



# California Regional Water Quality Control Board

## Central Valley Region

Robert Schneider, Chair



Gray Davis  
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Secretary for  
Environmental  
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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

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

***ACTION MEMORANDUM FOR THE TIME-CRITICAL REMOVAL ACTIONS AT THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA), CROWS LANDING FLIGHT FACILITY, ADMINISTRATIVE AREA PLUME, 1-2 DICHLOROETHANE (1,2-DCA) AND CARBON TETRACHLORIDE SOURCE AREAS AT INSTALLATION RESTORATION PROGRAM (IRP) SITE 17, STANISLAUS COUNTY***

We have reviewed the *Action Memorandum for the Time-Critical Removal Actions (TCRA) at the NASA Crows Landing Flight Facility, Administrative Area Plume, 1,2-DCA and Carbon Tetrachloride Source Areas at IRP Site 17, Stanislaus County* (Action Memo), received 20 August 2001. The Action Memo proposes the TCRA remedial action(s) at the Administrative Area groundwater plume.

The Administrative Area includes the area formerly designated as the Site 17 groundwater plume. The Navy discovered in 2000 that the Site 17 carbon tetrachloride (CT) groundwater plume had co-mingled with UST Cluster 1 and UST Site 117 petroleum groundwater plumes. Previously Board staff, in discussion with the Navy, determined that due to the high levels of CT and associated chlorinated constituents at the two former petroleum sites, the Navy could no longer address those sites as petroleum-only groundwater cleanup sites. Hence, the Navy renamed all three of the sites as the Administrative Area groundwater plume. In June and July 2001, the Navy conducted additional groundwater investigations to better delineate the lateral extent of the Administrative Area groundwater plume. New groundwater monitoring wells were installed and sampled along Bell Road in August 2001. To date, results from groundwater sampling by Hydropunch™ and new monitoring wells have not been received by the Board.

The Navy stated, in the June Status Report dated 15 June, that the TCRA might involve groundwater pumping and offsite treatment. At the 25 July 2001 Base Realignment and Closure Cleanup Team (BCT) meeting, the Navy indicated that the Action Memo would include groundwater pumping with offsite treatment, and injection of a substrate material to enhance biodegradation. The Navy stated that the Hydropunch™ groundwater sampling along Bell Road (site boundary) revealed that the groundwater contamination appeared to be near Bell Road. As a result of this finding, the Navy felt that the location of the contaminants justified immediate TCRA removal actions. The Board requested that the Navy provide the information necessary for the Board to issue Waste Discharge Requirements (WDRs)

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*California Environmental Protection Agency*

immediately, and refrain from injecting substrate until the Board adopted the WDRs. Board staff repeated the request to the Navy by phone on 21, 23, and 28 August. On 10 September, Board management discussed the need for WDRs for substrate injection with Navy representatives in a teleconference. The Navy agreed to provide additional information on the substrate that they plan to inject.

### General Comments

1. We feel that there is insufficient evidence currently to support the proposed TCRA removal actions. We disagree with the concept proposed at the 25 July 2001 BCT Meeting, that since the groundwater plume has recently moved to the site boundary, substrate injection at the area(s) of highest concentration will immediately affect movement of contaminants at the plume boundary. While we do not wish to minimize the seriousness of discovering that the groundwater plume is near (less than 100 feet) the site boundary, we feel that pumping, at various locations (hotspots with the highest concentrations and near Bell Road), and offsite treatment alone is appropriate for the TCRA removal actions. Additional issues associated with the proposed substrate injections were previously discussed in our 17 September 2001 letter comments to the Draft Feasibility Study. In that letter, we requested additional bench scale and pilot studies to assess the effectiveness of the substrate injection. Further, we indicated WDRs would be necessary to conduct the pilot studies. We believe that the proposed substrate injections are premature, in that the following are lacking in the Action Memo or the FS:

- Data supporting full dechlorinization of CT,
- An evaluation of effects to the physical structure of the aquifer, and
- A Contingency Plan for removal of the substrate in the event that the injection proves harmful to the aquifer,

Therefore we do not concur with the substrate injections outlined in the Action Memo.

2. The Navy, in a 10 September conference call, stated that the substrate would be Hydrogen Releasing Compound®, or HRC®. The Navy provided the Board with the HRC® Material Safety Data Sheet (MSDS). The MSDS states that HRC® is flammable; poses an irritation hazard by inhalation, ingestion or skin absorption; and has not been studied for chemical, physical, and toxic properties. We are concerned that, due to the above hazards and lack of chemical, physical, and toxic properties studies, HRC® may pose an unacceptable risk to water quality. Further, to our knowledge, laboratory tests using HRC® have not been conducted using site groundwater.

3. The Action Memo does not provide sufficient details regarding the proposed removal action for the Board to concur with the extraction component. The Board does not object to extraction, and offsite treatment and disposal of contaminated groundwater. Specific extraction locations and anticipated pumping rates and volumes should be provided for Board concurrence. Additionally, a monitoring plan to evaluate the effectiveness of the TCRA should be provided.

4. The text states that TCRA site work will commence in August and run through November 2001. This timeframe is inadequate to monitor the effects of HRC® on the plume and background water quality.

### Specific Comments

1. Section I. PURPOSE, page 1, paragraph 2: The text states that the treatment in place (in situ) will remove contaminant mass. While injecting the substrate may result in reduction of CT to methylene

chloride (MEK) and chloroform, these daughter products of CT have remained recalcitrant (hard to break down further) in previous bench scale testing. As a result, the mass reduction of CT may be offset by an increase in the other contaminants.

2. Section I. PURPOSE, page 1, paragraph 2: Hydraulic capture of the groundwater plume by pumping wells has not been demonstrated at the site. The effects of any substrate injection, while potentially long-lived, will not immediately affect or prevent offsite migration of the groundwater plume, which is the stated purpose of the TCRA. Only an adequately designed pumping and treatment system, with full plume capture, can prevent offsite plume migration. Further, hydraulic containment of any substrate must be a component of any injection plan.

3. Section I. PURPOSE, page 2, paragraphs 6 and 8: The text states that the insitu treatment will be used to design the final remedy for the site. In effect, the proposed action is a pilot study. Without proper planning and adequate controls, the study could create an unnecessary risk to the aquifer and the people of the State of California.

4. Section I. PURPOSE, page 3, paragraph 3: The text states there are no nationally significant or precedent-setting issues for this site. We disagree with the statement, since the Navy does not concur with the Board's position regarding permits at non-NPL sites.

5. Section 1. Removal Site Evaluation, page 7, paragraph 2: The text lists 4 wells and other unidentified wells as possible extraction wells. Please provide specific well locations, and contaminant concentrations in the work plan, to facilitate our evaluation of the removal action.

6. Section 1. Removal Site Evaluation, page 8, paragraph 4: The text refers to the "laboratory treatment studies conducted in 1998 and 1999" for the substrate injection rationale. Our review of *Draft Phase I and II Pilot Testing, Technical Memorandum* (Bench-scale Study) revealed that the Bench-scale Study showed partial anaerobic dechlorination of CT to MEK and chloroform, using molasses as an electron donor; the aerobic reduction of MEK and chloroform by injection of methane; and limited anaerobic reduction of MEK and chloroform, to carbon dioxide under nitrate-reducing, or to carbon disulfide under sulfate-reducing conditions. Methane injection was required to cometabolize MEK and chloroform to carbon dioxide. The Bench-scale Study concluded that "...complete degradation of daughter products (chloroform and MEK) was not fully demonstrated in the bench-scale study." While not included here in the Action Memo text, the Bench-scale Study recommended that additional laboratory and field studies be conducted before full scale implementation of the remedy. We do not feel that conducting the field studies under the time constraints of a TCRA removal action, without permits (WDRs) and adequate safeguards, is warranted at this time. Also note that the last sentence in this paragraph is incomplete, and implies complete dechlorination of MEK occurs within 70 days after methane injection. The Bench-scale Study text states that this may occur, but that proving successful full dechlorination was one reason for the recommendation for additional laboratory and field studies.

7. Section 1. Removal Site Evaluation, Evaluation of the Release at the Administration Area Plume, page 10: The text (and specific parts of the remainder of the TCRA document) describes the criteria from 40 Code of Federal Regulations (CFR) 300.415, which covers all types of removal actions, including TCRAs. The criteria also cover petitions to USEPA. Since this is not a National Priorities List (NPL) site, and USEPA is not involved in the TCRA removal actions (or any investigative/remedial

activities at Crows Landing), we have previously commented that the site is governed by non-NPL sections in CERCLA, and subject to State Requirements (including WDRs).

8. Section V. A. 5. Applicable or Relevant and Appropriate Requirements (ARARs), page 20, with Table 2, page 25: The text specifies that the only potential State ARARS related to substantive requirements, and not to permits (WDRs), apply to the TCRA removal action. It is the Board's position that CERCLA Sections 14 and 120(a)(4) govern the application of state requirements at Crows Landing, since it is not listed on the National Priorities List. As we have stated previously, WDRs are required for the injection of substrate into the aquifer.

9. Section VI. Expected Change in the Situation Should Action Be Delayed or Not Taken, page 27: The text states that contamination would probably spread northeast or to the nearest water supply well(s). We feel that, without hydraulic containment of the groundwater plume, this scenario would continue, regardless of the TCRA removal action. We request that the Navy provide a work plan which includes hydraulic containment of the groundwater plume, notification of nearby owners of water supply wells of the contaminant hazards present in the aquifer, and a contingency plan to address potential offsite contamination, including replacement supply wells if needed.

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



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

cc: Ms. Francesca D Onofrio – CALEPA-DTSC  
Mr. Jim Simpson – Stanislaus County DER  
Mr. Donald Chuck, NASA  
Ms. Lynn Hornacker – US Navy SWDIV

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