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2600 Blair Stone Road  
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NSWC PANAMA CITY  
5090.3a

Re: RFI Addendum Rev. 02 NSA Panama City

Dear Ms. Mora-Applegate:

At your request, we have reviewed *Resource Conservation and Recovery Act Facility Investigation Addendum for Area of Concern (AOC) 1 and Solid Waste Management Units (SWMU) 3, 9, and 10, Revision 02, Naval Support Activity (NSA) Panama City, Panama City, Florida*. Tetra Tech NUS, Inc. created this report for Naval Facilities Engineering Command Southeast in January 2008.

The SWMUs and AOC include two firefighting training areas (SWMU 9 and AOC1), a landfill/burn and disposal area (SWMU 3), and an oil-water separator area (SWMU 10). This report briefly summarizes the results of prior study and corrective actions at the site, including additional assessment activities conducted in 2003 and 2004. A significant objective of this Addendum is a re-evaluation of human health risks posed by contaminants in SWMU 3 and 10, and AOC1.

We have the following comments regarding this addendum.

#### *SWMU 3*

The original RFI in 1996 found excess cancer risk to transients (trespassers) from exposure to soil to be greater than  $10^{-6}$ , due primarily to arsenic and PAHs. Future adult and child residents were also calculated to have excess cancer risks above  $10^{-6}$  from exposure to soil and to surface water. The conceptual model was revised in the Addendum and only transients are addressed. There are a number of comments related to this re-evaluation:

1. The exposure frequency for the transients was decreased from 100 days per year to 26 days per year. The exposure duration was also decreased, from 11 or 24 years (for adolescent and adult transients, respectively) to 3 years. No clear rationale for the change in exposure frequency is stated. We agree that 100 days per year may be a little high, but 26 days per year appears too low. Transients could come from the base or from the Marina campground. The Marina is stated to limit campers to 60 days, so that could be proposed as a site-specific

exposure frequency [assuming that the 60-day limit is per year and not per stay, which is not clear in the Addendum]. Alternatively, an exposure frequency of 45 days per year could be justified as being consistent with EPA Region 4 guidance. Either would be a better choice than 26 days per year, in our opinion. The reduction in exposure duration to 3 years is explained as reflecting "... the maximum expected tenure of a person at NSA Panama City who could be considered a transient." We are unsure what this means. It seems to suggest that base residents who might visit SMWU 3 would be there at most for three years. If so, the basis for this contention needs to be explained. Even if this is true, SWMU 3 is also accessible to campers, and we see no reason why their visits to the area would be limited to three years.

2. In the re-evaluation, the fraction ingested from contaminated source is reduced from 1 to 0.5. A fraction ingested less than 1 could perhaps be justified if the area occupied by SWMU is small compared to the area that a transient would be expected to visit. However, the case for using a value other than the default of 1 needs to be made in the report — simply stating that a different assumption was used is inadequate.
3. Surface water was not included in the re-evaluation, with the explanation that beryllium is no longer considered a carcinogen and benzo(b)fluoranthene in surface water is not quantitatively evaluated in risk assessment. The former statement regarding beryllium carcinogenicity is correct [at least for the oral route]. With respect to the latter statement, it's not clear why PAH risks from surface water were quantifiable in the original RFI but not in this addendum.
4. Risks for future residents were not re-evaluated and are assumed to be the same as calculated in 1996 (see page 5-4). The report contends that if land use changes to permit residential scenarios in the future, contaminant concentrations will likely have changed and human health risks would need to be re-evaluated. This is reasonable, but the conclusion should not be lost that this SWMU is unsuitable for unrestricted land use.
5. The Addendum states, "Risks for site workers are expected to be comparable to those of the transients." (page 5-4). Presumably, this statement applies to future scenarios, given the context of the paragraph and the clear message elsewhere (see page 5-2) that no workers currently visit this SMWU. We would not expect risks to future workers to be comparable to risks calculated for transients. A future worker scenario will involve more frequent contact with the site over a longer duration than is assumed for a transient, resulting in higher risks.
6. In the 1996 RFI, risks posed to construction workers by contact with subsurface soil were calculated to be less than  $10^{-6}$ . This scenario was

not re-evaluated, in part because no intrusive activities are expected. Unless there is a prohibition against intrusive activities, it would be worthwhile to include a re-evaluation of the construction worker scenario to verify that calculated risks remain below acceptable levels using contemporary exposure assumptions.

#### *SWMU 10*

The re-evaluation of risks for SWMU 10 consists of comparison of updated groundwater and soil concentrations with criteria from Chapter 62-777, FAC. We have the following comments.

1. There are a number of contaminants in groundwater at concentrations that exceed their groundwater cleanup target levels (GCTLs) or surface water cleanup target levels (SWCTLs). The Addendum concludes correctly that "adverse health effects would be expected if groundwater was used as a domestic drinking water supply." The Addendum also states, "The SWCTL exceedence, however, were generally slight and no adverse impact to surface water is anticipated because of natural attenuation." We agree that natural attenuation will be helpful in minimizing impacts associated with the discharge of contaminated groundwater to surface water. However, the discharge of concentrations that exceed the SWCTL is not allowed under Chapter 62-780, FAC.
2. With regard to soil, we have no comment other than to point out that the re-evaluation confirms the presence of contamination in soil that exceeds both residential and commercial/industrial criteria (per Chapter 62-777, FAC).

#### *AOC1*

As with SWMU 10, the re-evaluation of risks for AOC1 consists of comparison of updated groundwater and soil criteria from Chapter 62-777, FAC. Our comments are as follows.

1. We agree with the statement that updated groundwater analysis "... indicate that adverse human health effects would be expected if groundwater were used as a domestic water supply."
2. There was a significant change in groundwater concentrations as compared with SWCTLs between 2003 and 2004. In 2003, one VOC, five SVOCs, and one inorganic (iron) in groundwater exceeded their respective SWCTL. In 2004, only the VOC (1,1-dichloroethene) exceeded its SWCTL. This is an encouraging trend, if real. Additional sampling may be needed to clarify this. The Addendum states that groundwater flow patterns indicate that migration to St. Andrews Bay will not occur. This is an important point, but evaluation of this contention is outside of our expertise.

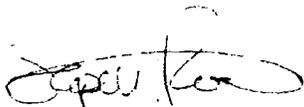
3. As with SWMU 10, the re-evaluation of soil concentration data for AOC1 also indicates the presence of contamination exceeding residential and commercial/industrial cleanup targets.

*Recommendations*

1. For SWMU 3, the Addendum recommends No Further Action with institutional controls (Risk Management Option Level II in Chapter 62-780, FAC) to deal with surface soil contamination. The scenario used to evaluate risk at this SWMU is an alternative scenario — a transient. By using an alternative exposure scenario, the approach moves to Risk Management Option Level III, and potential additive effects of contaminants must be considered. There are two issues here: 1) whether appropriate screening approaches have been used to identify the chemicals present that might contribute significantly to total risk; and 2) whether the right exposure assumptions are being used for the alternative scenario. As indicated in comments above, it is our opinion that some exposure assumptions for the transient used in the Addendum are too restrictive (exposure frequency and duration) or have not been sufficiently justified (fraction from contaminated source). Yet another re-evaluation of soil contamination at SWMU 3 is needed, we think, that complies more closely with requirements of Chapter 62-780, FAC and uses a somewhat different set of exposure assumptions. We would be happy to meet with FDEP and other members of the partnering team, as well as with Tetra Tech NUS, to discuss this in more detail.
2. The recommended approach for SMWU 10 and AOC1 is a combination of natural attenuation for groundwater and land use controls for soil. With regard to natural attenuation, it would be helpful for the Addendum to explain succinctly how the current status of groundwater contamination satisfies criteria for monitored natural attenuation in Chapter 62-780, FAC. Also, it is unclear to us what is meant by land use controls in the context of these sites. Both have surface soil contamination that exceeds residential and commercial/industrial criteria. Evaluation of risks associated with other land uses were not presented, and it is therefore not apparent from this document how land use should be controlled to result in acceptable risks.

Please let us know if you have any questions regarding this review.

Sincerely,



Stephen M. Roberts, Ph.D.



Kendra F. Goff, Ph. D.