Response to Comments on the Draft Investigation Summary Report, Extent of Groundwater Impact Verification, Installation Restoration Program Site 17, NASA Crows Landing Flight Facility, Crows Landing, California
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Comments by: Russell W, Walls, Senior Engineer, California Regional Water Quality Control Board, Central Valley Branch, dated March 13, 2006			
Comment No.	**Section, Figure, Table**	**Comment**	**Response**
		We have reviewed the 24 February 2006 *Draft Investigation Summary Report, Extent of Groundwater Impact Verification, Installation Restoration Program Site 117* at the NASA Crows Landing Flight Facility near Crows Landing in Stanislaus County. Your consultant, Shaw Environmental, Inc., prepared the report. The report summarized the subsurface investigation of the Administration Area Plume downgradient and off-site (east of Bell Road) to the Crows Landing facility. The investigation found the following: 1. Benzene was detected in the mid-shallow interval only, at a maximum concentration of 2.0 micrograms per liter (µg/L). The extent of benzene in groundwater has been defined in the shallow, mid-shallow, mid-deep, and deep intervals. 2. 1,2-dichlorothane (1,2-DCA) was detected in the mid-shallow interval only, at a maximum concentration of 1.6 µg/L. The extent of 1,2-DCA has been defined in all four intervals. 3. Carbon tetrachloride was not detected in groundwater samples collected from the shallow interval. The maximum concentration of carbon tetrachloride detected was 14.7 µg/L in the mid-shallow interval, 0.7 µg/L in the mid-deep interval, and 5.4 µg/L in the deep interval. The extent of carbon tetrachloride has been defined in the shallow interval, but has not been defined in the mid-shallow, mid-deep, and deep interval. 4. Chloroform was detected at a maximum concentration of 0.5 µg/L in the shallow interval and 4.8 µg/L in the mid-shallow interval. Chloroform was not detected in the mid-deep or deep intervals. The extent of chloroform in the mid-shallow interval has not been defined. 5. Trichloroethene was detected in the shallow interval at a maximum concentration of 2.2 µg/L and in the mid-shallow interval at a maximum concentration of 1.2 µg/L.	

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		6. Based on the results of the off-site investigation coupled with the results of previous investigations, the following was recommended. • Additional groundwater sampling and analysis should be conducted on the adjacent (downgradient) property to further define the extent of carbon tetrachloride and chloroform in the mid-shallow, mid-deep, and deep intervals. • Installation of traditional monitoring wells would also be conducted in the future to provide off-site data that can be compared to all of the historical data collected on-site. • An assessment should be conducted to evaluate if the impacted groundwater detected off-site poses a risk to human health and the environment and if migration control is necessary. A predictive model should be developed to evaluate risk associated with plume movement, and to estimate long-term natural attenuation of the plume. • Remedial technologies should be evaluated. Other comments regarding the *Draft Investigation Summary Report* are as follows.	
1.		We concur with the findings and recommendations presented in the report.	Concurrence noted.

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2.		A definitive statement regarding whether to conduct additional investigation of the trichloroethene detected in the shallow and mid-shallow intervals should be provided. Additionally, the reasoning behind the statement should be included.	The data collected to date does not indicate a defined plume of trichloroethene with a specific on-site source area (highly concentrated area where concentrations decrease with distance downgradient). The northern and southern extent of the trichloroethene detections on-site are defined by existing wells/piezometers and previous discrete samples along Bell Road. The downgradient and southeastern extent of detections are not defined off-site. Additional investigation is required to define the extent of the chloroform plume in the mid-shallow interval to the south of the off-site investigation area. This is the same area where trichloroethene was detected. Samples will be collected from the shallow and mid-shallow intervals in this area and analyzed for volatile organic compounds. Data from the additional off-site investigation will be used to further evaluate the trichloroethene to determine the potential source and extent of detections. Text will be added to the conclusions and recommendations section of the report to indicate that data from the additional investigation will also be used to evaluate the potential source and extent of the trichloroethene detections.
3.		Off-site irrigation well 6/8-16M1 is located east of the Administration Plume. This will likely influence the movement and distribution of the contaminants of concern in groundwater, and could be the reason for contaminants found in the mid-deep and deep intervals. Knowing the construction specifications of the well could help explain contaminant movement and distribution. As such, construction date of this well should be obtained. If construction data is not available, then the well should be video-logged.	The Navy has made several attempts to acquire the construction details for well 6/8-16M1. These include requests to the Department of Water Resources, Stanislaus County, and the property owner. No information has been received to date. The Navy will continue to try to acquire information about the well. Any support from the RWQCB would be appreciated.