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LETTER AND COMMENTS FROM ILLINOIS ENVIRONMENTAL PROTECTION AGENCY REGARDING THE DRAFT REMEDIAL INVESTIGATION REPORT FOR SITE 9 MOFFETT DISPOSAL AREA NSTC GREAT LAKES IL
3/17/2011
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

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March 17, 2011

NAVFAC Midwest IPT EV
Attn: Ms. Terese Van Donsel
Building 1A, 201 Decatur Avenue
Great Lakes, Illinois 60088-2801

Re: Draft Remedial Investigation Report for
the Site 9 – Camp Moffett Disposal Area
Naval Station Great Lakes
Great Lakes, Illinois

0971255048 – Lake
Great Lakes Naval Station
Superfund/Technical

Dear Ms. Van Donsel:

The Illinois Environmental Protection Agency (Illinois EPA or Agency) is in receipt of the Navy's Draft Remedial Investigation Report for the Site 9 – Camp Moffett Disposal Area, Naval Station Great Lakes, Great Lakes, Illinois. It was dated November 2010 and was received on December 1, 2010. The Remedial Investigation Report presents the results of the September and November 2009 environmental investigation of Site 9 and the subsequent human health risk assessment for the site. The Agency has conducted a review of the Draft Remedial Investigation Report and is herein providing comments generated during that review.

1) **Executive Summary** – Beginning in Section E.5, it appears all of the collected data reported here, for both soil and groundwater, have been compared only to Illinois EPA's Tiered Approach to Corrective Action Objectives regulations. According to the approved Sampling and Analysis Plan (SAP), the Project Action Limits were defined as "the more stringent of the USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites or Illinois risk-based criteria (Tiered Approach to Corrective Action Objectives [TACO])." The Executive Summary should also provide discussion comparing the data to the project action limits as defined in the SAP.

2) **Executive Summary** – The second paragraph of Section E.1 concludes by stating that no ecological evaluation is necessary. It would be more satisfactory to verify that any contaminant contribution from Site 9 shallow groundwater to Pettibone Creek will be

assessed during evaluation of the adjacent site which contains the headwaters of the creek.

3) **Executive Summary** – The last sentence in Section E.6 discussing Soil, mentions the deposition of fill material into the Site 9 ravines "after placement of the subsurface piping". Explain the location and purpose of the subsurface piping.

4) **Section 1.1 Project Overview** – The first sentence should read "...to determine the nature *and extent* of fill materials ..."

5) **Section 2.3** – In the table on page 2-6, the last entry under Activity states that approximately 45% of the middle finger of the ravine is located under buildings at Site 9. This statement is inaccurate. Please review and revise as necessary.

6) **Section 4.1** – The geophysical survey is discussed at the end of this section. However it is unclear what the result of that investigation was. Did the geophysical survey and the soil sampling determine the geographical boundary of the ravines? Was that goal accomplished? This needs to be addressed.

7) **Section 4.4.4** – This section reports that dioxin/furan contaminants were not detected at concentrations exceeding the minimum regulatory screening criteria. However, the Draft Site Inspection Report, which used the exact same data set, reported an exceedance. Please explain why that exceedance is not reported here.

8) **Sections 4.5** – This section compares site soil and groundwater concentrations to TACO objectives. The title specifies two receptors, residential and industrial. Since the construction worker receptor is included in the risk assessment, please explain why the TACO construction worker objectives are excluded from this comparison.

9) **Sections 4.5.1** – The last line in the paragraph concerning dibenzo(a,h)anthracene misstates the TACO objective. It should be reported as 90 µg/kg.

10) **Table 4-3** – Beginning with this table and continuing through all tables that present screening values, the application of a safety factor of 10 to the individual screening values needs to be standardized and documented, preferably on the table. As presented, there is uncertainty whether the one-tenth rule has been applied. It would be helpful as well if the trigger for applying the one-tenth multiplier were explained.

11) **Tables 4-6 and 4-7** – Table 4-6 lists the screening criteria for groundwater and Table 4-7 presents the occurrence and concentration summary also for groundwater. Earlier, Tables 4-4 and 4-5 presented corresponding information for soil. Tables 4-4 and 4-5 include the same chemical parameters yet the lists of contaminants differ between Tables 4-6 and 4-7. Please explain or correct this discrepancy.

12) **Section 6.4.2.3** – The paragraph addressing Navy recruits as possible receptors mentions that Site 9 has been covered with clean soil. This is the type of information that we are asking to be summarized in the General Comment below to support excluding surface soil from this evaluation.

13) **Section 6.4.5.1** – The averaging time (AT) factor in the dermal contact with soil equation incorrectly indicates that the non-cancer AT should be converted to hours.

14) **Section 6.7.2.2** – This section discusses the bias due to sampling in the ravine where waste may have been placed and reasons that such a practice likely overestimates the risks. That may be true, but the lack of sample locations due to inaccessibility (location of buildings and locations off-site) could well have the reverse effect and underestimate the risks. This should be stated as well.

15) **Section 6.7.2.3** – The last paragraph of this section makes a comparison of the average inorganic compound values to the background values. Arithmetic means are generally unacceptable for use as exposure point concentrations in human health risk evaluations. The procedures outlined in the USEPA ProUCL user's guide should be followed.

16) **Table 6-2** – This table is a good example of the inconsistency observed in applying the one-tenth rule; TACO values are not factored, UAESP (should be USEPA) values are factored, and vapor intrusion values are not factored. Use of the one-tenth factor appears to be arbitrary.

17) **Table 6-5** – This table presents the exposure point concentrations (EPC) to be used in the risk calculations. Please explain how both total TCDD equivalent concentrations can be lower than the single 2,3,7,8-TCDD value. Also, explain the absence of a 2,3,7,8-TCDD EPC for the central tendency exposure (CTE) receptor.

18) **Table 6-8** – The full citation for footnote #3 should be added to the reference section of the report. The exposure duration (ED) for the occupational/maintenance worker receptor is reported here as nine years. USEPA's guidance document "Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposures" (1993) suggests a default ED of five years and averaging time of 1825 days for this receptor. Please explain the differences between the report and the guidance document.

Please explain the four hour exposure time (ET) for dust and volatiles from soil by the CTE occupational/maintenance and construction workers. Inhalation of fugitive dusts and volatiles from soil is a passive exposure. These exposures are controlled by meteorological conditions, physical properties of the chemicals and soil, and soil

contaminant concentrations. The only reasonable justification for the ET to be halved is if the central tendency receptor spends one-half day at the site. If this is the underlying assumption, it should be stated and justified.

19) **Table 6-9** – Numerous errors were noted on this table of non-cancer toxicity values for the oral and dermal routes of exposure. It is incumbent upon the Tier 3 applicant to provide the most current toxicity values available.

- Manganese: Change chronic oral reference dose (RfD) to 0.02 mg/kg-d. The Integrated Risk Information System (IRIS) documentation states that up to 5 mg/day of manganese is obtained from the diet; thus, half of the intake must be subtracted from the acceptable dose.
- Vanadium: Change chronic RfD to 0.00007 mg/kg. This is a Provisional Peer Reviewed Toxicity Value (PPRTV) available for elemental vanadium and vanadium compounds other than vanadium pentoxide. Documentation can be found at: http://hhpprtv.ornl.gov/quickview/pprtv_papers.php.
- Arsenic: We cannot verify the PPRTV subchronic RfD (RfDs) from October 2005. Alternative is HEAST 1997.
- Chromium VI: Change the RfDs to 0.005 mg/kg-day based on the Agency for Toxic Substances and Disease Registry (ATSDR) value.
- Naphthalene: Add RfDs of 0.6 mg/kg-d, ATSDR.
- TCDD: Add RfDs of 2.0E-08 mg/kg-d, ATSDR.
- Antimony: Add RfDs of 0.0004 mg/kg-d, PPRTV.
- Barium: Add RfDs of 0.2 mg/kg-d, ATSDR.
- Cadmium: Add RfDs of 0.0005 mg/kg-d, ATSDR.
- Cobalt: Add RfDs of 0.003 mg/kg-d, PPRTV.
- Copper: Add RfDs of 0.01, ATSDR.
- Iron: Add RfDs of 0.7 mg/kg-d, PPRTV.
- Manganese: Add RfDs of 0.02 mg/kg-d, chronic value.
- Selenium: Add RfDs of 0.005 mg/kg-d, HEAST.
- Vanadium: Add RfDs of 0.0007 mg/kg-d, PPRTV.
- Zinc: Add RfDs of 0.3 mg/kg-d, ATSDR.

20) **Table 6-11** – The preferred oral cancer slope for TCDD is 1.3E+05 $(mg/kg\text{-}day)^{-1}$ from California EPA.

21) **Table 6-12** – The conversions of unit risk values to inhalation cancer slope factors are inappropriate for all but two chemicals (TCDD and TCE). Chemicals are not eligible for conversion when they induce tumors at the point of impact with the body. Furthermore, we observe that inhalation slope factors are not used in the Appendix G

calculations of risk. Both the inhalation RfD conversion's column and the unit's column are unnecessary.
The inhalation unit risk value presented here for vanadium is actually for vanadium pentoxide. Vanadium metal and other vanadium compounds are not carcinogenic. The analytical results should be examined to determine which form of vanadium is present.

22) **Section 7.1** – This section is written much the same as the Executive Summary. As such, those same comments apply to this section as well.

23) **Section 7.1** – It states in the first paragraph that there was "some correlation between the geophysical data and observations from the soil boring investigation" for the three ravines. Please define "some correlation". Were the objectives for this portion of the investigation met? Were the geographical boundaries of the ravines accurately determined?

24) **Section 7.2** – This section does not really present any conclusions based upon the risk assessment as is the title of this section. In fact, it does not even state that there are unacceptable risks at this site. There is only discussion of the site data when compared to background. There should be a fully developed discussion of what the results of the risk assessment mean, so that the following Recommendations Section can address how that risk may be eliminated or addressed, if necessary.

25) **Section 7.3** – Obviously, this section needs to be completed. The Agency would suggest waiting until the Remedial Investigation is complete and the risk assessment revised as necessary before developing any recommendations for this site.

26) **Appendix B-10** – The Chain of Custody forms provided here appear to be missing some information, are poorly copied, and are difficult to read. Suggest this section be reviewed and revised to correct these deficiencies.

27) **Appendix G** – The units are incorrect for the final intake result on all inhalation intake tables. The units should be "mg/m^3". This comment affects Tables 4.2, 4.2a, 4.5, 4.5a, 4.7, 4.10, and 4.10a.

28) **Appendix G** – Tables 4.7a, 7.7a, and 8.7a are missing from our copy of the report. They should be included to present the adult resident central tendency inhalation contact assumptions and calculations followed by tables of the intakes and calculated hazard quotients.

29) **Appendix G** – Tables 4-11 and 4-11a present the intake calculations for the child receptor. For mutagens, age-related intake values are calculated. Typically, age-related intake variables such as water ingestion rate, surface area, and body weight are

also selected to match the receptor's age. It appears that only the exposure durations have been adjusted in the subject tables.

30) **Appendix G** – Tables 8-11 and 8-11a present risk calculations for the residential child receptor. We cannot establish that the age-dependent adjustment factors (ADAF) of 10X (ages 0-<2) and 3X (ages 2-<16) have been applied to the oral slope factors and unit risk factors when carcinogenic risks were calculated for the mutagenic contaminants. Please verify whether that was the case.

31) **Appendix G** – Footnotes "(1)" and "(2)" appear on all of the tables presenting the hazard and risk calculations in Appendix G. Please provide the denotations for these footnotes.

32) **General Comment** – Given that the RI reports in Section 7.1 that the "general area of contamination at the site based on the laboratory results appears to be where the three fingers of the ravine merge", and that all available evidence points to the fact that the ravine extends farther to the east at least as far as the roadway, the Agency believes additional investigation is required to verify the full extent of the ravine and to determine if there may be higher levels of contamination in the down-gradient direction within the ravine. Data needs include both subsurface soil and groundwater analyses. The Agency suggests at least four subsurface soil sample locations and two groundwater sample locations. Based upon the current figures, it appears that this additional investigation would be conducted entirely off-site on property not currently owned by the Navy.

33) **General Comment** – This report calculates human health risks for chemical contaminants in subsurface soils only, as was agreed upon during development of the Sampling and Analysis Plan. It is well established that surface soils are typically the major contributor to risk due to the high potential for direct contact. At Site 9, concern about surface soils now seems warranted since the single surface soil sample that was analyzed showed dioxins were present. A comprehensive discussion and evaluation of all information regarding surface conditions at Site 9 should be presented. In the absence of analytical results, comprehensive arguments and documentation supporting the safety of the surface soils should be compiled. However, since the results of this investigation dictate that additional sampling be conducted to determine the full nature and extent of contamination, a re-evaluation of this strategy may be necessary. A limited number of surface soil samples should be considered.

If you have any questions regarding anything in this letter or require any additional information, please contact me at (217) 557-8155 or by electronic mail at *brian.conrath@illinois.gov*.

In accordance with Public Act 96-0603, which went into effect on August 24, 2009, any person who knowingly makes a false, fictitious, or fraudulent material statement, orally or in writing, to the Illinois EPA commits a Class 4 felony. A second or subsequent offense after conviction is a Class 3 felony. (415 ILCS 5/44(h))

Sincerely,

Brian A. Conrath

Brian A. Conrath
Remedial Project Manager
Federal Facilities Unit
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Bureau of Land

BAC:jrf:fac:H\GLNTC\Site 9\Site9DRIrvw

cc: Bob Davis, Tetra Tech NUS, Inc. Owen Thompson, USEPA (SR-6J)