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U S NAVY RESPONSES TO MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY COMMENTS ON DRAFT REMEDIAL INVESTIGATION REPORT FOR SITE 3 NORTHWEST LANDFILL NCBC GULFPORT MS
07/28/2011
TETRA TECH NUS

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Commanding Officer, Southeast
Naval Facilities Engineering Command
Attn: Charles Cook (Code OPA6)
Remedial Project Manager
NAS Jacksonville
135 Ajax Street
Jacksonville, Florida 32212-0030

Reference: CLEAN IV Contract Number N62467-04-D-0078
Contract Task Order Number 0041

Subject: Response to Comments on the Draft Remedial Investigation Report
Site 3 – Northwest Landfill
Naval Construction Battalion Center Gulfport, Mississippi

Dear Mr. Cook:

Tetra Tech NUS, Inc. (Tetra Tech) is pleased to submit the Response to Comments letter addressing comments received on the Draft Remedial Investigation (RI) Report for Site 3, Northwest Landfill, at the Naval Construction Battalion Center (NCBC) Gulfport, Gulfport, Mississippi for Contract Task Order 0041.

Mississippi Department of Environmental Quality (MDEQ), Mr. Robert Merrill, P.G.

Comment 1: The lettering on Figure 2-1 associated with both the magnetometer legend and the main map is blurred or otherwise not readable. A small area of Figure 2-2 is lacking color that represents the amplitude of the EM 61 signal return.

Response: Figure 2-1 has been revised to improve legibility.

The area referred to in Figure 2-2 was covered by large piles of soil and was not traversable with the EM-61 instrument; therefore, no EM-61 data is available in that area. A brief discussion was added to Section 2.1 regarding the soil piles, and a note was added to Figure 2-2 to identify the soil piles.

Comment 2: Wells GPT 03-18 through GPT 03-31 are missing from the Appendix B well installation logs. All monitor well installation logs should be included in the report. The text (page 2-4, paragraph 5) describes wells GPT 03-08 through GPT 03-15 as hollow stem auger (HSA) wells and wells GPT 03-16 through GPT 03-31 as direct push (DPT) while the well installation logs in Appendix B indicate that wells GPT 03-16 and GPT 03-17 are HSA type wells. The text does not consistently describe installation details for each grouping of wells. The text discussion does not address well details for GPT 03-21 through GPT 03-31.

Response: The missing well logs have been added to Appendix B (GPT-3-18 through GPT-3-31). The text was revised to indicate the correct well installation method for GPT 03-16 and GPT 03-17.

Comment 3: The text (page 2-5, paragraph 3) references Figure 2-4 for surface water sample locations and Figure 2-7 for sediment sample locations. Both sediment and surface water sample locations are shown on Figure 2-7. Figure 2-4 addresses surface and subsurface soil locations.

Response: The text was revised to reference the tables correctly.

Comment 4: Cross sections should utilize wells close to or on the line of section rather than transpose borings located further away. For example, the cross section shown on Figure 3-2 utilizes boring 03SB02 located well north of boring 03SB17, which is located adjacent to the line of section as shown on Figure 3-1. Efforts to construct an alternate section failed because boring logs are missing from Appendix B for borings 03SB09 through 03SB22. All boring logs should be included in the report.

Response: Of the 23 direct push technology (DPT) sampling locations, soil profiles were collected at 11 of the locations (03SB01 through 03SB08 and 03SB11 through 03SB13). At the other 12 locations, only groundwater samples were collected; therefore, additional lithologic data is not available. Figures 2-5 and 3-1 were revised to differentiate between the soil/groundwater DPT locations and the groundwater-only locations. The boring logs for 03SB11 through 03SB13 have been added to Appendix B.

Comment 5: The text (page 2-4, paragraph 3) discusses 24 permanent monitoring wells labeled as GPT 03-08 through GPT 03-32 but well GPT 03-32 does not appear on the list of wells in Table 2-2, the well location map Figure 2-6 or in the well completion logs in Appendix B.

Response: The text should have indicated 24 permanent monitoring wells (GPT-3-08 through GPT-3-31, not GPT-3-32). No monitoring well identified as GPT-3-32 was installed. The text has been revised to correct the monitoring well identifications.

Comment 6: The text (page 3-8, paragraphs 1 and 2) states that downward migration of contaminants is limited due to the upward hydraulic gradient created by higher potentiometric surfaces (observed water elevations) in deeper wells than in the shallower wells. It should be noted that although deeper wells screened in the lower semi-confined aquifer produced higher potentiometric surfaces than wells screened in shallower horizons in 5 of 6 cases, the head difference was consistently small considering a substantial vertical screen separation across the presumed confining aquitard thickness of 12.5 to 17 feet (Table 3-3).

Due to the characteristic discontinuous, lenticular and interfingering stratigraphic relationships typical of terrace deposits comprising the Surficial Aquifer in the area in which the site is located, vertical hydraulic interaction among saturated zones should be assumed and sampling of shallow and deeper intervals within the aquifer should be conducted during future sampling conducted for the long term monitoring (LTM) program.

It is noted that permanent monitor well pairs were installed in shallow and deeper intervals of the Surficial Aquifer at Site 3. These wells should remain intact for use in the LTM program.

Response: The discussion of vertical gradient was intended to demonstrate that, at least locally, the semi-confining layer does have an apparent influence on vertical contaminant migration. Based on the distribution of contaminants found in the RI, monitoring of groundwater in both zones would be appropriate. Long-term monitoring (LTM) was evaluated in the Site 3 Feasibility Study (FS) and is part of the presumptive remedy for Site 3. Details of the LTM program will be developed during the design phase for the remedy.

Comment 7: A clearer understanding of the hydrogeological setting would be provided by an additional cross section that utilizes data from monitor well borings to identify lithologies occupied by screened

intervals of the permanent monitor wells. Figure 3-2 provides a cross section illustrating lithologies encountered in the 23 DPT borings and provides a general stratigraphic profile however detailed stratigraphic relationships of screened intervals in the 24 permanent monitor wells to lithologies shown on figure 3-2 are not illustrated or described in the text. This would help understand where (within the generalized stratigraphic profile shown on Figure 3-2) the wells are screened, horizontal and vertical relationships of screened intervals of well pairs and the lateral connectivity of saturated zones being monitored.

Response: The permanent monitoring wells in the area of the plume have been added to the cross section to show the screened intervals of the selected monitoring wells.

Comment 8: The text (pages 4-14 through 4 -16) states that the horizontal extent of the CVOC plume was defined to the north and west by non detections in DPT samples (analyzed on site) and to the south by samples collected from the 24 permanent monitoring wells. The southeastern extent of the CVOC plume does not appear to be clearly defined due to elevated concentrations reported from both the DPT samples (03SB19 and 03SB21) and the permanent monitoring well samples (GPT 03-26, GPT 03-27 and GPT 03-16) as compared to one CVOC non detect in well GPT 03-15 located slightly southeast of the other wells in the immediate vicinity. Uncertainty concerning the interval sampled is also indicated by "NA" (not available) in wells GPT 03-26 and GPT 03-27 compared with the 10 - 20 (feet) depth interval in southeasternmost well GPT 03-15 shown on Figure 4-5. Monitor well GPT 03-27 is reportedly (Appendix B) screened at the 30 to 35 (feet) depth interval, indicating a deeper sampling interval (and possibly a different saturated zone) than the other wells.

Hydrostratigraphic relationships could be clarified by addressing comment 6 (construction of a hydrogeologic cross section showing screened intervals and lithologies encountered during well installation). For example, the screened interval is not reported for GPT 03-26 (Table 4-4). Appendix B does not contain well construction diagrams for monitoring wells GPT 03-18 through GPT 03-31 so comparisons of screened intervals from original data could not be reproduced. Screened intervals given on Table 4-5 indicate that these wells were probably screened on opposite sides of the aquitard(s) implied by the discussion provided on page 3-8 through 3-9 and shown as "gray sandy clay" on Figure 3-2. This cannot be determined without a complete set of original data (well construction diagrams and boring logs) that contains a complete data set reporting well elevation, depth and screened intervals.

Response: Locations and screened intervals of selected monitoring wells have been added to the cross section to show the relationship of the lithologic units and well screens. The monitoring well construction diagrams for GPT 03-18 through GPT 03-31 have been added to the appendices. Tables and figures have been updated to show the correct monitoring well screen intervals. The downgradient monitoring well GPT-03-15 is screened from 10 to 20 feet, and the monitoring wells at the southwestern corner of the plume (GPT-03-26 [9 to 19 feet] and GPT-03-27 [30 to 35 feet]) are upgradient of monitoring well GPT-03-15, which Tetra Tech believes defines the horizontal extent of the groundwater plume.

Comment 9: Clarification is needed concerning the consistency of dilution factors (DAFs) and screening values (SSLs) used to evaluate the soil to groundwater pathway for contaminants of potential concern (COPCs). The text (page 6-8, paragraph 3) discusses SSL values and compares the DAF = 1.0 (most conservative) to the higher DAF = 20.0 allowed by EPA guidance. Most contaminants retained as COPCs on Table 6-2 appear to be screened using the more conservative DAF = 1.0 with the exception of benzo(a)pyrene (BAP). The SSL value (using a DAF=1.0) for BAP is reported as 410 MCL on Table 6-2, however with an MCL of 0.2 ppb the screening value would be 82.0 ppb. The maximum observed soil concentration is 210.0 ppb but the contaminant is not retained as a COPC for the soil to groundwater pathway, indicating that the higher DAF = 20 or 820MCL (1640.0 ppb) screening value was used for BAP. Conversely, an SSL value of 160MCL is shown (Table 6-2) for benz(a)anthracene which has no MCL so the applied dilution factor is unclear. SSL values utilizing DAF = 1 were consistently used to screen other COPCs for the subsurface soil to groundwater pathway (page 6-9 and 6-10, Table 6-4). It is noted that BAP is retained as a COPC for direct surface soil contact (Table 6-9).

Response: The screening for chemical migration from soils to groundwater presented in Tables 6-2 and 6-4 is based on a comparison of maximum detected concentrations to Soil Screening Levels (SSLs) calculated using a Dilution Attenuation Factor (DAF) of 1. The SSLs were calculated using the United States Environmental Protection Agency (USEPA) calculator referenced in footnote 5. The SSLs specifically developed for carcinogenic polycyclic aromatic hydrocarbons (cPAHs) were conservatively based on the Safe Drinking Water Act (SDWA) Maximum Contaminant Level (MCL) for benzo(a)pyrene (BaP) and appropriate physical constants for each particular cPAH (see table footnote 7). Two SSLs are actually presented in the tables (SSL-DAF1 and SSL-DAF20). For example, the SSL-DAF1 for BaP is 410 micrograms per kilogram (µg/kg), and the SSL-DAF20 is 8,200 µg/kg (i.e., 420 x 20 = 8,200 µg/kg). The maximum detected BaP concentration, 210 µg/kg, is less than both of these SSLs. As another point of reference, the maximum BaP concentration in soils is less than the most current MCL-based SSL (DAF1) published in the USEPA's Regional Screening Level table of 240 µg/kg.

Comment 10: The text (page 6-10, last paragraph) states that all COPCs except lead exceeded USEPA Region 9 PRGs then states (second sentence later) that lead exceeded screening criteria in one sample. The text discussion should simply state that lead exceeded the USEPA action level (15.0 ppb) in groundwater since action levels (Als) and MCLs are primary regulatory groundwater screening criteria.

Response: The referenced sentence will be changed to state that concentrations of lead reported for one sample exceeded the SDWA Action Level of 15 parts per billion (ppb).

Comment 11: Attempts at minimizing observed risks are noted. For example, the text (page 6-48, paragraph 2) states that cancer risks for the lifelong tress passer (child and adult) and the industrial worker exceed the MDEQ benchmark but not the EPA target risk range. This is not an appropriate evaluation or comparison of risk screening values as EPA rarely utilizes the 1 E-4 cancer risk value to establish remedial goals. Although MDEQ recognizes and appreciates the 1 E-4 to 1 E-6 risk range and the 1 E-4 risk occasionally allowed by EPA in some (not all) risk evaluations, MDEQ utilizes a cancer risk benchmark of 1 E-6 exclusively for establishing remedial goals. The text (page 6-49, paragraph 3) further states that both MDEQ and EPA cancer and non cancer risk benchmarks were exceeded for future residents due primarily to concentrations of vinyl chloride, arsenic and iron in groundwater and arsenic and PAHs in surface soil. The text then discusses "uncertainties associated with risk estimates developed for COPCs in groundwater", citing unlikelihood of residential use as the uncertainty. This is inappropriate since it is the residential scenario that is being evaluated. The text discussion should also point out that both USEPA MCLs and MDEQ TRGs were exceeded in groundwater occurrences of cis-1,2 DCE, TCE, vinyl chloride, methylene chloride and arsenic. The text (page 6-69, paragraph 3, last sentence) also states the ICLR for sediments (2 E-6) "marginally exceeded" the MDEQ benchmark of 1 E-6. It should be pointed out that the observed value is twice the screening value, which is not "marginal". The text should report the findings and not attempt to minimize the impact of the results.

Response: The referenced text on Pages 6-48 through 6-50 presents the results of the quantitative risk assessment and compares those results to both USEPA and MDEQ cancer and non-cancer risk benchmarks. The analysis is not intended to compare site concentrations to federal or state screening levels (please see the COPC selection tables for those comparisons) and is not indicating what may or may not be an appropriate remedial goal for the project. While the reviewer is correct in that USEPA rarely uses the 1E-04 cancer risk benchmark when calculating/selecting remedial goals, again, this narrative is not about remedial goals. As indicated in the text, however, the USEPA often compares the results of a quantitative risk assessment to the 1E-04 cumulative cancer risk assessment benchmark when determining if a remedial action is necessary for a site. Therefore, the USEPA benchmark is referenced in the narrative.

Regarding the "uncertainties" of the cumulative risk assessment results, it is standard risk assessment practice to include such information in a baseline human health risk assessment. Please see the Uncertainty Analysis information presented in Chapter 8 (Risk Characterization) of the Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A) (Interim Final,

December 1989) for a comprehensive discussion of the utility of such information. An assessment would not be considered complete without this information.

Comment 12: Land use control (LUC) measures should be established to restrict groundwater use in areas within and downgradient of the area of direct influence by contaminated groundwater from Site 3. LUC measures should also be established to restrict access to areas that pose a threat by direct contact with contaminated soils or sediments. A long term groundwater monitoring program should be developed to demonstrate effectiveness of the remedy and to monitor any changes in size or direction of movement of the contaminant plume.

Response: Land use controls (LUCs) and LTM were evaluated in the Site 3 FS and are part of the presumptive remedy for Site 3. Details of the LTM program will be developed during the design phase for the remedy.

Comment 13: The Screening Level Ecological Risk Assessment (SLERA, included as Section 7 and Appendix E of the RI Report) does not clarify why the exit from the full assessment was taken prior to step 3 (or 2B typically utilized by the Navy). The SLERA should incorporate a description of the site remedy and how it affects the reason for concluding the ecological risk evaluation process prior to the typical exit step. It would be wise to involve appropriate stakeholders in this evaluation and review process as apparently ecological risk has been minimized by this abbreviated assessment. NOAA and US Fish and Wildlife are the Natural Resource Trustees charged with ecological health in this region. Since several landfills (currently in remediation) are located adjacent to Canal 1 the input of stakeholders should be invited in case there is an interest that has been overlooked in the risk evaluation process concerning these landfills.

Consideration should also be given to areas of Canal 1 located outside of landfill site boundaries and that have not been investigated in association with the remedial activities at the numerous landfills the canal flows adjacent to. Ecological habitats located downstream of the numerous landfills adjacent to Canal 1 may be suffer cumulative risks from contaminants introduced into the ecosystem.

Response: As described in Section 7.5, the ecological risk assessment was carried through to Step 3A of the Baseline Risk Assessment Problem Formulation, which is the typical exit point. Potential risks that were identified in surface soil will be addressed by the cover component of the presumptive remedy.

Because most of the western half of NCBC Gulfport can potentially contribute contaminants to Canal No. 1, the RIs for the landfill sites adjacent to Canal No. 1 have focused on the potential for migration of contaminants from the landfills to the Canal. Comparison of the surface water and sediment data from sample locations adjacent to the waste disposal area at Site 3 to contaminants found in soil or groundwater in the waste disposal area at Site 3 did not support the scenario of Site 3 as a source of contaminants in Canal No. 1. The presumptive remedy strategy is designed to contain waste at the sites and prevent future migration of contaminants.

Discussion by the stakeholders of areas of Canal No. 1 not associated with landfills, in this case Site 3, should be separate from this RI. Further evaluation of areas of Canal No. 1 not directly linked to releases from the landfill sites is beyond the scope of this investigation.

If you have any questions with regard to this submittal, please feel free to contact me at (904) 730-4669, extension 215, or via e-mail at Gregory.Roof@TetraTech.com.

Sincerely,

Gregory Roof, P.E.
Task Order Manager

GSR/lc

c: Gordon Crane, NCBC Gulfport
Bob Merrill, MDEQ
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CTO 0041 Project File