazardous materials should be located in areas protected from the weather. If the containers are damaged (rusted, dented, and so on) so that the potential for leaking increases, the product must be placed in a compatible new container immediately:

- Recommend that containers located inside of buildings be provided with a spill platform (secondary containment pad).
- Recommend that containers that are to be placed outside be placed into a secondary containment pallet with a cover to prevent rainfall from entering the storage containment. Hazardous materials released to the secondary containment pad should be handled as a SMALL SPILL.
- Secondary containment for containers must be inspected to ensure that the containment areas have not leaked, that drain plugs are secure, and that rainfall is drained if uncontaminated. A visual inspection is adequate for petroleum products. A chemical analysis is required for water-soluble chemicals. Contact 4-4787 for chemical analysis services.
- A written inspection log must be prepared for each area inspected.

All containers must be labeled in such a way that the contents and appropriate warning and safety label(s) of the containers are readily visible. A weekly inspection must be performed to ensure that labels identifying the contents are present and readable. If the labels are not readable, new labels must be placed on the container.

Containers that Are Empty

Empty containers must be turned into the MSFC COSS Contractor (4-9578). This includes 5-gallon through 55-gallon containers. Empty container guidelines are available from the MSFC COSS Contractor. Some empty containers must be triple rinsed before pickup (pesticides and acutely toxics).

Empty containers must be kept sealed and marked empty until they are picked up for disposal. Empty containers must not be used as general trashcans. Contact the Facilities Services Office to obtain trashcans.

A container is considered to be an empty container when all original product has been removed that can be removed using the practices commonly employed to remove materials from that type of container (for example, pouring, pumping, and aspirating).

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When containers are emptied for disposal, the contents must be pumped and placed into an appropriate satellite accumulation container.

Satellite Waste Accumulation Management

Hazardous waste satellite accumulation containers and areas must be maintained in accordance with State of Alabama environmental regulations.

Satellite Waste Accumulation Containers Actively Collecting Waste

The individual who fills the containers with liquid to 90 percent of the volume of the container must follow these procedures:

1. Properly close and seal the container completely.
2. Enter the current date on the label.
3. Immediately notify the point of contact (POC) listed on the container for turn-in.
4. If unable to reach the POC, notify the POC's supervisor. If unable to reach the POC's supervisor, notify the MSFC COSS Contractor (4-9578) for turn-in of the container.

The generating activity (POC and personnel who place waste into the container) is responsible for ensuring that the satellite accumulation container is sealed during periods of inactivity. Periods of inactivity include lunch breaks and so on.

The generating activity (area supervisor) will ensure that the POC on the satellite accumulation container is accurate.

The generating activity (POC and personnel who place waste into the container) will ensure that only the waste identified on the label on the waste accumulation container is placed into the container.

Obtaining Satellite Waste Accumulation Containers

Contact the MSFC COSS Contractor at 4-9578 to obtain replacement containers.

Notify the MSFC COSS Contractor (4-9578) of any new waste streams that require disposal. The types of waste that must be managed include, but are not limited to, the following: organic solvents, acids, caustics, paints or coatings, aerosol cans, and petroleum products. Any materials (gloves, rags, and so on) that have been in contact with any of the types of liquid listed above also must be handled as a waste. The MSFC COSS Contractor will ensure that the appropriate disposal is provided.

Follow the guidelines above for active satellite waste accumulation containers.

Good Housekeeping Practices

Cleanup of Spills

Small spills should be cleaned up immediately by onsite personnel, if they are properly trained and it can be done safely. A small spill means approximately a 3-gallon or less spill that onsite personnel have the proper equipment to handle. However, if the spill is a reportable quantity, it must be handled as a large spill. Onsite personnel should have spill

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response equipment (absorbent, booms, and so on) to clean up small spills for the types of materials that they handle. Absorbent materials or cleanup rags that are used in the clean up of petroleum products may be disposed of in the conventional manner (i.e., in a dumpster) if they are not saturated or dripping. If the absorbent material or used rags are dripping oil, notify the MSFC COSS Contractor (4-9578) for disposal.

Large spills that onsite personnel are unable to handle should be reported immediately to 911 to initiate the MSFC Emergency Plan (MPG 1040.3F, Section 8—a copy of this Plan can be obtained by calling 4-4490). Personnel should provide the location, their name, type of spilled material, and approximate quantity of spilled material, if known.

Routine Maintenance Items

Empty drip pans daily into the appropriate satellite waste accumulation container. Provide covers over all drip pans located outdoors to prevent rainwater from entering and causing an overflow.

Place lids on paint cans, degreasers, and so on to limit off-gassing of the products.

Transfer products out of containers and into containers without spilling materials. Clean up all drips or spills immediately.

The general rule is to minimize any chemical, oil, or waste coming into contact with the ground (soil or concrete) or water (ditches, rainfall, or ponds), or escaping to the air.

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APPENDIX K
Inspection Records

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TABLE K-1

Inspection Record/Storm Water Release Form

Area of Inspection: _____

Inspector's Name _____

Phone No.: _____

User Contact's Name _____

Phone No.: _____

Date	Initials of Person making the Inspection	Facility Condition (Circle one) (1)	Are Improvements needed? (Circle One)	Comments	Was water released?	Has spill or release occurred since last time containment area was drained? (2)	Is the water noticeably contaminated (oily sheen, noticeable odor, discoloration)? (2)	Is there any other reason why this storm water should not be released? (2)	Estimated volume released (3)
		Good Fair Poor	Yes/No		Yes/No	Yes/No	Yes/No	Yes/No	
		Good Fair Poor	Yes/No		Yes/No	Yes/No	Yes/No	Yes/No	
		Good Fair Poor	Yes/No		Yes/No	Yes/No	Yes/No	Yes/No	
		Good Fair Poor	Yes/No		Yes/No	Yes/No	Yes/No	Yes/No	
		Good Fair Poor	Yes/No		Yes/No	Yes/No	Yes/No	Yes/No	
		Good Fair Poor	Yes/No		Yes/No	Yes/No	Yes/No	Yes/No	
		Good Fair Poor	Yes/No		Yes/No	Yes/No	Yes/No	Yes/No	
		Good Fair Poor	Yes/No		Yes/No	Yes/No	Yes/No	Yes/No	
		Good Fair Poor	Yes/No		Yes/No	Yes/No	Yes/No	Yes/No	
		Good Fair Poor	Yes/No		Yes/No	Yes/No	Yes/No	Yes/No	
		Good Fair Poor	Yes/No		Yes/No	Yes/No	Yes/No	Yes/No	
		Good Fair Poor	Yes/No		Yes/No	Yes/No	Yes/No	Yes/No	
		Good Fair Poor	Yes/No		Yes/No	Yes/No	Yes/No	Yes/No	

- (1) Use the Inspection Checklists provided in Section 5 as guidance for conducting inspections
 (2) If yes, contact SPCC Coordinator for appropriate actions
 (3) Remember to seal or close bypass valve when finished

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Inspection Checklist for ASTs/USTs: Biweekly and after significant rainfall No signs of tanks and fixtures leaking

- Punctures
- Cracks
- Corrosion
- Spill kit available
- Tanks should be properly labeled
- Bypass valves properly sealed or closed and locked
- No visible contamination (sheen) on water collected in containment
- Spill prevention controls and containment in good condition
- No sign of spillage from material handling operations
- Warning signs present and legible as appropriate
- Erosion prevention satisfactory at drain valve
- Overfill prevention controls in place/effective

Inspection Checklist for HazMat/Waste Storage Areas/Investigation-derived Waste: Monthly for outdoor storage areas, Monthly for storage sheds, Monthly for self-contained drum storage units (clamshells), Weekly for IDW

- Containers are protected from weather
- Containers have secondary containment
- Containment system in good condition
- Containment valves closed
- No liquid in secondary containment
- Containers labeled
- Storage area neat and orderly
- No evidence of spillage from material handling operations
- Containers sealed or bearing identification marks
- Containers in good condition
- Appropriate BMP signage in place as appropriate
- No damaged pallets
- No damaged containers
- Spill kit available
- Erosion and sedimentation control measures in place for remedial investigations
- Containers not stacked more than two containers high
- Drip pan not overflowing
- Yellow flammable storage cabinets closed and no visible signs of leakage

Inspection Checklist for Storage Yards: Monthly

- No sign of leakage from stored equipment
- No visible sign of contamination on equipment in storage yard

- Materials stored neatly
- Appropriate material stored in yard
- Appropriate BMP signage posted at entrance to storage yard as appropriate

Inspection Checklist for Construction Activities: Daily

- Erosion and sediment control measures in place
- Hazardous waste/materials stored and handled appropriately
- Site free of excessive debris
- No leaking vehicles or equipment
- Empty containers handled appropriately

Inspection Checklist for Erosion Control: Monthly

- No signs of excessive erosion
- Erosion controls are effective and in good condition
- No sediment buildup in storm water structures (inlets, ditches)

Inspection Checklist for Sandblast Areas: Monthly

- Measures in place to prevent or to minimize contact with storm water
- Control measures in place to retain sand and paint particles resulting from sandblasting operations
- Control measures maintained in good condition

Inspection Checklist for Materials Handling / Fueling Areas: When material handling operations occur

- No sign of spillage from material loading and unloading operations
- Measures in place and effective to prevent contact with storm water during material handling operations
- Appropriate BMP signage in place
- Spill kits available
- Spill and overflow protection equipment working properly

Inspection Checklist for Motor Pools/Vehicles and Equipment Maintenance/ Mobile Equipment: Monthly

- Maintenance activities conducted indoors, where possible
- Control measures taken to minimize storm water contamination during outdoor maintenance operations (inlets covered, maintenance area diked)
- No sign of spillage of leaks
- All spillage appropriately cleaned up
- No leaking vehicles or leaking equipment outdoors

- Fluids used in maintenance activities are stored or managed appropriately (see Hazardous Waste/Hazardous Materials BMPs)
- Spill kits available
- BMP signage in place as appropriate
- Secondary containment areas or drip pans are used when available
- Equipment is positioned away from storm inlets

Inspection Checklist for Vehicle and Equipment Washing: Monthly

- Vehicle washing confined to wash area
- Washwater routed to sanitary sewer
- Appropriate BMP signage in place as appropriate
- Catch basins in wash area maintained (not clogged with sediment or debris)

Inspection Checklist for Painting and Depainting Operations: Daily

- New and used materials protected from the weather
- Measures taken to minimize overspray and windblown particles
- Measures in place to retain particles generated from sanding operations

Inspection Checklist for Buried Pipelines: When uncovered

- Inspect for signs of deterioration
- Inspect for signs of corrosion
- Pipelines that are not in service or in standby service are capped or blank flanged
- Pipeline status recorded on Master Plans and provided to EED

Inspection Checklist for Outdoor Garbage Dumpsters

- Dumpster is covered nightly and on weekends and remainder of time whenever practical
- Drain plugs are in place
- Area is neat and clean
- Dumpster is in good condition
- No signs of leakage

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TABLE K-2

Storm Water Release Follow-up (To be completed by SPCC Coordinator)

Date	Location	Source	UPOC	Situation	Resolution	Signature

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TABLE K-3
Quarterly EED Source Inspection Checklist

Name:		Area of Responsibility:		Date:
Quarter: 1 st 2 nd 3 rd 4 th				
Number of sources in your area:		Number of Storm Water Inspectors contacted:		
Number of User POCs contacted:				
1. Are all inspections completed and documented? Yes/ No If no, please explain:				
2. Are all BMPs in place? Yes/No If no, please fill out table for each source that needs improvements				
Location	Source	User POC/Phone	Problem/Recommendation	
3. Did you observe any new sources? Yes No If yes, please fill out table for each new source				
Location	Source	User POC/Phone	BMP/Recommendation	
4. Please list any sources that have been removed: Bldg./Source				
Signature of Inspector: _____				

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TABLE K-4
Annual Site Evaluation Checklist

Evaluation Issue (Answer Yes or No to the following questions)	Yes	No
1. Have inspections been completed as required?		
2. Has storm water sampling been completed as required?		
3. Were the BMPs implemented at the facility effective?		
4. Have CERP revisions been recommended as a result of the daily or monthly Source Inspections?		
5. Do new storm water sources or pollutant exposures indicate a need for additional BMPs?		
6. Has this CERP been updated to include recommended changes resulting from previous inspections or annual evaluation?		
7. Were pollutants in storm water sampling data present above NPDES permit limitations?		
8. Was there a significant change in pollutant concentrations since the last sampling effort?		
9. Are additional BMPs warranted? If yes, describe below:		
BMPS OR BMP Improvements Needed		
Notes: Completed evaluation form should be retained by the SWC.		

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AD10-OWI-002

BASELINE

EFFECTIVE DATE: 1/31/2000

ORGANIZATIONAL ISSUANCE

AD10

COMPLIANCE AUDIT PLAN

for
Resource, Conservation, and Recovery Act
Treatment, Storage, and Disposal Facilities

**APPROVING
AUTHORITY**

NAME	TITLE	ORG	DATE
Original signed by:	Manager, Environmental		
<u>Rebecca C. McCaleb</u>	<u>Engineering Department</u>	<u>AD10</u>	<u>1/31/2000</u>

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DOCUMENT HISTORY LOG

Status (Baseline/ Revision/ Canceled)	Document Revision	Effective Date	Description
Baseline		1/31/2000	Baseline

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1. PURPOSE

This document provides a plan and protocol for conducting Resource Conservation and Recovery Act (RCRA) compliance audits of offsite hazardous waste treatment, storage, and disposal facilities (TSDFs) that are used, or are candidates for use, by Marshall Space Flight Center (MSFC).

It is MSFC policy that a compliance evaluation of offsite hazardous waste TSDFs be conducted as a means to determine if wastes produced are being disposed in an environmentally responsible manner and in compliance with applicable environmental regulations. To help identify potential liability under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), an evaluation of the financial condition and liability insurance status of potential hazardous waste disposal contractors is important.

This plan is developed for use by Environmental Engineering Department (EED) personnel to assist in their evaluations. Audit procedures are described in a stepwise fashion, and reporting protocols are established. This plan, along with the accompanying audit checklists (Appendix D), provides EED personnel with the tools needed to conduct a compliance audit.

This plan provides a protocol for evaluating RCRA compliance status only. The auditor should be aware that a TSDF probably is subject to other environmental statutes and regulations that are not included in the scope of this audit plan. While the audit focus on RCRA probably will capture the majority of potential issues, some key compliance issues for a particular facility may be outside the scope of this audit protocol.

2. APPLICABILITY

This plan is applicable for all treatment, storage, and disposal facilities utilized by MSFC.

3. APPLICABLE DOCUMENTS

MPG 8870.3 "MSFC Environmental Management Program"

4. DEFINITIONS

TSDF - A treatment, storage, and/or disposal facility with an

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Environmental Protection Agency Identification Number that accepts hazardous or controlled waste for disposal.

5. INSTRUCTIONS

When a TSDF is a candidate site for disposal of waste, EED personnel shall use Appendix A for guidance on performing an audit of the site. Appendix B provides selected contact information for regulatory agencies. Appendix C will be utilized for scoring each facility to ensure consistent results for TSDFs. Appendix D is a generic audit checklist that will be completed for each facility.

6. NOTES

None

7. SAFETY PRECAUTIONS AND WARNING NOTES

None

8. APPENDICES, DATA, REPORTS, AND FORMS

Appendix A - Audit Protocols

Appendix B - Federal and State Hazardous Waste
Regulatory Agency Contacts

Appendix C - Compliance Evaluation Criteria Evaluation of
Results

Appendix D - Compliance Audit Checklist for Offsite RCRA
TSD Facilities

9. RECORDS

TSDF Audit Report, 3 years (AD10 records)

10. TOOLS, EQUIPMENT, AND MATERIALS

None

11. PERSONNEL TRAINING AND CERTIFICATION

None

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12. FLOW DIAGRAM

Not applicable

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Appendix A

Section 1

Pre-Audit Protocols

This section describes activities that must be completed before beginning a compliance audit. Thorough preparation and planning is essential to conducting the audit efficiently and effectively.

Determining the Need for a RCRA Compliance Audit

The first step in evaluating whether an audit is needed is to determine if a facility has been audited, and if so, when the last audit was completed. An audit is desirable when one of the following conditions applies to a facility:

- The facility has not received a compliance audit by MSFC in the past two years.
- The facility has never received a compliance audit by MSFC representatives.

An audit must be completed before contracting with a TSDF that has not been previously used by MSFC.

Audit Scheduling

Once the need for an audit has been determined, provide the facility with four to six weeks lead time before the site visit. Many regulatory agencies also schedule file reviews several weeks in advance.

TSDF Contact

The following should be discussed with the TSDF upon scheduling the audit:

- Clarify purpose and scope of audit
- Specify date and estimated duration of site visit

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- Verify that facility will be operating at time of scheduled audit
- Verify facility contacts
- Identify site safety requirements and equipment needed
- Obtain directions to site
- Request that copies of the site financial assurance documents and RCRA compliance documents (closure plan, contingency plan, waste analysis plan, personnel training program, inspection schedules, and groundwater monitoring plans) be available for review during the site visit

Follow up the initial contact with a confirmation letter, and enclose a copy of the audit checklist.

Regulatory Agency Contact

Whenever possible, state regulatory agency files should be reviewed before the facility site visit. State agency files typically will provide the most detailed information regarding day-to-day compliance status, but for states without RCRA corrective action authorization, EPA region files may be reviewed. It is also desirable to schedule an interview with regulatory agency inspection or enforcement personnel responsible for the site. Appendix B provides selected regulatory agency contacts for federal and state hazardous waste management programs.

Many states require a written request to view files. Suggested procedure is to call the agency and follow up the call with a letter confirming the review scope, time, and date.

If it is possible to do so during the review of files, the facility status should be discussed with the appropriate official, usually an inspector or the inspector's supervisor.

Telephone interviews of this type should be documented with a brief memorandum listing the following:

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- Time and date of call
- Agency name and telephone number
- Person contacted and title
- Summary of topics discussed (refer to checklist (Appendix D) for guidance)

The completed memorandum will be attached to the audit report.

Assembling Audit Materials

Before beginning travel, obtain the following materials for use during the audit:

- Safety equipment as identified during the initial scheduling call
- Audit checklists
- Credentials (business card or identification card)
- Camera (discuss photograph policies with the facility contact when scheduling the site visit)

Section 2

Regulatory Agency File Review

The purpose of the regulatory agency visit is to review the TSDF files and, when possible, discuss the facility with the regulators. The facility site visit can be enhanced by conducting the file review first, because some facility information may only be available in the state files, which will leave more time to observe waste management activities while at the site.

The files may also offer insight into a TSDF's compliance status, and may uncover areas of concern that can be investigated during the audit.

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Document Review

The following information in the agency file should be reviewed:

- Facility permits
- Closure plans, post-closure plans (if needed), and cost estimates
- Compliance inspection reports
- Evidence of cited violations (Warning Letters, Notices of Violation, Consent Decrees or Orders, other enforcement actions)
- Complaints from the public
- Public hearing transcripts
- Permit modifications
- Groundwater investigations
- Corrective action reports
- Annual or biennial reports

The agency review checklist should be consulted during the review and completed to the extent possible.

Information to Consider

While conducting the file review, the following information should be noted:

- Facility permit status-Note the date of issuance and date of modifications.
- Permit scope-Note what units are permitted to receive hazardous wastes and what types of waste the facility is permitted to accept.

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- Compliance inspection frequency-Note the number of times the facility is inspected each year, the scope of inspections, and the thoroughness of inspections (look for fully completed checklists or detailed inspection reports).
- Cited violations and responses-Note the number and type of citations, number of repeat violations, and any unresolved (outstanding) violations. Review facility responses to citations-Are they timely and responsive in correcting cited deficiencies?
- Closure plans, post-closure plans, and cost estimates-Look for both closed units and plans for active units. Review cost estimates; verify that sufficient financial assurance is provided for the estimate.
- Public perception-Review public comments on permits, records of citizen complaints, notes from any public meetings, and newspaper clippings.
- Financial assurance-Note the type of mechanisms used and the amount of assurance provided. Determine if the facility has the required *insurance* as well.
- Environmental investigations and remedial reports-Does evidence of contamination from the facility, such as groundwater contamination, exist? Are remedial actions underway?

Notes of your observations should be recorded for later mention in the audit report.

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Agency Personnel Interviews

If an interview with the facility inspector, permit writer, or both, can be arranged, it is beneficial to schedule the interview after your file review so you will be able to clarify items in the files, if needed. The purpose of the interview is to obtain a firsthand agency perspective on the facility. While it will not be possible for agency personnel to provide information on ongoing administrative or enforcement actions, or to provide personal opinions on the adequacy of the facility, the interview will provide insight into both how the agency views the facility and the level of competency in the agency.

Begin the interview by providing an introduction and a brief explanation of your purpose (for example, to evaluate the RCRA compliance status of the facility). The remainder of the interview should be used to accomplish the following:

- Determine what the inspector does during a facility inspection. Have the inspector provide a brief narrative describing duties/actions.
- Determine how often an agency representative visits the site, and for what reasons.
- Ascertain the level of experience of the inspector and permit writer.
- Ascertain their perceptions of the facility (if they were NASA, would they send waste to the facility?).
- Clarify questions that may have arisen during the file review.

Record the names, titles, and telephone numbers of personnel interviewed along with the date and time of each interview for inclusion into the audit report. Pertinent information collected from the interviews should also be noted for inclusion in the report.

Additional Information Sources

The following sources can provide additional information to evaluate a facility compliance status.

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Financial Information

Dun & Bradstreet's (D&B's) reports are the principal source for financial information. These reports also provide information on company history, ownership, and affiliated companies. However, many privately-held companies decline to provide financial information to Dun & Bradstreet, and in some cases the financial information is either not current or is incomplete. Therefore, it is best to determine this information before the site visit so that any missing or questionable items can be addressed while onsite. Copies of the latest Annual Report, where one is available, should be requested, because they usually provide the information needed.

Publicly-held companies are required to file financial information with the Securities Exchange Commission (SEC), which can provide insight into the financial strength of a facility or its parent company. Usually, Form SEC 10-K is not readily available, but can be obtained by writing the parent company. If a facility is unwilling to provide financial information, either during the onsite visit or through follow-up correspondence with the parent company, this must be noted in the audit report.

EPA Data bases

The Environmental Protection Agency (EPA) maintains several data bases listing information regarding facilities in each EPA region. Its enforcement data bases are confidential; however, the following can provide useful information during an audit:

- LUST-Leaking Underground Storage Tank-Identifies LUSTs by location. Use this data base to see if the audited facility has LUSTs.
- RCRIS-RCRA Information System-Lists TSDF and generator facilities by state. Use this data base to evaluate whether a facility has an EPA identification number and a RCRA permit.
- TRIS-Toxicity Reduction Information System-Superfund Amendments and Reauthorization Act (SARA) TRI data

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Appendix B - Federal and State Hazardous Waste Regulatory Agency Contacts

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12. FLOW DIAGRAM

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Appendix A

Section 1

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- Compliance inspection frequency-Note the number of times the facility is inspected each year, the scope of inspections, and the thoroughness of inspections (look for fully completed checklists or detailed inspection reports).
- Cited violations and responses-Note the number and type of citations, number of repeat violations, and any unresolved (outstanding) violations. Review facility responses to citations-Are they timely and responsive in correcting cited deficiencies?
- Closure plans, post-closure plans, and cost estimates-Look for both closed units and plans for active units. Review cost estimates; verify that sufficient financial assurance is provided for the estimate.
- Public perception-Review public comments on permits, records of citizen complaints, notes from any public meetings, and newspaper clippings.
- Financial assurance-Note the type of mechanisms used and the amount of assurance provided. Determine if the facility has the required insurance as well.
- Environmental investigations and remedial reports-Does evidence of contamination from the facility, such as groundwater contamination, exist? Are remedial actions underway?

Notes of your observations should be recorded for later mention in the audit report.

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Agency Personnel Interviews

If an interview with the facility inspector, permit writer, or both, can be arranged, it is beneficial to schedule the interview after your file review so you will be able to clarify items in the files, if needed. The purpose of the interview is to obtain a firsthand agency perspective on the facility. While it will not be possible for agency personnel to provide information on ongoing administrative or enforcement actions, or to provide personal opinions on the adequacy of the facility, the interview will provide insight into both how the agency views the facility and the level of competency in the agency.

Begin the interview by providing an introduction and a brief explanation of your purpose (for example, to evaluate the RCRA compliance status of the facility). The remainder of the interview should be used to accomplish the following:

- Determine what the inspector does during a facility inspection. Have the inspector provide a brief narrative describing duties/actions.
- Determine how often an agency representative visits the site, and for what reasons.
- Ascertain the level of experience of the inspector and permit writer.
- Ascertain their perceptions of the facility (if they were NASA, would they send waste to the facility?).
- Clarify questions that may have arisen during the file review.

Record the names, titles, and telephone numbers of personnel interviewed along with the date and time of each interview for inclusion into the audit report. Pertinent information collected from the interviews should also be noted for inclusion in the report.

Additional Information Sources

The following sources can provide additional information to evaluate a facility compliance status.

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Financial Information

Dun & Bradstreet's (D&B's) reports are the principal source for financial information. These reports also provide information on company history, ownership, and affiliated companies. However, many privately-held companies decline to provide financial information to Dun & Bradstreet, and in some cases the financial information is either not current or is incomplete. Therefore, it is best to determine this information before the site visit so that any missing or questionable items can be addressed while onsite. Copies of the latest Annual Report, where one is available, should be requested, because they usually provide the information needed.

Publicly-held companies are required to file financial information with the Securities Exchange Commission (SEC), which can provide insight into the financial strength of a facility or its parent company. Usually, Form SEC 10-K is not readily available, but can be obtained by writing the parent company. If a facility is unwilling to provide financial information, either during the onsite visit or through follow-up correspondence with the parent company, this must be noted in the audit report.

EPA Data bases

The Environmental Protection Agency (EPA) maintains several data bases listing information regarding facilities in each EPA region. Its enforcement data bases are confidential; however, the following can provide useful information during an audit:

- LUST-Leaking Underground Storage Tank-Identifies LUSTs by location. Use this data base to see if the audited facility has LUSTs.
- RCRIS-RCRA Information System-Lists TSDF and generator facilities by state. Use this data base to evaluate whether a facility has an EPA identification number and a RCRA permit.
- TRIS-Toxicity Reduction Information System-Superfund Amendments and Reauthorization Act (SARA) TRI data

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summary. Use this data base to see if the audited facility has had toxic chemical releases.

- CERCIS-CERCLA Information System-Gives the investigation status of potential CERCLA sites. Use this data base to identify potential CERCLA liability at audited facilities.

Copies of the above information can be obtained by writing the Freedom of Information Officer in the EPA Region where the facility of interest is located.

Please note that databases may not be as current or accurate as agency files. Significant information obtained from a data base should be verified with the appropriate regulatory agency.

Section 3

Facility Site Visit

This section describes the performance of the site visit portion of the TSDf audit. The section "walks through" the site visit and provides supplementary guidance to consider while completing the facility checklists.

Preliminary Reconnaissance

If possible, it is suggested that a drive-by of the facility be conducted before entering. During the drive-by, the following should be noted:

- Condition of access roads and other access such as rail or water
- Adjacent property, including land use and significant topographic features
- Site security-location and condition of signs, fences, and gates
- Location of nearby residences or other potentially sensitive populations such as schools, hospitals, child care centers, or nursing homes

The purpose of the drive-by is to establish the facility setting as well as to verify security.

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Inbriefing

Upon arriving, an inbriefing is recommended to accomplish the following:

- Introduce the audit team and meet the facility representatives
- Review the purpose of the audit
- Discuss the audit schedule and protocol
- Review safety or other facility inbriefing procedures

Records Review

The RCRA compliance documents that were requested when the site visit was scheduled should be reviewed in conjunction with the applicable portion of the checklist. It is not necessary to review all historical records such as inspection logs or waste analysis data, but a sample of each type of record should be examined. Questions that arise during the review should be directed to facility personnel so they have an opportunity to clarify or explain items in the record while the site visit is ongoing.

The following should be considered during the records review:

- If records are current
- Organization of the records
- If plans are consistent with the items reviewed during the regulatory agency file review

Site Walk-Through

Upon completing the records review, the facility should be thoroughly toured. Where possible, walking is preferable to driving because one can better control the pace of the tour and one may notice items of potential concern (odors, for example) that could not be noticed from a vehicle. If driving is necessary, ask to get out of the vehicle and walk through individual units of interest. Follow facility safety rules.

A common mistake is to become so focused on completing the checklist that items of potential concern are missed. A preferred technique is to look over the unit or area, ask

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questions, and then complete the notes or checklist. The checklist should be more of a reminder tool than the focus of the audit.

Questions that arise during the walk-through should be asked as soon as possible, preferably while at the unit. If it is not possible to ask questions, or if the facility representative does not know the answer to your question, record it for future follow-up.

In addition to the checklist, note the general condition of the facility. The following items should be observed:

- Housekeeping-Are parking areas, floors, and storage pads clean? Is there evidence of spills?
- Maintenance-Is equipment leaking or dripping? Do tanks and piping appear to be in good condition, or are rust and indentations evident?
- Safety-Are units such as tanks clearly labeled? Are safety requirements posted or otherwise communicated? Are workers dressed in protective clothing? Although the focus of the audit is not safety, a facility's commitment to safety can provide an indication of its commitment to other regulatory programs.
- Operators-Do workers appear to perform their tasks competently and conscientiously?

Outbriefing

At the conclusion of your audit, provide an outbriefing to facility representatives. The following should be accomplished during the outbriefing:

- Clarify remaining questions or issues
- Establish a point of contact for follow-up questions or information
- Explain NASA policy for distribution of findings
- Thank the facility representatives for their assistance

Section 4

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Reporting Requirements

This section provides the requirements for documenting and distributing audit findings.

Report Format

An outline of the audit report format is provided below. This format must be followed to ensure that audit findings are documented consistently between both auditors and facilities.

The audit report also must contain the auditor's evaluation of the facility, based on the criteria and performance ranking system described in Appendix C.

Audit Report Outline

I. Introduction

- Purpose
- Scope of audit

II. Site Information

- Facility name and ownership
- Previous owners/facility names
- Site history
- Location and surrounding land use
- RCRA permits

III. File Review Summary

- Date and time of file review(s)
- Regulatory agencies contacted
- List of files reviewed
- Summary of findings (compliance status, results of inspections)
- Agency personnel interviews
- Financial Assurance/status

IV. Facility Visit

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IV. Facility Visit

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- Date and time of visit
- Contacts at facility
- Observations

V. Summary

- Observations
- Recommendations

Attachments

- Completed audit checklist
- Copies of pertinent file information
- Completed evaluation criteria ranking

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Appendix B

**Federal and State Hazardous Waste
Regulatory Agency Contacts**

EPA Region IV
Hazardous Waste Division
345 Courtland Street NE
Atlanta, Georgia 30365
(404) 347-3454

File Info
(404) 347-2316

RCRA Branch Manager
(404) 347-2316

Alabama Department of Environmental Management
P.O. Box 301463
Montgomery, Alabama 36130-1463
(334) 271-7700

File Info
(334) 271-7916

RCRA Section Chief
(334) 271-7738

South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

File Info: (803) 734-5200

Enforcement and Inspection
(803) 734-5205

Tennessee Department of Health and Environment
Solid Waste Management

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401 Church St.
Life and Casualty Tower, Fifth Floor
Nashville, Tennessee 37243-1535
(615) 532-0780

File Info
(615) 532-0786

Enforcement and Inspection
(615) 532-0866

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Appendix C

Compliance Evaluation Criteria Evaluation of Results

As part of his or her report, the auditor must prepare an evaluation of the TSDF using the ranking system described below. The ranking system provides a method to compare key features of each facility that may affect a decision by a NASA installation to use the facility.

This is a numerical ranking system, whereby each compliance category listed below is assigned a rating between 1 and 5. The assigned rank is then multiplied by the weighting factor for that category, and the resulting scores for all categories are summed to obtain the final ranking.

Although this ranking system provides a method to comparatively evaluate TSDFs, the ranking results are intended to be used along with the firsthand observations from a completed compliance audit. There may be observations from the audit that cannot be accurately reflected in the ranking system, but which may be important for evaluating the facility.

Evaluation Categories

The facility must be ranked in each of the evaluation categories described below. Table 1 summarizes the categories and the relative weighting factor assigned to the category.

Evaluation Criteria

A numerical score is used to determine the overall facility rating.

- Regardless of the total numerical score, any facility that does not have valid permits required by all agencies will be rated "Poor."
- Pending civil suits and/or criminal indictments will be noted as sensitive areas but will not automatically require a "Poor" rating.

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Seven evaluation categories are scored on a scale ranging from 5 to 0. Individual scores are then multiplied by weighting factors assigned to each category. The sum of the weighting factors for all seven categories is 30. The maximum score possible is 150.

For sites with no effect from one category, delete the category and normalize the results to the maximum possible score of 150. For example, for sites with no effect on groundwater, delete the groundwater category and multiply the result by 150/125 before applying the numerical rating criteria.

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FACILITY EVALUATION SUMMARY FORM
(Based on Facility Inspection)

FACILITY/LOCATION: _____ EVALUATION BY: _____ DATE: _____

WASTE: <u>Category</u>	DISPOSED	RECYCLED	TREATED					HANDLED	Points ¹
			Weighting Factor	Evaluation/Points Awarded					
			5	4	3	2	1	0	
Financial Strength	5								
Geology/Groundwater	5								
Facility Design	5								
Operations/Quality Control	5								
Regulatory Compliance	4								
Location	4								
Community Relations	2								

FACILITY OVERALL RATING _____ FACILITY OVERALL SCORE _____²

COMMENTS:

¹Points = (Weighting factor) x (evaluation points)

²When a category is not scored, normalize the results to the maximum possible score of 150. (Points x 150 / max. points for scored categories).

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The following chart shows the numerical criteria for establishing an overall facility rating.

Numerical Criteria	
Rating	Total Score
Good	105-150
Fair	81-104
Poor	80

Requirements for Selecting Facilities

- Use facilities rated "Good."
- Do not use any site rated "Poor."
- Sites rated "Fair" can be used on an exception basis only, with approval of AD10, until the site is reaudited and rated "Good." In cases where a site has planned modifications, a reaudit can be scheduled upon completion of the modifications.

Financial Status

The financial strength of a facility is evaluated by reviewing the financial assurance documents required by RCRA and any supplementary financial data, such as Dun and Bradstreet reports, collected during the records review process. Financial strength provides an indication of the facility's resources to prevent environmental releases, or to control and mitigate releases if they occur.

Facilities with accurate and realistic closure cost estimates, which can easily demonstrate financial strength through the financial test and corporate guarantee required by RCRA, have a tangible net worth of over \$10 million, and have a bond rating of A or greater (by either Moody's or Standard and Poor's) should be scored highest (5). The lowest score should apply to facilities who either will not provide evidence of financial stability, are found to be in a vulnerable financial

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condition, or are using the trust fund option (combined with no other option) for RCRA financial assurance.

Hydrogeology and Groundwater

A facility with a release to groundwater, or a high potential for release, has potentially incurred an expensive long-term liability. There are four primary considerations for ranking a facility in this category:

- Is the hydrogeology beneath the site vulnerable to groundwater contamination, on the basis of factors such as depth to groundwater, depth to a drinking water source aquifer, soil types and permeabilities, and groundwater usage?
- Has there been a release to groundwater from the facility? If so, has the release (contaminant plume) travelled beyond the property boundary or affected a drinking water source?
- Is groundwater monitoring required, and if so, does the facility have a well-designed and implemented groundwater monitoring program that complies with applicable regulations?
- How has the facility responded (in terms of promptness and adequacy of investigation and remediation) if contamination has been detected?

Judgment by the inspector will be needed to evaluate this category. An assessment of site hydrogeology should be compared to the possible extremes, and a decision made about which end of the scale the site conditions most closely resemble.

The most important factor to consider is the presence of vulnerable groundwater. The first set of criteria, given above, addresses Groundwater Vulnerability, and this issue should receive the greatest emphasis. The next set of criteria, Likelihood of Contamination, should receive medium emphasis, and Contaminant Migration should receive the least emphasis. For each set of criteria, a majority of favorable responses will yield a favorable rating by that set of criteria. Similarly, a majority of unfavorable findings will yield an unfavorable rating.

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If the geology and hydrogeological information is not available, the scoring will be determined on the potential for groundwater contamination. In most instances this will be a subjective assessment by the inspector. However, landfills and facilities with underground storage tanks can generally be considered to have potential for groundwater contamination. On the other hand, facilities that are totally paved, and collect and treat all storm water and materials from accidental spills, can be considered to have minimal potential for groundwater contamination.

When information is not available, the scoring will be as follows:

- A score of "0" will be given to those facilities that have a potential for groundwater contamination.
- No score will be given to those facilities that have no potential for groundwater contamination. This will constitute deletion of this category; therefore, the results will be normalized to the maximum possible score of 150.

Information that cannot be easily obtained during the facility visit or from the company can possibly be obtained from one or more of the following sources:

- County or local health department
- Nearby USGS office
- Local water company
- Local soil conservation or other agricultural office

A facility with a compliant and well-designed groundwater monitoring program, with a favorable geology, where no releases have been detected, would score highest in this category. Facilities with releases that affect a drinking water supply would score the lowest.

Facility Design

This category includes the design of individual units for waste management, as well as the facility layout. Facilities with units designed under the direction of registered professional engineers to both applicable regulatory standards and accepted engineering design standards, with well-

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documented plans and construction data (such as structural testing, liner installation QA/QC, and documented record drawings) will be scored high. Facilities with little or no evidence of design or engineering will be scored low.

New facilities designed specifically for the waste management function being performed will probably score higher than those adapted from other operations or uses. The lowest score should be assigned to facilities where problems are directly attributable to design inadequacies. Scoring should not be based on age alone because some facilities that are designed to obsolete standards may not have significant risk.

Old landfills, with open or closed cells, designed to obsolete standards can have average ratings if it is confirmed they have not contaminated groundwater. If no groundwater monitoring has been done, then the auditor must judge the potential risk.

Operations

This category is used to evaluate observations of actual waste management and handling at the facility, as well as facility compliance with waste analysis, inspection, training, and preparedness and prevention requirements. Housekeeping observations are also considered when ranking under this category. Past operating practices should also be considered when developing this ranking.

Quality control on incoming wastes may be the most important consideration. Poor quality control can result in more dangerous wastes, or wastes not compatible with the facility's design, entering the facility, and possibly being handled inappropriately.

The following factors are considered:

- Are appropriate material handling systems in place, or do material transfer operations result in risks of spills or accidents?
- Do past site use and practices have potential for future liability?
- What improvements to the facility are planned? Continuous improvement in facility equipment and

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system show management commitment to good operations.

- Housekeeping-Note overall site conditions.
- Recordkeeping.
- Facility accident history-Poor workplace safety may indicate a problem with company operations.
- Emissions monitoring (excluding groundwater).

Both site visit and file review information should be used for evaluating this category. A facility should have complete, thorough, and compliant operations procedures, and should be executing the procedures as written, to score high in this category. A facility that has excellent written procedures, but is not implementing them, will score lower, as will a facility with incomplete procedures. The lowest scoring facilities will have incomplete operating procedures, and observations of noncompliance, unsafe, or sloppy waste management practices.

Regulatory Oversight and Compliance

This category is used to evaluate both the facility's regulatory compliance record and the adequacy of the regulatory agency oversight program. Both these factors are important, because a facility may have an excellent compliance record "on paper" that results from infrequent or unaggressive oversight from the regulatory authority rather than from efforts to comply by the facility.

Factors resulting in a high ranking will include the following:

- Frequent, thorough inspections and oversight by the regulators
- Activities have applicable permits in place and the permits are current
- Record of few or minor violations
- Few repeat violations (the facility is not cited for a violation repeatedly)

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- Documentation that the facility acts promptly and aggressively to correct violations
- Cooperative working relationship with regulators (as shown in the tone of agency correspondence)

Factors contributing to a low ranking will include the following:

- Pattern of frequent and repeated violations
- Pattern of major violations (those resulting from a potential to release contaminants to the environment, an unsafe practice, or failure to provide financial assurance)
- Listing on the National Priorities List (CERCLA)

Location

Few RCRA regulations address facility location. The regulations do contain restrictions on waste management in floodplains or earthquake prone areas. Some state regulations prohibit RCRA TSDFs in certain environmentally sensitive areas.

In the context of this ranking system, location refers to facility surroundings that may be affected by facility operations. The following factors should be considered when ranking location:

- Transportation routes - Are routes used to transport waste into and out of the facility in good condition and suitable for the type of traffic resulting from waste hauling? Does traffic pass through heavily populated areas or sensitive ecosystems (such as wetlands) to access the facility?
- Is the facility itself located in a populated area or adjacent to a sensitive ecosystem such as wetlands, a wildlife refuge, or similar area?

The ideal facility would be one at which an accidental release of a hazardous constituent could not create any problems for human health or the environment. Because the ideal rarely

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exists, the auditor must balance the physical site characteristics against the proximity to human population. The highest score can be given to facilities located in remote locations (no residences adjacent to the facility boundary and less than 10 residences within a 1 mile radius), and with no sensitive environment within a 2 mile radius.

At the other end of the scale, facilities with immediate residential neighbors, those with no effective buffer zones, and those bordering a sensitive environment would receive the lowest score for location. An average score can be given to facilities 2 or more miles from any concentration of population and having a reasonable buffer zone between the waste management area and the nearest neighbor. A facility in an industrial location, 2 or more miles from any concentration of population could also receive an average score.

The location evaluation should be conducted considering mitigating actions the facility may have taken in response to location restraints. For example, a facility near a populated area that has developed a warning system and evacuation plan in the event of a catastrophic release will score higher than a facility in a similar location that has no such plans.

Community Relations

This is a subjective ranking category in that a variety of political and societal factors may influence the perception of a facility to the public that have little or no relation to its compliance status.

It is included as a ranking factor because of NASA's highly visible role as a public agency.

Facilities that have programs or have made efforts toward community outreach should rank high, as this type of activity demonstrates a commitment to the community. Facilities that do not attempt such outreach, or that have an adversarial posture, may score lower. Not all sectors of a community will have positive impressions of a TSDf because of the overall public perception of hazardous waste management.

Facility response to citizen complaints should also be considered when ranking this category. A history of similar complaints, with no record of follow-up or correction, should reduce the score in this category.

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Appendix D

**Compliance Audit Checklist
for
Offsite RCRA TSD Facilities**

Facility Name:

Location:

Type Of Facility:

Evaluation By:

Date(s) of Facility Visit:

Date(s) of Regulatory Agency Visit:

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1.0 General Site Information

1-1 Site Identification:

Name of facility _____
EPA ID Number _____

1-2 Site Location:

a. Physical location of facility:

Street or Route No. _____

City or Town _____ State _____ Zip _____
Phone No. _____

b. Facility Mailing Address:

Street or P.O. Box No. _____
City or Town _____ State _____ Zip _____

1-3 Facility Contact:

Name: _____ Title: _____

1-4 Facility Status:

Generator Transporter Treatment Storage Disposal

1-5 Company Ownership/Principal Contact:

a. Parent Company (if any):
Address: _____

Contact Name: _____ Phone No.: _____

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b. Affiliated Companies:

1-6 Site History:

Describe previous owners, operators, date facility opened, prior use(s) of site:

1-7 General Facility Information:

a. Total facility size:

b. Facility operating hours:

_____ Monday - Friday

_____ Saturday

_____ Sunday

c. Site climate (rainfall, temperature, humidity):

d. Is facility located in populated, industrial, residential, commercial, rural, remote location? Describe.

e. Nearest neighbors in all directions and description (residential and non-residential, proximity to schools, hospitals): _____

f. Facility appearance (describe):

Housekeeping - _____

Odors - _____

Ponded Water - _____

Buffer zone (between active areas and adjacent property) - _____

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Visible emissions - _____

1.1 Facility Operations

1-8 General Operations:

Site Activities

Disposal Treatment Storage Generator
 Recycle Transporter

1-9 Onsite Units (check all that apply):

Sanitary landfill
 Industrial nonhazardous landfill
 Secure hazardous landfill
 Storage/transfer station
 Container storage
 Tank treatment/storage
 Surface impoundments
 Thermal treatment
 Incineration
 Wastewater treatment
 Solvent recovery
 Oil recycling
 Injection well
 Other (specify)

1-10 Method(s) of Receipt (check all that apply):

Tank Truck Railroad Barge Ship
 Vacuum Truck Van Other

Mode of Acceptance:

Containerized: Liquids Solids
 Bulk: Liquids Solids
 Other:

AD10-Form 2 (December 1999)

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Handling/treatment/disposal units used by NASA at facility:

1-11 Waste Description and Quantities:

Wastes handled at facility (indicate quantity per year, if possible, and method of handling. Attach waste list, if appropriate):

<u>Waste Code or Type</u>	<u>Description/ Quantity</u>	<u>Handling/Treatment/Disposal</u>
-------------------------------	----------------------------------	------------------------------------

1-12 Other toxic or hazardous wastes handled by facility (indicate quantity per year, if possible, and method of handling):

<u>Waste</u>	<u>Yes</u>	<u>No</u>	<u>Quantity</u>	<u>Handling/Treatment/Disposal</u>
Asbestos	—			
Flammable wastes	—			
Halogenated organics	—			
Pesticides	—			
PCBs	—			
Radioactive	—			
Reactive	—			
Etiological	—	—		

1-13 Does facility handle ignitable or reactive wastes?

- a. If yes, is waste separated and confined from sources of ignition or reaction (open flames, smoking, cutting and welding, hot surfaces, frictional heat), sparks (static, electrical, or mechanical), spontaneous ignition (e.g., from heat-producing chemical reactions), and radiant heat?
Yes __ No __ NA
- b. Are smoking and open flames confined to specifically designated locations?
Yes __ No __ NA
- c. Are "No Smoking" signs posted in hazardous areas?
Yes __ No __ NA

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1-14 NASA wastes sent to facility in the last two years or proposed to be sent if this is a new site:

<u>Generator</u>	<u>Waste Code or Type</u>	<u>Description/ Quantity</u>	<u>Handling/Treatment/Disposal</u>
------------------	-------------------------------	----------------------------------	------------------------------------

Percentage of NASA wastes to facility total? ___ percent

1-15 Other major companies that use facility:

1-16 Prohibited Wastes:

- a. By permit limitations
- b. By facility management policy

1-17 Describe location(s) and management method(s) for all wastes resulting from operations at this facility (hazardous, nonhazardous wastewater, liquid waste streams, empty drums, other):

<u>Waste Stream</u>	<u>Management Method</u>	<u>Facility Name and Location</u>	<u>Evaluated by NASA Rating</u>
-------------------------	------------------------------	---------------------------------------	-------------------------------------

1-18 How are the offsite waste management facilities selected (cost, audits, etc.)?

1-19 If NASA wastes are handled separately, can NASA select the secondary disposal contractor? Explain:

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- a. 24-hour surveillance system (television monitoring or guards)? Yes No NA

OR

- b. 1. Artificial or natural barrier around facility (fence or fence and cliff)? Yes No NA

Describe:

AND

2. Means to control entry through entrances (attendant, television monitors, locked entrance, controlled roadway access)? Yes No NA

Describe:

2-5 Are "DANGER-UNAUTHORIZED PERSONNEL KEEP OUT" signs posted at all entrances?

Yes No NA

2-6 Does the owner/operator maintain a written inspection schedule at the facility?:

Yes No NA

2-7 Does the owner/operator maintain an inspection log?

Yes No NA

2-8 Personnel Training:

Does the owner/operator maintain personnel training records at the facility? Yes No NA

Date of most recent training:

How long are they kept?

2-9 Does the facility have a health surveillance plan for employees?

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Yes __ No __ NA

Describe:

2-10 Preparedness and Prevention:

Is there evidence of fire, explosion, or contamination of the environment?

Yes __ No __ NA

If yes, use narrative explanation sheet to explain.

2-11 Is the facility equipped with:

a. Internal communication or alarm system? Yes __ No __ NA

1. Is it easily accessible in case of emergency? Yes __ No __ NA

b. Telephone or two-way radio to call emergency response personnel? Yes __ No __ NA

c. Personnel safety equipment and protective clothing? Yes __ No __ NA

d. Portable fire extinguishers, fire control equipment, spill control equipment, and decontamination equipment? Yes __ No __ NA

e. Water of adequate volume from hoses, sprinklers, or water spray system? Yes __ No __ NA

2-12 Is there enough aisle space to allow unobstructed movement of personnel and equipment in the event of an emergency?

Yes __ No __ NA

2-13 Has the owner/operator made arrangements with the local authorities to familiarize them with characteristics of the facility?

(Layout of facility, properties of hazardous waste handled and associated hazards, places where facility personnel would normally be working, entrances to roads inside facility, possible evacuation routes.) Yes __ No __ NA

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2-14 In the case that more than one police or fire department might respond, is there a designated primary authority?

Yes No NA

2-15 Does the owner/operator have phone numbers of and agreements with state emergency response teams, emergency response contractors, and equipment suppliers?

Yes No NA

Are they readily available to all personnel?

Yes No NA

2-16 Has the owner/operator arranged to familiarize local hospitals with the properties of hazardous wastes handled and types of injuries that could result from fires, explosions, or releases at the facility?

Yes No NA

2-17 If state or local authorities declined to enter into agreements, is this entered in the operating records?

Yes No NA

2-18 Contingency Plan and Emergency Procedures:

Is a Contingency Plan maintained at the facility?

Yes No NA

a. If yes, is it a revised SPCC Plan?

Yes No NA

b. What is the date of the plan?

2-19 Is there an emergency coordinator onsite or on-call at all times?

Yes No NA

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2-20 Manifest System, Record Keeping, and Reporting:

- a. Does the owner/operator retain copies of all manifests?
Yes __ No __ NA
1. Are the manifests signed and dated and returned to the generator?
Yes __ No __ NA
2. Is a signed copy given to the transporter? Yes __ No __ NA

2-21 Does the facility receive any waste from a rail or water (bulk shipment) transporter?

Yes __ No __ NA

- a. If yes, is it accompanied by a shipping paper? Yes __ No __ NA

2-22 Has the owner/operator received any shipments of waste that were inconsistent with the manifest (manifest discrepancies)?

Yes __ No __ NA

- a. If yes, has he attempted to reconcile the discrepancy with the generator and transporter? Yes __ No __ NA
1. If no, has Regional Administrator been notified?
Yes __ No __ NA

2-23 Does the owner/operator keep a written operating record at the facility?

Yes __ No __ NA

2-24 Does facility have copy of permit onsite?

Yes __ No __ NA

2-25 Does the facility submit a biennial report by March 1 every even-numbered year?

(Note: Some states require annual reports.) Yes __ No __ NA

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2-26 Has the facility received any waste (that does not come under the small generator exclusion) not accompanied by a manifest?

Yes No NA

a. If yes, has it submitted an unmanifested waste report to the regulatory authority?

Yes No NA

2-27 Does the facility submit to the regulatory authority reports on releases, fires, and explosions; contamination and monitoring data; and facility closure?

Yes No NA

3.0 Regulatory Agency Information

3-1 Regulatory Status (check all that apply):

- | | |
|--|---|
| <input type="checkbox"/> RCRA Permitted Facility | <input type="checkbox"/> RCRA part B Application Submitted |
| <input type="checkbox"/> RCRA Interim Status | <input type="checkbox"/> RCRA part B Application in Preparation |
| <input type="checkbox"/> No Permits Required | <input type="checkbox"/> Other than RCRA Permitted Facility |

3-2 Name of Agency(s) (state/EPA/county) responsible for hazardous and solid waste management:

Agency name & address Contact's name/function Phone #

3-3 List RCRA operating permits and facility identification numbers (federal and state):

<u>Regulatory Authority</u>	<u>Permitted Activity</u>	<u>PermitDate</u>	<u>Issue Date</u>	<u>Expiration Date</u>
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3-4 List other environmental permits, if any (NPDES, air emissions permits):

3-5 Describe agency inspection program for facility:

- a. Resident regulatory agency inspector? Yes No NA
- b. Frequency of routine inspections? Yes No NA
- c. Scope of routine inspections? Attach sample if available. Yes No NA
- d. Frequency of major inspections? Yes No NA

3-6 Summarize results of most recent inspection:

- a. Date
- b. Compliance deficiencies
- c. Resolution of deficiencies
- d. Any Notices of Violation? Subject(s)?

3-7 Any litigation in progress? (Also check SEC 10-K)

Yes No NA

3-8 Is the facility a potential responsible party (PRP) at a Superfund site or has the facility received a CERCLA Section 104(e) letter notifying it that it may be a PRP?

Yes No NA

If yes, describe:

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3-9 Results of discussion with Regulatory personnel:

3-10 Were there any public complaints filed recently (last 2 to 3 years) or since the last inspection?

Yes __ No __ NA

If yes,

- a. Subject?
- b. Resolution/response?

3-11 Were there any reportable spills, accidents, fires, or other events requiring an emergency response?

Yes __ No __ NA

If yes,

- a. Incident? Yes __ No __ NA
- b. Was the Contingency Plan applied satisfactorily in terms of notification, etc.? Describe: Yes __ No
NA

3.1 Financial Strength

3-12 Source of Information (check all that apply):

- Dun & Bradstreet (specify DUNS No.)
- Annual Report,
- SEC Form 10-K
- Accounting Report
- Other

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3-13 Evaluation of Financial Strength:

- | | <u>Facility</u> | <u>Parent Co.</u> |
|---|-----------------|-------------------|
| a. Current assets | \$ _____ | \$ _____ |
| b. Current liabilities | \$ _____ | \$ _____ |
| c. Net working capital
(line a minus line b) | \$ _____ | \$ _____ |
| d. Tangible net worth | \$ _____ | \$ _____ |
| e. Bond rating by Standard & Poor's or Moody's? | | |
| f. Percentage of assets in the United States: | _____ % | _____ % |
| g. Value of assets in the United States? | \$ _____ | \$ _____ |
| h. Debt/equity ratio?
(total liabilities/net worth or stockholders equity) | | |
| i. Current Ratio?
(Current Assets/Current Liabilities) | | |
| j. Other comments? | | |
| k. Name of parent company (A.4.a.), percent ownership: | | |

3-14 How is facility meeting financial requirements for closure/post-closure costs?

- a. Closure:
- Financial Instrument: _____ (trust fund, surety bond, letter of credit, insurance, financial test)
- Amount of coverage \$ _____
- Is amount \geq than cost estimate? Yes ___ No ___
- b. Post-Closure (disposal facilities only):
- Financial Instrument: _____ (trust fund, surety bond, letter of credit, insurance, financial test)
- Amount of coverage \$ _____
- Is amount \geq than cost estimate? Yes ___ No ___
- c. Institution holding financial instrument?

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d. Is estimate adjusted annually? Yes No

3-15 Summarize assessment of liability coverage:

3.2 Insurance

3-16 Does the facility maintain the following types of insurance coverages?

Pollution Liability	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Property	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Auto Liability	Yes <input type="checkbox"/>	No <input type="checkbox"/>
General Liability	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Excess Liability	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Workers Compensation	Yes <input type="checkbox"/>	No <input type="checkbox"/>

3-17 How is facility demonstrating financial responsibility for bodily injury and property damage to third parties caused by sudden or non-sudden accidental occurrences arising from operations of the facility per 40 CFR 264.147?

- a. Sudden (all TSD facilities)
 Financial instrument _____
 (insurance, financial test, corporate guarantee, combination, other 40 CFR264.149)
 Amount of Coverage \$ _____ each occurrence
 \$ _____ annual aggregate
- b. Non-sudden (surface impoundments, landfills, and land treatment facilities)
 Financial instrument _____
 (insurance, financial test, corporate guarantee, combination, other 40 CFR264.149)
 Amount of Coverage \$ _____ each occurrence
 \$ _____ annual aggregate

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- c. Institution holding financial instrument?
- d. Expiration date of financial instrument?

4.0 Landfill/Impoundments

4-1 Landfill/Impoundments:

Total acreage, volume, capacity currently permitted:

4-2 Total acreage, volume currently closed:

4-3 Total estimated disposal rate/year:

4-4 Total estimated waste volume/weight previously disposed:

4-5 Estimated permitted facility life remaining:

4-6 Construction (or provide cross-section from permit):

- a. Are units constructed according to RCRA minimum technology requirements? Yes __ No __ NA
- b. Does unit contain synthetic liner(s) on bottom and sides? Yes __ No __ NA
- c. What is the elevation of the uppermost groundwater at the unit(s) area?
- d. Are there any portions of the unit(s) bottom below or closer than 10 feet to the uppermost ground water? Yes __ No __ NA __
- e. Depth of unit bottom below grade: _____
- f. Area/volume of unit(s): _____

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4-7 Leachate Collection and Treatment:

- a. Does each cell/subcell contain a leachate collection system? Describe: Yes __ No __ NA __
- b. How is leachate handled/treated? Yes __ No __ NA __

4-8 Landfills/Operations:

- a. Describe measures to prevent commingling of incompatible wastes:
- b. Is the landfill managed to control wind dispersal? Yes __ No __ NA __
- c. Is landfill cell segregated into subcells? Describe: Yes __ No __ NA __
- d. Is three-dimensional grid system employed for waste placement in landfill cells? Yes __ No __ NA __
- e. Are interim covers used at the site? Describe: Yes __ No __ NA __

4-9 Surface Impoundments/Operations:

- a. Are impoundments currently used to treat or store waste? Yes __ No __ NA __
- b. Are 2 feet of freeboard maintained in impoundments? Yes __ No __ NA __
- c. Is there any evidence of overtopping of the dike? Yes __ No __ NA __

4-10 Describe closure and post-closure plans for the landfill/impoundment:

- a. Closure:

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b. Post-closure:

5.0 Thermal Treatment/Incinerator

5-1 Type of Facility:

Asphalt Plant Waste Incinerator Soil Treatment
 Cement Kiln Brick Manufacturer Other

5-2 Type of Furnace:

Rotary Kiln Fluid Bed Multiple Hearth
 Other (Describe):

5-3 Describe unit operation:

- a. Continuous, semi-continuous, or batch operation?
- b. Combust wastes together or separately?
- c. Furnace feed system(s)?
 Conveyor Ram injection Shredder Auger
 Other:
- d. Fuel source(s) and typical fuel usage for furnace and gas incinerator (afterburner):
- e. Ash removal - Batch Continuous
 Dry
 Wet

5-4 Waste codes furnace is permitted to treat:

5-5 Operations Information:

- a. Criteria for heat treating waste? Definition of stable conditions?
- b. Operating schedule? hours days/week

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- c. Scheduled maintenance periods?
- d. Operating availability? (%)

5-6 Air emissions control equipment, major components?

- Baghouse Cyclone Gas Quenching
- ESP Direct Heat Impinger Heat Exchanger
- Scrubber Wet Type _____ Neutralization
- Dry Type

Special features:

5-7 Control/Alarm Systems:

Describe what conditions result in automatic feed cutoff-parameter and range (low afterburner temp. _____°F).

5-8 Test burn complete? Results:

5-9 Operating data versus regulations?

- a. Temperature Primary Gas Incinerator
 Furnace (Afterburner)
- b. Residence Time Primary Gas Incinerator
 Furnace (Afterburner)
- c. Ambient Monitoring Pollutant R/P Frequency Type Monitor
 TSP
 SO₂
 NO_x
 Other
- d. Emissions Particulates
 Opacity
 SO₂
 O₂
 CO₂
 CO
 NO_x
 HCl

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PCB
VOC

R = Required
P = Process Control (actual concentration)

5-10 Other Emission Sources:

- a. Storage tanks? Yes No Vented? Yes No

Describe System:

- b. Dry material handling? Yes No Product(s) _____
c. Evaporator(s) Yes No Capacity ___#/hr VOC Emissions ___#/hr
d. Shredder Yes No Particulate Emissions ___#/hr
e. Truck loading/unloading operation ___#/hr
f. Heating boiler(s) Yes No Max capacity ea. ___ MBTU/hr
g. Emergency generators/fire pumps Yes No
Max. capacity ___kW/GPM
h. Other:

5-11 Visible Emissions Observations:

- a. Were emissions visible from any unit observed? Yes No

5-12 How and where are solid and liquid residues treated and/or disposed:

- a. Solids
- Bottom and fly ash
 - Scrubber sludge
 - Tank bottoms
 - Empty drums
 - Are solids fixed/stabilized before disposal? If so, what stabilization agents are used and in what amounts?
- What RCRA tests are performed on solids?

- b. Liquids

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- Scrubber water
- Quench water
- Area wash water/other wastes
- NPDES permit required? Conditions?

6.0 Recycling Treatment Facilities

6-1 Type of Facility:

Recycler
Treatment

6-2 Processes or unit operations used at facility (check all applicable processes and explain as necessary):

- Biological treatment
- Blending/fuels program
- Chemical fixation
- Chemical treatment
- Dewatering (specify method)
- Distillation
- Flocculation/precipitation
- Oxidation
- Thermal regeneration
- Other

6-3 What materials or wastes are accepted at the facility (specify where possible)?

6-4 Briefly describe unit design and operation (or attach flow plan and supplement with description):

What operating parameters/conditions are monitored and how often?

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7-2 What wastes is the well permitted to receive?

7-3 Describe unit design and operation (provide a sketch showing well profile and subsurface formations):

Injection formation:

- Formation: Name _____ fracture pressure ____ psig
- What is maximum wellhead pressure (or bottom hole pressure)?
- Has it ever been exceeded? Yes __ No __ NA __

Well characteristics:

- Depth to base of the lowermost underground source of drinking water (USDW):
- Depth to injection zone:
- Is surface casing set below this depth? Yes __ No __ NA __
- Is casing/borehole annulus cemented to prevent fluid flow into or between all USDWs? Yes __ No __ NA __
- Does the well have tubing and packer? Yes __ No __ NA __
(Tubing and packer provide an additional layer of USDW protection and another annulus to monitor and test for mechanical integrity.)

Is the well being operated according to the conditions of its permit?

	<u>Gauge</u>	<u>Permit</u>		<u>In Compliance?</u>
		<u>Recorder</u>	<u>Limit</u>	
Injection pressure	__ psig	__ psig	_____ psig	__ Yes __ No
Annulus pressure	__ psig	__ psig	_____ psig	__ Yes __ No
Differential	__ psig	__ psig	_____ psig	__ Yes __ No
Injection Rate	__ gpm	__ gpm max.		__ Yes __ No
		__ gpm avg.		__ Yes __ No

pH: _____

Fluid density: _____

Condition of gauges and recorders: _____

Annulus fluid volume monitoring system: _____

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Wellhead appearance: _____

Remarks:

Were logs and other tests conducted during the construction of the well? Yes __ No __ NA

Was a report prepared by a qualified log analyst who interpreted the results? Yes __ No __ NA

7-4 Describe how integrity of deep well construction is monitored:

7-5 Describe surface equipment and operation:

If separation or other methods of pre-injection treatment are practiced, where and how are wastes disposed?

Is waste subject to the land disposal ban? Yes __ No __ NA
If yes, is it being properly pretreated before injection? Yes __ No __ NA

7-6 Do closure and post-closure plans exist? Yes __ No __ NA

8.0 Containers

8-1 Container Storage:

(Complete one copy of this checklist for each container storage area evaluated.)

a. Describe drum storage area (stack height, stored inside, outside protected):

b. Number of containers
__ Permitted __ In Storage

c. Are all containers: In good condition? Yes __ No

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Securely closed? Yes No
 Segregated by waste type? Yes No
 Marked to identify contents? Yes No

If no, explain.

- d. Is there a containment system for spills, leaks, and precipitation? Yes No NA
 If yes, is containment system:
- Designed to efficiently drain and remove liquids? Yes No NA
 - Of sufficient capacity to contain 10 percent of all containers or the volume of the largest container? Yes No NA
 - Is the base underlying the containers free of cracks or gaps and impervious to the materials being stored? Yes No NA

If no, explain.

- e. Is runoff into the containment system prevented? Yes No NA
- f. Is accumulated precipitation or spills removed from the sump or collection area in a timely manner? Yes No NA
 If no, explain. If yes, how disposed?
- g. Is the area marked with "Hazardous Waste," and if appropriate, "No Smoking" signs? Yes No NA

9.0 Tanks

9-1 Tank Storage:

(Complete a checklist for each tank storage area evaluated.)

- a. What is the number and size of each tank? (Attach list if necessary)
- b. Do tanks have controls to prevent overfilling? Yes No NA
 If yes, explain:
- c. Do aboveground tanks have a containment Yes No NA

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system for spills, leaks, and precipitation?

If yes, is containment system:

- Designed to efficiently drain and remove liquids? Yes __ No __ NA
- Of capacity to contain 10 percent of the volume of all tanks or the volume of the largest tank, whichever is greatest? Yes __ No __ NA
- Is the base underlying the containers free of cracks or gaps and impervious to the materials being stored? Yes __ No __ NA

If no, explain.

- d. Is runoff into the containment system prevented? Yes __ No __ NA
- e. Is accumulated precipitation or spills removed from the sump or collection area in a timely manner? If no, explain. If yes, how disposed? Yes __ No __ NA
- f. Are there underground tanks? Yes __ No __ NA
If yes, what is the tank capacity and material stored?
- g. Are underground tanks subjected to periodic integrity testing? Yes __ No __ NA
If yes, explain (frequency and method)
- h. Have any underground tanks been found to be leaking? Yes __ No __ NA
- i. What method of leak testing or leak detection is used?

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9-2 Are storage areas inspected for corrosion, leaks, spills?
Yes __ No __ NA

If yes, explain (frequency, by whom and method)

9-3 Evidence of leaks in storage areas?
Yes __ No __ NA

10.0 Hydrology/Groundwater Monitoring

10-1 Water Supply:

- a. Source for nearby community/neighbors (for irrigation, drinking, etc.):
- b. Source for facility:

10-2 Nearest Offsite Wells:

- a. Distance
- b. Use of offsite wells (drinking water, irrigation, process, etc.):

10-3 Groundwater Occurrence:

- a. Depth to principal site aquifer:
 - Quality:
 - Use (locally and regionally):
- b. Depth to nearest unconfined or shallow ground water:
 - Quality:
 - Use (locally and regionally):

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10-4 Local/Regional Groundwater Flow Direction:

10-5 Discharge Point(s) for Groundwater:

10-6 Proximity of Surface Waters:

10-7 Source of Geological/Hydrological Data:

10-8 Groundwater Monitoring:

- a. Is groundwater monitoring performed? Yes No NA
If yes,
- b. How many wells are used in sampling groundwater: Total
 Upgradient Downgradient
- c. Water-bearing formations in which wells are screened:
- d. Monitoring strategy
 Facility perimeter
 Individual treatment/disposal facilities
 Other, describe:
- e. Is monitoring system adequate to detect groundwater contamination within reasonable time frame? Yes No NA
- f. Monitoring parameters:
- g. Monitoring frequency:
- h. Does the state split/analyze samples? Yes No NA
- i. Has contamination been detected? Yes No NA
If yes, describe:
- j. Has a groundwater assessment or corrective action program been initiated or proposed? Describe: Yes No NA
- k. Has the state or EPA reviewed in detail the groundwater monitoring results? If yes, describe: Yes No NA

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I. General results of groundwater monitoring:

10-9 Storm Water Runon/Runoff:

- a. How is runon to facility prevented?
- b. Is surface water runoff diverted away from active portions? Yes __ No __ NA
- c. Is surface water originating from active portions of the site collected? If yes, describe: Yes __ No __ NA
- d. Is NPDES permit required for discharge? Yes __ No __ NA
 - If yes, what are discharge criteria?
 - Describe analysis of collected water before discharge:
- e. What is the design basis for runoff control system?
- f. Is the site located within the 100-year floodplain? Yes __ No __ NA

National Aeronautics and
Space Administration

George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812



November 1, 2002

Reply to Attn of: PS01

TO: ALL POTENTIAL QUOTERS

FROM: PS01/Stephen P. Beale

SUBJECT: Significant Changes Between the Draft and the Final Request for Quotation (RFQ), Logistics Services for the Marshall Space Flight Center

A list of the significant changes incorporated into the final version of Request for Proposal (RFP) 8-1-1-A4-00155 is provided below. The changes are a result of continuing internal reviews performed by the Center, and comments received from Industry. All questions and comments received from Industry have been thoroughly evaluated, and the RFQ has been updated as appropriate. Only the most significant changes are listed below. Potential Quoters are cautioned to carefully review the Final RFQ in its entirety. Grammatical and typographical errors have been corrected throughout the Final RFQ as needed.

1. Section 1: FAR Clause 52.232-18, Availability of Funds was added.
2. Section 2, Clause 8: The references to Logistics Work Request were changed to Logistics Service Order.
3. Section 2, Clause 14: The references to Logistics Work Request were changed to Logistics Service Order.
4. Section 2, Clause 19: The names of the local sources were corrected to: Alabama Industries for the Blind, a division of the Alabama Institute for Deaf and Blind (AIDB), and Huntsville Rehabilitation Foundation, dba Phoenix Industries.
5. Section 2, Clause 21: The second and third sentences of paragraph A were changed to read "Phase-In shall not exceed a maximum of sixty (60) calendar days beginning with the order's effective date. The Quoter quotes the following Phase-In period: _____ (calendar days)." Paragraph C was renumbered as paragraph D. The following was inserted as the new paragraph C: "If Phase-In activities are required, the first year's period of performance will be calculated to include the lump sum price for base year A, less a maximum of two months of lump sum price for base year A (two twelfths of base year A), plus Phase-In price, if any."

6. Section 2, Schedule of Fixed-Labor Rates: The job categories on the schedule were updated.
7. Section 3, Attachment 1, Performance Work Statement: The following statement was added to the first sentence of Section 1.2.E.

“...within six (6) months of order effective date and shall be accepted by the Government.”
8. Section 3, Attachment 1, Performance Work Statement: The following statement was added to Section 3.2.A.1.a.(4).

“Spill Response is provided in support of RSA Fire Department (first responder). The Center Operations Support Services Contractor is the primary spill responder for MSFC with the Logistics Services Contractor providing support. Spill response efforts shall include technical consultation, provision of appropriate containers for spilled materials, and miscellaneous initial responders functions until primary organization arrives on the scene.”
9. Section 3, Attachment 1, Performance Work Statement: The following statement was added to Section 3.2.A.1.b, second paragraph.

“The Contractor provide manifests or other documentation for Government review and acceptance prior to disposal of waste materials.”
10. Section 3, Attachment 1, Performance Work Statement: The following statement was added to Section 5.2.B.3.

“M&R For Equipment Not Specified Herein

The Contractor shall provide M&R services for cafeteria equipment type, which is not specified in 5.2.A.1.a.(2). The Contractor shall obtain approval from the CO or COTR for these services.”
11. Section 3, Attachment 2, Data Procurement Document: DRD 988LS-025 was added.
12. Section 3, Attachment 3, Performance Requirements Summary: Minor changes were made throughout the attachment.
13. Section 3, Attachment 4, Award-Term Plan: The following statement was added to the grading table: “In addition, any major breach of safety or security as defined in Clause 33 will result in a score of zero for the evaluation period.”
14. Section 3, Attachment 8, Terms and Conditions for Operations of the Retail Store, Building 4752: Added shelving information in Attachment 2.

15. Section 3, Attachment 10, Government Furnished Equipment: Added additional items to the Food Services' general purpose and special purpose equipment lists.
16. Section 3, Attachment 13, Other Retail Store Items: Updated current standby stock list to other retail store items list.
17. Section 4, Provision 4-3: The following changes were made to Paragraph B.

“For the purpose of developing subcontracting baselines, percentage goals of 49 percent for SDB concerns, 5 percent for WOSB concerns, 3 percent for HUB Zone SB concerns, 3 percent for VOSB concerns, and 1 percent for HBCUs/OMIs of the total order value have been established for this requirement. The goals for WWOSB, HUBZone SB, VOSB, and HBCUs/OMIs while stated separately as a percentage of the total order value, are subsets of the overall SDB goal. The Government recognizes that the achievement of these goals may present Quoters with a challenge, especially in the identification of VOSB subcontractors to count toward the achievement of the 49 percent SDB goal. If it is determined by the Quoter that it is unable to identify an SDB certified VOSB concern, the Quoter will be evaluated based on achievement of a 46 percent SDB goal rather than 49 percent, and a separate 3 percent VOSB goal. In this situation, the Quoter shall provide supporting rationale documenting its inability to identify an SDB certified VOSB concern to participate.”

18. Section 4, Provision 4-7: In Paragraph C, Submittal I, for Past Performance the definition of major subcontracts was changed to include “if applicable, subcontracts for No Cost To This Order Services such as food services and the retail store operations.”
19. Section 4, Provision 4-7: In subparagraph C.2 the following definition of subcontracts was added: “subcontracts over \$500,000 total value or, if applicable, subcontracts for No Cost To This Order Services such as food services and the retail store operations.”
20. Section 4, Provision 4-7: In Paragraph D, Submittal II, Volume I, Mission Suitability Factor, Management Approach Subfactor, subparagraph MA-2, Planned Subcontracts and Teaming, major subcontracts were changed to include “subcontracts for No Cost To This Order Services such as food services and the retail store.”
21. Section 4, Provision 4-7: In Paragraph D, Submittal II, Volume I, Mission Suitability Factor, Management Approach Subfactor, subparagraph MA-5, Staffing, under Total Compensation Plan, the second sentence of the 4th subdivision was changed to read “This information shall be included in the Quoter’s submittal.”
22. Section 4, Provision 4-7: In Paragraph D, Submittal II, Volume IV, Completed RFQ and Signed SF 1449, the following list of fill-ins by the Quoter was provided:

“Fill-ins are included on the first two pages of section 1, Clauses 2, 21, 22, and 31 in section 2 and in provision 4-2 in section 4.”

23. Section 4, Provision 4-8: Samples of MSFC Approved Furniture was added to the list of material in the reading room.
24. Section 4, Attachment 4-3, MSFC Logistics Services – Lump Sum and Prepriced Work Basis of Estimate (BOE) Contract Line Item Number: A row was added to each period of performance for CLIN 00X1.0601.
25. Section 6, Attachment 6-1, Historical Background: Added Spill Response information and updated Flight Hardware residual data.

Potential Quoters are reminded that the "Blackout" letter for this procurement has been distributed to all MSFC personnel concurrently with the release of the Final RFQ to industry. However, the "Blackout" letter is not intended to prevent the potential Quoter from utilizing the Reading Room. Any questions on the Final RFQ shall be in writing to the Contract Specialist, Mr. Daniel J. Fuller. Mr. Fuller can be reached by e-mail at dan.fuller@msfc.nasa.gov. Thank you for your interest in this requirement, and continued success in your proposal preparation activities.


Stephen P. Beale
Director
Procurement Office