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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
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Mr. Paul A. Rakowski, P.E., DEE
Head, Environmental Program Branch
Environmental Division
Atlantic Division (LANTDIV), Code 182
Naval Facilities Engineering Command
1510 Gilbert Street
Norfolk, VA 23511-2699

Re: Naval Station Roosevelt Roads - EPA ID # PR2170027203

1) Tow Way Fuel Farm Draft Corrective Measures Study (CMS) Task 1 Report - Section 3.0 Establishment of Corrective Action Objectives (Revised April 21, 1999),

2) Draft Work Plan for Additional Dioxin Sampling at SWMU 31/32 area (dated May 28, 1999)

Dear Mr. Rakowski:

The United States Environmental Protection Agency (EPA) Region 2 has completed its review of the above documents submitted on your behalf by Baker Environmental, Inc.. EPA has the following comments:

Tow Way Fuel Farm CMS Task 1 Report - Section 3.0 Establishment of Corrective Action Objectives (Revised April 21, 1999)

1. EPA's contractor, Booz Allen, has reviewed the revised Section 3.0, and as discussed in the enclosed technical review, concludes that with one exception, which is discussed in 2) below, derivation of the proposed clean-up levels given in Table 3-2 generally appears to based on appropriate application of the principles regarding health-based selection of constituent of potential concern (COPC), and derivation of risk and hazard-based clean-up levels. While Booz Allen's review indicates that the Navy's proposed clean-up levels (given in Table 3-2) are targeted to achieve a protectiveness standard of a 10^{-4} risk level, or better, EPA has concerns about certain exposure assumptions. Such a protectiveness standard might be acceptable for this site, assuming acceptable site-specific exposure scenarios and pathway assumptions are used in deriving the clean-up levels; however, this is not always clear. For example:

a) The proposed soil clean-up levels are based on a site specific "military residential scenario" (assumed exposure duration of 4 years) with accidental ingestion and dermal contact pathways evaluated; yet no documentation of the basis for this limited exposure duration is provided.

b) The benzene clean-up level for groundwater is based on the "military residential" exposure duration, with non-potable usage of groundwater exposure pathways (accidental ingestion and dermal contact during usage of groundwater for watering lawns and washing cars) evaluated; yet the other groundwater clean-up levels are based on a [temporary] construction worker scenario, which has an assumed exposure duration of [only] one year. An explanation is required.

c) In addition, no permanent on-site worker exposure scenario, with a long term (greater than one year) exposure duration, was evaluated for any of the media.

EPA requests that Section 3.0 be revised to assess an exposure scenario for permanent on-site workers (long term exposure duration); including an evaluation of inhalation exposure (including volatiles stemming from shallow groundwater, as discussed below), and also to address comments in a) and b) above. However, General Comment No. 4 (regarding groundwater usage, etc.) of the enclosed Booz Allen comments does not have to be addressed at this point, as the exact mechanism for groundwater usage restriction and/or documentation of its non-usability, can be discussed in the Final CMS report.

2. The exception to comment 1) above is that inhalation exposures of construction workers ["commercial workers"assumed by Booz Allen to mean construction workers] are evaluated based on particulate emissions from subsurface soils only, and do not include an evaluation of inhalation of volatiles stemming from shallow groundwater. EPA requests that Section 3.0 be revised to assess this exposure pathway.

3. Booz Allen also stresses in their enclosed comments that the stand-alone revised Section 3.0 of the CMS Task 1 Report, submitted by Baker's April 21, 1999 letter, provides inadequate data to allow for independent assessment of the adequacy of the proposed clean-up levels given in Table 3-2. While EPA does not necessarily wish to revisit old issues, EPA does wish to have a complete stand-alone CMS Task 1 document that provides sufficient data to allow for independent assessment of the adequacy of the proposed clean-up levels. In order to address this comment, and all the other deficiencies and/or concerns noted by Booz Allen in their enclosed technical review, and in comments 1) and 2) above, please submit within 40 days of your receipt of this letter, a revised, complete CMS Task 1 document that provides sufficient data to allow for independent assessment of the adequacy of the proposed clean-up levels. Until these issues are resolved, EPA is not prepared to approve any of the proposed clean-up levels.

Draft Work Plan for Additional Dioxin Sampling at SWMU 31/32 area (dated May 28, 1999)

As discussed during a telephone conversation on June 14, 1999 between Mr Tim Gordon of my staff, and Mr Thomas Fuller of Baker Environmental (your contractor), EPA approves the work plan as submitted. It is EPA's understanding that the Navy plans to implement this sampling this month (June 1999). In addition to the results being reported in the CMS report for the SWMU 31/32 area as indicated in Section 4.0 of the workplan, please include preliminary results in the RFI quarterly progress report.

Please telephone Mr. Tim Gordon at (212) 637- 4167, if you have questions regarding any of the above.

Sincerely yours,

Nicoletta DiForte, Chief
Caribbean Section
RCRA Programs Branch

Enclosure

cc: Mr. Israel Torres, Attn. Ms. Luz Muriel-Diaz, PREQB, with encl.
Ms. Madeline Rivera, NAVSTA Roosevelt Roads, with encl.
Mr. Christopher Penny, LANTDIV, with encl.
Mr. Thomas C. Fuller, Baker Environmental, with encl.
Ms. Connie Crossley, Booz Allen, with encl.

TOW WAY FUEL FARM
CORRECTIVE MEASURES STUDY REPORT

Technical Review of
Section 3.0: Establishment of Corrective Action Objectives
(Revised April 21, 1999)

[These Review Comments Revised June 21, 1999 by EPA]

GENERAL COMMENTS:

1. In general, the revised Section 3.0 (dated April 21, 1999) Establishment of Corrective Action Objectives, Tow Way Fuel Farm Corrective Measures Study Report (CMS), appears to apply the appropriate basic principles regarding health-based selection of constituents of potential concern (COPC) and derivation of risk- and hazard-based clean-up levels (preliminary remediation goals). However, the amount of information within the revised Section 3.0 does not provide sufficient data regarding the nature and extent of contamination at the Tow Way Fuel Farm. This information is necessary to complete a defensible review of the development of corrective action objectives and is presumably contained within the referenced baseline human health risk assessment.

2. This review of the revised Section 3.0 (dated April 21, 1999) is limited to an analysis of the methodology by which preliminary remediation goals were calculated. This review does not extend to the baseline risk assessment. Booz•Allen assumes that all previous reviews were appropriate and resulted in defensible positions, and that this CMS is an extension of a defensible risk assessment. In fact, initial indications suggest that this is the case, although the general guidance upon which the preliminary remediation goals is predicated appears somewhat dated (e.g., use of the 1989 Exposure Factors Handbook rather than the 1997 version). With the notable exception of the omission of an evaluation of inhalation exposures of volatiles from shallow groundwater, the generation of clean-up levels derived in Section 3.0 of the CMS Report, appears to have a relatively conservative basis, given the receptor group at issue. However, comments A through D, below discuss potential data gaps associated with the review of this single document without review of the associated background documents (e.g., Baseline Human Health Risk Assessment):

   A. This document, as part of a greater report, provides an incomplete basis for the review of appropriately protective health-based standards as the basis for preliminary remediation goals or clean-up levels. The document does not provide an effective discussion of the selection of COPCs. Selection of COPCs appears to be simply based on comparison to the USEPA Region III Risk-Based Concentrations (RBC) and to a lesser extent on USEPA's Maximum Contaminant Levels (MCL) for drinking water sources. This document does not provide a complete discussion of non-anthropogenic inorganic background levels, nor does it provide a discussion of data quality or validation. A discussion of sample quantitation limits (SQL) or treatment of elevated detection limits is not provided. Without an effective discussion of the data treatment it is not possible to determine whether COPCs have been adequately and accurately identified. Without this

information it is impossible to determine whether all relevant exposure pathways (e.g., ingestion, inhalation, dermal contact) have been considered. As a result, it is not possible to evaluate fate and transport considerations and the subsequent identification of potentially impacted media.

B. Without additional information, it is impossible to determine whether groundwater COPCs were screened in an appropriately conservative manner. Use of MCLs can be limiting in that these federally promulgated levels are limited in number and are not available for all compounds commonly associated with hazardous waste sites. In addition, MCLs may be based on target risk or hazard levels in excess of 10^{-4} or 1.0, respectively. Likewise, the MCLs are influenced by factors other than a health basis, such as economic cost-to-clean constraints and treatment technology limitations. Where MCLs are available, they constitute important applicable or relevant and appropriate requirements (ARAR), but they are not effective when implemented as health-based screening levels in the interests of calculating baseline risk; nor should they implicitly be used to screen a given contaminant from further consideration at the Corrective Measures Study (CMS) or remedial stage.

C. The document does not provide an adequate discussion of the current or future proposed land uses. Without this information, and additional information regarding the surrounding land use, it is not possible to evaluate the applicability of the receptor populations, exposure routes and pathways outlined for discussion. It is unclear why the sole receptor population considered is a transient population - the on-site construction worker - exposed under subchronic to chronic conditions. Contrary to the position proffered in the document, exposures characterized as occurring over the course of 180 days cannot be considered acute. Likewise, it is not possible to evaluate the applicability of selected exposure parameter values used in the calculations of site-related risks and/or hazards, or the back-calculation of clean-up levels. For example, it is not possible to evaluate the applicability of an exposure frequency of 180 days/year or an *incidental* (rather than *accidental* as written) soil ingestion rate of 480 mg/day.

D. The proffered clean-up levels are specific only to a current or future construction worker, not to an on-site worker who might be reflective of exposures typified by a generic commercial/industrial worker. This is illustrated by the calculated soil remedial goal of 345 mg/kg for benzene, as compared to the Region III industrial RBC of 200 mg/kg. By extension, this level is clearly not protective of generic residential exposures.

3. Although EPA's National Oil and Hazardous Substances Pollution Contingency Plan (NCP) specifies an acceptable risk range of 10^{-6} to 10^{-4}, an acceptable carcinogenic risk level is usually determined by the Agency on a site-specific basis. The CMS does not provide extensive information regarding cumulative estimates of risk upon which remedial decisions may be based. However, the presented values are reflective of the preeminent risk drivers. Additional additive inputs from COPCs excised from the detailed discussion are likely to be negligible (or at least unlikely to result in an order of magnitude difference). It appears that the facility is targeting a remedial strategy designed to ensure that risk estimates do not exceed the 10^{-4} threshold, assuming that this upper bound level is applicable under current and future use conditions. A broader review of information not presented within this document is necessary to determine the

applicability of allowable risks in the mid or upper 10^{-5} range. The risk assessment appears, however, to have been predicated on some relatively conservative standard default assumptions (e.g., an incidental soil ingestion rate of 480 mg/day).

4. The CMS does not discuss in sufficient detail a vehicle to preclude use of groundwater. Low yield and availability of a secondary water source do not render additional use of the underlying shallow aquifer wholly impractical. There is no discussion of a deeper aquifer and no discussion of whether the shallow groundwater contamination may be capable of migrating off-site. As part of the decision rationale, this section should present a discussion of whether the shallow aquifer is underlain by an aquitard/confining layer or could potentially be in hydraulic contact with a deeper or bedrock aquifer. The facility does recognize that institutional controls such as implementation of a restrictive covenant on the deed of the facility are necessary to achieve the corrective action objective, given the current and predicted/likely future land use. Without such a vehicle, the future use of the property for residential/military residential or use other than current industrial activities, however unlikely or impractical, is not rendered impossible. Thus land use and access to groundwater must be restricted in support of the protection of public health.

SPECIFIC COMMENTS

Section 3.2, Page 3-3, Last Complete Paragraph: Identification of Media of Concern/Contaminants of Concern (COCs) as Determined by the Human Health Risk Assessment

1. This paragraph implies that filtered groundwater samples were used. EPA typically does not support the use of filtered groundwater samples, preferring instead to use unfiltered samples as more representative of total contaminant concentrations. Arsenic is eliminated as a contaminant of concern (COC) in groundwater because it was detected in only one dissolved groundwater sample and because it was attributed to naturally occurring concentrations. It is unclear why an environmental sample of this nature should be discounted in this manner, unless significant uncertainty was associated with the laboratory result. One reason for discounting this finding could be discrepancies with regard to duplicate analysis or analysis of split samples submitted for total contaminant concentration (unfiltered) which were returned at non-detect or significantly lower levels. Information of this nature is not provided in Section 3.0 of the CMS Report.

Section 3.4.2, Page 3-7: Human Health Risk-Based Preliminary Clean-up Goals

2. This section refers to evaluation of the inhalation pathway for *commercial* workers. It is assumed that this is a typographical error and the facility originally meant to refer to *construction* workers. Inhalation exposures of construction workers are evaluated based on particulate emissions arising from subsurface soil, but do not extend to an evaluation of inhalation of volatiles stemming from shallow groundwater. Volatile organic compounds (VOC) were detected in the shallow groundwater including benzene, toluene, ethylbenzene and xylene (BTEX) compounds. As a result, an evaluation of inhalation exposures based on volatiles stemming from shallow impacted groundwater is necessary to advance estimates of aggregate carcinogenic risk upon which to base preliminary remediation goals.

   It should be noted that although VOCs were not detected in soil, benzene was retained as a soil COPC and is evaluated based on the Farmer volatilization from soil model. This exercise appears to have been unnecessary in that the facility already had an indication that benzene was not detected at elevated levels in soil, based on comparison to residential RBCs.

Section 3.4.3, Page 3-8, Second Complete Paragraph: Selection of Clean-up Levels

3. This section of the document refers to *inhabitants*. It is assumed that the facility is referring to on-site construction workers. This should be verified.

Section 3.4.3, Page 3-9, Second Complete Paragraph: Selection of Clean-up Levels

4. Construction worker exposures incurred over 180 days cannot be considered acute. Exposures over this duration should be considered chronic. Also, this paragraph seems to imply that because of the duration of exposure, clean-up goals will only be generated for noncarcinogenic compounds; yet Table 3-2 presents clean-up goals for benzene in

groundwater, based on construction worker exposures. Footnote 1 from this Table indicates that the 800 ug/L level is based on military residential exposures attributable to volatilization of benzene from both subsurface soil and groundwater. This is not discussed within the text. Construction workers are expected to be exposed to volatilization of contaminants from subsurface soil and groundwater. The text, however, lists no volatile COPCs in subsurface soil and fails to discuss inhalation of volatiles by a construction worker stemming from impacted shallow groundwater or subsurface soil – either in the ambient air breathing zone within overlying buildings, unbroken soils, or during subsurface intrusive construction activities.

Appendix A-2

5. This table tends to indicate that on-site construction workers are exposed to subsurface soil only, rather than a composite of surficial and subsurface soil. It is unclear why the facility would make such an assumption, unless contamination increases with depth and in this treatment of the data set, the facility sought to generate what they felt was a more appropriately conservative basis for the exposure point concentration.