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MARE ISLAND  
SSIC NO. 5090.3.A



# Department of Toxic Substances Control



Alan C. Lloyd, PhD  
Agency Secretary  
CalEPA

700 Heinz Avenue, Suite 200  
Berkeley, California 94710-2721

Arnold Schwarzenegger  
Governor

August 1, 2005

Mr. Dwight Gemar  
Weston Solutions, Inc.  
750 Dump Road  
Mare Island  
Vallejo, California 94592

Dear Mr. Gemar:

**Mare Island Navy Final Remedial Investigation, IA-H1, dated 7/1/2005**

Dear Mr. Gemar:

The Department of Toxic Substances Control has reviewed the subject document. The attached partial comments are forwarded to you for your consideration.

Should you have any questions regarding this letter, please call me at (510) 540-3773.

Sincerely,

Chip Gribble  
Remedial Project Manager  
Base Closure Unit  
Office of Military Facilities

Attachments

cc: Mr. Jerry Dunaway  
Mr. Gary Riley  
Ms. Carolyn dAlmeida

Post-It™ brand fax transmittal memo 7671		# of pages ▶ 13
To	Jerry Dunaway	From
Co.	Amfac	Co.
Dept.		Phone #
Fax #	619-532-0940	Fax #

**DTSC Comments on the  
Mare Island Navy Remedial Investigation IA H1, dated 7/1/2005**

1. Page 2-9, section 2.2.6, para. 2, 2<sup>nd</sup> sentence: The rationale that was developed was that most of the explosive and radiological material that was dumped into the Mare Island Strait waterfront and that was subsequently removed through historical dredging practices at Mare Island was then placed in dredge ponds/dredged material disposal areas on Mare Island. However, there is also considerable MEC/MC that was disposed/buried on Mare Island and that is not associated with the historical Mare Island Strait disposal practices and historical dredged material disposal practices. IA-H1 includes areas for which there is a realistic probability for existing MEC/MC from both historical disposal/burial practices and historical dredged material disposal practices. Although the probability may not be uniform across the entire IA-H1, it is technologically impractical (due to interference from other waste within IA-H1) to investigate further for MEC/MC within IA-H1, without excavation of the landfill and all waste within IA-H1. Please revise section 2.2.6 and 2.2.6.1 accordingly.
2. Page 2-11, section 2.2.6.2, 2<sup>nd</sup> sentence: It is not accurate nor logical to interpret, extend, or extrapolate the conclusion of the survey and the agencies' approval or concurrence to the entire content or the subsurface of the landfill area when the survey was intended and designed to adequately detect only radionuclide contamination at the surface and at shallow depths. At the time of the survey, the Navy and the regulatory agencies did not see the need to investigate fully the subsurface in the landfill area for radionuclide contamination, with an understanding that the reasonably anticipated final remedy for the landfill area was to be containment. Given then the practical limits of the radiological survey and the corresponding report, the agencies agreed that no further action was required for IA-H1 to be in compliance with unrestricted use criteria for the surface area or surface exposure area with respect to radionuclides. Please revise section 2.2.6.2 accordingly.
3. Page 2-11, section 2.2.6.2: The range of possible radiological contamination/sources at depth within IA-H1 landfill area (containment area) is considerably broader than the discrete radiological items encountered in the dredge pond outfall investigation. Please revise section 2.2.6.2 accordingly.
4. Page 2-11, section 2.2.6.2, last para.: The possible radiological contamination at depth within IA-H1 landfill area is considerably different from that identified for the dredge pond areas, in particular for the historical outfall locations. Please revise section 2.2.6.2 accordingly.
5. Tables 3-1 through 3-4: The physical and geotechnical information should be consistent with the July 2005 Geotechnical Design Parameters Report. Also, these tables do not appear to be tied to any text in section 3.
6. Page 4-26, section 4.51: The UST sites within IA-H1 should have completed investigations and closure or other final resolution with the RWQCB. Corresponding reports of these investigations and activities and RWQCB Closure should be referenced in the final RI report.

7. Page 4-26, section 4.52: The corresponding PCB reports need to be referenced and regulatory agencies' responses and/or approvals should be cited as well.
8. Page 4-38, section 4.72: Please add a section to this chapter for the IA-H1 IRAP Completion report.
9. Page 7-22, para. 2: Please identify the seven radionuclides found.
10. Page 7-32, para. 2: Please identify the six radionuclides found.
11. Page 7-76, para. 4: Please identify the three radionuclides found.
12. Page 8-49, section 8.9.3, last para.: This paragraph is misleading; IA-H1 has not been subject to geophysical surveys and intrusive investigations as has been the case for the dredge ponds within the Western Early Transfer Parcel (WETP) for which there is an approved Remedial Action Plan. Notwithstanding, significant MC has been encountered through other investigations and activities in several locations within IA-H1, in particular within the containment area. Following the discoveries of MC, these areas were not investigated further for MC/MEC, despite the abundance of MC found. Further investigation within IA-H1 for MEC, MC, UXO, OE, OEW, and all other definitions or classifications previously used at Mare Island, has been considered impractical due to the existence of other metallic and hazardous waste within IA-H1, and also considered not critical given the reasonably anticipated final remedy of containment.

Despite the absence of rigorous geophysical surveys and intrusive investigations (due to technical impracticality) for MEC within IA-H1, considerable ordnance related waste, (some portion of which may be MEC) has been found in several locations within the IA-H1 containment area. The disposal mode for these deposits within IA-H1 is not consistent with that for the dredge ponds within the WETP. Instead, the disposal mode for much of the MC material encountered within IA-H1 appears to be random dumping/burial within the landfill containment area. A rational basis to conclude that "...there is a very low potential for human and ecological risk from explosive and/or radiological items in the Containment Area" has not been established. See also comments numbers 1 and 2. Please revise this section accordingly.

13. Table 11-1: The Risk from MEC and Radiological Items column should indicate Yes for Groundwater-SWBZ Inside.
14. Please submit to DTSC a hard copy of the appendices. I have received only a hard copy of the text through the Reference section.



Department of Toxic Substances Control

Alan C. Lloyd, Ph.D.  
 Agency Secretary  
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1011 North Grandview Avenue  
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MEMORANDUM

TO: Chip Gribble, DTSC Project Manager  
 Henry Chui, DTSC Project Manager  
 OMF Berkeley Office  
 700 Heinz Street, Second Floor  
 Berkeley, CA 94704

FROM: James M. Polisini, Ph.D.  
 Staff Toxicologist, HERD  
 1011 North Grandview Avenue  
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DATE: July 21, 2005

SUBJECT: MARE ISLAND NAVAL SHIPYARD FINAL REMEDIAL  
 INVESTIGATION, INVESTIGATION AREA H1  
 [SITE 201208-18 PCA 18040]

**BACKGROUND**

HERD reviewed the document titled *Final Remedial Investigation, Investigation Area H1, Mare Island, Vallejo, California*, dated 1 July 2005. This Remedial Investigation (RI) Report for Investigation Area (IA) H1 was prepared by Weston Solutions, Inc. of Vernon Hills, Illinois. This review is in response to your verbal request for HERD review prior to July 30, 2005.

In a HERD memorandum dated July 15, 2005, HERD reviewed the document titled *WESTON RESPONSES TO 29 OCTOBER 2004 DTSC (James M. Polisini, Ph.D., Staff Toxicologist) REVIEW COMMENTS, MARE ISLAND DRAFT FINAL REMEDIAL INVESTIGATION, INVESTIGATION AREA H1, 22 JULY 2004*. The Response to Comments (RTC) document was forwarded, for HERD comment, by facsimile copy on June 13, 2005.

Subsequent to the construction of Dikes 12 and 14 at the southern end of Mare Island, the Navy constructed levees in Investigation Area (IA) H1

Chip Gribble  
July 21, 2005  
Page 2

along the western shoreline to hold dredge spoils pumped from Mare Island Strait. Dredge spoil ponds were expanded to the west as spoil ponds reached containment capacity. From as early as 1909 until 1978, solid wastes generated in the shipyard, including hazardous wastes and petroleum wastes, were deposited within IA H1 in unlined pits and low-lying terrain along Dump Road, the main road along the western border of MINSY. IA H1 was also the site of a fire-fighting training area, storage areas for spent lead-acid batteries, a fenced solid waste disposal area (Landfill subarea), and industrial wastewater treatment plant (IWTP), and treatment waste sludge impoundments.

IA H1 encompasses approximately 230 acres with an elevation ranging from 6 feet to 23 feet above mean sea level (msl). An estimated 4.5 million gallons of waste oil were reportedly disposed of at the former waste oil sumps within the Waste Disposal Sump/Lead Oxide Storage and Disposal Area. Estimates of the free product, observed in borings and test pits, in the IA H1 area range from 900,000 gallons to upwards of 2 million gallons. The presumptive remedy for IA H1 is consolidation of contaminated material into a proposed containment boundary containing the former landfill, placement of a slurry wall with engineered dewatering collection trench, and capping of the former landfill area.

Mare Island Naval Shipyard (MINSY) was the first naval station on the Pacific Coast, where shipbuilding began in 1854. The former MINSY is located on a peninsula approximately 30 miles northeast of San Francisco. The peninsula is bounded to the east, south, and west by the Napa River (Mare Island Strait), Carquinez Strait, and San Pablo Bay, respectively. Mare Island was originally an island of approximately 1,000 acres with surrounding wetlands of approximately 300 acres. Fill material was added to enlarge Mare Island and connect it to the mainland. MINSY has been in operation under Navy control from approximately 1853 until the recent transfer to the City of Vallejo through the State Lands Commission.

#### GENERAL COMMENTS

HERD provided two comments on the Draft Final RI Report for IA H1, in a HERD memorandum date July 15, 2005. These comments related to whether a pipeline was included in IA H1 and whether Geological Services Unit (GSU) input had been received. Neither of those comments appears to have been addressed in the Final RI Report for IA H1.

Chip Gribble  
July 21, 2005  
Page 3

### SPECIFIC COMMENTS

1. While it has no impact on the methodology or findings of the RI of IA H1, the List of Figures contains a typographic error where sediment is repeatedly misspelled 'sedimaent' (Table of Contents, xxi and xxii). No response is required regarding this comment.
2. HERD recommended, in previous comments on the Draft Final RI Report for IA H1, that the DTSC GSU be consulted regarding the adequacy of the groundwater sampling, modeling regarding the depth to different water-bearing zones, the direction of groundwater flow and the magnitude of tidal influence. The applicable sections (Section 3.0, pages 3-9 through 3-14 and Section 7), and electronic transfers to HERD of Weston responses to other entities, contain no reference to review by GSU.
3. HERD recommended, in comment on the Draft Final RI Report for IA H1, that the description of the outflow pipeline from the Industrial Wastewater Treatment Plant (IWTP) be amended to explicitly state that the outflow pipeline was excluded from the scope of the Ecological Risk Assessment (ERA) for IA H1. The language referenced (Section 4.59, page 4-31, third bulleted item) was not amended and still includes only the Resource Conservation and Recovery Act (RCRA) characterization of the discharge pipeline as a non-RCRA unit. The discussion of intertidal mudflats (Section 3.6.1, page 3-16) concentrates mostly on the eastern side of Mare Island Naval Shipyard (MINSY) and does not appear to discuss the outflow pipeline or the sediment communities at the outfall in San Pablo Bay. Several figures (e.g., Figure 5.2 and Figure 5.3), however, indicate that the sampling data from the inflow IWTP pipeline (IR14) are evaluated in the IA RI Report (Section 5.1.1.1, page 5-2), but the IWTP outflow pipeline and associated sediments are not included in the IA H1 RI investigation. Although an explicit statement in the ERA presentation would be preferred, HERD does not recommend amending the document at this stage of the IA H1 RI Report preparation. This comment is intended as clarification to the DTSC Project Manager.
4. The complete Final ERA for IA H1, referenced as Appendix J (e.g., Section 5.11.5, page 5-47), was not furnished for HERD review. The complete ERA was previously furnished on a CD-ROM. This would not appear a critical issue as all HERD comments on the Appendix J ERA, contained in a HERD memorandum dated October 29, 2004, were addressed in the Response to Comments to that October 29, 2004 memorandum. This comment is meant for the DTSC Project manager to define the scope of this review.

Chip Gribble  
July 21, 2005  
Page 4

## CONCLUSIONS

Two previous HERD comments do not appear to have been directly addressed in the Final RI Report. The question of whether the IWTP outflow pipe is considered in the IA H1 Report was resolved by examination of figures and text contained in the Final IA H1 RI Report. HERD recommends that GSU review of the groundwater modeling and other groundwater issues be obtained by the DTSC Project Manager.

Although the complete ERA was not provided, previous HERD comments provided on the Draft Final IA H1 ERA (Appendix J) have been addressed in a separate Response to Comments, not included in the Final IA H1 RI document reviewed. The receptors evaluated and the IA H1 ERA conclusions contained in the Final ERA do not differ from the Draft Final ERA.

HERD Internal Reviewer: Michael Anderson, Ph.D.  
Staff Toxicologist, HERD

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Chip Gribble  
July 21, 2005  
Page 5

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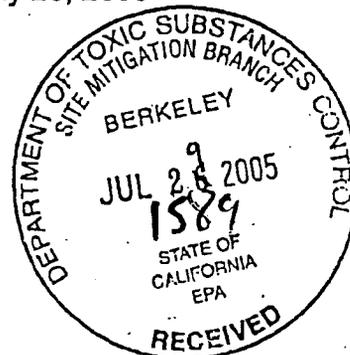
Voice 818-551-2853  
Facsimile 818-551-2841  
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**Memorandum**

To: Chip Gribble, Remedial Project Manager  
 Department of Toxic Substances Control  
 700 Heinz Avenue, Suite 200  
 Berkeley, CA 94710

Date: July 26, 2005

From: Beckye Stanton, Ph.D., Associate Toxicologist  
 Department of Fish and Game  
 Office of Spill Prevention and Response  
 1700 K Street, Suite 250  
 Sacramento, CA 95814



Subject: **Comments on Final Remedial Investigation for Investigation Area H1, Mare Island, Vallejo, California (SITE # 201208).**

The California Department of Fish and Game, Office of Spill Prevention and Response (DFG-OSPR) appreciates the opportunity to comment on the above-entitled report as part of its ongoing involvement in activities at Investigation Area (IA) H1. DFG-OSPR provided Applicable Or Relevant And Appropriate Requirements (ARARs) for IA H1 in a memo dated December 21, 2004. The DFG-OSPR commented on the Draft Final Remedial Investigation (RI) for IA H1 in a letter dated November 2, 2004, and participated in subsequent conference calls and meetings between December 2004 and June 2005.

Overall, the document has incorporated the changes agreed upon in previous discussions and addressed concerns with the previous version of the document; however, two major concerns remain. DFG-OSPR does not concur with the proposed exclusion of chemicals that pose potential or significant and immediate risk to wildlife receptors from further consideration based on a simple comparison to ambient conditions. A more valid statistical comparison of entire data sets of site (including outliers) and ambient data should be used. However, Weston's recent proposal to consider these chemicals in the feasibility study (FS), along with sufficient documentation in both the RI and FS, addresses our main concerns with the potential outcomes of this process. In addition, DFG-OSPR recognizes that Weston does not have access currently to the whole ambient dataset and that extensive page changes at this stage are problematic. The other major concern is the assumption that exposure is zero from consumption of biota in which a chemical was not detected. Sources of surrogate information should be considered to estimate exposure, at least as part of the FS criteria development.

**Background**

Mare Island Naval Shipyard is in Solano County about 25 miles northeast of San Francisco. The base is bordered by San Pablo Bay to the west, Carquinez Strait to the south, and Highway 37 to the north. The Napa River (Mare Island Strait) separates Mare Island from the mainland and the City of Vallejo to the east. Mare Island is within the incorporated boundaries of the City of Vallejo. IA H1 is approximately 230 acres and is bounded by dredge ponds in three directions. Sources of contamination to the IA H1

Chip Gribble  
July 26, 2005  
Page 2 of 5

are related to the overall activities of the base, including shipbuilding, ship repair, dredge and fill activities, manufacture and storage of munitions, and waste disposal.

The DFG is the State's trustee for fish and wildlife resources pursuant to Fish and Game Code section 711.7. The DFG is also designated to act on behalf of the public as trustee for natural resources pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act Section 107 (f)(2)(B).

### General Comments

1. DFG-OSPR does not concur that aluminum, barium, cadmium, chromium, copper, manganese, mercury, zinc, and benzo(a)pyrene are "present at ambient levels" (Pages 10-104 and 10-112) in the non-tidal wetlands, and therefore are not a concern for the wildlife. This conclusion was justified by a simple comparison of the 95% upper confidence limit (UCL) of site data excluding outliers and the 95<sup>th</sup> percentile ambient artificial fill values. Comparisons to ambient conditions should include the entire site data set and be evaluated with appropriate statistical tests comparing the two data sets. Based on preliminary responses from Weston (email July 8, 2005), all chemicals considered to be at "ambient levels" will be compared to the hot spot criteria in the FS. This proposed change, particularly if referenced in some fashion in the RI (e.g., revised cover letter or changed page) is sufficient to address our concerns.
  - a. The maximum concentration of mercury detected in the non-tidal wetland in the top two feet was 5.1 mg/kg. This concentration exceeds the ambient concentration of 2 mg/kg and is more than three times (i.e. HQ of 3) the wetland preliminary remediation goal (PRG) (1.1 mg/kg) proposed for the feasibility study. The exceedances of mercury in sediment occur in Wetland B in relatively close proximity to each other.
  - b. Chromium concentrations in the non-tidal wetlands pose significant and immediate risk to killdeer (baseline ecological risk assessment [BERA] high TRV HQ of 5.1). Concentrations of chromium greater than ambient (140 mg/kg) were primarily located adjacent to IR01 and IR16 in Wetland B, but also in Wetlands A, C, and Northwest Dump Road Wetland.
2. The phrase "do not pose a risk to wetland [or upland] receptors because these metals are present at ambient levels" is inaccurate and should be revised. Ambient simply refers to concentrations occurring from natural or anthropogenic conditions other than site activities.
3. The summary of the ERA for non-tidal wetlands (Page 11-7) is inconsistent with the information provided on Page 10-112.
4. Maximum and 95% UCL of plant tissue concentrations were used directly rather than as site-specific bioaccumulation factors (BAFs) based on co-located plant and

Chip Gribble  
July 26, 2005  
Page 3 of 5

soil/sediment concentrations. If a chemical was not detected in biotic tissue, then exposure via consumption of that biota was assumed to be zero (i.e. left blank in the table). The frequency of detection in tissue is based on many factors including the sensitivity of the analytical method, the sample size, the range of co-located soil/sediment concentrations, and characteristics of the organism sampled (e.g., age). The sample size for the upland samples was particularly limited with six to eight samples from four locations. Overall, non-detected chemicals should not be eliminated from the exposure calculations, and several alternative sources could be used to estimate exposure. For example, literature regression models could be used as a substitute for chemicals not detected in site collected samples. At a minimum, this issue should be addressed in the FS as part of PRG and hot spot criteria determination.

### Specific Comments

1. Page 4-27 (Section 4.53). Please reference the date of the Draft Final RI for IA H1.
2. Page 4-38 (Section 4.73). Please include a separate section for the Draft Final RI for IA H1 after Section 4.73 to be consistent with the chronological list of documents.
3. Page 8-40 (Section 8.6) and Page 8-49 (Section 8.9.4). The "significant and immediate risk" result was in the following sentence, referred to as "potential risk." The second phrase should be revised to be consistent with the established risk definitions, either as "immediate and significant risk" or "potentially significant risk."
4. Table 9-3. The analytical results from the two surface soil samples from the West subarea were not presented in Section 9 although the results are included the corresponding table in Appendix G.
5. Table 9-12. Please include the summary of the screening (Table J6-18) and baseline (Table J6-30) ERA results for the upland habitat here.
6. Table 10-11. Please include the summary of the screening (Table J6-45) and baseline (Table J6-60) ERA results for the non-tidal wetlands here.
7. Page 11-7. The summary of the ERA for non-tidal wetlands (Page 11-7) is inconsistent with the information provided on Page 10-112. Dioxin-like polychlorinated biphenyls (PCBs), lead, selenium, and antimony posed significant and immediate risk to wildlife receptors (Page 10-112), but only chromium and selenium are listed on Page 11-7 under this category. Please resolve this discrepancy.
8. Page J-2-3 (Section 2.2). The text states only three PCB congeners (PCB 77, 105, and 126) have toxicity equivalency factors (TEFs); however, TEFs for 12 PCB congeners were provided in the 1998 World Health Organization revision as described in the links below. Of the 12 PCB congeners with TEFs available, four congeners (PCB 77, 105, 126, and 118) were included as analytes. Based on initial

Chip Gribble  
July 26, 2005  
Page 4 of 5

feedback from Weston (email received July 8<sup>th</sup>), PCB-118 was included in the calculation of dioxin-like PCBs although it was not included in the text description.

- a. <http://www.epa.gov/toxteam/pcb/tefs.htm>
  - b. <http://ehp.niehs.nih.gov/members/1998/106p775-792vandenberq/vandenberq-full.html>
  - c. [http://www.oehha.ca.gov/air/hot\\_spots/pdf/table082903tef.pdf](http://www.oehha.ca.gov/air/hot_spots/pdf/table082903tef.pdf)
9. Page J-4-3 (Section 4.1.3). Please clarify that site-specific tissue concentrations are used directly without the use of a site-specific BAF. In addition, please describe how non-detected values were handled and for which chemicals this occurred.
10. Page J-6-17 (Section 6.6). The final paragraph is inconsistent with the previous paragraph regarding the level of risk (e.g., significant and immediate versus potential) and the potentially impacted receptors (e.g. fox).
11. Attachment M-1. No extent maps were provided for cadmium although the BERA low-TRV based hazard quotient (HQ) were greater than one for shrew and meadowlark in upland and killdeer in wetland.

If you have any questions regarding this review or require further details, please contact Beckye Stanton at (916) 327-9961, [bstanton@ospr.dfg.ca.gov](mailto:bstanton@ospr.dfg.ca.gov).

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Chip Gribble  
July 26, 2005  
Page 5 of 5

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