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Department of Environmental Protec...

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Twin Towers Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

January 5, 1998

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CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Bill Hill
Code 1851
Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
P.O. Box 190010
North Charleston, South Carolina 29419-9010

RE: Final Remedial Investigation Report Site 38, NAS Pensacola

Dear Mr. Hill:

I have completed the technical review of the above referenced document dated September 5, 1997 (received September 8, 1997). The document cannot be approved as final until the attached comments from Dr. Steve Roberts have been addressed.

If I can be of any further assistance with this matter, please contact me at (904) 921-9989.

Sincerely,

John W. Mitchell
Remedial Project Manager

cc: Ron Joyner; NAS Pensacola
Gena Townsend, USEPA Region IV
Henry Beiro, EnSafe; Pensacola
Brian Caldwell, EnSafe, Pensacola
[redacted], EnSafe, Memphis
Karen Atchley, Bechtel, Knoxville
Tom Dillon, NOAA CRC, USEPA Region IV
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November 26, 1997

BUREAU OF WASTE CLEANUP

DEC 01 1997

TECHNICAL REVIEW SECTION

John Mitchell
Bureau of Waste Cleanup
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Dear Mr. Mitchell:

At your request, we have reviewed the errata for the ***Remedial Investigation Report (RIR) for Site 38 at Naval Air Station Pensacola, Florida***. This report was prepared by Ensafe/Allen & Hoshall (E/A&H) and dated September 5, 1997. We previously reviewed the ***Final Remedial Investigation Report*** for Site 38 and provided comments to you in a letter dated November 15, 1996, and we have been provided with responses to these comments from E/A&H. Based on our review of the errata and comments, we have the following comments.

1. Responses to our November 15, 1997 comments:

Comment: E/A&H correctly cite EPA Region IV guidance as indicating that the arithmetic mean of groundwater concentrations in the most concentrated area of a plume can be used as the EPC. The approach taken by E/A&H is not entirely consistent with this guidance, however. In this report, E/A&H used either the maximum concentration, the UCL, or the arithmetic mean of the detected concentrations. The maximum concentration was used as the EPC only in instances where a contaminant was detected only once or in less than 5% of the total samples analyzed. For the remainder of the chemicals, "...If the UCL was greater than the maximum reported concentration, the arithmetic mean of the detected concentrations was used as the EPC. The UCL and arithmetic mean were compared for the remaining chemicals, and the higher concentration was used as EPC." The arithmetic mean of all of the detected concentrations is not the same thing as the arithmetic mean of concentrations within the most concentrated area of the plume. Including marginally contaminated samples in the averaging process has the potential to inappropriately lower the EPC. With respect to the last comparison ("...The UCL and arithmetic mean were compared...") it is unclear how the UCL could ever be lower than the mean, unless different data sets are used for the calculations. This should be clarified.

E/A&H Response: Groundwater plumes at Site 38 are not clearly defined, and high concentrations were often observed at only one sample location. Consequently, using the arithmetic mean of the highest concentrations as the exposure point concentration would generally be the same as using the maximum reported concentration. RAGS does not recommend using maximum concentrations as exposure point concentrations. In

accordance with USEPA Region IV Supplemental Guidance to RAGS, the arithmetic mean concentration was calculated for groundwater EPC. Since one high concentration does not necessarily define a plume, all detected concentrations were used. The UCL usage has been eliminated. Regardless, risk was estimated for each sample location and for each chemical of concern. This is more specific information than is typically provided in baseline risk assessments, which are usually based on only one exposure point concentration that is assumed to represent all sample locations in one exposure unit area.

Follow-Up Comment: There still seems to be some confusion over USEPA and USEPA Region IV guidance for EPC in groundwater. Although the presentation of risk calculations for each well is helpful, for the overall risk at this site the averaging procedure is inappropriate. In the errata to the RIS, E/A&H state "Plumes in Site groundwater are generally defined by few samples, *so* the highest concentrations in the plume are all concentrations reported. Consequently, the arithmetic mean of the highest concentrations in the plume would be closely approximated by the arithmetic mean of the detected concentrations" (page 10-16). However, by averaging samples with a very low contaminant concentration with those that have high concentrations, exposure is likely to be underestimated. Having few samples and ill-defined plumes is not a reasonable justification for averaging values, but on the contrary points to the need for the use of maximum detected values as EPC for groundwater. Region IV guidance allows for the use of the arithmetic mean for groundwater only in the highly concentrated area of the plume. Additionally, RAGS states that "If there is great variability in measured or modeled concentration values (such as when too few samples are taken or when model inputs are uncertain), the upper confidence limit on the average concentration will be high, and conceivably could be above the maximum detected or modeled value. In these cases, the maximum detected or modeled value should be used to estimate exposure concentrations." In this case, where it seems uncertain where the most highly concentrated area of the plume is located, neither the arithmetic mean nor the *95%* UCL is appropriate to estimate the groundwater EPC; therefore, the maximum detected value should be used. For example, in Table 10-18 ***(Hazard Quotients and Incremental Lifetime Cancer Risks for Ingestion of Groundwater at Site 38, Building 71 Area***) the EPC for 1,1,1-trichloroethane is listed as 0.1345 mg/L (the arithmetic mean of detected concentrations). If the maximum detected concentration of 0.77 mg/L were instead used, the child hazard quotient for 1,1,1-trichloroethane would increase from 0.25 to 1.58.

2. Comments on the errata to the RIS (Section 10-Baseline Risk Assessment)

Section 10.2.5 Selection of Chemicals of Potential Concern

On page 10-9, E/A&H states that "...USEPA indicated in the 6/25/97 Summary of TQM Contractor Meeting email, iron's reference dose (RfD) is not a proper RfD. In accordance with this guidance, iron should be addressed in the uncertainly section, if at all. Consequently, iron was not considered a COPC in this HHRA." If E/A&H want to eliminate iron from the Baseline Risk Assessment (BRA) on this basis, then the email document should be made available for review by FDEP. Iron was detected in surface soils and groundwater above screening levels, and some rationale should be given for why iron is not a health problem at this site, or an explanation should be given in the uncertainty section that E/A&H cannot determine whether the risk from iron is unacceptable.

To select COPCs, maximum detected concentrations of contaminants were compared to either USEPA Region III RBCs or FDEP Soil Cleanup Goals. It is stated on page 10-10 that "In accordance with USEPA Region IV Supplemental Guidance to RAGS, USEPA screening concentrations were adjusted from a target HQ goal of 1.0 to 0.1 for

noncarcinogens." However, in Tables 10-7, 10-8, 10-10, and 10-11 ***(Chemicals Present in Site Samples for Building 71 Area)*** and Tables and 10-30, 10-31, 10-33, and 10-34 ***(Chemicals Present in Site Samples for Building 604 Area)*** the division of screening values by 10 to reflect a HQ of 0.1 does not appear to have been done. Therefore, the following contaminants were inappropriately excluded as COPCs: Table 10-11, antimony, molybdenum, and thallium. In Table 10-34, it is unclear why lead was excluded as a COPC, with a maximum detected value of 639 µg/L; the screening value was 15 µg/L.

In Tables 10-10 and 10-33, some contaminants were excluded as COPCs due to low detection frequency (although they were included in point risk estimates). Based on USEPA Guidance as stated in RAGS, this exclusion was inappropriate in Table 10-10, as there were only 18 samples. RAGS states that if "a frequency of detection limit of five percent is used, then at least 20 samples of a medium would be needed." RAGS also states that, to exclude a contaminant based on low detection frequency, it must be detected infrequently, not be in any other media or at high concentrations, and there must be no reason to believe the chemical is present. The excluded chemicals in Table 10-10 exceed their screening values considerably. For example, based on a HQ of 0.1, 1,1-dichloroethene (42 µg/L) exceeds its screening value (0.0044 µg/L) by almost four orders of magnitude. Therefore, 1,1-dichloroethene, 1,2-dichloroethane, 1,4-dichlorobenzene, and bromomethane should not be eliminated from the site-wide assessment.

In Tables 10-11 (Building 71) and 10-34 (Building 604), sodium was excluded as a groundwater COPC based on the lack of a screening level concentration and because it is an essential nutrient. However, there is a Florida primary standard for sodium in groundwater (160,000 µg/L). The maximum detected concentrations of sodium at Building 71 and Building 604 are 538,000 µg/L and 219,000 µg/L, respectively. Therefore, sodium should be retained as a COPC.

Section 10-2-6 Exposure Assessment

Table 10-1 (page 10-14) lists exposure pathways for the site. Inhalation of volatile contaminants from surface soil was eliminated as an exposure pathway for current site workers and future residents and workers based on low concentrations of volatile contaminants in surface soil as well as the fact that portions of the site are paved or covered with buildings. Volatilization from subsurface soil to air was not considered a viable exposure pathway, although Table 9-1 (page 9-1) states that 6 VOCs were detected above screening levels in subsurface soils. Depending upon their concentrations, VOCs may volatilize from subsurface soils into buildings or ambient air; however, no volatilization models were included in the BRA. In any case, if the existence of paving or buildings is considered justification for exclusion of a potential receptor pathway, some institutional controls should be in place to ensure that pavement or buildings are not removed. With respect to subsurface soils, a table should be provided listing the contaminants and detected concentrations found in subsurface soil; Table 9-1 indicates that, in addition to the VOCs, 5 inorganics, 5 SVOCs, and 2 pesticides/PCBs were detected above screening levels in subsurface soils.

Also in Table 10-1, inhalation of chemicals in dust is excluded as a potential receptor pathway for current and future workers and future residents, based on the presence of pavement and vegetation. Will the pavement and vegetation remain "as is" for future uses of this site?

The potential risk to construction workers was not addressed in the BRA. The rationale for this is stated on page 10-61, "future worker assessment is considered to be protective of both current site use and future construction/maintenance workers' exposure

to surface soil...Direct contact with subsurface soil is unlikely because the water table is very close to land surface." However, the water table is close to land surface throughout Florida, yet this has hardly been an impediment to construction. The risk to construction workers should not be regarded as insignificant unless it is actually calculated. The risk to future site workers from ingestion and dermal contact with subsurface soils, inhalation of subsurface VOCs, and inhalation of dust was not addressed, yet construction workers would be expected to have these exposures. After the risk to construction workers is calculated, then it can be determined if it is minimal.

Table 10-3 Toxicological Reference Information

In Table 10-3 ***(Toxicological Reference Information for Chemicals*** of ***Potential Concern),*** the RfD for manganese is listed as 4.7E-02 mg/kg-day. On page 10-37, the rationale for this RfD is stated: "Because of the different uptake rates in water and food, a modified RfD was used in this HHRA. The RfD used was 0.047 mg/kg-day." According to recommendations in IRIS, an oral RfD for manganese should be developed by reducing the RfD of 0.14 mg/kg-day to account for a dietary intake of approximately 5 mg/day and then applying a modifying factor of 3 to account for environmental exposures. This results in an oral RfD of 2.3E-02, which is the value used by both FDEP and USEPA Region III.

The ecological risk assessment for Site 38 was not a part of this document, and was therefore not reviewed.

We hope that these comments are helpful. If you have any further questions, please do not hesitate to contact us.

Sincerely,

Stephen M. Roberts

Stephen M. Roberts', Ph.D.

Christine Halmes

N. Christine Halmes, Ph.D.