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LETTER REGARDING U S NAVY RESPONSES TO REGULATOR COMMENTS ON HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT OF REMEDIAL INVESTIGATION REPORT FOR OPERABLE UNIT 2 (OU 2) WITH ATTACHMENT NTC ORLANDO FL
5/6/2002
TETRA TECH

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May 6, 2002

Commander, Southern Division
Naval Facilities Engineering Command
Attn: Ms. Barbara Nwokike, Code ES333
P.O. Box 190010
2155 Eagle Drive
North Charleston, SC 29419-9010

Reference: CLEAN Contract No. 62467-94-D-0888
Contract Task Order No. 0024

Subject: Remedial Investigation Report, Operable Unit 2, March 2001
Naval Training Center, Orlando

Dear Ms. Nwokike:

Enclosed for your review are responses to comments provided by the University of Florida on the human health and ecological risk assessment sections in the OU 2 RI Report. The comments were forwarded by the FDEP's David Grabka in his letter of August 14, 2001.

Once the responses have been received by FDEP and deemed to be adequate in addressing the comments, revised pages to the RI Report will be issued to the Partnering Team. If you have any questions, please contact me at (865) 220-4730.

Sincerely,

Steven B. McCoy, P.E.
Task Order Manager

SBM:tko

Enclosure

c: Ms. Barbara Nwokike, Southern Division (Orlando Office)
Mr. Wayne Hansel, Southern Division
Mr. Mark Salvetti, Harding ESE
Mr. David Grabka, FDEP (2)
Mr. Gregory Fraley, USEPA Region 4
Mr. Steve Tsangaris, CH2M Hill
Mr. Mike Campbell, Tetra Tech NUS
Ms. LeeAnn Sinagoga, Tetra Tech NUS
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Tetra Tech NUS, Inc.
Oak Ridge Office

RECORD OF REVIEW

Project No.: N7457 **Date:** 4/30/02

Project Desc.: NTC Orlando

Project Manager: S. McCoy

Document Title: Letter - OU 2 RI Comment Responses

Authors: S. McCoy

Date Review to be Completed By: 5/1/02

Reviewers, Document Sections and Scope of Review:

Reviewers: Name	Project Code	Hrs	Sections: Entire Docmt	Sections: Specified Below:	Scope of Review: Tech.	Scope of Review: Math Check	Scope of Review: Com.
A: S. Smith	D. Final FS		☒		☐	☐	☒
B: D. Stair	"		☒		☒	☐	☒
C:			☐		☐	☐	☐
D:			☐		☐	☐	☐

Instructions/Comments:

Review Documentation: (attach unresolved comments)

			Reviewer Signature / Date
Reviewer A:	☒ No unresolved comments	☐ Unresolved comments	Sandra D. Smith 5/1/02
Reviewer B:	☒ No unresolved comments	☐ Unresolved comments	Paul M. Jr 5/6/02
Reviewer C:	☐ No unresolved comments	☐ Unresolved comments	
Reviewer D:	☐ No unresolved comments	☐ Unresolved comments	

Approval:

I certify that this document has been reviewed in accordance with Tetra Tech NUS procedures, all comments have been resolved or dispositioned, and the document is approved for transmittal.

S.B.McCoy 5/6/02
Project Manager Signature / Date

RESPONSE TO COMMENTS – REMEDIAL INVESTIGATION REPORT OPERABLE UNIT 2, NAVAL TRAINING CENTER, ORLANDO

Ref.: Tetra Tech NUS, *Remedial Investigation Report for Operable Unit 2, McCoy Annex Landfill, Naval Training Center, Orlando, Florida,* Contract No. N62467-94-D-0888, March 2001.

FDEP COMMENTS

Ref.: University of Florida, Letter from Stephen M. Roberts, Ph.D., to Ligia Mora-Applegate (Bureau of Waste Cleanup, FDEP), June 28, 2001.

Human Health Risk Assessment

Comment:

1. In the 1998-2000 versions of the RI report, the site was going to remain a golf course for the foreseeable future. In these reports, the receptors considered to be potentially exposed to soil were site maintenance workers, adult and adolescent recreators (assumed to be golfers), adult and adolescent off-site residents, visitors, or trespassers, and hypothetical future adult, adolescent, and child on-site residents. However, in the March 2001 report under review, a recreational user assumed to be engaged in soccer, baseball, softball, picnicking, or walking on trails is added because the southern wood portion of the site would be converted into these recreational facilities. An exposure frequency of 75 days/year is assumed for this recreator, taken from an Oak Ridge National Laboratory (ORNL) web-site. This assumption (1.5 days/week) is not very conservative for a site in Central Florida, in our opinion. Generally, FDEP requires calculation of risks for reasonable maximum exposure (RME), and calculation of RME involves use of an upper percentile (e.g., 90^{th}) estimate of exposure frequency. The weather in Central Florida permits outdoor play throughout the year, and an exposure frequency of 75 days/year would be an upper percentile only if the park had limited use. If the recreational use of the property might be popular, a higher exposure frequency would be warranted. We are aware of no data that point clearly to an appropriate exposure frequency value for recreational use at this particular site. However, for perspective, a park use survey conducted for a site in South Florida with playgrounds and athletic fields near a residential area found a 90^{th} percentile visitation rate of 350 days/year. A value as high as 350 days/year may not be appropriate for recreational areas at the McCoy Annex, but it will be important to be able to defend any choice of a lesser frequency as being protective under site-specific conditions. The exposure frequency assumption of 75 days/year needs to be more carefully justified, if that's possible, or the value should be reconsidered.

Response:

The risks to the adult and child recreational users have been recalculated using a value of 350 days/year for the exposure frequency.

Comment:

2. A second issue with respect to the recreator scenario is the use of a fraction ingested from contaminated soil (FI) value of 0.5. On page 6-28, TTN justifies the use of this FI by stating "the receptors would not be exposed to the surface soil for a full day as residents would" and that "the receptors will be engaged in a variety of activities ranging from very contact intensive to spectator-oriented." Residents aren't usually in contact with soil for a full day either, and the soil ingestion rate assumption is not predicated on a full day of contact. The issue isn't whether a receptor is on site for a full day, but rather whether contact with soil on site needs to be balanced with some predictable contact with soil elsewhere during the same day. An FI of 0.5 assumes that for every 2-3 hour soccer practice a child attends at the site, the same day he/she will have equivalent soil contact somewhere else. This assumption is pretty hard to defend, and the usual approach is to assume that when a receptor visits a park or playground that will be the principal source of their soil contact for that day. That means, for practical purposes, an FI of 1.0.

Response:

The risks to the adult and child recreational users have been recalculated using a value of 1.0 for the fraction ingested from contaminated soil.

Ecological Risk Assessment

Comment:

1. Ecological receptors inhabiting a contaminated site are simultaneously exposed to all of the contaminants present at that site. To acknowledge this fact in the modeling exercise (as well as during screening), Hazard Quotients (HQs) should be added for chemicals with the same mechanism of toxicity and/or target organ(s), such as DDT and its breakdown products, chlordane (alpha and gamma), and endrin (endrin, endrin aldehyde, and endrin ketone). For example, although individually DDT and DDE did not represent exceedances, added hazards for the dove based on a NOAEL are in fact 1.38. Also, alpha- and gamma-chlordane were dropped from consideration during the screening comparison with "alternative" (i.e., less conservative) sets of criteria in step 3A. However, the combined exposure concentration for this group of chemicals would exceed the Probable Effects Level (PEL) of the Florida Sediment Quality Guidelines (FSQG).

Response:

We agree that, in some cases, it may be appropriate to add HQs for pesticides. For example, treating pesticides as a group for screening may be useful when none of the individual chemicals would be retained, but the summed HQ for the group is greater than one. This condition does not apply to this assessment. In every medium where there were pesticides, at least one and usually all or most of the pesticides were retained. Please recall that one of the purposes of screening is to eliminate less important chemicals from the risk assessment.

The text has been revised to indicate that the sum of maximum alpha- and gamma-chlordane concentrations exceeds the PEL in North Section sediment, but the sum of average values does not. Other changes have been made in the Step 3a discussion to clarify the risk from pesticides in sediment.

Although not mentioned in the text, sediment guideline values for pesticides and PCBs based on co-occurrence data are suspect. When sediments are evaluated that have pesticides or PCBs as the main contaminants, threshold values are in the low ppm range (e.g., Chapman, P.M. 1996. A test of sediment effects concentrations: DDT and PCB in the Southern California Bight. Environmental Toxicology and Chemistry 15:1197-1198). The ppb-range guidelines based on co-occurrence reflect the ubiquity of these chemicals in both nontoxic sediments and sediments where toxicity is most probably caused by other chemicals.

Regarding the food chain modeling, whether or not the chemicals have the same target organ or mechanism of toxicity is debatable. For example, chronic effects to wildlife from pesticides are typically caused by their actions as endocrine disrupters. These actions would vary according to specific molecular configurations and therefore would not be predictable as a group. If summed pesticide values had been considered, little would have changed in the text, and the conclusions would have changed not at all.

Comment:

2. In our opinion, it is not appropriate to use PEL values as screening criteria. The supporting document for the FSQGs states in page 15, Chapter 3 Vol.2, that concentrations above the PEL are those for "which biological effects are usually or always observed" and further states that exceedances "represent significant and immediate hazards to exposed organisms."

Response:

We agree that PELs should not be used as screening criteria, in the sense that Region IV screening levels are criteria. The use of ER-Ms, SELs, and PELs will be clarified in the following paragraph that will be inserted in the text after these guidelines are described in Section 7.7:

"ER-Ms, SELs, and PELs are similar in that they are probable effects levels. This means that concentrations above them are likely to be associated with toxic responses in benthic invertebrates or impairment of invertebrate communities in sediment. Their value in Step 3a is to provide a range of upper bound concentrations to supplement the lower bound concentrations provided by screening levels."

Comment:

3. The short-tailed shrew is a burrowing insectivore that feeds almost exclusively on invertebrates, mainly earthworms, embedded in the soil matrix. A 3% incidental soil ingestion was used based on data from the omnivore, white-footed mouse presented in the 1993 USEPA *Wildlife Exposure Factors Handbook.* This value is not appropriate because it has been estimated that earthworms can contain 20 to 30% soil (Beyer et al. 1994). We think the soil ingestion value of 10% based on a range presented by Beyer et al. (1993) for the short-tailed shrew should be used.

Response:

The description of the short-tailed shrew as "burrowing" is misleading. This shrew constructs tunnels in organic debris and uses soil burrows of other animals for foraging. Nests are constructed of organic matter beneath logs, stumps, rocks, or debris. Therefore, it does not have a burrowing habit like moles have a burrowing habit.

The argument that the soil content of earthworms is important for the soil ingestion of the shrew is based on assumptions regarding soil content of earthworms and earthworms as the main food item. In the two studies listed in the USEPA's Wildlife Exposure Factors Handbook, earthworms are the main food item in one, but the portion of diet is less than 50 percent in both cases. There are alternate sources for data on soil ingestion for shrews. In its draft ecological soil screening level guidance, the USEPA reports probabilistic modeling of soil ingestion for the shrew with a median value of 1.53 percent of diet and a 90th percentile of 3.01 percent of diet.

For this assessment, the main point is that food chain modeling BAFs were set equal to one. This means that contaminant concentrations in food items were the same as contaminant concentrations in soil. Therefore, changing the portion of diet that is soil would not change any of the doses or hazard quotients.