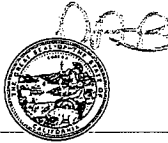




California Regional Water Quality Control Board

Los Angeles Region



Linda S. Adams
Cal/EPA Secretary

320 W. 4th Street, Suite 200, Los Angeles, California 90013
Phone (213) 576-6600 FAX (213) 576-6640 - Internet Address: <http://www.waterboards.ca.gov/losangeles>

Arnold Schwarzenegger
Governor

October 21, 2008

Mr. Daniel S. Samorano, P.E.
Project Manager
Raytheon Company
1151 East Hermans Road
TU, Bldg 826
Tucson, AZ 85706

Certified Mail
Return Receipt Requested
Claim No. 7005 1820 0001 2683 6986

COMMENTS ON DEFICIENT TECHNICAL REPORT – WORK PLAN FOR GROUNDWATER INVESTIGATION TO VERIFY CURRENT RADIOACTIVITY CONDITIONS PURSUANT TO CALIFORNIA WATER CODE SECTION 13267 ORDER – FORMER RAYTHEON FACILITY (HUGHES MISSILE SYSTEMS COMPANY), 8433 FALLBROOK AVENUE, CANOGA PARK, CALIFORNIA (WDR NO. 95-012, SLIC NO. 0693, SITE ID NO. 2043T00)

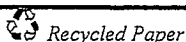
Dear Mr. Samorano:

Los Angeles Regional Water Quality Control Board (Regional Board) staff received and reviewed the *Work Plan for Groundwater Investigation to Verify Current Radioactivity Conditions* (Work Plan), dated September 12, 2008, prepared by TN & Associates, Inc. for the referenced site. This Work Plan was required by the Regional Board in the July 15, 2008 California Water Code (CWC) Section 13267 order.

Based on review of the information submitted, Regional Board staff have the following comments which shall be addressed in a revised work plan:

1. The groundwater samples shall be submitted to a state certified laboratory with Field of Testing in Radiochemistry of Drinking Water. Provide proof of Environmental Laboratory Certification when the investigation report is submitted to the Regional Board.
2. The groundwater samples shall be analyzed for:
 - Total dissolved solids (TDS) by EPA Method 160.1
 - Gross alpha by EPA Method 900.0 or 900.1
 - Radium-226 by EPA Method 903.0 or 903.1
 - Radium-228 by EPA Method 904.0
 - Uranium by EPA Method 908.0
 - Gross beta by EPA Method 900.0
3. In EPA Method 900.0 for gross alpha and gross beta measurement, the solids concentration is very much a limiting factor in the sensitivity of the method for any given groundwater sample because the radioactivity of the sample is not separated from the solids of the sample. For groundwater samples with solids content greater than 500 milligrams per liter (mg/L), EPA Method 900.1 is recommended.

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4. EPA Method 903.0 covers the measurement of the total soluble alpha emitting radioisotopes of radium, namely radium-223, radium-224, and radium-226. When the total radium alpha activity of a groundwater sample is greater than 5 picocuries per liter (pCi/L), then the radium-226 analysis by EPA Method 903.1 is required.
5. Include a table containing information on container types, sample volumes, preservatives, special handling, and analytical holding times for each analysis.
6. Because adjusted gross alpha activity is calculated by subtraction of the uranium measurement from the gross alpha measurement, specify which standard will be used for gross alpha measurement.
7. EPA Method 908.0 only covers the measurements of total uranium alpha particle activity. Specify the EPA approved method for isotopic analysis of uranium.
8. Collect both filtered and unfiltered groundwater samples for the purpose of comparison in order to determine whether the suspended sediments could affect analytical results.
9. Specify field QA/QC program for radioactivity analyses of groundwater samples and provide supporting documentation. However, equipment (rinsate) blanks should be collected as field QA/QC samples and field duplicates should be at least 10% of total samples per event for QA/QC purposes.
10. Specify laboratory QA/QC program for radioactivity analyses of groundwater samples and provide supporting documentation.
11. Specify data validation procedures for radioactivity analyses of groundwater samples and provide supporting documentation.
12. Explain why all liquid Investigation-Derived Wastes will be transferred from the storage tank to the on-site groundwater remediation system. It is our understanding that the groundwater recovery and treatment system was shut down in April 2006.
13. Provide documentation of all analytical methods.
14. Provide a Statement of Qualifications for professionals who will be responsible for preparing a revised work plan, indicating project experience related to chemical and radiochemical analyses of environmental samples.

Mr. Daniel S. Samorano
Raytheon Company

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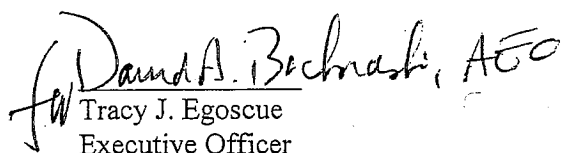
October 21, 2008

Please adequately address the aforementioned comments and submit a revised work plan to the Regional Board by **November 17, 2008**. In addition, the Regional Board staff will meet with the representatives of the Raytheon Company and TN & Associates to further discuss the content of the revised work plan on November 4, 2008.

Pursuant to CWC Section 13268, failure to submit the required technical reports/documents by the due date specified may result in civil liability penalties administratively imposed by the Regional Board in an amount up to one thousand dollars (\$1,000) for each day the technical reports/documents are not received.


Should you have any questions, please contact Dr. Ann Chang at (213) 620-6070, or Ms. Su Han at (213) 576-6735.

Sincerely,

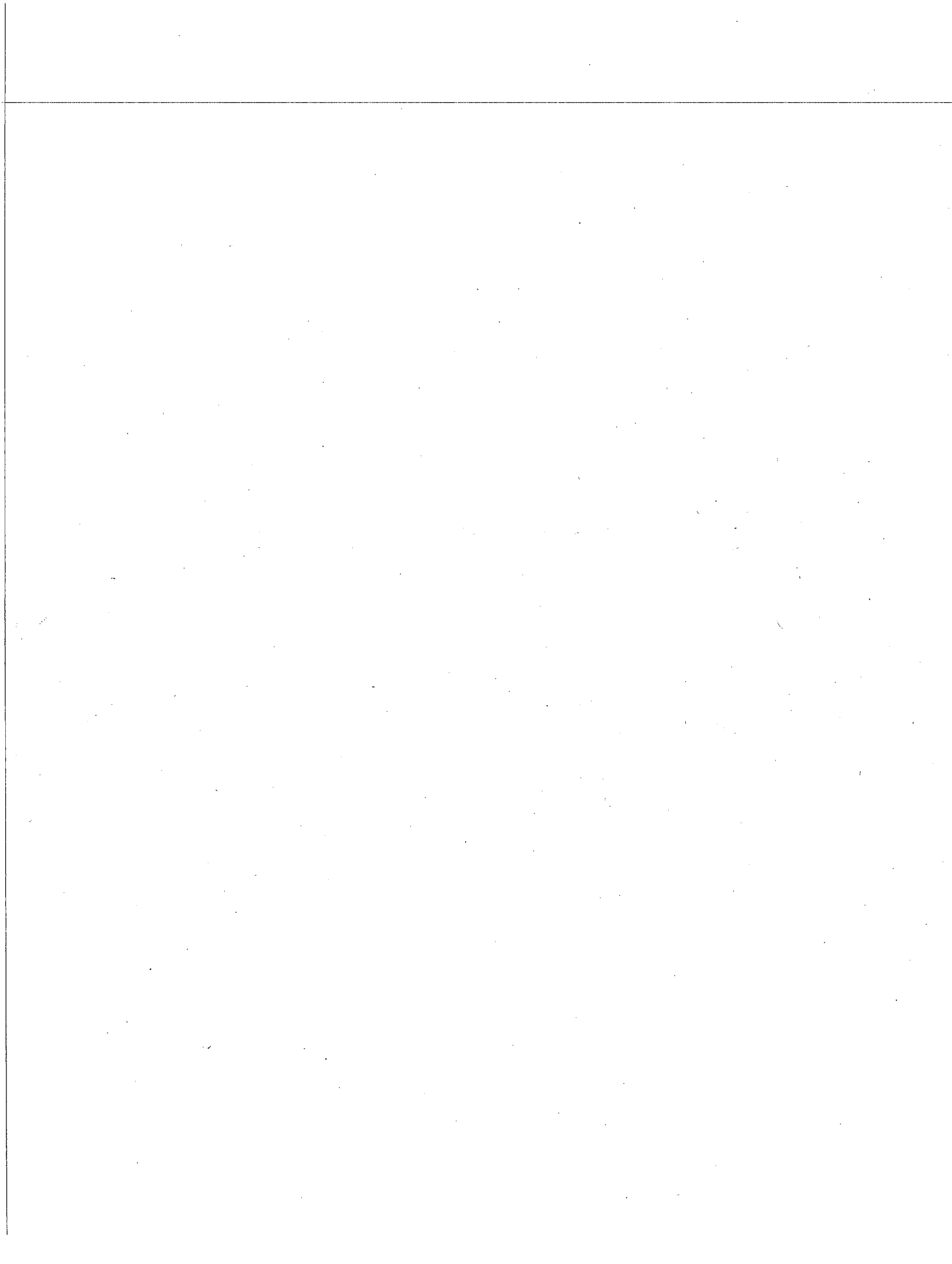
 Tracy J. Egoscue
Executive Officer

cc: Mr. Stefan Cajina – California Department of Public Health
Mr. Chris Nagler, Watermaster, California Department of Water Resources
Mr. Bernard Franklin, Los Angeles County, Department of Public Health
Mr. Hoover Ng, Water Replenishment District- Southern California
Mr. James Pappas, Department of Toxic Substances Control
Mr. Rod Collins, Department of Toxic Substances Control
Mr. Jacques Marcillac, TN & Associates, Inc.

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Arnold Schwarzenegger
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July 15, 2008

Mr. Daniel S. Samorano, P.E.
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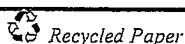
CALIFORNIA WATER CODE SECTION 13267 ORDER: REQUIRING A GROUNDWATER INVESTIGATION WORK PLAN TO VERIFY CURRENT RADIOACTIVITY CONDITIONS – RAYTHEON SYSTEMS COMPANY (FORMER HUGHES MISSILE SYSTEM COMPANY), 8433 FALLBROOK AVENUE, CANOGA PARK, CALIFORNIA (WDR NO. 95-012, SLIC NO. 0693, SITE ID NO. 2043T00)

Dear Mr. Samorano:

The California Regional Water Quality Control Board (Regional Board) staff have reviewed Raytheon's response to the Regional Board's Order dated March 19, 2008 requiring a groundwater investigation work plan to verify current radioactivity conditions at the Former Canoga Park Facility. The response presents additional information including historical data, revised tables, and recalculations for the Regional Board to evaluate the radioactivity condition of groundwater at the site. Based on review of the additional information submitted, the Regional Board staff have the following comments:

1. The Work Plan dated December 19, 1991 indicated that concentration of radioisotopes in groundwater may not be directly related to concentrations in the host rock or soil, but rather to water attributes such as pH, total dissolved solids, concentration of dissolved carbonate, oxidation/reduction potential, etc. On the contrary, the Raytheon response dated June 3, 2008, stated that investigation and follow-on sampling events at the former Canoga Facility consistently determined that the levels of radioisotopes were attributable to naturally occurring sources in the underlying native soils and bedrock. There is inconsistency between these two statements. In addition, the measurements of uranium did not indicate the elevated uranium levels in excess of the Maximum Contaminant Levels (MCLs) across the entire Facility.
2. Groundwater monitoring was conducted at the site by McLaren/Hart between March 1990 and June 1991. A total of 22 wells were sampled for gross alpha, gross beta, total uranium, and radium-226. Additionally, radium-228 was analyzed for samples with radium-226 exceeding 3 picocuries per liter (pCi/L). As indicated in the McLaren/Hart report dated October 28, 1991, gross alpha and gross beta radioisotope levels in groundwater beneath the Facility were generally consistent with those levels identified at other sites located in the San Fernando Valley area. However, uranium and radium-226 levels were broader in range and were elevated in comparison.

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3. Two groundwater sampling events with isotopic analyses of uranium and radium were performed by GRC during October and December 1991. GRC recommended that no additional radionuclide sampling is warranted based on the USEPA 1991 proposed MCLs, which were different from the current USEPA MCLs and California MCLs. In addition, the documentation only indicated that the associated isotopic mass percentages fell within the range expected for naturally occurring uranium.
4. The uranium activity data presented in the two referenced GRC groundwater reports have been recalculated using conversion factors based on the specific activities referenced in the U.S. Department of Energy document. The site data are compared to the published values of typical isotopic abundances. The data indicates the isotopic mass percentages of the samples with elevated uranium levels support the USEPA definition of naturally occurring uranium.

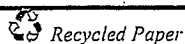
Relative Abundance of Uranium Isotopes

Isotope	U-238	U-235	U-234
Natural Abundance (%)	99.27	0.72	0.0055

5. The Raytheon response dated June 3, 2008, stated that radioactivity in groundwater at the site was concluded to be naturally occurring based on the results of eight sampling events. However, there were only two sampling events (October 1991 and December 1991) with isotopic analysis of uranium to demonstrate the percentage of natural abundance of each natural uranium isotope for confirming its natural origin. In addition, there were only two sampling events with isotopic analysis of radium for measurements of radium-226 and radium-228 separately, to meet monitoring requirements for radium-228.
6. Upon review of the revised summary tables, Regional Board staff conclude that the following wells have radioactive contaminant levels in excess of the California MCLs.

	California MCL	October 1991, 22 wells sampled	December 1991, 28 wells sampled
Gross alpha particle activity (excluding radon & uranium)	15 pCi/L	MW-20D	none
Uranium	20 pCi/L	MW-19S, MW-21S, CM-8D, CM-9D, CM-10	CM-8D, CM-10, CM-12, CM-17, CM-18
Combined radium - 226+228	5 pCi/L	MW-16, MW-20D, MW-21D	MW-16, MW-21D

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Mr. Daniel S. Samorano
Raytheon Company

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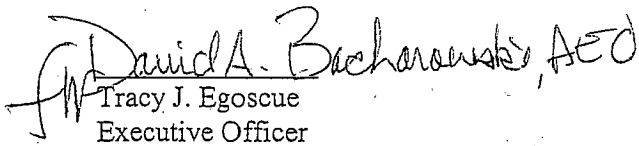
July 15, 2008

Pursuant to Section 13267 of the CWC, you are required to submit a work plan for a site-wide groundwater investigation to verify current radioactivity conditions. The groundwater monitoring wells shall be sampled for radioactivity including gross alpha particle activity, uranium, combined radium - 226+228, and gross beta particle activity. At a minimum, the work plan shall address those groundwater monitoring wells with radioactive contaminant levels in excess of the MCLs. The work plan must be submitted to the Regional Board by **September 15, 2008**.

Pursuant to Section 13268 of the CWC, failure to submit the required work plan by the due dates may result in civil liability administratively imposed by the Regional Board in an amount up to one thousand dollars (\$1,000) for each day the work plan is not received.


Should you have any questions, please contact Dr. Ann Chang at (213) 620-6070, or Ms. Su Han at (213) 576-6735.

Sincerely,


Tracy J. Egoscue
Executive Officer

cc: Ms. Heather Collins, California Department of Health Services
Mr. Chris Nagler, Watermaster, California Department of Water Resources
Mr. Bernard Franklin, Los Angeles County, Department of Public Health
Mr. Hoover Ng, Water Replenishment District- Southern California
Mr. James Pappas, Department of Toxic Substances Control
Mr. Martin Herrmann, Department of Toxic Substances Control
Mr. Timothy Garvey, TN & Associates, Inc.
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