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RESPONSE TO ILLINOIS ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON THE DRAFT FINAL SITE 12 REMEDIAL INVESTIGATION/RISK ASSESSMENT REPORT NSTC GREAT LAKES IL
06/02/2014
TETRA TECH

**From:** Corey Rich <Corey.Rich@tetratech.com>
**Sent:** Monday, June 02, 2014 12:46 PM
**To:** terese.vandonsel@navy.mil ; Brian.Conrath@illinois.gov ; Robert.Davis@tt ; LeAnne.Ganser@tt Les.Morrow@Illinois.gov
**Subject:** Final Site 12 RI/RA Report and Response-to-Comment Document, Naval Station Great Lakes

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**RESPONSES TO ILLINOIS EPA's MARCH 18, 2014 COMMENTS**
**DRAFT FINAL SITE 12 RI/RA REPORT**
**NAVAL STATION GREAT LAKES, GREAT LAKES, ILLINOIS**

**Issued:** April 29, 2014
**Revision 1 Issued:** June 2, 2014

1) **Executive Summary, Section E.6** — In the fifth sentence, the singular "medium" should be used.

   **RESPONSE:** Agree. The text was corrected as requested in the comment.

2) **Executive Summary, Section E.6.1.1** — The criterion for delta-BHC and phenanthrene in the tables herein could not be confirmed. Please provide the source for these.

   **RESPONSE:** Surrogate values were used for these compounds. Alpha-BHC was used as a surrogate for delta-BHC and pyrene was used as a surrogate for phenanthrene as identified on Table 4-2. No change was made based on this comment.

   **ADDITIONAL RESPONSE PER MAY 6, 2014 COMMENT RESOLUTION:** Per Illinois EPA's request, a footnote was added to document the surrogates that were used.

3) **Executive Summary, Section E.6.2.2** — The first bullet states that the groundwater objective for arsenic is 6 µg/L. The Class I groundwater standard for arsenic is 10 µg/L.

   **RESPONSE:** Agree. The text was corrected as requested in the comment.

4) **Executive Summary, Section E.6.2.2** — There is discussion of the groundwater results when compared to the TACO Class II remediation objectives. The discussion, though, does not expound on the fact that the local groundwater, due to its proximity to Lake Michigan, is likely not potable nor does it attempt to have a Class II determination made. Has this been considered?

   **RESPONSE:** Agree with clarification. In the Phase 3 UFP SAP, it was decided to compare the groundwater results to the Class II groundwater quality standards as indicated in the Executive Summary and on Worksheet #9 based on the UFP SAP scoping conference call on March 21, 2013. The participants in this UFP SAP scoping conference call recognized (as stated in the RI in several places including the introductory paragraph for E.6) that the local potable water supply is provided by water utilities in the area. The participants in the UFP SAP scoping conference call know that the water utilities draw their water from Lake Michigan and treat it before being distributed to customers. Please note that discussions of groundwater results were modified to compare to 35 Illinois Administrative Code (IAC) Class II objectives. No change was made based on this comment.

**RESPONSES TO ILLINOIS EPA's MARCH 18, 2014 COMMENTS**
**DRAFT FINAL SITE 12 RI/RA REPORT**
**NAVAL STATION GREAT LAKES, GREAT LAKES, ILLINOIS**

**Issued:** April 29, 2014
**Revision 1 Issued:** June 2, 2014

**ADDITIONAL RESPONSE PER MAY 6, 2014 COMMENT RESOLUTION:** Illinois EPA's preference is to default to Class I objectives for groundwater. However, based on discussions with Illinois EPA, they would accept further information being included to demonstrate that groundwater at the site fits into Class II. The following text bullets were added:

- The local potable water supply is provided by water utilities in the area, and the water utilities draw their water from Lake Michigan and treat it before being distributed to customers.
- The shallow aquifer is within 10 feet of the ground surface, is not potable, and is not used by NSGL and the surrounding area as a water source.
- Groundwater could possibly be reclassified as Class II groundwater according to 35 IAC 620 (similar to the classification at Ft. Sheridan, approximately 9 miles south of NSGL).
- Geologic/hydrogeologic information was added to the text (e.g., clay with sand stringer with low permeability and minimal groundwater flow).

5) **Executive Summary, Section E.7** — The third paragraph states that screening for carcinogens will be at the $10^{-4}$ level of risk. Illinois EPA requires screening to be performed at the $10^{-6}$ level.

   **RESPONSE:** The text in Section E.7, Section 6.8.3, and Section 8.2 was revised to state that if cumulative cancer risk was greater than $1x10^{-4}$ or the hazard index for a target organ was greater than 1, then chemicals were retained as COCs if their individual carcinogenic risk contribution was greater than $1x10^{-6}$ or their non-carcinogenic HQ was greater than 0.1.

6) **Executive Summary, Section E.9** — The final sentence in the second paragraph requires the singular noun "medium". Furthermore, the sentence is long and unclear with some words apparently missing, which obscures its meaning.

   **RESPONSE:** The text was corrected as requested by the comment.

7) **Section 4.5.1.1** — It is mentioned here that, based upon the measured ORP data, reducing conditions are present in the area of the fill material compared to the up-gradient location. There is no discussion provided to explain the possible cause for this however. There should be some discussion to explain this. Is this related to the fill material or the contamination; or, is there another cause? Depending on the cause, perhaps some type of amendment may be applied as part of one of the remedial alternatives to correct this situation.

**RESPONSE:** Agree. It is suspected that the cause for the reducing conditions is the high organic content of the dredge spoils deposited on site or plant debris in the soil/fill material. The high organic content and plant debris would be subject to biodegradation and after the dissolved oxygen is consumed, anaerobic microorganisms would degrade the organic content and plant debris. This anaerobic biological activity would cause the reducing conditions. This information was added to the text in this section as a possible cause of the reducing conditions.

8) **Section 4.5.2** — This section should be revised to focus on the difference between site groundwater and the Illinois Groundwater Quality Standards found at 35 Illinois Administrative Code (IAC) 620. The standards are enforceable (ARAR) and any difference between TACO and the standards should default to the 35 IAC 620 values. The groundwater standard for arsenic is 10 ug/L.

   **RESPONSE:** Agree. Section 4.5.2 was modified to compare site groundwater concentrations to 35 IAC 620 standards for Class I and Class II. The SAP Addendum for Phase 3 RI indicates that groundwater concentrations would be compared to the 35 IAC 620 standards for Class II.

9) **Section 4.6** — Please explain the inclusion of this section. What is its purpose? The 12$^{th}$ sentence states that "Most maximum surface soil and subsurface soil concentrations exceeded the maximum sediment concentrations." The last sentence states that, "greater metals concentrations were generally found in soil samples compared to sediment samples." What is the point of reporting the previous sediment sampling data if it only shows that the site soil is more contaminated than the sediment in the harbor? It should also clearly state here that no sediment samples were collected for this Site 12 evaluation, but that proximal samples may be adequate.

   In addition, in one sentence there is reference to sediment sample 37, while the next sentence references sediment sample 27. Please verify which is correct.

   **RESPONSE:** The reason for including the data is provided in the response provided to Comment 34 in the October 9, 2012 response to comment document for Illinois EPA's comments on the draft RI/RA. It was believed that the discussion was better suited for Section 4, which discusses nature and extent information, versus Section 7, which includes the ecological risk assessment.

   Soil (surface and subsurface) and sediment concentrations were compared to evaluate whether the concentrations are similar. Chemical concentrations in subsurface soil, likely composed of lake dredge spoils based on available information, were compared to concentrations in lake sediment to see if they were

similar. In addition, surface soil concentrations, likely composed of land-based fill, were compared to sediment concentrations to determine if the surface soil could impact the lake sediment if it eroded and was deposited into the lake. This evaluation was completed even though erosion is not expected to be a significant migration concern because there is substantial vegetation cover over the site soil.

A statement was added that no sediment samples were collected at Site 12, but that proximal sediment samples were presented in this evaluation.

The sediment sample reference was corrected to sample 37.

**ADDITIONAL RESPONSE PER MAY 6, 2014 COMMENT RESOLUTION:** An introductory paragraph was added to Section 4.6 with similar text as discussed above to indicate why soil and sediment concentrations were compared.

10) **Section 4.7** — In the fourth paragraph, it is stated that screening was done against TACO residential and industrial/commercial values. TACO construction worker values should always be included in screening efforts. Occasionally, TACO construction worker objectives will be the lowest of all available objectives and this receptor is applicable at all sites.

    **RESPONSE:** Agree with clarification. Soil concentrations were screened against TACO construction worker ingestion and inhalation values as presented in Tables 4-3 for surface soil and 4-4 for subsurface soil. The discussions in Section 4.4 and 4.7 were modified to include discussion of TACO construction worker criteria.

11) **Section 4.7** — In the fifth paragraph, the purpose of Class I groundwater is misstated. The Class I designation is to protect the groundwater resource whether currently used or not. Site groundwater contaminant levels should be compared to the 35 IAC 620 standards not TACO.

    **RESPONSE:** Agree. The text was corrected as requested in the comment.

12) **Table 4-2** — On page 2 of 4, several soil to groundwater criteria can be added. The TACO Soil Component of the Groundwater Ingestion Route objectives for the inorganic constituents are extraction-based (TCLP/SPLP) criteria. These criteria should be added to the respective TACO and Non-TACO Class I Soil to Groundwater Criteria columns. On page 4 of 4, the SPLP TACO ingestion of groundwater criterion for arsenic should be 10 ug/L to agree with the revised groundwater standards.

**RESPONSE:** On page 4 of 4 of this table the TACO Ingestion of Groundwater Class I (TACO GROs) criteria were included. These criteria are the same as the TACO Soil Component of the Groundwater Ingestion Route objectives. The last 2 columns (TACO GROs) on this table were deleted and the criteria were placed on page 2 as suggested in this comment. A search of the Illinois EPA TACO criteria on April 3, 2014 on the Illinois EPA website shows the arsenic TACO Ingestion of Groundwater criteria (TACO GROs) and the TACO Soil Component of the Groundwater Ingestion Route objective as 50 ug/L, the criteria that the SPLP data should be compared to as indicated in the UFP SAP dated December 2012.

**ADDITIONAL RESPONSE PER MAY 6, 2014 COMMENT RESOLUTION:** A footnote was added to the arsenic value to indicate that the groundwater standard is 10 ug/L and that the TACO Soil Component of the Groundwater Ingestion Route are being updated by Illinois EPA.

13) **Table 4-3** — Page 1 of 2 contains a column titled "TACO Class I Soil to Groundwater Criteria". The entries appear to be based on TACO Appendix B Table C values for pH 7.75 to 8.24. Unless the site-specific soil pH has been established to be in this range, the TACO default soil pH of 6.8 should be used.

**RESPONSE:** Agree with clarification. TACO values presented are pH-specific 7.25 to 7.74 values as noted in footnote 11 for Table 4-2. This pH range was selected based on analysis of soil IDW samples which indicated pH values of 7.58 and 7.6 as presented in Appendix C. A footnote was added to Table 4-3.

14) **Table 4-3** — The fifth and sixth data columns of page 2 of 2 present the USEPA SSL criteria for the inhalation exposure pathway for the residential and industrial receptors, respectively. Please explain why columns providing ingestion criteria are not also included.

The seventh and eighth columns present construction worker ingestion and inhalation criteria, respectively. The USEPA Supplemental Soil Screening Levels do not include default construction worker exposure parameters. Please provide the exposure parameters used to develop the construction worker criteria.

The headers for columns nine and ten are identical yet the data differ. Please explain.

**RESPONSE:** The USEPA residential and industrial soil RSLs in columns 2 and 3 on page 2 of Table 4-3 consider risks from ingestion, dermal contact, and inhalation. As noted in footnote 1 for Table 4-2, USEPA SSL ingestion values for the residential and

industrial/commercial worker scenarios were considered but not presented as the USEPA residential RSLs cover the same pathway and are more restrictive.

The exposure parameters used to develop the construction worker criteria are presented in Exhibit 5-1 of the Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 93355.4-24, December 2002.

The header for column ten was corrected to USEPA MCL BASED SSLs –USEPA MIGRATION TO GROUNDWATER DAF 15.

**ADDITIONAL RESPONSE PER MAY 6, 2014 COMMENT RESOLUTION:** Construction worker criteria were developed using subchronic RfDs/RfCs where available. The particulate emission factor for the calculation of inhalation of fugitive dusts for the construction worker was derived as presented in Equation 5-5. The assumptions for vehicle traffic presented on page 5-12 were used for site-specific conditions. These details were added to Section 6.3.1.

15) **Table 4-5** — The same problems exist for Table 4-5 as were found for Table 4-3 as described above. Additionally, 10 ug/L should be used as the arsenic SPLP criterion for TACO ingestion of Class I groundwater.

**RESPONSE:** See response for Comments 13 and 14.

**ADDITIONAL RESPONSE PER MAY 6, 2014 COMMENT RESOLUTION:** A footnote was added to Table 4-5 for SPLP arsenic to indicate that the groundwater standard is 10 ug/L and that the TACO Soil Component of the Groundwater Ingestion Route are being updated by Illinois EPA.

16) **Section 6.3.1** — As a general comment, the described screening procedures should be reconciled with the Section 4.0 tables. For instance, it is not apparent that HQ = 0.1 was included in the Section 4.0 screening process.

**RESPONSE:** Disagree with clarification. The safety factor of 10 (HQ=0.1) is used as part of the risk assessment process that is described in Section 6 of this report. USEPA RAGS does not state the safety factor of 10; however, in the USEPA memo on the RBC table it discusses the safety factor of 10 (http://www.epa.gov/reg3hscd/risk/human/info/cover.htm - see the FEATURES AND HISTORIAL CHANGES section). The web page explains how you should divide by 10 to adjust the criteria for an HQ = 0.1. The text from this section is below:

"At Region III Superfund sites, noncancer RBCs are typically adjusted downward to correspond to a target HQ of 0.1 rather than 1. (This is done to ensure that chemicals with additive effects are not prematurely eliminated during screening. Note that the

RBCs displayed on the table are shown at an HQ of 1; to arrive at the RBC at 0.1, data users must do the conversion themselves.) However, some chemicals have RBCs at HQs of 0.1 that are lower than their RBCs at 1E-6 cancer risk. In other words, the screening RBC would change from carcinogenic to noncarcinogenic. These chemicals are flagged with a "!" symbol. Therefore, assessors screening with adjusted RBCs will be alerted to this situation. See the companion attachment to the RBC Table, "Alternate RBCs," for alternate values for "RBCs."

The safety factor of 10 does not apply to the tables in Section 4.0 that are used for Nature and Extent. No change was made based on this comment.

17) **Section 6.3.1** — The fifth bullet indicates that USEPA SSL values for the construction worker were used for screening. The cited reference contains no calculated criteria. Please explain.

**RESPONSE:** A statement was added that states the SSL values were calculated according to the 2002 guidance document using the default construction worker exposure parameters presented in Exhibit 5-1 of the Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 93355.4-24, December 2002. Construction worker values were developed using subchronic RfDs/RfCs where available and the PEF was calculated for inhalation of fugitive dust using an assumption of 8 tons for mean vehicle weight.

18) **Section 6.3.2** — In this section and throughout Section 6 and 7, the PAH benzo(a)pyrene has been misspelled in numerous locations. This should be corrected.

**RESPONSE:** Agree. The typographical error was corrected is this section as well as the Executive Summary and Section 4.

19) **Section 6.3.2** — The first bullet in the first paragraph should include the carcinogenic PAH chrysene. Upon the exceedance of screening criteria for any one carcinogenic PAH, all carcinogenic PAHs need to be evaluated. The seven carcinogenic PAHs are similar acting and Illinois EPA requires that they all be evaluated as a group regardless of their individual screening status. In addition, please add chrysene to the table of background values in this section.

**RESPONSE:** Agree. Chrysene was included in the calculation of BAP equivalents and the text was corrected to include chrysene in the list of carcinogenic PAHs. Chrysene was also added to the table of background values.

20) **Section 6.3.3** — In the first paragraph, first bullet; add chrysene.

**RESPONSE:** Agree. The text was corrected to include chrysene in the list of carcinogenic PAHs.

21) **Section 6.3.5** — The first paragraph, should reference the 35 IAC 620 Groundwater Standards rather than TACO.

**RESPONSE:** Agree. The text was modified to compare site groundwater concentrations to 35 IAC 620 standards for Class I and Class II in this section as well as Section 4.

22) **Section 6.4.5.1** — In the Inhalation of Air Containing Fugitive Dust/Volatiles Emitted from Soil paragraphs, the abbreviations for the concentration of the contaminant in air need to be reconciled. For completeness, the equations and procedures necessary to calculate the volatilization factors should be added.

**RESPONSE:** Agree. The abbreviation $C_{ai}$ was corrected to $C_{air}$. The equations for volatilization from soil were added.

23) **Section 6.6.2.1** — This section presents cumulative risk for each receptor that was evaluated. Incremental risk based on target organ impacts similar to what was done for non-carcinogens should also be presented to better identify the chief contributor to risk.

**RESPONSE:** Disagree. There are no target organs for cancer risks. No change was made in response to this comment.

24) **Section 6.6.2.1** — Under Carcinogenic Risks for Exposure to Subsurface Soil — RME, the ILCR for construction workers was not equivalent to the lower limit of the USEPA and Illinois EPA TACO target risk range. It was below.

**RESPONSE:** Agree. The text was corrected based on the above comment.

25) **Section 6.6.2.2** — This section presents a summary of the calculated chemical hazards for the various receptors. Although the hazards for the child and adult residential receptors are calculated separately, the results are usually combined to portray the 30-year resident.

**RESPONSE:** Disagree. Noncancer hazards are not combined for child and adult, that is only done for cancer risks. No change was made in response to this comment.

**26) Section 6.7.4** — Please explain and justify the use of a dilution attenuation factor, as is discussed here. Its use was not included in the previous version of this report. In addition, please provide a more thorough explanation of how the $DAF_{15}$ was derived and provide tables including the $DAF_{15}$ — adjusted soil screening levels. Also, the site is described here as being approximately 1.75 acres in size when it is listed as 3.5 acres in Sections 2.1 and 7.2.1.

**RESPONSE:** The text was modified to indicate that 1.75 acres refers to the approximate area of soil impacted by fill material. The DAF of 15 was determined by extrapolating information from Table 7 of the Soil Screening Guidance Technical Background Document (USEPA, 1996). The data presented in Table 7 of the SSL guidance was plotted and the equation for the best fit line was used to determine a DAF for a source area of 1.75 acres.

Table 6-15 and 6-16 provide the risk based SSLs and MCL based SSL and these criteria adjusted by a DAF of 15. The migration from soil to groundwater screening levels were used to estimate the mobility of chemicals in soil; however, because groundwater samples were collected during the Phase 3 RI and the actual concentrations of chemicals in groundwater were determined, the estimates of chemical mobility in soil are only for informational purposes.

**27) Section 6.7.4** — In the first paragraph of the Surface Soil section, the TACO Class I groundwater criterion for arsenic is out of date. The Illinois Groundwater Standard of 10 ug/L should be used.

**RESPONSE:** Disagree. The tables referenced in Section 6.7.4 (Table 6-15 and 6-16) present arsenic surface soil and subsurface soil concentrations in units of mg/kg. Therefore, the groundwater standard presented in units of ug/L in the comment is not appropriate. Tables 6-15 and 6-16 present a pH-specific Soil Remediation Objective for the Soil Component of the Groundwater Ingestion Route (Class I Groundwater).

**ADDITIONAL RESPONSE PER MAY 6, 2014 COMMENT RESOLUTION:** A footnote was added for arsenic to Tables 4-2, 4-3, 4-5, 6-15, and 6-16 to indicate that forthcoming criteria revisions (not yet available) will decrease this value.

**28)** Section 6.7.5 — The uncertainty regarding whether the groundwater is actually potable and if it could have a Class II groundwater designation should be discussed here.

**RESPONSE:** Agree. The text in this section was modified and text was added to capture the following:

- The local potable water supply is provided by water utilities in the area, and the water utilities draw their water from Lake Michigan and treat it before being distributed to customers.

- The shallow aquifer is within 10 feet of the ground surface, is not potable, and is not used by NSGL and the surrounding area as a water source.

- Groundwater could possibly be reclassified as Class II groundwater according to 35 IAC 620 (similar to the classification at Ft. Sheridan, approximately 9 miles south of NSGL).

- Geologic/hydrogeologic information was added to the text (e.g., clay with sand stringer with low permeability and minimal groundwater flow).

29) **Section 6.7.6.4** — This section addresses the uncertainty associated with treating all detected chromium concentrations as the more toxic form, Cr VI. This practice is not an uncertainty; it is an absolute overestimation of risk and an abandonment of risk assessment principles. Ideally, the chromium should have been speciated when analyzed. Resampling and analysis with speciation should be considered. Otherwise, some quantifiable approach should be proposed.

**RESPONSE:** Per the UFP SAP/QAPP (Tetra Tech, 2011), the screening of chromium was conducted assuming that 100 percent of the reported total chromium is hexavalent. In addition, current EPA guidance requires chromium be evaluated as hexavalent chromium if speciation data is not available, unless justification can be provided that hexavalent chromium would not be present.

Based on the historical information on the site, hexavalent chromium is not expected to be a COC. If it was expected to be a COC, during the preparation of the UFP SAP/QAPP, analysis of hexavalent chromium would have been discussed and included. Additional text was added to the Executive Summary and Conclusions to remove hexavalent chromium as a COC. The Navy does not intend to do additional sampling and analysis for hexavalent chromium.

**ADDITIONAL RESPONSE PER MAY 6, 2014 COMMENT RESOLUTION:** The Navy, Illinois EPA, and Tetra Tech agreed that no hexavalent chromium was used or stored at the site based on historical information

30) **Section 6.7.7.1** — This section addresses the uncertainty involved when summing risk and hazard. This concern is negligible for the carcinogenic PAHs. The slope for benzo(a)pyrene coupled with order-of-magnitude relative potency factors for the various carcinogenic PAHs are used to evaluate the seven compounds. The

carcinogenic PAHs all have the same toxicological endpoint and should any individual compound exceed screening, all should be evaluated.

**RESPONSE:** Comment noted. Also see the response to Comment 20. No changes were made in response to this comment.

31) **Section 6.7.7.2** — The discussion suggests that risks and hazards might be doubled when surface soil risks are added to subsurface soil risks. This should not be a concern. Receptors contacting surface soil are evaluated using a dataset containing only surface soil result and receptors such as a construction worker are evaluated using a dataset combining surface and subsurface results.

**RESPONSE:** Comment noted. Risks were calculated separately for surface and subsurface soil for the reasons stated in the comment; however, the risk for receptors exposed to both surface and subsurface soil could be overestimated if they are added together because the dose calculations for both the surface and subsurface soil calculations apply the full default exposure factors which would be too conservative and unrealistic. The text was revised based on this comment.

32) **Section 6.8.3** — The second paragraph suggests that some constituents contributing unacceptable risk are at or below background. This should be quantified by comparison to well documented references or by site-specific analysis.

**RESPONSE:** The comparison to Illinois EPA background values is presented in Section 6.3.2 as indicated in Section 6.8.3. Site-specific background values were not available. No changes were made in response to this comment.

33) **Table 6-8** — The exposure parameters for the central tendency versus the reasonable maximum exposure paradigms are presented here. Due to the uncertainty in determining environmental concentrations, the exposure point concentration data should be the 95% UCL for both exposure paradigms, the RME and the CTE.

**RESPONSE:** Disagree. The use of maximum (RME scenario) and average (CTE scenario) values for construction workers and residents was used per Appendix C of the UFP SAP dated January 2011.

**ADDITIONAL RESPONSE PER MAY 6, 2014 COMMENT RESOLUTION:** Illinois EPA acknowledged that the approach was acceptable.

34) **Table 6-9** — This table presents non-cancer toxicity values. Because separate toxicity values are not available for alpha- and gamma-chlordane, their concentrations should be combined and evaluated as "chlordane" or "technical Chlordane."

A subchronic RfD of 1.0E-04 is available for heptachlor from ATSDR. HEAST provides subchronic RfDs of 1.3E-05 for heptachlor epoxide and 3.0E-04 for arsenic. Additionally, the State suggests the subchronic RfD of 5.0E-03 for chromium VI from ATSDR. In the absence of subchronic RfDs, the chronic RID should be used.

**RESPONSE:** Alpha-chlordane and gamma-chlordane were evaluated separately using toxicity criteria for chlordane; therefore no changes were needed because combining the concentrations would not change the results of the risk assessment. The suggested subchronic RfDs for heptachlor and heptachlor epoxide are more conservative than the chronic RfDs for these chemicals, therefore, the chronic RfDs were used in HHRA as discussed in Section 6.7.6.2. A RfD value of 3E-04 was used for arsenic in the risk assessment. When the draft RA/RI report (June 2011) was completed the ATSDR RfD for chromium (September 2012) was not available. Therefore, a RfD of 2E-02 from HEAST was used. Changing this toxicity value would have little impact on risk characterization and would not impact remedial action decision-making. Therefore, the level of effort required to quantitatively revise the risk assessment to address this comment is not warranted. However, Table 1 in Appendix F was updated to indicate the value used in the risk assessment was more conservative than if risks had been calculated with the ATSDR RfD. Chronic RfDs were used when subchronic RfDs were not available as indicated in Table 1 in Appendix F. Text was added to Section 6.5 to state that chronic toxicity values were used in the evaluation of risks to the construction worker when subchronic toxicity values were not available.

35) **Table 6-10** — Alpha- and gamma-chlordane should be evaluated together as technical chlordane. ATSDR provides a subchronic RfC of 2.0E-04 for chlordane and 3.0E-04 for chromium VI. In the absence of subchronic RfCs, the chronic RfC should be used.

**RESPONSE:** Alpha-chlordane and gamma-chlordane were evaluated separately using toxicity criteria for chlordane; therefore no changes were needed because combining the concentrations would not change the results of the risk assessment. The suggested subchronic RfC for chlordane is more conservative than the chronic RfC for chlordane; therefore, the chronic RfCs were used in HHRA as discussed in Section 6.7.6.2. Therefore, the RfC for chlordane was not changed in the risk assessment. When the draft RI/RA report (June 2011) was completed the ATSDR RfC for chromium (September 2012) was not available. Therefore, the chronic RfC was used in the risk assessment. Changing this

toxicity value would have little impact of risk characterization and would not impact remedial action decision-making. Therefore, the level of effort required to quantitatively revise the risk assessment to address this comment is not warranted. Also, the RfC value used in the risk assessment (1E-04) was more conservative than if risks had been calculated with the suggested RfC (3E-04). Table 2 of Appendix F presents a comparison of Illinois EPA suggested inhalation RfCs compared to those used in the HHRA.

36) **Table 6-17** — The correct arsenic groundwater screening value is 10 ug/L.

**RESPONSE:** Agree. The arsenic groundwater screening value was correct to 10 ug/L in Table 6-17.

37) **Section 7.0** — This section presents the ecological risk assessment. In the State's judgment, the complexity and detail of this assessment is unnecessary. Site 12 is described as 3.5 acres that includes a road and parking lot and is otherwise mowed and highly maintained as a picnic area and archery range. The size and configuration of Site 12 suggests that it is unlikely to attract or support any threatened or endangered species.

Rather than review and provide detailed comments for the Section 7.0 Ecological Risk Assessment, Illinois EPA requests that a qualitative assessment be added to summarize the more realistic potential for ecological harm. A biological survey should be conducted to determine whether threatened or endangered species (T&Es), terrestrial or aquatic, are present. In the absence of existing T&Es, the site should be evaluated on the likelihood of it attracting and supporting T&E species in the future. Potential harm to common species should be qualified relative to the size of the site and the length of the shoreline.

**RESPONSE:** Further clarification required from Illinois EPA. The ERA was expanded to evaluate potential risks to terrestrial plants, invertebrates, mammals, and birds based on the Illinois EPA comment on the draft RI that indicated the ERA was insufficient. The responses to the draft RI comments were issued October 9, 2012. Illinois EPA provided their general concurrence with the responses on November 28, 2012. Because of the conflicting nature of the comments received from Illinois EPA, further clarification is required.

**ADDITIONAL RESPONSE PER MAY 6, 2014 COMMENT RESOLUTION:** Illinois EPA clarified that their concern is that the Piping plover, which has nesting sites at nearby locations, may be present at Site 12. The Navy agreed to walk through the site to determine if the species of concern is present. The results of the site walk/survey were added to the ERA. In addition, based on further clarification

provided by Illinois EPA via electronic mail on May 19, 2014, the site description for Section 7.2.1 was expanded. The last sentence of the first paragraph of Section 7.2.1 states "Approximately 15 percent of the site is covered by a gravel road and parking lot and approximately 15 percent of the site is a sandy beach." The following additional text was added to the end of this paragraph: "The beach area includes approximately one-tenth of a mile of shoreline. Beach sediments along the Illinois coast consist of mixed sand, sandy gravel, and gravel. The primary source for the beach sediments was erosion of the coastal bluffs. The remainder of the site is mostly maintained turf grasses with a few deciduous trees." Additional text was added to the second paragraph of Section 7.2.1, as described below, to include details from the 2010 Integrated Natural Resource Management Plan indicating typical and protected species found in the Naval Station Great Lakes area within the types of habitat found at Site 12. The following statements were added after the second sentence of the second paragraph: "The maintained turf grasses and deciduous trees at Site 12 may provide habitat for some common species found at NSGL, including groundhogs, raccoons, squirrels, chipmunks, opossum, rabbits, skunks, transient white-tailed deer, and various songbirds. The beach area at Site 12 may provide habitat for the Federally Endangered Piping plover and other shorebirds. However, Piping plover prefer to nest on undisturbed sandy beaches and the beaches at NSGL are easily accessible to foot traffic creating relatively low but a constant level of disturbance." A concluding statement was added to the end of the second paragraph to indicate that, according to Bob Vanbendegom, Biologist and National Environmental Policy Act Program Manager at NSGL, no federal or State protected fauna or flora have been identified as inhabiting Site 12 based on a records review and a May 8, 2014 site evaluation.

38) **Section 7.4.1** — The last sentence in the 10th paragraph appears to be superfluous. Please clarify the intent of this sentence.

**RESPONSE:** Agree. The sentence was reworded to state: "Most zinc concentrations (44.7 to 328 mg/kg) were only slightly greater than the screening level; however, one sample had a zinc concentration (1,530 mg/kg) well above the other concentrations detected at the site."

39) **Section 7.4.1**— The last sentence in the 11th paragraph states there does not appear to be a specific source of selenium. While this may be accurate when considering this site only, it does not take into account the fact that the site is comprised of fill material and former dredge material. That fill material could well be the source of the selenium and since the fill was spread across the site would explain the sporadic distribution.

**RESPONSE:** Agree. The referenced sentence was deleted.

40) **Section 8.1.3** — See previous comment regarding Section 4.6.

**RESPONSE:** See the response provided for Comment 9.

41) **Appendix B** — The chain-of-custody forms provided are incomplete as they are missing the laboratory received by signatures and dates. Please ensure the completed forms are provided in the final version of the report.

**RESPONSE:** Disagree. The chain of custody forms in Appendix B are the forms that were completed during the field/sampling activities and at that time the laboratory did not receive the samples. The samples were shipped to the laboratory by Federal Express. Chain of custody forms that were received and signed by the laboratory can be found in Appendix D with the Data Validation memos and laboratory data.