



Goddard Procedural Requirements (GPR)

DIRECTIVE NO.	GPR 8500.8A	APPROVED BY Signature:	<u>Original Signed By</u>
EFFECTIVE DATE:	Revalidated February 9, 2015	NAME:	Raymond J. Rubilotta
EXPIRATION DATE:	February 9, 2020	TITLE:	Director, Management Operations Directorate

COMPLIANCE IS MANDATORY

Responsible Office: 250/Medical and Environmental Management Division (MEMD)

Title: Site Investigation and Remediation

PREFACE

P.1 PURPOSE

The purpose of this GPR is to define requirements for site investigations and site remediation activities at Goddard Space Flight Center (GSFC). This GPR outlines the procedures to be followed and the responsibilities for conducting site investigation and site remediation activities.

P.2 APPLICABILITY

These procedures and guidelines are applicable to all GSFC personnel, facilities, and activities, including all permanent and temporary activities. This directive shall also apply to all tenant organizations, contractors, grantees, clubs, and other persons operating under the auspices of GSFC or on GSFC property as required by law and as directed by contractual, grant, and agreement documents. These procedures and guidelines should be applied to foreign sites based on the intent of United States environmental statutes and full consideration of the requirements of the regulating Government body.

P.3 AUTHORITY

- a. National Aeronautics and Space Act, 51 U.S.C. § 20113, as amended.
- b. NPD 8500.1, NASA Environmental Management
- c. NPR 8590.1, NASA Environmental Compliance and Restoration Program
- d. GPD 8500.1, Environmental Policy Program Management

P.4 REFERENCES

- a. Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) (Superfund Act), as amended, 42 U.S.C. § 9601 et seq.
- b. Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA), as amended, 42 U.S.C. § 11001 et seq.
- c. Resource Conservation and Recovery Act of 1976 (RCRA), as amended 42 U.S.C. § 6901 et seq.
- d. Occupational Safety and Health Standards, 29 C.F.R. § 1910, (Subpart Z - Toxic and Hazardous Substances).

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- e. U.S. EPA Docket Number: RCRA-03-2004-0201TH. Administrative Agreement on Consent, United States Environmental Protection Agency Region III, in the Matter of National Aeronautics and Space Administration, Wallops Island, Virginia. September 2004.
- f. U.S. Environmental Protection Agency, October, 2006, Terms of Environment; Glossary, Abbreviations and Acronyms, <http://www.epa.gov/OCEPAterms/rterms.html>

P.5 CANCELLATION

None

P.6 SAFETY

All personnel who perform surveys in conjunction with this document shall comply with all worksite safety and health requirements.

P.7 TRAINING

Personnel managing or involved in site investigations or remediation shall have the appropriate training per NASA, GSFC, OSHA, CERCLA and RCRA regulations and directives.

P.8 RECORDS

All environmental records will be maintained per NASA Records Retention Schedules (NRRS) ([NPR 1441.1E](#)), Program Management Records, Schedule 8, Agency Filing Scheme # 8800, Item 43, summarized in the table below. Exception to the NRRS approved retention periods may be requested to satisfy programmatic or site-specific agreements as part of a consent order, corrective action plan, or record of decision.

Record Title	Record Custodian	Retention
RCRA Records	MEMD (Code 250)	* NRRS 8/48B1 Permanent. May retire to Federal Records Center 2 years after disposal. Transfer to National Archives and Records Administration 25 years after disposal of installation.
CERCLA Records	MEMD (Code 250)	* NRRS 8/48B1 Permanent. May retire to Federal Records Center 2 years after disposal. Transfer to National Archives and Records Administration 25 years after disposal of installation.

*NRRS – NASA Records Retention Schedules ([NPR 1441.1](#))

P.9 METRICS

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- a. The majority of environmental regulations and Executive Orders include specific required metrics to assess progress. These metrics shall be monitored and reported to comply with the requirements of the law or order. GSFC may establish additional metrics as deemed appropriate.
- b. The environmental management metrics shall be revised, as appropriate, to support continual improvements.
- c. Any measure or standard, defined by and required by a Corrective Actions Plan, Consent Agreement or Order, will be monitored and complied with to assess progress.

P.10 DEFINITIONS

(As defined in accordance with applicable references listed in Section P.4)

- a. **CERCLA Site/Facility** – An area or place within the jurisdiction of the U.S. EPA and/or a state.
- b. **Hazardous Substance** – 1. Any material that poses a threat to human health and/or the environment. Typical hazardous substances are toxic, corrosive, ignitable, explosive, or chemically reactive. 2. Any substance designated by U.S. EPA to be reported if a designated quantity of the substance is spilled in the waters of the United States or is otherwise released into the environment.
- c. **Hazardous Waste** – By-products of society that can pose a substantial or potential hazard to human health or the environment when improperly managed. Possesses at least one of four characteristics (ignitability, corrosivity, reactivity, or toxicity), or appears on special U.S. EPA lists. Petroleum products are not considered a hazardous substance and are addressed under Underground Storage Tank regulations.
- d. **National Oil and Hazardous Substances Contingency Plan/National Contingency Plan** – The Federal regulation that guides determination of the sites to be corrected under both the Superfund program and the program to prevent or control spills into surface waters or elsewhere.
- e. **National Priorities List (NPL)** – U.S. EPA’s list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action under Superfund. The list is based primarily on the score a site receives from the Hazard Ranking System. EPA is required to update the NPL at least once a year. A site must be on the NPL to receive money from the Trust Fund for remedial action.
- f. **Release** – Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment of a hazardous or toxic chemical or extremely hazardous substance.
- g. **Remediation** – Cleanup or other methods used to remove or contain a toxic spill or hazardous materials from a Superfund site.

P.11 ACRONYMS

(As defined in accordance with applicable references listed in Section P.4)

CAP	Corrective Action Plan
CERCLA	Comprehensive Environmental Resource, Compensation, and Liability Act
CMI	Corrective Measures Implementation
CMS	Corrective Measures Study
EE/CA	Environmental Evaluation/Cost Analysis
EPA	Environmental Protection Agency
FMD	Facilities Management Division
FS	Feasibility Study
HRS	Hazard Ranking System
NCP	National Contingency Plan
NPL	National Priorities List
PA	Preliminary Assessment
RA	Risk Assessment
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RI	Remedial investigation
RPM	Remedial Project Manager
ROD	Record of Decision
SI	Site investigation

PROCEDURES

In this document, a requirement is identified by “shall,” a good practice by “should,” permission by “may” or “can,” expectation by “will,” and descriptive material by “is.”

1. ROLES AND RESPONSIBILITIES

1.1 Center Director shall:

- a. Maintain an Environmental Program to ensure compliance with the Center Environmental Policy and applicable local, state, and Federal regulations.

1.2 Directors of shall:

- a. Ensure that Directorate operations are performed in accordance with this GPR and applicable permits and regulations;
- b. Ensure control of environmental program documents and records associated with directorate operations;
- c. Notify the Medical and Environmental Management Division of any potentially contaminated site; and

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d. Ensure resource management to accomplish the following responsibilities.

1.3 Medical and Environmental Management Division (MEMD) shall:

- a. Manage and provide technical expertise to comply with CERCLA, RCRA, and state site investigations and remediation processes and designate a Remedial Project Manager (RPM);
- b. Review plans and drawings related to site investigations and remediation to determine compliance with applicable regulations;
- c. Coordinate with Facilities Management Division (FMD) as part of remediation process and to obtain permits, as necessary;
- d. Act as the remedial programs point of contact for all regulatory agency interfaces and correspondence;
- e. Review, prioritize, and concur, as appropriate, on Construction of Facilities (CoF)-funded proposals for remedial projects, environmental compliance and restoration measures, abatement plans, and revisions thereto;
- f. Ensure appropriate training for workers and contractors in site investigation and remediation management and emergency response in accordance with applicable laws and consistent with NASA statutory authority;
- g. Ensure that necessary actions are taken to meet the applicable requirements of environmental laws and regulations;
- h. Negotiate, when necessary, compliance schedules with Federal, state, or local environmental regulatory agencies. If such negotiations commit NASA to specific actions having budgetary impact beyond the amounts already allocated to the Center for that purpose, then the agreement(s) shall be coordinated, in advance, with the cognizant Institutional Director and/or Program Associate Administrator and the NASA Headquarters Director of the Environmental Management Division;
- i. Inform the Public Affairs Office whenever environmental information is to be released to the public;
- j. Provide Web site(s) listing various hazardous waste or materials.

1.4 Facilities Management Division (FMD) shall:

- a. Notify MEMD of any potentially contaminated site identified during construction;
- b. Prepare or review construction specifications and plans for remediation systems;
- c. Submit plans or comments to MEMD for review, approval, and permit purposes related to remedial activities;
- d. Include environmental requirements in construction specifications;
- e. Approve excavation permits related to remedial activities;
- f. Coordinate permit requirements with MEMD related to remedial activities;
- g. Provide oversight of construction activities related to remedial activities, including safety compliance;
- h. Assist with the implementation and maintenance of Institutional Controls required per Record of Decisions, Site Agreements or as required per regulatory agencies;
- i. When planning for new facilities shall consider existing conditions, including landfills and fuel storage tank farms. The Facilities Master Plan includes information regarding past and existing operations that may have an environmental impact on future use. Contact MEMD RPM early in the planning process when considering the locations of new facilities; and

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- j. When planning and conducting operation and maintenance activities shall consider existing site conditions, including the presence of known environmental sites and remediation areas. The Facilities Master Plan includes information regarding past and existing environmental sites and conditions. Contact the MEMD RPM prior to entering a past or existing environmental site to obtain specific health and safety instructions. Contact MEMD RPM if unusual site conditions are encountered at any facility location (i.e., unusual odors, stained or discolored soil, obvious debris, etc).

1.5 Office of Public Affairs shall:

- a. Coordinate with the MEMD RPM to solicit public involvement in site investigation and site remediation processes;
- b. Coordinate with the MEMD RPM to assure that environmentally significant activities are disclosed to the public and that public opinion is taken into consideration during the planning phase; and
- c. Assist the MEMD RPM with responses to questions and comments from the public on environmental issues.

1.6 Supervisors shall:

- a. Ensure the immediate reporting of any known or suspected hazardous materials releases. At Greenbelt, dial 911 from Center phones or (301) 286-8080 from other phones. At Wallops Flight Facility, dial 911 from facility phones or (757) 824-1333 from other phones;
- b. Ensure that all employees within their organization, and contractors under their direction, managing or involved in site investigations or remediation have the appropriate training per NASA, GSFC, OSHA, CERCLA and RCRA regulations and directives; and
- c. Provide the MEMD RPM notification of any new activity, or changes to existing activities, in order that environmental considerations can be included early in the planning phase of a project.

1.7 Employees and Contractors shall:

- a. Immediately report any known or suspected hazardous materials releases. At GSFC, dial 911 from Center phones or (301) 286-8080 from other phones. At Wallops Flight Facility, dial 911 from facility phones or (757) 824-1333 from other phones; and
- b. Comply with all Greenbelt or Wallops Flight Facility requirements and organizational procedures relevant to site investigation and remediation.

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2. PROCEDURES

2.1 Site Investigation and Remediation

This section summarizes the various investigation and remediation processes for the uncontrolled releases of hazardous substances into the environment from past and ongoing operations at GSFC. NASA's past activities in managing hazardous wastes created situations that potentially released hazardous substances and wastes into the environment. These releases may have occurred through accidental spills, from undetected leaks in storage facilities and containers, and even after disposal.

The MEMD RPM will conduct the investigation and remediation, if required, of these releases, per state regulations and either under the CERCLA (for releases of hazardous substances) or RCRA (for releases of hazardous wastes). There are three major cleanup programs utilized, as discussed below.

The MEMD RPM may conduct the investigation and remediation as a voluntary action or may be required under a Federal facility agreement or consent order. The MEMD RPM may initiate a site investigation or remediation as a good faith effort to encourage positive public relations. A voluntary effort can be viewed as a tool in reducing regulatory scrutiny, proving a pro-environmental consciousness, and encouraging assistance from the regulatory agencies. Additionally, volunteer remediation efforts can reduce the potential for future liability, reduce or eliminate restrictions on future land use, and terminate potential migration of contaminated media in the event that site investigation or pathway assessment was not adequately addressed. The activities conducted under voluntary action are similar to those required under the CERCLA or RCRA programs, but with more flexibility in decision making.

The major steps of these programs are discussed below:

2.1.1 CERCLA (Superfund) Remedial Process

CERCLA establishes liabilities and responsibilities for hazardous substances investigation and remediation. The process itself is covered by EPA's regulations in the National Contingency Plan (NCP) and consists of the following stages to be managed and implemented in serial (a stage may be bypassed to accelerate the process, if supported by all parties) by the MEMD RPM (see Figure 1):

- a. **Site Discovery** – Notification to the EPA and the state of possible releases of hazardous substances into the environment.
- b. **Preliminary Assessment (PA)** – An initial evaluation of the site, description of the release, the probable nature of the release and a recommendation on whether further action is warranted, which lead agency should conduct further action, and whether a site investigation, removal action, or both should be undertaken. It generally consists of a site visit, a review of records, and interviews.
- c. **Site Inspection (SI)** – In-depth sampling and testing of environmental media to determine the presence or absence of hazardous substances, their concentrations, and the probability of the site

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qualifying for the National Priorities List (NPL). In addition, the SI determines if a site contains contamination levels requiring immediate remediation or emergency response.

- d. **Hazard Ranking System (HRS)** – Sites are evaluated and scored under the HRS, and sites that receive a score above a given cut-off may be placed on the NPL. If a site obtains NPL eligibility, the site undergoes the remedial phase in which site cleanup measures are taken. A facility may enter into a Federal facility agreement, interagency agreement or consent order.
- e. **Remedial Investigation (RI)** – The investigation characterizing the nature and extent of contamination at a CERCLA site. This phase will evaluate and select the most appropriate response alternative. The purpose of an RI is to collect the necessary field data to adequately characterize the release site in order to develop and evaluate remedial alternatives. For each release site undergoing an RI, the MEMD RPM shall conduct a baseline risk assessment that includes a characterization of the current and potential threats to human health and the environment, and the establishment of acceptable exposure levels.
- f. **Feasibility Study (FS)** – An FS is conducted to further examine the site risks and identify possible remedies that will meet NASA’s cleanup standards. The FS evaluates the most appropriate action to protect human health and the environment, taking into consideration long- and short-term effectiveness, potential to comply with regulatory standards, ability to reduce toxicity, volume, mobility, cost effectiveness, and public acceptance.
- g. **Remedial Design/Remedial Action (RD/RA)** – This stage involves the design for the proposed remedy and implementation through construction.
- h. **Record of Decision (ROD)** – Documents selection of a remedial alternative, using factual data, analyses and policy considerations. After a review of the regulatory agency and public comments, the MEMD RPM, in conjunction with the regulatory agency, shall select a final remedy. The ROD then documents the alternative remedies and costs, and defines the selected remedy.

Prior to conducting any field sampling, the MEMD RPM shall develop and approve plans, which may consist of the following:

- Health and Safety Plan
- Sampling and Analysis Plan
- Quality Assurance Project Plan

Samples shall be collected by trained personnel. Samples shall be submitted to approved laboratories, where required.

- i. **Community Relations (CR)** – The MEMD RPM shall conduct various community-relations activities throughout the site evaluation process. The intention is to promote active communication between communities affected by the release site and the facility’s response for implementing remedial actions. CR activities shall be undertaken in the RI/FS, RD/RA, and removal actions

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processes and shall include interviewing community interest groups, developing a CR Plan, and completing various regulatory notification requirements.

- j. **Administrative Record** – The MEMD RPM shall establish and maintain an administrative record which contains all documents containing information used to select response actions, information on the RI/FS and RD/RA processes, the ROD, and all public comments received. It shall be maintained at a central location near the release site and shall be easily accessible to community interest groups.

2.1.2 CERCLA Removal Actions

The MEMD RPM shall conduct a removal action to address an immediate threat to human health or the environment from a past or ongoing release or the threat of a release. Removal actions, conducted at either NPL or non-NPL sites, are short-term actions that can be conducted at any point during the remedial process. However, a removal action will not be the final action and subsequent investigation, review, and assessment will likely be required. There are three categories of removal actions: (1) emergency removal actions, (2) time-critical removal actions, and (3) non-time-critical removal actions. The MEMD RPM manager uses the type of situation, the urgency of the threat of release, and the subsequent timeframe in which the action must be initiated to select the appropriate action.

2.1.3 RCRA Remedial Process

RCRA requires that facilities that generate hazardous waste remediate any contamination resulting from current and past hazardous waste management practices. Remediation takes place following the RCRA Corrective Action process, which is similar to the CERCLA program in its intent: The remediation of hazardous waste contamination. The difference between RCRA Corrective Action and CERCLA is that the RCRA Corrective Action program generally applies to facilities that continue to operate and the current facility owner is involved in the remediation.

There are five basic elements of the RCRA Corrective Action program that are managed and implemented in serial (a stage may be bypassed to accelerate the process if supported by all parties) by the MEMD RPM, similar to the steps in a CERCLA remediation (See Figure 2):

- a. **RCRA Facility Assessment (RFA)** – Initial site assessment done by the owner or operator to determine location, nature, and magnitude of contamination.
- b. **RCRA Facility Investigation (RFI)** – In-depth sampling and testing to verify and accurately characterize the releases identified by the RFA.
- c. **Interim Actions** – Short-term actions to address imminent threats before site remedy is selected. These can be initiated at any time during the RCRA Corrective Action.
- d. **Corrective Measures Study (CMS)** – Evaluation of alternatives for cleaning up the site.

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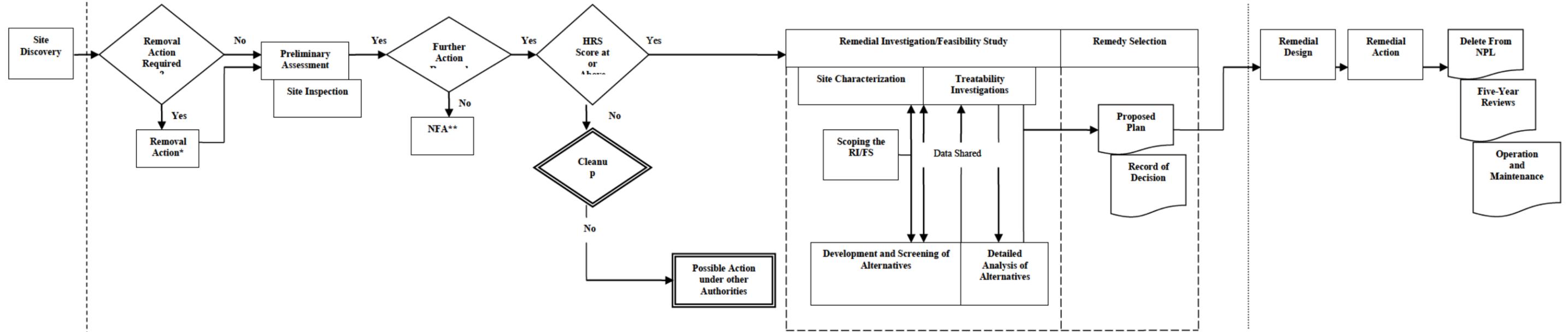
- e. **Corrective Measures Implementation (CMI)** – Detailed design, construction, and operation of the chosen remedy, all of which are performed with EPA or state oversight and with public involvement.
- f. **RCRA Administrative Record** – The MEMD RPM shall establish and maintain an administrative record which contains all documents containing information used to select response actions, information on the RFA, RFI, CMS and CMI and the closure documentation.

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CHANGE HISTORY LOG

Revision	Effective Date	Description of Changes
Baseline	05/26/09	Initial Release
A	03/10/10	Administratively revised to show Safety and Environmental Division (S&E) change to Medical and Environmental Management Division (MEMD) due to reorganization.
	02/09/15	Revalidation – Clarified training requirements in paragraph 1.6, and other administrative corrections.

Figure 1: CERCLA Investigation and Remedial Action Process



* Removal Actions may occur at any stage.
 ** NFA may be determined at any stage.

Figure 2: RCRA Assessment and Corrective Action Process

