

**MEMORANDUM OF AGREEMENT
BETWEEN
U.S. DEPARTMENT OF THE NAVY
BASE REALIGNMENT AND CLOSURE
PROGRAM MANAGEMENT OFFICE WEST
AND
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
AMES RESEARCH CENTER
FOR
INSTALLATION RESTORATION SITE 22 LANDFILL
FORMER NAVAL AIR STATION MOFFETT FIELD, CALIFORNIA**

The purpose of this Memorandum of Agreement (MOA) is to establish the roles and responsibilities of the United States Department of the Navy Base Realignment and Closure Program Management Office West (Navy) and the National Aeronautics and Space Administration Ames Research Center (NASA) in ensuring protectiveness of the remedy for the Site 22 landfill with regard to the monitoring and institutional controls for the site that are required pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Record of Decision (ROD) for the Moffett Federal Airfield (the former Naval Air Station [NAS] Moffett Field) Site 22 landfill, signed on June 25, 2002.

I. BACKGROUND

The Site 22 landfill is located in the northeastern corner of the former NAS Moffett Field (Moffett). The landfill covers approximately 10 acres and contains an estimated total waste volume of 92,000 cubic yards. Site 22 was an active Navy landfill from 1950 through 1967. Moffett Field was transferred from the Navy to NASA in 1994. Site 22 now underlies holes 3, 6, and 7 of the Moffett Field Golf Course.

The lead agency for the Moffett Field installation restoration program is the Navy. The lead regulatory agency is the United States Environmental Protection Agency (EPA), with the San Francisco Bay Regional Water Quality Control Board (RWQCB) and the California Department of Toxic Substances Control (DTSC) serving as supporting agencies. The RWQCB is currently acting on behalf of the DTSC as the California state regulatory agency for the Navy's Installation Restoration Program (IRP) at Moffett Field. The IRP was initiated in 1980 by the United States Department of Defense (DoD) to comply with federal guidelines to manage and control past waste disposal actions. IRP activities are performed under the authority of CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA), and in compliance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), also known as the "Superfund" program.

History of IRP at Moffett

The EPA proposed Moffett Field as a National Priorities List (NPL) site in June 1986 and placed it on the NPL in 1987. Placement on the NPL initiated the Remedial Investigation/Feasibility Study (RI/FS) process under CERCLA. Data collected during the initial studies were used to plan the RI/FS work. This work was coordinated through a Federal Facility Agreement (FFA) between the Navy, EPA, RWQCB, and DTSC, which was signed on September 14, 1990. The FFA is a cooperative agreement that:

- Ensures environmental impacts are investigated and appropriate response actions are taken to protect human health and the environment.
- Establishes a procedural framework and schedule for developing, implementing, and monitoring appropriate response actions.
- Facilitates cooperation, exchange of information, and participation of the parties.
- Ensures adequate assessment, prompt notification, and coordination between federal and state agencies.

Sites included in the RI/FS at Moffett Field were organized into operable units (OUs) in 1991. The Navy and NASA signed a Memorandum of Understanding (MOU) on December 22, 1992, concerning environmental activities at Moffett. Under the MOU, the Navy retained responsibility for remediating Navy-related contamination. NASA is responsible for their ongoing environmental compliance operations.

Investigations supporting various phases of the RI for Moffett Field identified several potentially contaminated sites, including the Site 22 landfill. The Site 22 landfill was characterized in the *Final Station-wide RI Report* and the *Additional Sites Investigation Phase II Draft Final Report* prepared by PRC Environmental Management, Inc. in 1996 and 1995, respectively.

Description of the Selected Remedy

The selected remedy described in the June 25, 2002 ROD for the Site 22 landfill entails construction of a biotic barrier, which is comprised of layers of soil, gravel, concrete slurry, and cobblestone to prevent animals from burrowing into the Site 22 landfill and exposing the debris. It also includes institutional controls and groundwater and landfill gas monitoring.

The selected CERCLA response addresses the remedial action objective (RAO) for the site by preventing animals from burrowing into the Site 22 landfill and exposing the refuse, thereby limiting direct contact with the waste by humans. The major components of the selected remedy are summarized below:

- Install a barrier to prevent burrowing animals from disturbing the subsurface contamination

- Manage surface water flows across the site
- Enact institutional controls to prevent excavation of waste materials
- Monitor groundwater and landfill gas in the vicinity of the site

For institutional control implementation, the ROD documents commitment to the following requirements as elements of the selected response action for the Site 22 landfill:

Access restrictions would be included in NASA's land use planning documents and would be designed to maintain the integrity of the biotic barrier and to limit surface excavation that could disturb the refuse. The restrictions would be implemented by NASA per a MOA to be entered into between the Navy and NASA after review and concurrence by EPA. The MOA will be adopted within 1 year of the Final ROD, and will include the following elements:

- *Protection of the structural aspects of the landfill cap (biotic barrier)*
- *Prohibition of alterations to the drainage patterns or modification of surface contours*
- *Establishment of specific boundaries for the extent of the landfill*
- *Prohibition of extraction of groundwater from the site*
- *Prohibition of residential land use*
- *Requirement of regulatory approval for consideration of alternative land uses*
- *Indication of the parties responsible for ongoing operations, maintenance, and monitoring activities for the site*
- *Requirement of annual reporting to EPA regarding the implementation, monitoring, and efficacy of the institutional controls*
- *Reference to how the MOA will be enforced with NASA and with their site-specific tenants*
- *Requirement that transfer of the site to a non-federal entity includes a restrictive covenant conveying the property with institutional controls as provided in the MOA in place.*

II. PURPOSE

The purpose of this MOA is to establish the roles and responsibilities of the Navy and NASA in ensuring protectiveness of the remedy for the Site 22 landfill with regard to the monitoring and institutional controls for the site. Once executed, the specific objectives of this MOA are to:

- Implement a process to ensure appropriate long-term maintenance of institutional controls. The process will elevate general awareness of institutional controls by NASA personnel, tenants, and contractors to ensure long-term protection.
- Implement a process for NASA to periodically update the Navy and the EPA concerning the status and continued efficacy of adopted institutional controls and any proposed changes in land use that may affect the site and protectiveness of the remedy.
- Integrate appropriate institutional controls into the required long-term operations and maintenance program for the site.
- Implement long-term groundwater and landfill gas monitoring and reporting for the site.
- Provide reasonable assurance that the pathway and exposure assumptions relied upon to establish the remedy will remain valid until different site controls or unrestricted use of the site is appropriate.

This MOA is intended only to govern the allocation of responsibility between the Navy and NASA and to improve internal management and is not intended to, nor does it, create any right or benefit, substantive or procedural, enforceable at law or equity by any party against the United States, its agencies, or its officers.

III. APPLICABILITY

This MOA will apply as long as NASA retains custody and/or control of the Site 22 property. Implementation of the institutional controls under this MOA will not have the effect of creating, disposing, or altering any real property rights for the site. Transfer of any portion of the site to a non-federal entity must include a restrictive covenant conveying the property with institutional controls in place as provided in this MOA.

NASA shall not transfer the Site 22 landfill or any portion thereof to another federal agency, unless (1) any such agency has entered into an interagency agreement with the Navy agreeing to assume any and all responsibilities assigned to NASA under this MOA, or (2) the head of any such federal agency or his or her delegatee has indicated, in writing and in a manner satisfactory to the Navy, that such agency is willing to enter into such an interagency agreement with the Navy.

Restrictive covenants and/or interagency agreements shall include the requirement for review and written approval of the Navy prior to any proposed construction activities, improvements, or alterations to such property that may impact the Site 22 landfill remedy. Construction or other work on or near such property may be subject to separate, non-Navy review and advance approval requirements pursuant to environmental restrictions.

IV. SITE INSPECTION/REVIEW/CERTIFICATION

Navy Responsibilities

The Navy, subject to authorization from the Secretary of the Navy, agrees to:

- Institute a Post-Construction Operations, Maintenance, and Monitoring Plan
- Conduct quarterly groundwater and landfill gas monitoring
- Complete and submit all annual groundwater and landfill gas monitoring reports to regulatory agencies
- Respond to subsequent release(s) of hazardous substances from the site that are not the result of any action taken by NASA, its tenants, contractors, or subcontractors, but rather are a result of the landfill's condition as of the signing of this MOA
- Establish specific boundaries for the extent of the landfill
- Conduct five-year reviews
- Complete and submit any necessary documentation concerning site closure, any "no further action" determination, or delisting of all or part of Site 22

NASA Responsibilities

NASA agrees to:

- As part of ongoing NASA operations and those of its tenants, contractors, and subcontractors, maintain vegetation, topsoil layer, irrigation system, and drainage components (drainage ditches, culverts, water drains, etc.) encompassed within and adjacent to the Site 22 landfill remedy boundary in a condition that ensures such operations do not otherwise impact the Site 22 landfill remedy
- Maintain and keep in operation the Building 191 pumping station, which affects groundwater flow at Site 22
- Be responsible for the remediation of any contamination at Site 22 resulting from NASA activities or activities of its tenants, contractors, or subcontractors
- Perform additional remediation and environmental analysis required as a result of any other use of Site 22 and the surrounding property by NASA and its employees, agents, tenants, and contractors

- Protect the structural aspects of the landfill cap (including but not limited to all components of the biotic barrier)
- Incorporate terms and conditions of this MOA into the Ames Procedural Requirements (APR)
- Prohibit and prevent any alteration to the drainage patterns, or modification of surface contours, existing at the site as of the date of execution of this MOA to minimize infiltration into the soil and groundwater at this location
- Prohibit and prevent any extraction of groundwater from the site for any purpose other than for groundwater monitoring purposes
- Prohibit and prevent any residential land use
- If necessary, include a restrictive covenant in the deed for conveyance of any portion of the Site 22 landfill and its remedy, requiring the review and written approval of the Navy prior to any proposed construction activities, improvements, or alterations to such property. (The Navy notes that construction or other work on such property may also be subject to separate non-Navy review and advance approval requirements pursuant to environmental restrictions.)
- Conduct regular (no less than quarterly or other agreed upon frequency) monitoring or visual inspections of the site to ensure compliance with, and proper maintenance of, the institutional controls
- Obtain prior written approval from Navy before altering, disturbing, or removing groundwater monitoring wells and associated equipment, including any equipment installed subsequent to the signing of this MOA
- Obtain prior written approval from the Navy before conducting any subsurface excavation, digging, drilling, or any other disturbance of the surface at Site 22
- Provide periodic updates to the Navy, EPA, and the Regional Water Quality Control Board describing status and continuing efficacy of institutional controls for which NASA is responsible
- Incorporate the ROD land use restrictions set forth in Section I of this MOA, and the surveyed coordinates of the site and boundaries of the landfill cover, into NASA's land use planning documents and any pertinent maps and plans, geographic information system (GIS), or other documents or materials related to the facility master planning process. Please see the final Remedial Action Report for Installation Restoration Site 22 Landfill for Site 22 landfill boundary and monitoring well locations.

- Require all current and prospective tenants, contractors, and subcontractors, and facility-wide departments to comply with the terms of this MOA, and provide any training necessary to ensure such compliance.
- Incorporate the institutional controls set forth herein into all current and prospective lease agreements for parcels including or adjacent to the site, and into all land use agreements or land use changes which might impact any aspect of the remedy for the site
- Incorporate by reference the terms of this MOA into any contract or subcontract involving any activity which might impact any aspect of the remedy for the site
- Obtain the written approval from the Navy, EPA, and San Francisco Bay Regional Water Quality Control Board at least 90 days prior to implementing any change to the Site 22 land use subsequent to the date of execution of this MOA
- Notify the Navy and the regulatory agencies as soon as, but no less than 90 days prior to, any major land use change is anticipated to allow sufficient time for regulatory review and amendments to remedy selection decision docs (i.e., RODs and RAPs). This notification should include:
 - 1) an evaluation of whether the anticipated land use change will pose unacceptable risks to human health and the environment or negatively impact the effectiveness of the remedy;
 - 2) an evaluation of the need for any additional remedial action resulting from the anticipated land use changes; and
 - 3) a proposal for any necessary changes in the selected remedial action.
- Major changes include any action that might disrupt the effectiveness of the remedial action; such as:
 - 1) a change in land use classification that is inconsistent with the exposure assumptions in the risk assessment that was the basis for the institutional controls (either human health or ecological risk assessments);
 - 2) any action that may disrupt the effectiveness of the remedial action; and
 - 3) any other action that might alter or negate the need for the institutional control.

V. MOA INTEGRATION

This MOA, once agreed to by NASA and the Navy, will be included as an addendum to the long-term Site 22 Post-Construction Operations, Maintenance, and Monitoring Plan and the Remedial Action Report. The Post-Construction Operations, Maintenance, and Monitoring Plan will include a strategy for monitoring the institutional controls and will describe the required monitoring activities and schedules, the responsibilities for

performing each task, the specific reporting requirements, and the process to be followed to address any potential issues concerning the land use controls.

VI. SITE ACCESS

NASA will allow the Navy, or its officers, agents, employees, contractors, and subcontractors, or appropriate regulatory agencies, access to the site at reasonable times consistent with the security and health and safety requirements, and upon presentation of proper credentials. Access is to be coordinated through NASA's official(s) responsible for environmental compliance at Moffett Field. If, in the judgment of the Navy, emergency circumstances exist which could compromise the effectiveness of the remedy for Site 22, the Navy shall have the right to access the site immediately in order to take action with respect to such circumstances.

VII. MODIFICATION

Amendments to this MOA must be in writing and be executed by all parties. In the event institutional controls must be modified for any reason, the Navy retains the right to amend this MOA to address those modifications.

VIII. TERMINATION

This MOA will terminate upon mutual concurrence by NASA and the Navy, upon transfer of the site to a federal or non-federal entity, or ten (10) workdays after one party to this MOA presents to the other party written notice of its intention to withdraw from such MOA. A party presenting such notice of intention to terminate this MOA shall provide copies of such notice of intention to the EPA and the Regional Water Quality Control Board.

IX. FUNDING

Any requirement for the payment or obligation of funds by the Navy or by NASA pursuant to this MOA shall be subject to the availability of appropriated funds, and no provision herein shall be interpreted to require obligation or payment of funds in violation of the Anti-Deficiency Act, 31 U.S.C. 1341.

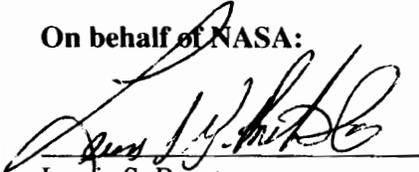
X. MISCELLANEOUS

In entering into this MOA, NASA and the Navy recognize that it is impracticable to make provisions for every contingency that may arise during the term of this MOA. NASA and the Navy agree that their relationship within the framework of this MOA shall be characterized by principles of fairness and shall be managed without detriment to the interest of any party. NASA and the Navy agree to engage in good-faith efforts to resolve any dispute(s) that may arise concerning any party's good-faith compliance with the terms of this MOA.

This MOA shall take effect on the later date appearing under the signatures below.

This MOA is executed by:

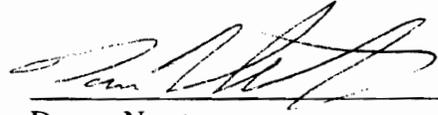
On behalf of NASA:



Lewis S. Braxton
Deputy Director
NASA Ames Research Center

Date 9/17/08

On behalf of Navy:



Darren Newton
BRAC Environmental Coordinator
BRAC PMO West
By direction of the Director

Date 04-SEPT-2008