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Telephone: (619) 532-0783/Fax (619) 532-0780

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TRANSMITTAL

Date: 26 January 2001

From: Lynn Marie Hornecker

To: Donald Chuck
National Aeronautics and Space Administration (NASA)
Ames Research Center, Moffett Field

Subj: Responses to NASA Comments dated 12 January 2001
Action Memorandum for Time-Critical Removal Actions
National Aeronautics and Space Administration (NASA)
Crows Landing Flight Facility (SOUTHWESTNAVFACENGCOM, November 2000)

We are transmitting responses to NASA comments dated 12 January 2001 pertaining to the Action Memorandum dated November 2000. Thank you for participating in the review of the Action Memorandum for the Time-Critical Removal Actions at NASA Crows Landing Flight Facility.

Please do not hesitate to call me at (619) 532-0783 if you have questions pertaining to the responses.

Thank you very much.

Attachment:
Responses to NASA Comments (SOUTHWESTNAVFACENGCOM, 26 January 2001)

CF:
Marianna Potacka (BRAC Environmental Coordinator, SOUTHWESTNAVFACENGCOM)
James Barton (Regional Water Quality Control Board)
Francesca D'Onofrio (California Department of Toxic Substances Control
Brad Hicks (Stanislaus County)
Sandy Olliges (NASA Ames Research Center, Moffett Field)
Navy Team Members

Project File and Administrative Record File (Crows Landing)

RESPONSES TO COMMENTS FROM THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)
DATED 12 JANUARY 2001
Subject: Final Action Memorandum, Time-Critical Removal Actions, NASA Crows Landing Flight Facility
(SOUTHWESTNAVFACENGCOM, November 2000)

Comment	Response
Comments prepared by Donald M. Chuck, Environmental Services Office, NASA Ames Research Center, Moffett Field, California dated 12 January 2001 **Subject: Final Action Memorandum, Time-Critical Removal Actions, NASA Crows Landing Flight Facility, Administration Area Plume at Installation Restoration Program (IRP) Site 17.** **Addressee: Marianna Potacka, Base Realignment and Closure (BRAC) Environmental Coordinator**	
NASA has received the following document from the Navy: Final Action Memorandum, Time-critical removal actions at the National Aeronautics and Space Administration (NASA) Crows Landing Flight Facility, Administration Area Plume at Installation Restoration Program (IRP) Site 17. The document has been reviewed and the following comments are provided, as requested in the public notification provided in the Modesto Bee.	The Navy appreciates the participation of NASA in the review process. For clarification, the notification in the newspaper, The Modesto Bee, was intended to announce the availability of the Administrative Record and the Action Memorandum for the time-critical removal actions at the Stanislaus County Library, Patterson Branch.
General Comments: **The proposed time-critical removal action (TCRA) involves the extraction of contaminated groundwater from one or more locations within the administration area plume near well CL1-MW-12(S). The removal action will end when either 50,000 gallons of water have been removed or the levels of ethylene dibromide (EDB) reach 1000 mg/L, whichever occurs first. The goal of the removal action is to reduce the risk of off-site mirgration of contaminants.** **To date, there has not been any evidence of migration of contaminants off of the Crows Landing facility. This is in spite of**	**Responses to General Comments:** The Navy offers the following extracts from Section I, page 2 of the Action Memorandum in order to restate the objectives of the time-critical removal actions: *"The Department of Defense has the authority to undertake Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) response actions, including removal actions, under 42 U.S.C. Section 9604, 10 U.S.C. Section 2705, and federal Executive Order 12580. The DON is the lead federal agency for the removal actions."*

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Comment	Response
the fact that some of those contaminants have probably been in the groundwater for more than fifty years. It appears, based on flow data, that irrigation wells have an influence on flow direction at the facility. The seasonal pumping of irrigation water has caused the flow direction to vary considerably throughout the year. As a result, it appears that the varying flow direction changes have helped keep the plumes from migrating offsite. Since there does not appear to be an imminent threat to the surrounding wells, the Navy should reconsider the need for this TCRA. **Based on the amounts of water proposed to be pumped during this removal, it is doubtful that any significant reduction of contaminant mass and concentration will occur. While the removal action will reduce some amount of EDB, there will still be very large quantities of contaminants such as acetone, benzene, and gasoline left in the groundwater. Since there will be large amounts of contaminants left, the usefulness of this removal action appears questionable.** **To properly prevent any potential offsite plume migration due to the influence of irrigation wells, pumping of groundwater at higher rates will be needed to provide hydraulic control. The current proposal will not provide that. Also, to provide meaningful hydraulic data, the aquifer should be pumped at a high enough rate to stress the aquifer.** **A remedial system had been previously planned and under construction for the Cluster 1 site. The Navy should explain why the construction was stopped and replaced with this TCRA. The previously proposed system would have provided a greater reduction in the contaminant mass than the current removal action. The proposed system would have been able to address all**	And *"The scope of the removal actions at the Administration Area Plume was based upon reducing potential exposure of human populations and animals to hazardous substances, pollutants, or contaminants that are present in an aquifer that has been designated a potential drinking water source and reducing the potential migration of the contaminant plume to adjacent properties. The removal actions will also result in the collection of information pertaining to aquifer characteristics, and this information will be used in the development and evaluation of remedial alternatives for the final remedy for the Administration Area Plume."* The Navy is in the process of revising the Feasibility Study (FS) to address the contaminants in the Site 17 Plume, to identify and evaluate Applicable or Relevant and Appropriate Requirements (ARARs), to evaluate remedial alternatives, and to propose remedial action objectives. The revised FS will evaluate the potential use of hydraulic control in the final remedy. Following the completion of the revised FS, the Navy will proceed with development of the Proposed Plan, and the Record of Decision. The Navy had not requested ARARs for Site 17 from the State of California at the time the Action Memorandum was prepared in November 2000, however, the Regional Water Quality Control Board, Central Valley Region provided a list of requirements with their letter dated 8 January 2001. The Navy is in the process of evaluating these requirements as part of the development of the revised FS. The Navy had not established remedial action objectives to address all of the contaminants in the groundwater at Site 17 and the Navy had not identified the groundwater plume at Site 17 as a commingled petroleum hydrocarbon and volatile organic compound plume at the time the

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contaminants present including the recently discovered EDB, methyl ethyl ketone (MEK), and methyl isobutyl ketone (MIBK).	Underground Storage Tank (UST) Cluster 1 groundwater remediation system was under construction during early calendar year 2000. The UST Cluster 1 system was designed to remediate petroleum hydrocarbons in groundwater, and the UST Cluster 1 remedy was specified in petroleum corrective action program documents (Final Corrective Action Plan (CAP), Underground Storage Tank Sites UST Cluster 1, Cluster 2, 109, and 117 (Tetra Tech, June 1998) and Draft Corrective Action Plan Addendum, Underground Storage Tank Sites UST Cluster 1, Cluster 2, 109, and 117 (Tetra Tech, November 1999)) rather than in a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Record of Decision. Consequently, the Navy stopped work on the groundwater remediation system in order to complete the process of evaluating remedial alternatives, establishing ARARs, and developing remedial action objectives for all contaminants in the commingled plume. The RWQCB letter dated 10 October 2000 included the statement that the Cluster 1 plume could no longer be considered a petroleum-only plume because solvents had been identified within the plume. The Navy is in the process of collecting continuous groundwater level data for potential use in evaluating the influence of pumping from nearby water supply wells. The data will be used to evaluate the potential for off-site migration of groundwater contamination from the facility.
Specific Comment 1. **Sect. I, Par. 4, Pg. 2** **The scope of the proposed actions are to prevent exposure to receptors of contaminants of groundwater that may migrate offsite due to the influence of nearby irrigation wells. With the exception of EDB, MED, and MIBK, the contaminants have been known for some time. There has not been any evidence to date that such**	**Response to Specific Comment 1.** The Navy acknowledges that previous investigations and monitoring events have been conducted at the facility. However, the chemicals - EDB, acetone, MEK, and MIBK - were not identified in previously published reports, feasibility studies, or corrective action plans. The Navy provided the laboratory test reports for the July 2000 sampling

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offsite migration had occurred.	event to the BCT, and the RWQCB responded with comments dated 10 October 2000 pertaining to the commingled groundwater plume. Copies of the RWQCB letters dated 10 and 19 October 2000 are attached. The Navy recognized and considered the proximity of the commingled contaminant plume to the facility boundary in developing the strategy for the interim response actions. The Navy is in the process of collecting continuous groundwater level data for potential use in evaluating the influence of pumping from nearby water supply wells. The data will be used to evaluate the potential for off-site migration of groundwater contamination from the facility.
Specific Comment 2. **Sect. I, Par.5, Pg. 2** **As stated in this paragraph, the TCRA should accomplish the following: removal of contaminant mass from a potential drinking water supply, reduce the potential exposure of nearby receptors of hazardous materials, and reduce the potential for migration of the plume to adjacent properties. Based on the proposed removal amounts of 50,000 gal or reduction of EDB to 1000 ug/L, it does not appear that this TCRA will be able to achieve the stated goals.**	**Response to Specific Comment 2.** The Navy will convey information to the BCT and NASA as the time-critical removal actions are implemented and a Summary Report, which will be submitted to the BCT and NASA, will be prepared following the completion of the time-critical removal actions. The Summary Report will include beginning and ending contaminant concentrations.
Specific Comment 3. **Sect. II, Par. 9, Pg. 5** **The dry wells were cobble-filled pits, not cobble-lined. The wells were removed completely during the tank removals.**	**Response to Specific Comment 3.** Comment acknowledged. The Final Corrective Action Plan (Tetra Tech, June 1998) identifies the dry wells as cobble-filled pits. The Navy will evaluate historical information and provide an improved description of the dry wells in the Summary Report, as appropriate.

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Comment	Response
Specific Comment 4. **Sect. II.A.1 "Evaluation of the Release..." Pg. 6-7** **The paragraph states that the releases of contaminants to a potential water supply were confirmed by the July 2000 sampling event. The implication is that there was no confirmation of the releases until the July 2000 event. The releases to groundwater have been known and confirmed as a result of several years of environmental investigation work before the July 2000 sampling.** **In that same paragraph, plume migration is discussed. Data collected to date do not indicate that the plume/plumes are moving offsite. The proposed pumping amounts in Section V (extraction of 50,000 gal. Of water or bringing the concentration of EDB to 1000 ug/L, whichever comes first) will not be sufficient to remove the contaminant hazard or prevent the plumes from potentially migrating offsite. Controlling plume migration will require higher pumping rates and water volumes. Additionally, such pumping would have to be balanced so as not to further commingle the plumes.**	**Response to Specific Comment 4.** The Navy acknowledges that previous investigations and monitoring events have been conducted at the facility. However, the chemicals - EDB, acetone, MEK, and MIBK - were not identified in previously published reports, feasibility studies, or corrective action plans. The Navy provided the laboratory test reports for the July 2000 sampling event to the BCT, and the RWQCB responded with comments dated 10 October 2000 pertaining to the commingled groundwater plume. Copies of the RWQCB letters dated 10 and 19 October 2000 are attached.
Specific Comment 5. **Sect. II.A.4 Pg. 9** **See previous comment concerning confirmation of releases. The presence of contaminants have been know for some time by investigative work that occurred at the site before the July 2000 sampling event.**	**Response to Specific Comment 5:** See response to Specific Comment 4.
Specific Comment 6. **Sect. IIC.1. Par. 4 2nd Sent., Pg. 11** **In addition to representatives for Stanislaus County, NASA**	**Response to Comment 6.** The Navy acknowledges that NASA participates in BCT meetings. The

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Comment	Response
representatives also participate in BCT meetings.	text of Section II.C.1, paragraph 4 (on page 11) was intended to identify the regulatory oversight agencies that participate in the BCT. The RWQCB and DTSC provide oversight for the site remediation activities, and Stanislaus County permits are associated with some of the wells.
Specific Comment 7. **Sect. IV** **This section states that "releases of contaminants from this site .... May present an imminent and substantial endangerment to public health, welfare, or the environment" if not addressed by this TCRA. Based upon the amount of groundwater extraction proposed for this action, the potential threat to receptors will remain due to the high levels of remaining compounds.**	**Response to Comment 7.** The Navy will submit the Summary Report describing the beginning and ending contaminant concentrations and the volume of extracted groundwater to the BCT and NASA following the completion of the removal actions.
Specific Comment 8. **Sect. V.A.1. Par. 4, Pg. 14** **It is unclear as to how the removal of 20,000 to 50,000 gallons of groundwater will substantially remove the contaminant mass. A considerable amount of contaminant mass for the highly contaminated area of the plume (>100,000 ug/L) showed that 119,000 lbs of mass were present due to JP4/5 and benzene. The TCRA, as proposed, will address only a small fraction of the mass present.**	**Response to Comment 8.** The goals of the time-critical removal actions were described in the response to Specific Comment 1. The Navy will submit the Summary Report describing the beginning and ending contaminant concentrations and the volume of extracted groundwater to the BCT and NASA following the completion of the time-critical removal actions.
Specific Comment 9. **Sect. V.A.3. Pg. 14** **This paragraph states that the "no action alternative" will leave the risk that contaminants could migrate offsite. As noted in previous comments, there will still be a substantial amount of contaminant mass present after this TCRA. Additionally, the potential for offsite migration will still exist. Hydraulic control of the plumes will be required to prevent migration offsite. Higher pumping rates and water volumes over longer periods of time will be needed to**	**Response to Comment 9.** The Navy offers the following extracts from Section I, page 2 of the Action Memorandum in order to restate the goals of the time-critical removal action: *"The scope of the removal actions at the Administration Area Plume was based upon reducing potential exposure of human populations and animals to hazardous substances, pollutants, or contaminants that are present in an aquifer that has been designated a potential drinking*

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establish such control. Remedial action will be required. It would be more expedient to focus on the installation of a remedial system at the site.	*water source and reducing the potential migration of the contaminant plume to adjacent properties. The removal actions will also result in the collection of information pertaining to aquifer characteristics, and this information will be used in the development and evaluation of remedial alternatives for the final remedy for the Administration Area Plume."* The Navy will utilize the information collected during the implementation of the time-critical removal actions in the evaluation of remedial alternatives including hydraulic control. Additional information is provided in the Responses to General comments.
Specific Comment 10. **Sect. IV** **See previous comments on the inability of this removal action to reduce risks at the site.**	**Response to Comment 10.** The Navy will submit the Summary Report describing the beginning and ending contaminant concentrations and the volume of extracted groundwater to the BCT and NASA following the completion of the time-critical removal actions.

Attachments:
RWQCB letters dated 10 and 19 October 2000

California Regional Water Quality Control Board

Central Valley Region

Steven T. Butler, Chair

Winston H. Hickox
Secretary for Environmental Protection

Gray Davis
Governor

Sacramento Main Office
Internet Address: http://www.swrcb.ca.gov/~rwqcb5
3443 Routier Road, Suite A, Sacramento, California 95827-3003
Phone (916) 255-3000 •DOD FAX (916) 255-3052

10 October 2000

Marianna Potlacka
BRAC Environmental Coordinator
BRAC Operations, SWESTNAVFACENGCOM
South West Division
1230 Columbia St., Suite 1100
San Diego, California 92101

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA), CROWS LANDING FLIGHT FACILITY, CROWS LANDING, CALIFORNIA: MEMORANDUM DATED 11 AUGUST 2000; INTERIM STATUS REPORT DATED 17 AUGUST 2000; AND TECHNICAL INFORMATION PACKAGE DATED 27 SEPTEMBER 2000

We have reviewed the following three related documents presented by the U.S. Navy Southwest Division (Navy):

- *Potential Revised Groundwater Remediation Strategy for the Administration Area Plume and Other Plumes, NASA Crows Landing Flight Facility (Memo)*, dated 11 August 2000;
- *September 2000 Interim Status Report (Status Report)*, dated 17 August 2000; and
- *Technical Information Package (Data Package), July 2000 Groundwater Sampling Activities, National Aeronautics and Space Administration (NASA), Crows Landing Flight Facility, Crows Landing, California*, dated 27 September 2000.

The Memo proposes strategies to continue investigation and conduct interim response actions, namely construct an extraction well/groundwater treatment system for the mixed hydrocarbon/solvent plume and decommission abandoned irrigation wells. The Status Report provides a chronology of past and proposed future (interim response actions) investigative activities for sites 11 (landfill), Underground Storage Tank (UST) 117, UST 109, UST Clusters 1 (CL1) and 2 (CL2), sewers, abandoned irrigation wells, and automated water level measurement for one or two monitoring wells (datalogger). The Data Package provides a table of results and a raw data report of groundwater analyses from the July 2000 groundwater sampling event, which analyzed Volatile Organic Compounds (VOCs), Total Petroleum Hydrocarbons (TPH) and metals from monitoring wells at UST sites 117 and CL1. The Data Package also includes a drawing with the proposed location of the extraction well, the two plumes (117 and CL1) that now appear to be commingled, and a table of well screen intervals. During a conference call on September 26, 2000, the Navy discussed the Memo, Status Report, and the Data Package that we received the following day. The Navy has discovered high levels of previously unknown contaminants of concern (COCs) in groundwater: Acetone to 68,400 ug/L, Benzene to 70,400 ug/L, Ethylene Dibromide (EDB) to 5080 ug/L, Methyl Ethyl Ketone (MEK) to 75,400 ug/L, and Methyl Isobutyl

Ketone (MIBK, reported as 4-Methyl-2-pentanone) to 3560 ug/L. Previously Carbon Tetrachloride (CT) was considered the primary COC at 131 ug/L. Methyl t-Butyl Ether (MtBE) was not detected in groundwater.

Specific Comments

1. The Data Package drawing (sketch) shows the extraction well located closer to monitoring well CL1-MW-03, which provided the highest CT concentration, than to CL1-MW-12S, which has higher concentrations of the new COCs. As stated in our introduction, CT was considered the primary COC before discovery of the additional COCs in July 2000. We suggest that a pump test be conducted using the existing monitoring wells, prior to placing the extraction well(s), in order to optimize placement of the extraction well(s).

2. We believe that the proposed interim response action is a removal action due to the scope of the project, and since installing a pump and treat system will remediate the hydrocarbon/solvent plume. A removal action requires a Workplan that contains the basic elements of a n Environmental Evaluation/Cost Analysis (EE/CA) and an Action Memorandum for public comment.

3. The CL1 plume can no longer be considered a petroleum-only groundwater plume, since high levels of solvents are commingled within the plume. All decision documents and remediation of the commingled plume must meet all CERCLA requirements.

4. We encourage the Navy to submit a Report of Waste Discharge for our review as soon as practicable. This will allow us sufficient time to draft and adopt any necessary permits, so that the implementation of the project (specifically, operation of the treatment system) is not delayed while the necessary permits are being obtained. Depending upon the option that the Navy chooses, either an NPDES permit for discharge to surface water, or a Waste Discharge Requirement permit for discharge to land are necessary before treated groundwater may be discharged to water or land.

If you have any questions please contact me at (916) 255-3050 or bartonj@rb5s.swrcb.ca.gov.

James L. Barton, R.G.

James L. Barton, R.G.
Associate Engineering Geologist

cc: Francesca D Onofrio – CALEPA-DTSC
Lynn Hornacker – US Navy SWDIV
Jim Simpson – Stanislaus County DER

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Sacramento Main Office
Internet Address: http://www.swrcb.ca.gov/~rwqcb5
3443 Routier Road, Suite A, Sacramento, California 95827-3003
Phone (916) 255-3000 -DOD FAX (916) 255-3052

19 October 2000

Marianna Potlacka
BRAC Environmental Coordinator
BRAC Operations, SWESTNAVFACENGCOM
South West Division
1230 Columbia St., Suite 1100
San Diego, California 92101

SOIL VAPOR EXTRACTION OPTIMIZATION FOR THE REMEDIATION OF UST CLUSTER 1 AND SITE VERIFICATION ACTIVITIES AT VARIOUS SITES WORK PLANS, REVISION 1, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA), CROWS LANDING FLIGHT FACILITY, CROWS LANDING, CALIFORNIA

We have reviewed *Soil Vapor Extraction Optimization for the Remediation of UST Cluster 1 and Site Verification Activities at Various Sites Work Plans, Revision 1, NASA Crows Landing Flight Facility* (Rev 1), received 10 October 2000. Rev 1 includes, in addition to the previously reviewed *Soil Vapor Extraction Optimization for the Remediation of UST Cluster 1 and Site Verification Activities at Various Sites Work Plans* (Rev 0), the new Appendix H, which contains attachments numbered from one to seven for the seven work plans proposed for the site verification activities.

Attachments include the following:

1. Abandonment and Closure of Wells;
2. Site 11 Geophysical Survey (landfill);
3. Underground Storage Tank Cluster 1 Aquifer Testing (CL1);
4. Sewer Line Survey;
5. UST Cluster 2 Soil Vapor Extraction Testing (CL2);
6. Baseline Groundwater Verification Sampling and Analysis Work Plan; and
7. Underground Storage Tank 109 Active Biovent Treatment Method Testing.

The Navy has expanded on previous work conducted at the facility in order to fully characterize contamination at six sites by filling data gaps. The new Rev 1 work for the seventh site (Attachment 1) consists of decommissioning four wells: an agricultural and a water supply well, each of which might provide a conduit for contaminants from the shallow aquifer to the deeper aquifer by grouting; and two previously abandoned (grouted) but not decommissioned monitoring wells (surface completions to be removed) at the landfill.

General Comments

1. We commented on certain aspects related to Attachments 3 and 6 during our review of the three informational documents that preceded this work plan (Rev 1). Please refer to the Regional Water Quality Control Board (RWQCB) letter dated 10 October 2000, which commented on the *Memorandum dated 11 August 2000; Interim Status Report dated 17 August 2000; and Technical Information Package dated 27 September 2000*, and provide changes to Rev 1 in response to these RWQCB prior comments. If the Navy decides to expand the groundwater removal action and seek disposal of groundwater to land or surface water, then addressing the RWQCB permitting comment in a timely fashion will become essential to avoid delays due to the permitting process.

2. Several new Contaminants of Concern (COCs) have been detected in groundwater at the site. Action levels have not been determined for the new COCs in Rev 1. Since several of the new COCs have extremely low Water Quality Goals in relationship to their concentrations in groundwater, cleanup levels will need to be established for the new COCs as well as in the Feasibility Study (FS) and Record of Decision (ROD).

Specific Comments

Attachment 3 Underground Storage Tank Cluster 1 Aquifer Testing:

1. Section 2.5 Well Installation states that the extraction well "...will be installed at the location thought most productive and most impacted by petroleum hydrocarbons." Since the Navy has recently discovered the following additional solvents and components of petroleum hydrocarbons at CL1, specifically:

- Acetone to 68,400 ug/L;
- Benzene to 70,400 ug/L;
- Ethylene Dibromide (EDB) to 5080 ug/L;
- Methyl Ethyl Ketone (MEK) to 75,400 ug/L; and
- Methyl Isobutyl Ketone (MIBK, reported as 4-Methyl-2-pentanone) to 3560 ug/L,

the Navy should consider the monitoring well locations of the highest sample concentrations of these previously unknown COCs in groundwater when locating the extraction well(s).

2. Sections 2.5 - 2.7 describes the design and installation of the extraction well. Section 1.2 states that the goal is to remediate the uppermost portion ("groundwater interface") of the aquifer near the water table for petroleum hydrocarbons, or Light Non-aqueous Phase Liquids (LNAPLs). Again, we suggest that the Navy also consider all of the new COCs, which also include Dense Non-aqueous Phase Liquids (DNAPLs), when designing and installing the extraction well.

3. Section 3.0 Waste Management states "The remaining waste streams (including the untreated, extracted groundwater) will be characterized and disposed of as described in Section 3.0 of Work Plan." This is confusing, since this reference to the "Work Plan" appears to describe the previously reviewed (and included within Rev 1) Rev 0, Section 3.0, which does not contain text related to containerizing a large volume of untreated groundwater into Baker tanks. The Rev 1, Appendix H, Attachment 3, Section 2.7 describes this activity, specifically that the untreated, extracted groundwater will be stored in

Baker tanks until the water is transferred into, and transported by, a tanker truck to a waste facility. Reference Rev 1, Appendix H, Attachment 3, Section 2.7 for this activity in the same attachment's Section 3.0 text, not Rev 0, Section 3.0.

Attachment 6 Basewide Groundwater Verification Sampling and Analysis Work Plan:

4. Section 1.0, the Introduction and following text state that the Navy will conduct semi-annual groundwater sampling at Crows Landing. We feel that quarterly groundwater sampling is more appropriate to characterize the lateral extent and concentrations of the COCs, considering the large list of new COCs found recently in groundwater from a limited number of monitoring wells. The Navy should change this work plan to reflect quarterly groundwater monitoring for all COCs until adequate data is collected to warrant the Navy requesting a revision to the sampling frequency.

If you have any questions please contact me at (916) 255-3050 or bartonj@rb5s.swrcb.ca.gov.

James L. Barton, R.G.

James L. Barton, R.G.
Associate Engineering Geologist

cc: Francesca D Onofrio – CALEPA-DTSC
Lynn Hornacker – US Navy SWDIV
Jim Simpson – Stanislaus County DER

SOUTHWESTNAVFACENGCOM
Code 06CC.LMH
1220 Pacific Highway
San Diego, CA 92132
Telephone: (619) 532-0783/Fax: (619) 532-0780

File: cladminrectrltr.doc

TRANSMITTAL

Date: 26 Jan 2001

From: Lynn Marie Hornecker LMH

To: Diane Silva
Code 01LS.DS

Subj: CERCLA Administrative Record Materials
NALF Crows Landing

Installation: Naval Auxiliary Landing Field, Crows Landing

UIC Number: N60211

Document Title (or subject): Responses to NASA Comments on Action Memorandum

Author: Lynn Marie Hornecker, SWDIV

Recipient: Donald Chuck, NASA

Record Date: 26 Jan 2001

Approximate Number of Pages: 13

EPA Category: 01.1

Sites: Site 17, UST cluster 1

Key Words: EDB, acetone, groundwater, removal action

Contract: N/A

CTO Number:
N/A