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MARE ISLAND
SSIC NO. 5090.3.A

Department of Toxic Substances Control

Alan C. Lloyd, PhD
Agency Secretary
Cal/EPA

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

Arnold Schwarzenegger
Governor

December 16, 2005

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

Mare Island Navy Draft Final Feasibility Study, Investigation Area H1, dated 10/2005

Dear Mr. Gemar:

The Department of Toxic Substances Control has reviewed the subject document. The attached 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: See next page.

Printed on Recycled Paper

cc: Mr. Jerry Dunaway
BRAC Program Management Office West
1455 Frazee Road, Suite 900
San Diego, California 92108-4310

Mr. George Leyva
Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, California 94612

Ms. Carolyn d'Almeida
U. S. Environmental Protection Agency
413 Poppyfield Drive
American Canyon, California 94503

DTSC Comments on the Navy Mare Island
Draft Final Feasibility Study, Investigation Area H1, dated October, 2005

General Comments:

1. This Feasibility Study presents a RCRA cap alternative 2B over the entire containment area. This alternative follows the presumptive remedy for the containment area. The presumptive remedy of containment for a landfill is one that is assumed to be adequate in general under circumstances similar to those found at this site. Presumptive remedies are useful where applied appropriately because they are considered robust enough to be protective for most landfills, and because they reduce the need for characterization to that necessary to conclude that the landfill is "typical". The Feasibility Study also presents an alternative 2A to the presumptive remedy, which includes a variable cap across the containment area. This alternative 2A is not supported through the Remedial Investigation (RI) Report site characterization and risk assessment. The RI characterization for nature and extent of contamination was developed to support what has been called a presumptive remedy of containment which, then, provides support for uniformity of containment. In order to justify the non-presumptive remedial alternative 2A, adequate site characterization and risk assessment for the containment area must be developed to provide appropriate support for the variable cap alternative. As an example, nature and extent characterization for waste oil, and other contamination within the proposed non-RCRA cap areas, as well as more extensive soil gas survey and analysis must be developed.

2. DTSC will provide Weston, in a separate submittal to follow, more detailed information regarding additional data and analysis necessary to consider further the alternative 2A for a variable cap within the containment area.

3. Cost estimates must be revised to explicitly include regulatory agency oversight, enforcement and monitoring of the remedial alternatives, as well as all activities associated with long term operations/maintenance and a post closure RCRA permit.

4. Several inconsistencies between this Feasibility Study and the preliminary draft remedial design document have been noted. Some of these inconsistencies involve cost estimates for various alternatives. The Feasibility Study and remedial design document should be revised for consistency.

Specific Comments:

1. Page ES-1, para. 1: This feasibility study should also address impacts to groundwater in addition to human health and ecological risks present within IA-H1.

2. Page ES—4, Alternative Analysis section, last sentence: This statement should be modified to indicate the State role with respect to the California Health and Safety Code chapters 6.5 and 6.8, the RAP process, and RCRA Closure Plan process.

3. Page 2-8, para. 3: Please provide information regarding the source/s of the information that is the basis for the statement that "According to former employees, much of the waste oil discharged to the sumps was reclaimed..." Whereas this reclamation may or may not have occurred, the statement has not previously been a part of the historical information and record for this site, to our knowledge.

4. Page 2-9, para. 1, last sentence: RCRA Closure for the IWTP is expected to be included with the final RAP/ROD/RCRA Closure Plan. Please revise accordingly.

5. Page 2-9, para. 2: Description of wastes paced in various sub-areas should not be limited to non-hazardous wastes or a volumetrically predominant waste. Please revise for completeness.

6. Page 2-10, para. 2: Please revise to include discussion of all hazardous waste that was encountered in the construction of the slurry wall/extraction trench, including the lead oxide contamination. It should also be noted that the location of the slurry wall/extraction trench was planned to minimize encounter with contaminated soil, and was partially modified during construction in response to unforeseen conditions.

7. Page 2-24, section 2.2.4.2, 1st sentence: We disagree with the statement in the first sentence. Based on the IA-H1 RI report as well as previous site investigation documents, the waste within the RCRA landfill area does not appear to be significantly different from that elsewhere within the containment area. Given the list of hazardous wastes that were permitted for the RCRA landfill (page 2-9, para. 1), and given that the volume and types of waste that were likely disposed outside the RCRA area, it is possible that the contamination outside the RCRA landfill area is more significant than that within. The IA-H1 Remedial Investigation report did not provide detailed characterization to substantiate such a distinction either way. The IA-H1 Remedial Investigation report provided characterization to support what has been referred to as a presumptive remedy of containment. Please revise accordingly.

8. Page 2-24, section 2.2.4.2: Please identify the screening criteria used in each instance. The percentage of samples that exceeded the screening criteria may not provide a complete picture insofar as the intent of the IA-H1 Remedial Investigation report was not to provide full characterization of nature and extent within the containment area. Also, not all samples taken were analyzed for all constituents. If the intent of this section is to support consideration of a variable multilayer cap across the containment area by differentiating nature and extent,

then this should be established in the characterization presented in a remedial investigation report. This does not appear to be the case with the IA-H1 Remedial Investigation report, nor was this the basis on which the document was prepared by Weston and reviewed by the regulatory agencies. The likely probability of MEC contamination should also be presented. The potential for radionuclide contamination should also be presented. Subsections should be added for the areas outside the containment area.

9. Page 2-27, para. 1, last sentence: The effect of a cap over this area on VOCs should also be mentioned in this context.

10. Page 2-27, section 2.2.4.3: Please include an explanation of why soil gas constituents within the Containment Area outside of the RCRA Landfill are orders of magnitude lower. It is only implied that this is related to differences in contamination.

11. Page 2-27, section 2.2.4.4: The organization for section 2.2.4.4 is confusing. It is not clear why this section is for non-RCRA areas. The organizational scheme should be consistent with the rest of the document, which is arranged based on 1) the containment area, 2) the upland areas outside containment area, 3) non-tidal wetland areas outside the containment area. Also, the likely probability of MEC contamination should also be presented. The potential for radionuclide contamination should also be presented.

12. Page 2-28, section 2.2.4.4.2: Please include some discussion of how this area is different or similar to the area within the containment slurry wall/extraction trench. The document should provide a basis for a slurry wall/extraction trench in the current location or provide support to establish a larger footprint for containment.

13. Page 2-41, para. 4: We disagree that the probability of coming into contact with MEC/MC items at IA-H1 is extremely low. A geophysical survey has not been conducted due to expected interferences and based on what has been referred to as a presumptive remedy. Notwithstanding, a number of MEC items have been found and considerable deposits of MEC/MEC waste have been identified.

14. Page 2-42, section 2.2.6.1.6, line 8: Please insert the words "consistent with" after "constituents are".

15. Page 3-7, para. 1: <u>Ambient/background</u> concentrations for inorganics for Mare Island have been established. Ambient/background concentrations for PAHs have not been established. Please revise accordingly.

16. Page 3-14, last para.: A percentage of groundwater discharge to non-tidal wetland areas has not been established. The dilution factor should be eliminated. Please revise accordingly.

17. Page 3-15, para. 3: The text is not clear regarding proposed soil cleanup levels. Please modify the text to clearly state the cleanup criteria for hot spots and exposure areas.

18. Page 3-23, para. 1, line 2: Please replace "RCRA/Facility Landfill site" with "containment area".

19. Page 3-32, last para.: An analysis should be conducted to establish meaningful estimates of generated gas volumes that will be produced post cap construction.

20. Page 4-4: The list of layers for the proposed RCRA closure cover should be revised to include 1) a biological barrier layer, and 2) a 60 mil HDPE geomembrane rather than a 40 millimeter.

21. Page 4-4, section 4.1.2.2: Site characterization within the containment area, and presented in the IA-H1 Remedial Investigation report, has not been adequate to support the variable cap alternative. The characterization for nature and extent of contamination was developed to support what has been called a presumptive remedy of containment; It is not considered adequate to differentiate a cap design over portions of the containment area for a variable cap alternative. Also, the potential for gas generation underneath a cap has not been investigated adequately to support a no gas collection remedy for a portion of the containment area. A revision to the IA-H1 Remedial Investigation report should be considered to develop adequate site characterization for the containment area to provide appropriate support for the variable cap alternative.

22. Page 4-6, section 4.1.2.3: The appropriateness of public access across a portion of the containment area should be supported by adequate site characterization and risk analysis which is not included in the IA-H1 Remedial Investigation report. A revision to the IA-H1 Remedial Investigation report should be considered to develop adequate site characterization for the containment area to provide appropriate support for an alternative that includes public access.

23. Page 4-6, section 4.1.2.3: It is our understanding that deed restrictions or implementing restrictive land use covenants on Navy property is problematic and that some other equivalent mechanism would have to be implemented instead. Please include information regarding this in a revised section 4.1.2.3.

24. Page 4-9, section 4.2: The adequacy of a 2-foot soil cover has not been established. Please revise to include a justification supporting a 2-foot soil cover. Also, please identify the interval to be considered for "hot spot" removal. Long-term effectiveness of a 2-foot soil cover may not be adequate.

25. Page 4-11, para. 4: Hot spot removal for all options should consider confirmation sampling for all constituents, not just the target COCs.

26. Page 4-20, section 4.3.2.3: Please revise for all options to indicate that specifics of a monitoring program, such as the number and location of samples, will be determined in a post closure monitoring plan rather than being defined in the feasibility study.

27. Page 5-1, section 5: DTSC requests the Navy/Weston to identify the portion of IA-H1 for which the Navy intends to pursue property transfer to the SLC. This may be critical to evaluating modifying criteria.

Department of Toxic Substances Control

Alan C. Lloyd, Ph.D.
Agency Secretary
Cal/EPA

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

Arnold Schwarzenegger
Governor

MEMORANDUM

TO: Chip Gribble
Engineering Geologist
Office of Military Facilities, Berkeley Regional Office, Site Mitigation

FROM: Buck King, PG, CHG Buck King
Engineering Geologist, Northern California Geological Services Unit (GSU)
Hazardous Waste Management Program, Berkeley Regional Office

CONCUR: Brian Lewis, CHG, CEG BK for
Senior Engineering Geologist, Northern California GSU
Hazardous Waste Management Program, Sacramento Regional Office

DATE: December 2, 2005

SUBJECT: DRAFT FINAL FEASIBILITY STUDY, INVESTIGATION AREA H1, MARE ISLAND NAVAL SHIPYARD, VALLEJO, SOLANO COUNTY,
PCA: 18040 SITE: 201208-18

DOCUMENT REVIEWED

Draft Final Feasibility Study, Investigation Area H1, Mare Island, Vallejo, California (FS) dated October 2005. Prepared by Weston Solutions, Inc.

INTRODUCTION

As you requested, the Northern California GSU of the Department of Toxic Substances Control (DTSC) has reviewed the above-referenced FS report. This memorandum provides GSU comments and recommendations. If you have questions, please contact me at (510) 540-3955 or Brian Lewis at (916) 255-6532.

DISCUSSION

Containment Area Remedial Alternative Evaluation

The FS uses United States Environmental Protection Agency (US EPA) guidance recommending waste containment for municipal landfills and military landfills as the rationale for presentation of a limited evaluation of remedial alternatives for the site area defined by the groundwater containment barrier. The alternatives evaluated consist of 1) no action, 2) containment, and 3) complete removal and offsite disposal. The FS presented two containment options which differ only in specifications of the landfill cap construction. The landfill cap construction alternatives consist of Alternative 2a) a RCRA Subtitle C Hazardous Waste Landfill cap (Hazardous Waste Cap) over the entire area, and Alternative 2b) a combination RCRA Subtitle D Municipal Waste Landfill cap (Municipal Waste Cap) and Hazardous Waste Cap.

The two containment alternatives are similar in terms of general performance regarding limiting rain water infiltration into waste. The two cap alternatives differ primarily in the long term robustness and landfill gas collection attributes of the Hazardous Waste Cap design compared to the less stringent Municipal Waste Cap design. The estimated costs for options 2a and 2b were $29,381,000 and $31,691,00, respectively. The cost difference between the two cap alternatives was $2,310,000 which is less than 10-percent of the total cost estimate for either of the two alternatives and within the margin of error of plus 50-percent and minus 30-percent typically associated with feasibility studies. The cost difference between the two cap alternatives is relatively minor and not considered a significant differentiator for the two remedial alternatives.

The two containment alternatives provide different levels of future public access to the containment area. The FS proposed future public access over the Municipal Waste Cap area in alternative 2b and no public access over a Hazardous Waste Cap area in alternatives 2a and 2b. The GSU considers the issue of allowing public access over the area capped by a Municipal Waste Cap the most significant factor differentiating the two cap alternatives.

Allowing public access over the Municipal Landfill Cap area is expected to increase the possibility of landfill cap erosion and potential human exposure to underlying waste or landfill gas. The GSU does not agree that the area within the containment zone has been adequately characterized or evaluated to demonstrate that soil gas will not present a health risk in the event that the area is capped with a Municipal Landfill Cap. Furthermore, proposed waste consolidation from areas outside the waste containment structure may also introduce additional health risk and landfill gas hazard that should be considered when contemplating public access.

The FS relies on soil gas investigation data to distinguish areas that are anticipated to generate landfill gas from areas not anticipated to generate gas. The landfill gas studies that are used to predict potential landfill gas generation were general and reconnaissance in nature, and not designed to characterize landfill gas generation potential of the entire area within the containment zone. The landfill gas study relies on data from nine locations to characterize the entire approximately 70 acre area within the

containment barrier. The use of the reconnaissance level landfill gas study to characterize landfill gas generation potential for the entire containment area is not considered appropriate for concluding that the generation potential does not exist.

Additionally, because the remedial alternative involves consolidating additional waste from areas outside of the containment structure into the landfill prior to capping, the reconnaissance soil gas study does not address landfill gas generation conditions associated with the imported waste materials. The waste area dewatering associated with containment area water collection sumps will promote waste material oxidation and volatilization and the generation of additional soil gas.

Upland Area Remedial Alternative Evaluation

The evaluation of remedial alternatives for Upland Area was limited to evaluating five alternatives. One end member, Alternative 1, consists of no action. The other end member, Alternative 5, consists of complete removal of all material within the Upland Area estimated as approximately 500,000 cubic yards and consolidation within the Containment Area followed by importing clean fill to reconstruct the Upland area. The Alternatives 2, 3, and 4 were similar to each other and consisted of "hot spot" removal and consolidation within the Containment Area followed by capping with a 2-foot thick soil cover. Alternatives 2, 3, and 4 differ from each other in the ecological risk Hazard Quotients (HQs) of 10, 5, and 3, respectively, used as part of hot spot identification and soil volume estimation process.

The three hot spot removal alternatives identified soil areas to be removed using multiple criteria consisting of 1) human health cancer risk greater than $1X10^{-4}$ or human health hazard index (HI) of 1 for noncancer health effects, 2) locations posing a threat to groundwater based on soil leaching and Preliminary Remediation Goals (PRGs), 3) locations exhibiting visible oil or free product, and 4) areas presenting an ecological risk with an HQ of 10, 5, or 3.

The GSU does not agree with the process used to identify hot spots and has identified apparent errors and omissions within the text and tables of the FS. The issues identified by GSU consist of:
1) use of a 1000-fold factor to increase threat to groundwater criteria,
2) use of a single human health cancer risk criteria of $1X10^{-4}$, and
3) use of single human health noncancer adverse health effects HI of 10 which conflicts with FS text description indicting HI of 1.

The FS developed Threat to Groundwater Preliminary Remediation Goals (TGPRG) for soil consistent with previous presentations based on cancer risks of $1X10^{-6}$ and HI of 1. The FS uses the TGPRG and a multiplication factor of 1,000 to develop a "hot spot" criteria for soil posing a threat to groundwater. The FS attempts to rationalize the selection of the factor of 1,000 based on an unsubstantiated statement that 0.1 percent of groundwater has been determined to discharge to nontidal wetlands. The GSU disagrees with the quantitative statement regarding groundwater and surface water interaction and does not accept its use in adjusting risk-based cleanup criteria. The use

of the 1,000-fold factor on the TGPRG is approximately equivalent to changing human health cancer risk criteria from $1X10^{-6}$ to $1X10^{-3}$.

The FS text repeatedly (pages 4-10, 4-13, 4-15, and 4-17) identifies hot spots as locations "that exceed a human health cancer risk estimate of $1X10^{-4}$ (leaving in place only materials that are $1X10^{-5}$ or better), a human health HI of 1 for noncancer adverse health effects...". This repeated statement is in error because use of $1X10^{-4}$ cancer risk criteria for soil removal leaves soil in place with risks of up to $9.9X10^{-5}$ or better and not $1X10^{-5}$. The repeated statement is also in error and disingenuous when referring to a HI of 1 when in fact a HI of 10 appears to have been used to identify hot spots based on review of report tables.

The FS is intended to present and evaluate a variety of remedial options to allow decision makers the ability to compare various alternatives to facilitate remedy selection. The three upland area remedial hot spot removal alternatives presented in the FS are similar to each other and only reflect variations in ecological risk HQ criteria. A more meaningful array of alternatives would include variation in human health risk criteria and in threat to groundwater criteria. GSU proposes alternatives that evaluate a range of threat to groundwater associated with hot spot criteria defined by the TGPRG, TGPRG X10, and TGPRG X100. The GSU proposes alternatives that evaluate human health risk associated with hot spot criteria defined by $1X10^{-6}$, $1X10^{-5}$, and $1X10^{-4}$ for cancer risks and 1,10, 100 HI for noncancer risks. This type of remedial alternative development will provide a more representative array of risk-based alternatives and facilitate risk management decision making and communication of risk reduction to the general public.

The Upland Area remedial alternatives (Alternatives 2, 3, 4,) include a 2-foot soil cover as part of the remedy. The FS does not quantify the risk reduction associated with the 2-foot soil cover. The report provides no design basis or justification for the selection of a 2-foot thickness. The FS makes no statements concerning the long-term maintenance of the soil cover. The selection rationale of a 2-foot thickness for the soil cover needs to be presented to allow for regulatory agency review and evaluation.

The Upland Area remedial alternatives (Alternatives 2, 3, 4,) do not describe uncertainty associated with estimated soil volumes determined for the different alternatives. The FS does not describe the confirmation sampling approach for the soil removal activities or potential for soil excavations to grow based on identification of additional areas of contamination during the remedial activity. Information regarding soil confirmation sampling and uncertainties associated with remedial alternative soil volume estimates should be included in the FS.

Non-Tidal Wetland Areas Remedial Alternative Evaluation

Similar to the Upland Area evaluation, the FS Non-tidal Wetland remedial alternative description text repeatedly (pages 4-19, 4-21, 4-23, and 4-24) identifies hot spots as locations "that exceed a human health cancer risk estimate of $1X10^{-4}$ (leaving in place only materials that are $1X10^{-5}$ or better), a human health HI of 1 for noncancer adverse

health effects...". This repeated statement is in error because use of $1X10^{-4}$ cancer risk criteria for soil removal leaves soil in place with risks of up to $9.9X10^{-5}$ and not $1X10^{-5}$ or better. The repeated statement is also in error and disingenuous when referring to a HI of 1 when in fact a HI of 10 appears to have been used to identify hot spots based on review of report tables.

The Non-Tidal Wetland Areas active hot spot removal alternatives indicate sediment sampling and analysis will be conducted to confirm that chemical concentrations in sediments are not increasing over time. The FS proposes collecting two samples per year from Wetlands A, B, C, and D for a minimum of 5 years. The FS does not present a technical basis for the proposed number of samples. The GSU does not agree that the number of samples proposed is adequate based on the information presented. The FS should at a minimum outline a technical rationale for the post remediation sediment sampling and evaluation activity in order to estimate sample numbers and analyses for cost estimating.

The actual sampling activity would require a work plan that describes the statistical evaluation of the sediment data. The work plan would include a data quality objective evaluation necessary to determine the number of samples required to confidently evaluate sediment chemistry and demonstrate significant concentration changes.

RECOMMENDATIONS

1) The proposed Containment Area Alternative 2b which includes a combination of Hazardous Waste Cap and Municipal Waste Cap with public access over the Municipal Waste Cap should be revised to include additional characterization activities necessary to confirm municipal waste characteristics prior to implementation of remedy. Waste characterization activities addressing imported waste from areas outside the landfill should also be conducted. Hazardous waste characteristics of all waste located in areas identified for capping with Municipal Waste Cap should be identified. All characteristic hazardous waste should be relocated to areas to be covered by a Hazardous Waste Cap. Waste characterization activities should include a land fill gas study that incorporates additional soil gas sampling along with evaluation of gas generation potential of imported material and gas generation potential associated with waste dewatering.
2) The FS should rephrase the description of human health risk reduction associated with Upland Area hot spot removal presented on pages 4-10, 4-13, 4-15, and 4-17 that implies an order of magnitude reduction greater than actual proposed cancer risk reduction. The FS should also revise inconsistencies between human health HI criteria presented on pages 4-10, 4-13, 4-15, and 4-17 of the report versus HI actually used during remedial alternative development.

3) The proposed Upland Area Alternatives 2, 3, and 4, should be revised to address errors and omission identified during review of the FS. Hot spots should be redefined to address soil areas posing a threat to groundwater that does not include the 1,000-fold dilution factor used in the FS. A range of hot spot criteria defined by the TGPRG, TGPRG X10, and TGPRG X100 should be used. The hot spots should also be revised to reflect a range of post remediation human health risk. The GSU recommends $1X10^{-6}$, $1X10^{-5}$, and $1X10^{-4}$ for cancer risks and 1, 10, 100 HI for noncancer risks. The revised hot spots should continue to include ecological risk HQ, but should consider limiting the alternatives to HQs of 10, 5, and 1.

4) The FS should describe human and ecological health risk reduction and basis for selection of the 2-foot soil cover component of the proposed remedial alternatives. The report should include a description of the long-term operation and maintenance for these areas covered by this type of cap and anticipated costs.

5) The FS should rephrase the description of human health risk reduction associated with Non-tidal Wetland Area hot spot removal presented on pages 4-19, 4-21, 4-23, and 4-24 that implies an order of magnitude reduction greater than actual proposed cancer risk reduction. The FS should also revise inconsistencies between human health HI criteria presented on pages 4-19, 4-21, 4-23, and 4-24 of the report versus HI actually used during remedial alternative development.

6) The FS should include a description of the anticipated range of error associated with the hot spot soil/sediment volume estimates. The potential volume estimate errors should be incorporated in the description of remedial alternatives to allow the reader to incorporate potential volume estimate changes into the remedial alternative evaluation and selection process.

7) The FS should include a description of the proposed hot spot removal confirmation sampling approach. The description should include proposed analytical test methods for confirmations samples and cleanup criteria. A detailed description of confirmation sampling proposed for hot spot removal of soil areas containing visible oil and free product should be included.

8) The proposed Non-Tidal Wetlands sediment monitoring activity should be revised to include additional detail describing the activity. The revised section should include an outline of the technical rationale for the post remediation sediment sampling and evaluation activity. The outline of the technical rationale should be sufficiently detailed to support the estimate of sediment sample numbers and an analyses for cost estimating.

Allen C. Lloyd, Ph.D.
Agency Secretary
Cal/EPA

Department of Toxic Substances Control

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Arnold
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MEMORANDUM

TO: Charles Gribble
Office of Military Facilities
700 Heinz Avenue
Berkeley, CA 94710-2721

FROM: John P. Christopher, Ph.D., D.A.B.T.
Staff Toxicologist
Human & Ecological Risk Division (HERD)
JChristo@dtsc.ca.gov 916.255.6630

DATE: 7 December 2005

SUBJECT: Mare Island Naval Shipyard: Draft Final Feasibility Study for Investigation Area H1
PCA: 18040 Site: 201208-18

BACKGROUND

The former Mare Island Naval Shipyard is a closed military facility in Contra Costa County. Cleanup operations are being managed by Naval Facilities Engineering Command, Southwest Division. Investigation Area H1 (IA-H1) is on the western side of Mare Island, close to San Pablo Bay. We reviewed the Remedial Investigation Reports and presented our comments in memoranda dated 28 March 2003, 15 September 2004, and 3 August 2005. The current document is the Draft Final Feasibility Study Report. We did not comment on the earlier draft report, because unsettled issues regarding destruction and restoration of wetlands made this problematic. Various issues surrounding this feasibility study were discussed at length in monthly project meetings in 2004 and 2005.

DOCUMENT REVIEWED

We reviewed "Draft Final Feasibility Study, Investigation Area H1, Mare Island, Vallejo, California". This document is dated October 2005. It was prepared by Weston Solutions, Inc., contractors to the Navy. We focused our review on Appendix C to this document, "Calculation of Residual Risk, Investigation Area H1 Feasibility Study".

GENERAL COMMENTS

1. **Overall:** The feasibility study report is thorough and well written. It accurately reflects the many agreements reached during several months of project meetings regarding human health risk assessment. Institutional controls are to be emplaced to prevent residential development of all of Area H1. Implementation of remedial alternatives short of complete excavation and removal result in estimated cancer risks within the "risk management range" of 1 E-4 to 1 E-6 for future recreational users and future construction workers. Non-cancer hazard is less than the benchmark of 1.0 for all human receptors. The report can become acceptable upon adequate responses to our specific comments below.

2. **Reduction of Risk Compared to Baseline:** Remedial alternatives for upland areas outside the containment area and for non-tidal wetlands show little or no reduction in risk for future human users of the land. The principal reason for this is that the baseline human health risk assessment was constructed with the assumption that hot spots of contaminated soil would be removed to the containment area and capped. Thus, this definition of baseline conditions differed little from remediated conditions areas outside the containment area.

3. **Report on Compact Disk:** We thank the Navy and Weston for providing this report in electronic form. In future, please make use of the "Bookmarks" feature in Adobe pdf files. This feature greatly assists the reviewer in navigating through these very large files. No response to this comment is required.

SPECIFIC COMMENTS

1. **Containment Area, Sec. 5, pp. 5-5 ff.:** Characterization of contamination within the slurry wall, especially volatiles, was less complete than it might have been, because the Navy and Weston chose to use the presumptive remedy of a cap over not only the former hazardous waste landfill (30 A), but also an additional 40 A, on which contaminated soils from other portions of Area H1 are to be consolidated. Baseline risks for future human users of the containment area are estimated to be >1 E-3, while non-cancer hazard is greater than 10. Alternative 2A includes a RCRA cap over the former hazardous waste landfill, a "RCRA-equivalent" cap over the remainder of the area within the slurry wall (including consolidation of hot spots of contaminated soil and removal of Wetland X), and institutional controls for restricted access and a prohibition on building or digging. Alternative 2B differs from 2A only by having a RCRA cap over the entire 70 A. Risks and hazards are said to be reduced to ambient levels under both alternatives. We accept that this will be true for Alternative 2B, but it is likely that more complete characterization of contamination within the containment area would be needed for Alternative 2A. We defer to advice of the Engineering Support Unit regarding the effectiveness of the "RCRA-equivalent" cap.

2. **Non-Tidal Wetlands Area, p. 2-35:** The second sentence refers to an estimated risk of "6.5". This expression either lacks an exponent in scientific notation, or it refers to a hazard quotient. Please correct.

3. **Too Many Significant Figures, Table 3-1b and elsewhere:** Concentrations of organic com-

pounds are shown to six significant figures in many cases. The actual analytical results could not possibly have been so precise. Please limit such expressions to 2 or at most 3 significant figures.

4. **Ambient Benzo(a)pyrene, Sec. 3.1.2.1.3, p. 3-7, and elsewhere:** Reference is made to levels of benzo(a)pyrene or its equivalents "within the range of ambient levels for Mare Island. DTSC does not permit discounting ambient levels of organic chemicals in assessing risk. Please remove all such references.

5. **Upland Areas, Alternative 2, Sec. C1-3, p. C1-4 ff.:** Alternative 2 includes institutional controls, removal of hot spots of contaminated soil causing human cancer risk >1 E-4, removal of hot spots causing human non-human hazard at HQ>1.0, and removal of hot spots causing ecological hazard at HQ>10. Cancer risk for future recreational users of the uplands under this alternative is estimated to be 5 E-5 for both the baseline and remediated conditions, as explained in General Comment 2 above. Cancer risks for construction workers are reduced under this alternative from 5 E-4 to 9 E-6. Approximately 80% these risk estimates are due to arsenic, which is present in upland soils within the ambient range for artificial fill at Mare Island. Incremental risk for future recreational users and construction workers are 8 E-6 and 1 E-6, respectively, which lie in the risk management range. Non-cancer hazard for future recreational users and construction workers are both at HQ<1.0, once arsenic is excluded.

6. **Upland Areas, Alternatives 3, 4, & 5, Sec. C1-4, C1-5 & C1-6, p. C1-7 ff.:** Alternatives 3 and 4 differ from Alternative 2 only by additional removal of soils causing HQ>5 or HQ>3, respectively, for non-human receptors. Estimates of risk and hazard for future recreational users are the same as for Alternative 2. Alternative 5 is excavation and removal of all contaminated upland soils, so risk and hazard would be reduced to ambient levels.

7. **Non-Tidal Wetlands, Alternative 2, Sec. C2-3. pp. C2-4 ff.:** Alternative 2 includes institutional controls, removal of hot spots of contaminated soil causing human cancer risk >1 E-4, removal of hot spots causing human non-human hazard at HQ>1.0, and removal of hot spots causing ecological hazard at HQ>10. Cancer risk for future recreational users of the uplands is estimated to be 8 E-5 for both the baseline conditions and after implementation of this alternative. Excluding arsenic, which is present within ambient levels for artificial fill at Mare Island, total cancer risk is 3 E-61 for the recreational user and 5 E-7 for the future construction worker.

8. **Non-Tidal Wetlands, Alternatives 3, 4, & 5, Sec. C2-4, C2-5 & C2-6, p. C2-9 ff.:** Alternatives 3 and 4 differ from Alternative 2 only by additional removal of soils causing HQ>5, HQ >3, or HQ>1, respectively, for non-human receptors. Estimates of risk and hazard for future recreational users are the same as for Alternative 2. Alternative 5 is excavation and removal of all contaminated upland soils, so risk and hazard would be reduced to ambient levels.

CONCLUSION AND RECOMMENDATIONS

1. This report is well prepared. It can become acceptable upon adequate responses to our specific comments.

2. Health risks within the containment area will be reduced to ambient levels under either Alternative 2A or 2B, provided the "RCRA-equivalent" cap is as effective a RCRA cap in preventing exposure to volatile contaminants.

3. In the upland areas and non-tidal wetlands, alternatives short of excavation and removal achieve the "risk management range" for future recreational users and construction workers.

4. The proposed remedial alternatives for the upland areas and non-tidal wetlands achieve little or no net reduction in risk and hazard, because the baseline risk assessment was prepared with the assumption that hot spots of contaminated soil would be removed to the containment area and capped.

Reviewed by: Michael J. Wade, Ph.D., D.A.B.T.
Senior Toxicologist, HERD

cc: Dr. J. Polisini, HERD

Alan C. Lloyd, Ph.D.
Agency Secretary
Cal/EPA

Department of Toxic Substances Control

Arnold Schwarzenegger
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TO: Chip Gribble, DTSC Project Manager
Henry Chui, DTSC Project Manager
OMF Berkeley Office
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FROM: James M. Polisini, Ph.D.
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DATE: December 12, 2005

SUBJECT: MARE ISLAND NAVAL SHIPYARD INVESTIGATION AREA (IA) H1 DRAFT FINAL FEASIBILITY STUDY (FS) [SITE 201208-18 PCA 18040 H:26]

BACKGROUND

HERD reviewed the document titled *Draft Final Feasibility Study, Investigation Area H1, Mare Island, Vallejo, California*, dated October 2005. This document was prepared by Weston Solutions, Inc., of Walnut Creek, California. HERD participated in a preliminary presentation of the scope of, and supporting rational for, various IA H1 remedial alternatives at a November, 18, 2005 meeting at Mare Island.

As part of any active remediation involving placement of a cap on the former landfill at IA H1, there are proposed mitigation steps to compensate for the loss of approximately 7.2 acres of jurisdictional waters of the United States which involve creation of 6.7 acres of new wetland and 1.5 acres of seasonally-ponded/open water habitat.

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. 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 (E & E, 1983 and Weston, 2004, page 1-5). 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 of a portion of MINSY, not including IA H1, to the City of Vallejo through the State Lands Commission.

GENERAL COMMENTS

DTSC has participated in several discussions with the Navy and Weston Solutions, Inc. regarding supplemental studies for the areas addressed in this FS. One example is additional sediment sampling of wetland areas which currently are insufficiently characterized. This wetland sediment sampling is planned as part of the confirmation sampling activities. The supplemental sampling activities discussed, and agreed to by the Navy, should be included as part of the appropriate remedial alternatives in the next version of the FS.

References to 'ambient' concentrations of benzo(a)pyrene which occur throughout the site description and risk characterization portions of the document should be removed. Discussion of wide-spread presence of polycyclic aromatic hydrocarbons (PAHs) in soil and sediment are appropriate after the total ecological hazard is presented.

A significant amount of the ecologically-based remedial activity involves placement of clean fill either after 'hot spot' removal or as an action to render exposure pathways incomplete. Please outline the methods proposed for placement and maintenance of this clean fill material at the specific thickness.

HERD supports the comments and recommendations on the Draft IA H1 FS made by the California Department of Fish and Game (DFG) in their memorandum dated December 5, 2005 from Beckye Stanton, Ph.D. to Chip Gribble, DTSC Project Manager.

SPECIFIC COMMENTS

1. There are repeated references to 'ambient' benzo(a)pyrene throughtout the document. There is a confusing discussion of benzo(a)pyrene for the Upland Areas and the Non-Tidal Weland Areas. The confusion arises where 'ambient' concentrations of benzo(a)pyrene are first discussed, but then benzo(a)pyrene is listed as a Contaminant of Ecological Concern (COEC) for the Upland Areas and the Non-Tidal Wetland Areas. Benzo(a)pyrene at Upland Areas and Non-Tidal Wetland Areas is discussed as 'present at ambient levels in soil' (Section 3.1.2.1.3, page 3-7). HERD is unaware of any MINSY investigation which resulted in an agreed-upon 'ambient' concentration for any organic compound. Ambient criteria are not appropriate for screening organic compounds in a risk assessment. Benzo(a)pyrene and other polycyclic aromatic hydrocarbons (PAHs) should be carried through the Ecological Risk Assessment (ERA) and the ecological hazard values discussed in terms of site-related contribution once the total ecological hazard is presented. Alternately, the results of the PAH-related ecological hazard should be discussed in the Uncertainty Section. If PAHs were carried through the ERA simply remove benzo(a)pyrene from <u>all</u> the discussion of the contaminants present at or less than the 'ambient' concentration to resolve the confusion.

2. Wetland monitoring is included in the wetland mitigation plan, but this appears to be referenced to the draft wetland mitigation plan (LSA, 2005b) (Section 4.1.2.2, page 4-5). The wetland creation plan and the monitoring plan should be finalized, in accordance with regulatory and resource trustee comments, and referenced in the next revision of this FS.

3. The volume requiring remediation is estimated as a 50 foot by 50 foot area to a depth one foot greater than the contaminated sample depth surrounding the single sample location (e.g., Section 4.2.2.2, page 4-

11) for hot spot removal. Coupled with post-removal confirmation sampling, this estimation method appears to be ecologically protective. This comment is meant for the DTSC Project Manager and no response is required from the Navy or the Navy contractor.

4. The sediment monitoring for non-tidal wetland areas (Section 4.3.2.3, page 4-20) should be described in more detail. The monitoring sampling described, does not appear sufficient to encompass previous discussions. The supplemental sampling activities discussed at the November 18, 2005 meeting, and agreed to by the Navy, should be included as part of the appropriate remedial alternatives in the next version of the FS.

5. Given the volume of material and list of non-degradable contaminants to be consolidated in the containment area, protection of ecological resources will require operations and maintenance services of the cap in perpetuity rather than for 30 years (Section 6.2.1.1, page 6-2).

6. The grey fox is capable of digging through the 2 foot clean-soil cover in Upland Areas, but exposure to soils deeper than the 2 foot clean-soil cover will be incomplete due to continuance of the weekly grey fox trapping to protect the Salt March Harvest Mouse (SMHM). The weekly trapping will be required in perpetuity to prevent disturbance of the two foot clean-soil cover (Section 6.2.1.2, page 6-4) in the Upland Areas.

7. The preferred remedial alternatives appear to be Alternative 2A (Variable multi-layer cap) for the Containment Area, Alternative 4 for the Upland Area, and Alternative 5 for the Non-Tidal Wetland Area (Executive Summary, pages ES-6 and ES-7). The result of the comparative analysis of remedial alternatives (Section 6.4, page 6-8) does not list a preferred alternative for Upland Areas. Please amend the summary section to agree with the list in the Executive Summary.

8. The active remedial alternative for the Containment Area (i.e., the presumptive remedy) has been limited to placement of a RCRA cap until recent development of Remedial Alternative 2A (Variable multi-layer cap), which includes a non-RCRA cap for a portion of the Containment Area. The potential exposure pathways, subsequent to implementation of the 2A remedial alternative, should be re-evaluated to determine whether characterization of the area proposed for non-RCRA capping is sufficient to evaluate future potential ecological exposure and support conclusions of ecological hazard in the non-RCRA cap area.

CONCLUSIONS

HERD agrees that Alternative 4 for Upland Areas and Alternative 5 for Non-Tidal Wetland Areas are appropriate remedial action choices for IA H1 to protect ecological receptors given the two feet of clean fill are maintained in the Upland Areas.

HERD has no ecologically-based preference for either remedial alternative 2A or 2B for the Containment Area as long as the integrity of the cap and/or the thickness of the in-place capping material is maintained. The potential future exposure pathways for the 2A remedial alternative should be re-evaluated to determine whether characterization of the area proposed for non-RCRA capping is sufficient to evaluate potential ecological exposure.

REFERENCES

Ecology and Environment, Inc. (E&E). 1983. "Initial Assessment Study of NavalShipyard, Mare Island, California." Prepared for Navy Assessment and Control of Installation Pollutants Department.

Weston, 2004. Draft Final Remedial Investigation, Investigation Area H1, Mare Island, Vallejo, California. October.

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State of California

Memorandum

To: Chip Gribble, Remedial Project Manager
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Date: December 5, 2005

DEPARTMENT OF TOXIC SUBSTANCES CONTROL
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CALIFORNIA EPA
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From: Beckye Stanton, Ph.D., Associate Toxicologist BJS
Frank Gray, Environmental Scientist FG.
Department of Fish and Game
Office of Spill Prevention and Response
1700 K Street, Suite 250
Sacramento, CA 95814

Subject: **Comments on Draft Final Feasibility Study 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 review the subject Draft Final Feasibility Study (FS) for Mare Island. The extensive discussions that occurred prior to the release of this version allowed early resolution of many issues, and facilitated a more rapid review. DFG-OSPR generally concurs with the preferred alternatives for upland (Alternative 4) and wetland (Alternative 5) habitats. However, the following major revisions should be made: (1) expand the two-foot soil cover over the entire upland habitat; (2) further evaluate metals considered in the "ambient range" for wetland habitats; (3) use hazard quotient (HQ) of one as hot spot criteria for wetland fringe or wetland mitigation areas, and (4) resolve all issues pertaining to regulatory compliance. Based on initial discussions with Weston and the Navy, the changes recommended in items one and three above are agreeable and will be made in the upcoming revisions.

Background

Mare Island Naval Shipyard is in Solano County about 25 miles northeast of San Francisco. The reuse plans for this area include industrial redevelopment, open space, and wetlands. Investigation Area (IA) H1 is approximately 230 acres and is bounded by dredge ponds in three directions. Sources of contamination to the IA H1 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). The DFG-OSPR has provided the Department of Toxic Substances Control (DTSC) with the following memorandums applicable to the FS process at IA H1 (in chronological order): (1) Applicable or Relevant and Appropriate Requirements (ARARs) (December 21, 2004); (2) comments on the Draft FS (January 10, 2005); (3) comments on the Final Remedial

Investigation (RI) (July 26, 2005); (4) comments on California Environmental Quality Act issues applicable to remedial actions (August 29, 2005); and (5) wildlife issues relative to contaminant hotspot excavations (September 2, 2005).

General Comments

1. DFG-OSPR strongly recommends the use of a hot spot criteria based on HQ of one for wetland fringe and mitigation wetland areas. This change would be consistent with the selection of Alternative 5 (HQ of one) for the wetland habitat areas. Based on initial discussions with the Navy and Weston, the hotspot criteria and process of the remediation in the wetland mitigation areas will meet the requirements of the U.S. Fish and Wildlife Service's Biological Opinion, once finalized.

2. The two-foot soil cover should apply across the entire upland habitat area. Residual risk calculations were not done for the overall upland area (Appendix C1) based on the determination that the two-foot soil cover prevented exposure of ecological receptors. Otherwise, the residual risk calculations should be done for any upland area that will not receive the soil cover following hot spot excavation. Based on initial discussions with the Navy and Weston, this change is agreeable and will be made in upcoming revisions.

3. The need for additional wetland sampling was discussed during the June 29, 2005 conference call with the conclusion that such sampling "would be a verification step." The FS should mention this need, the proposed actions to address it, and the process by which the results of sampling would be incorporated.

4. Metals for which the 95th upper confidence limit (UCL) was less than the Mare Island ambient value were considered differently than other chemicals during the baseline ecological risk assessment (BERA), and the remedial alternatives and residual risk evaluations of this FS. These metals include aluminum, arsenic, cadmium, chromium, manganese, nickel, and vanadium for the upland habitat, and aluminum, cadmium, chromium, copper, manganese, mercury, and zinc for the wetland habitat. DFG-OSPR commented on this process in its July 2005 memorandum on the RI.

   In the FS, hot spot locations for these metals were identified in the tables, but were not proposed for excavation in the remedial alternatives since the chemicals "may be present at ambient levels" (e.g., footnote 1 on Table 4-6). In addition, ecological risk associated with residual contamination of these metals in non-tidal wetlands was discounted (e.g., Page C2-21) for the same reason. For the upland habitats, a two-foot cover over the entire upland habitat will likely be sufficient to address the issue of residual contamination for these chemicals as well. In the non-tidal wetlands with Alternative 5 (Table C2-7n), however,

residual contamination poses significant and immediate risk to the Killdeer (chromium) and salt marsh harvest mouse (antimony, arsenic, barium, cadmium, manganese, mercury, nickel, vanadium, and zinc). Therefore, additional evaluation of the spatial distribution and potential risk reduction should be considered given the associated ecological risk, the small home range of these species, and the limited amount of wetland sampling to date.

a. For the FS, please include figures for each of the metals that show the locations with concentrations between the ambient and maximum values in relation to the proposed excavation areas. If these locations are clustered or near proposed excavation areas, they may represent a localized area of elevated exposure, and excavation could occur without a significant increase in wetland impacts.

b. In concert with the spatial analysis, please consider a step-wise evaluation of risk reduction based on the removal of individual locations beginning with the maximum concentration. This process would be helpful in determining the extent of additional excavation necessary to eliminate "significant and immediate risk" due to residual contamination. These actions could occur in the FS based on existing sample data or in association with future "verification sampling."

5. The regulatory framework for selection of alternatives in the FS should be described, particularly with respect to compliance with DFG ARARs and compliance with the requirements of the California Environmental Quality Act (CEQA). The DFG-OSPR commented on various issues pertaining to CEQA compliance in our August 29, 2005 memorandum. Further, information is still forthcoming regarding ARARs compliance, particularly with respect to the pending U.S. Fish and Wildlife Service Biological Opinion.

Specific Comments

1. Page 5-39, Section 5.3.3.3.2. Development of a wetlands protection plan is referenced here. The plan should be approved by the DFG and the U.S. Fish and Wildlife Service and should comply with DFG ARARs.

2. Page 5-45, Section 5.3.5.1. Reference is made to mitigation measures, but the only species for which mitigation is identified is the salt marsh harvest mouse. The DTSC, in a memorandum of August 30, 2005, identified a number of items to be addressed with respect to development of the mitigation plan and other issues. The DFG concurs with these comments, and hopes to see them incorporated into the FS.

3. Table 3-14. Please include the maximum detected concentrations for both upland and non-tidal wetland as appropriate so the hot spot criteria can be compared directly.

4. Table 3-15a. Please specify whether "NA" refers to a chemical that is not a chemical of concern (COC) or whether necessary information is missing. For example, the selected values for polynuclear aromatic hydrocarbons (PAHs) and total petroleum hydrocarbons (TPH) were based on threat to groundwater and human health risks, but ecological risk was "NA." Additional information on why ecological risks were not applicable would be useful in determining whether those levels are protective of wildlife.

5. Table 4-8. "Sample locations likely removed during construction for the containment barrier due to proximity of barrier (No ^{2})." The alternative evaluation should include these locations, and state that they will be excavated unless they are removed during barrier construction.

6. Table 4-6. As mentioned above, please include values based on HQ of one (high or low Toxicity Reference Value [TRV] depending on species status) for wetland fringe or mitigation wetland areas.

7. Figure 4-10. A two-foot soil cover is not included for the upland area adjacent to south dredge pond (IR01GB016 hot spot location). The two-foot soil cover should apply across the entire upland habitat.

Appendix B

8. Appendix B, Page B-5. Please revise the explanation and equation for the conversion from wet weight to dry weight to convert the tissue concentration or weight of tissue, not the bioaccumulation factor. This change would clarify what is being converted based on the relationship between the weight of the tissue before and after drying.

Appendix C2

9. Page C2-1, Section 1. Please clarify the differences, if any, in the calculations of current and future exposure scenarios in the determination of residual baseline ecological risk.

10. Page C2-3, Section 2. For the "no action" alternative, residual risk calculations that include outliers (Page C2-1) would not be equivalent to the BERA where outliers were excluded. The text should be revised to identify this discrepancy.

11. Residual Ecological Risk Tables.

    a. The use of "—" for BAF and "0" in tissue concentrations should be explained in the corresponding footnote ([d]). Presumably, these identifiers were used if the chemical was not detected in the tissue, and therefore no BAF was calculated.

12. Page C2-20, Section 6.1.2 and Tables C2-7l and 7n. The text states, "No chemicals in sediment present a significant and immediate risk (an HQ greater than 1 based on the high TRV) to ... the killdeer." In the tables, however, the high TRV HQs are 2 and 5.1 for Killdeer exposed to aluminum and trivalent chromium, respectively. Please revise the text and tables appropriately.

    a. In addition, the sediment exposure point concentration (EPC) for trivalent chromium and Alternative 5 on Table C2-7l (90.8 mg/kg) is inconsistent with the corresponding value on Table C2-7a (109 mg/kg). This discrepancy may be due to total versus trivalent chromium, but the distinction should be identified clearly.

If you have any questions regarding this review or require further details, please contact Beckye Stanton regarding contaminants (916-327-0916, bstanton@ospr.dfg.ca.gov) or contact Frank Gray regarding other issues (916-327-9961, fgray@ospr.dfg.ca.gov).

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