California Regional Water Quality Control Board
San Francisco Bay Region

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Arnold Schwarzenegger
Governor

Letter sent via email

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U.S. Department of the Navy
Attn: Mr. Keith S. Forman
BRAC Program Management Office – West
1455 Frazee Road, Suite 900
San Diego, CA 92108-4310
Via email only: keith.s.forman@navy.mil

Subject: Comments on the *Draft Final Remedial Investigation/Feasibility Study Report for Parcel E-2, Hunters Point Shipyard, San Francisco*, dated February 27, 2009

Dear Mr. Forman:

I have reviewed the *Draft Final Remedial Investigation/Feasibility Study Report for Parcel E-2* (*Draft Final RI/FS*). I appreciate that the Navy, in response to comments provided by the regulatory agencies on the March 2007 Draft Remedial Investigation/Feasibility Study Report, has developed alternatives that address potential discharges of leachate and contaminated groundwater to San Francisco Bay (Alternatives 3 and 4) and has additionally presented an alternative consisting of the complete removal of landfill waste and the wastes in the adjacent areas (Alternative 2). I note that the *Draft Final RI/FS* addresses CERCLA hazardous substances except for radionuclides, which will be addressed in a radiological addendum.

SUMMARY

The following summary is presented to provide context to my comments.

Background - Parcel E-2 is located along the shoreline in the southwest portion of the Hunters Point Shipyard. The Navy describes Parcel E-2 as consisting of four distinct areas including the Landfill Area, Panhandle Area, East Adjacent Area, and the Shoreline Area. The Navy has characterized the solid waste in the Landfill Area as contiguous and composed primarily of municipal-type waste and construction debris, and notes that some industrial wastes were additionally disposed within the parcel. Some solid wastes were placed in the Panhandle and East Adjacent Areas, and the Navy describes these wastes as soil and rock with isolated solid waste.

Remedial Investigations and Removal Actions - Investigations of solid waste, soil, sediment, landfill gas, groundwater and surface water have been performed over more than 20 years resulting in an extensive site dataset. In addition, several removal actions have been performed. The site data have been compared against remedial investigation evaluation criteria (RIEC) to evaluate the extent of chemicals that may pose a risk to human health or the environment.

Concentrations of chemicals above the respective RIEC have been detected throughout the parcel. As concluded in Section 5 (Nature and Extent of Chemicals in Groundwater) and Appendix M (Evaluation of Groundwater Chemical Migration to the Aquatic Environment), groundwater at Parcel E-2 contains elevated concentrations of chemicals that may be migrating to the bay. The highest concentrations were detected in groundwater samples collected from the Landfill Area, East Adjacent Area, and southern portion of the Panhandle Area, although there are also elevated concentrations in the northern portion of the Panhandle Area near the bay.

Future Land Use - Parcel E-2 is primarily designated for open space reuse except for portions of the Landfill Area and the East Adjacent Area, which are designated for industrial and research and development reuse. Institutional controls will be used to address any reuse incompatibilities.

Feasibility Study – In the Feasibility Study, the Navy has identified remedial goals and remedial action objectives and developed three alternatives in addition to No Action (Alternative 1):

- **Alternative 2** (Excavate and dispose of solid waste, soil, and sediment including monitoring, institutional controls, and a shoreline protection system) – This alternative describes a clean closure.

- **Alternative 3** (Contain solid waste, soil, and sediment with hot spot removal including monitoring, institutional controls, and a shoreline protection system) - This complex alternative includes caps for the Landfill Area and adjacent areas, a shoreline protection system, active landfill gas collection, a subsurface drainage and extraction system where the Landfill Area abuts the Shoreline Area but would not extend into the Panhandle Area, upgradient groundwater diversion, excavation of radiological surface anomalies, excavation of chemical hotspots in adjacent non-landfill areas, and excavation and on-site consolidation of solid waste and soil in the wetlands restoration areas and sediment in the Shoreline Area.

- **Alternative 4** (Contain solid waste, soil, and sediment with hot spot removal, contain groundwater from the Landfill Area, monitoring, institutional controls, and a shoreline protection system) – This complex alternative includes all of the elements of Alternative 3 with some additional elements. Under this alternative, additional chemical hotspots identified in the Panhandle and East Adjacent Areas would be addressed by excavations. Contaminated groundwater from the Landfill Area within 100 feet of the bay would be contained by a downgradient slurry wall, and there would be a contingency to extend the slurry wall along the PCB Hot Spot Area (in the East Adjacent Area).

GENERAL COMMENTS

Adequacy of the Remedial Investigation (Section 4 Nature and Extent of Solid Waste, Landfill Gas, and Chemicals in Soil and Section 5 Nature and Extent of Chemicals in Groundwater) – The Navy indicates that the extent of chemicals in soil and groundwater at the site is not completely defined and also that additional investigation of soil gas (including methane) is warranted in the non-landfill areas. The Navy concludes that sufficient data have

been collected for the evaluation of remedial alternatives in the Feasibility Study. Based on my review of the data and nature and extent evaluations, I concur.

Development and Evaluation of Alternatives – Overall, I support the composition of the alternatives and the Navy's corresponding evaluation regarding effectiveness. However, for Alternative 3, it appears that the groundwater impacts in the northern portion of the Panhandle Area close to the bay (see temporary wells TW013 to TW047 and tabulated groundwater data on Figure 12-9, Evaluation Tier 4) would only be monitored. Based on this, I conclude that this alternative would not be completely protective of the environment because it would not prevent the potential discharge of contaminated groundwater to the bay. In contrast, Alternative 4 includes a hotspot removal action to address these impacts with subsequent groundwater monitoring, which might provide adequate protection of the environment.

Items to be Addressed During Remedial Design – In the document, the Navy notes that there are multiple remaining data gaps. The Navy indicates that these will be addressed as part of the Remedial Design. The items that the Navy has committed to address during the Remedial Design phase, depending on the alternative selected in the Proposed Plan, include the following:

- Evaluation of the need for extending the slurry wall south into the PCB Hot Spot Area (Alternative 4) (p. ES-15, p. 12-2, p. 12-4, p. 12-24, and p. 13-15).
- Consideration regarding the protection of all plant and animal species in wetland areas (p. 2-22).
- Verification of the potential presence of subsurface utilities in the eastern portion of the Landfill Area (p. 4-70) and investigation of the utilities as a potential preferential pathway for landfill gas migration (p. 8-20).
- Potential refinement of the method for comparing groundwater data with aquatic criteria to assess the downgradient effect of shoreline groundwater contamination on San Francisco Bay (p. 5-43) and development of groundwater monitoring criteria or risk-based remediation goals for chemicals of potential ecological concern based on more refined fate and transport modeling (p. 9-4 and Appendix M p. M-2-8).
- Augmentation of the groundwater dataset from ongoing monitoring (p. 8-31).
- Further evaluation of the shoreline protection system (p. 12-5).
- Refinement of the preliminary long-term groundwater monitoring plan (p.11-14 and p.12-3).
- Specification of best management practices for stormwater (p. 12-6).
- Refinement of the selected shoreline remediation approach for Parcel E-2 for integration with current remediation approach for Parcel F given that the current alignment of the

shoreline protection system would not contain all contaminated sediment with the Shoreline Area (p. 12-7).

- Pre-design characterization of the lateral and vertical extent of the hot spots and possible refinement of the hot spot excavation goals potentially through modeling or site-specific leaching analyses (p.12-9).

- Quantitative slope stability analysis (p. 12-18).

- Further evaluation of the quality of the groundwater proposed for diversion to the freshwater wetlands (Alternatives 3 and 4) (p. 12-21).

- Investigation of the soil gas in the Panhandle, East Adjacent and Shoreline Areas to assess whether landfill gas (due to buried solid waste) is being generated to a degree that requires collection (Alternatives 3 and 4) (p. 12-22).

- Assessment of the volume and concentration of landfill gas to support determination of the appropriate landfill gas treatment technology (e.g., flare versus potassium permanganate) (p. 11-56 and 12-22).

SPECIFIC COMMENTS

Figures 2-9 through 2-11 (Cross Sections G-G', H-H', and I-I') – The colors used for the A-aquifer and B-aquifer are similar and make the figures difficult to review. If possible, adjust the color scheme to better differentiate these aquifers.

Section 5.8.4 (Data Gaps) and Table 5-15 (List of All Possible Areas of Concern in Parcel E-2 Aquifers) – I recommend that Table 5-15 additionally list the temporary monitoring wells installed in 2008 where groundwater data exceed the RIEC.

Figure 12-1 (Conceptual Grading Plan, Alternatives 3 and 4) – I recommend re-orienting this figure to match the orientation of the remaining figures in Section 12 (north is towards the top of the page). The lateral extent of the subsurface drainage and extraction system should be illustrated on this figure. Also, please indicate the location of Cross Section A (Figure 12-3) on this figure.

Please contact me at (510) 622-2445 or rsteenson@waterboards.ca.gov if you have any questions.

Sincerely,

Digitally signed by Ross Steenson
Date: 2009.06.11 11:39:24 -07'00'

Ross Steenson, PG, CHG
Engineering Geologist
Groundwater Protection Division

Cc (via email only):

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