

Draft - Response to Comments on Draft Streamlined Remedial Investigation/Feasibility Study Report for Site 7 - Former Beryllium Landfill

TO: John Aubert/NAVSEA
Tom Bass/WVDEP
Bruce Beach/USEPA

David McBride/NAVSEA
Dominic O'Connor/LANTDIV
Lou Williams/NAVSEA

FROM: G. Brett Doerr/CH2M HILL

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This memorandum compiles the responses to all comments received on the *Draft Streamlined Remedial Investigation/Feasibility Study Report for Site 7 – Former Beryllium Landfill at the Allegany Ballistics Laboratory Superfund Site, Rocket Center, West Virginia* (CH2M HILL, February 2001). To facilitate review, each comment has been reproduced in bold type, followed by the response. Please note that where applicable, the responses refer to pages in the original document, not the revised text with comments incorporated.

LANTDIV

- 1) **Page ES-1, Paragraph 3: I think this conflicts with the last sentence of the 1st paragraph of the introduction. i.e. Either remedial alternatives were evaluated or they were not? They were not. Suggest strike this last sentence.**

Comment incorporated. The last sentence of the first paragraph of the Introduction (page 1-1) has been deleted.

- 2) **Page ES-1, Paragraph 3: I agree, a little more detail into how the previous study relates to why a RI/FS is now being performed would help the clarity here.**

Please see response to Comment 1. Last sentence of first paragraph of the Introduction (page 1-1) has been deleted to eliminate conflict.

- 3) **Section 2.2, Page 2-1: Site 7 does not exist within Plant 1 or 2.**

The sentence is referring to the main administration building at Plant 1. Additionally, Site 7 is located with the Plant 1 boundary; Plant 1 is 1,577 acres, of which only 400 acres are the developed portion in the river floodplain. Site 7 is within the remaining undeveloped area.

- 4) **Section 2.2.1.3, Page 2-2, Third sentence: Down-sloped?**

Comment incorporated. The third sentence has been changed to read:

“The site is relatively level; the topography surrounding the site slopes gently downward to the north at approximately an 8-percent grade.”

- 5) **Section 2.2.1.4, Page 2-2, Last sentence: Is this stream valley a small ditch or canal? How far is it from the site? Is it dry other than rain events? Is it a potential sink from other anthropogenic sources?**

The stream valley is relatively small, compared to the North Branch Potomac River (see Figure 2-1). It is intermittent and likely flows only during storm events and the spring snow melt. It is located approximately 200 feet north of Site 7. Because it does cross (under) State Route 956, it likely receives runoff from the highway during storm events. In order that the readers have a better visual understanding of the relationship of the intermittent stream and Site 7, the last sentence of the paragraph has been changed to read:

“It is assumed that surface water from Site 7 flows northward approximately 200 feet into an intermittent stream valley and then down Knobly Mountain toward the North Branch Potomac River (Figure 2-1). It is likely that this intermittent stream valley also receives runoff from State Route 956 during storm events.”

- 6) **Section 2.2.1.7, Page 2-3, Last sentence: BTAG has a historical problem with comments like this. Although I agree with the statement, please remove it or add additional information supporting the statement and a clear definition of what significant means.**

Comment incorporated. Last sentence deleted.

- 7) **Section 2.2.3.2, Page 2-5, Last sentence: The EP tox was the precursor to the TCLP. The purpose is to determine HW disposal requirements of the waste in question. Conclusions regarding migration cannot be made using EP tox data. Suggest this sentence be removed or modified accordingly.**

Comment incorporated. As noted in the comment, the EP tox was a precursor to TCLP, which evaluates leaching potential. To clarify, the last sentence has been changed to read:

“However, EP Toxicity test results for mercury and silver were below regulatory levels for hazardous waste disposal, indicating very low potential for leaching of these two constituents.”

- 8) **Figure 2-1: Show where 5GW06 is on here as it's compared to 7GW01 for risk characterization.**

Comment incorporated. A tag line to Site 5 in Figure 2-1 has been added with the following text:

“General Location of Well 5GW06”

- 9) **Table 2-3: 2-Fluorobiphenyl, 2-fluorophenol, and 2,4,6-tribromophenol are surrogates added to the samples by the lab prior to semi-volatile extractions. Similarly, bromofluorobenzene is added to the samples by the lab prior to VOA analysis. I doubt these should be in this table.**

Comment incorporated. Those SVOCs were inadvertently added to the table because the database search regarded them as detected, even though they are surrogate recoveries. They have been removed.

- 10) **Section 3.1, Page 3-1, First paragraph: A brief discussion as to why groundwater is not of concern to eco should be qualified here.**

The ecological risk associated with groundwater contamination is discussed in Section 4.0 - Summary of Risk Characterization, Subsection 4.1.2 – Ecological Risk Summary. Section 3.0 is a presentation of the nature and extent of contamination.

- 11) **Section 3.2, Page 3-3, Third paragraph, last sentence: HH or eco?**

The concentrations of all organics were detected below their respective human health and ecological screening criteria. To clarify, the last sentence has been changed to read:

“The concentrations of all organic constituents detected in soil were well below their respective human health and ecological screening criteria (Table 3-2).”

- 12) **Table 3-1: In future documents can this info be shown graphically? It lessens the chance that a value will be overlooked. Just values and screening levels on an excel graph.**

If helpful, all constituent maximum concentrations can be graphically displayed versus screening criteria. It is recommended that this information be included as an appendix.

- 13) **Table 3-2: Add u flag note. Also any others that are missing.**

Comment incorporated. “U” flag and “UJ” flag definitions added to table.

- 14) **Table C-1: Use proper significant digits in the table.**

Comment incorporated. Multiple digits following decimal corrected.

- 15) **Table C-1: Define U in the footer.**

Comment incorporated. “U” flag definition added to footer of tables C-1 and C-2.

WVDEP

General Comment: The West Virginia Division of Environmental Protection/Office of Environmental Remediation will provide no comments for the RI/FS for Site 7.

USEPA

- 1) **Introduction, Page 1-1, First sentence: Replace “remedial” with “removal.”**

Comment incorporated.

- 2) **Introduction, Page 1-1, First paragraph, last sentence: No remedial alternatives were developed for Site 7 because it was determined that there was no unacceptable risk related to the site.**

Comment incorporated. Sentence deleted.

- 3) **Section 2.2.1.6, Page 2-3, Fourth sentence: Delete “, off of Plant 1,”.**

Comment incorporated.

- 4) **Tables 2-3 and 2-4: Delete constituents with only “U” and/or “B” flagged results.**

Comment incorporated. The following constituents have been removed from Table 2-3: arsenic, copper, selenium, and zinc from “Total Inorganic Constituents;” aluminum, arsenic, chromium, iron, selenium, sodium, and zinc from “Dissolved Inorganic Constituents.” Additionally, the results for bromofluorobenzene; 2-fluorobiphenyl; 2-fluorophenol; and 2,4,6-tribromophenol are surrogate recoveries and not constituent concentrations in the groundwater. Therefore, these four organic constituents have been removed from Table 2-3. In addition, the footnotes for “U” and “K” have been removed.

The following constituents have been removed from Table 2-4: acetone, alpha chlordane, gamma chlordane, and sodium. In addition, the footnote for “B” has been removed and the following footnote added: “U = Not detected above instrument quantitation limit.”

In addition to the above, methylene chloride and the footnote for “B” were removed from Table 2-1.

- 5) **Section 3.1, Page 3-1, Second paragraph, First sentence: Fourteen, not eighteen, inorganic constituents were detected in Site 7 groundwater samples.**

Comment incorporated. The word “eighteen” was replaced with “fourteen.” In addition, because four of the eight organic constituents have been removed from Table 2-3 (see response to comment #4 above), the word “Eight” has been replaced with “Four.”

- 6) **Section 3.1, Page 3-1, Fourth paragraph, First sentence: Because arsenic should be removed from Table 2-3 (see comment #4 above), delete this sentence.**

Comment incorporated.

- 7) **Section 3.1, Page 3-1, Fourth paragraph, Fourth sentence: Because arsenic should be removed from Table 2-3 (see comment #4 above), replace the word “five” with “four,” eliminate arsenic from the parenthetical list, and indicate the inorganic constituents in the list are all from total analyses.**

Comment incorporated. The sentence now reads:

“In addition, four inorganic (total analysis) constituents (i.e., antimony, chromium, iron, and manganese) were detected”

- 8) **Section 3.1, Page 3-2, First paragraph: Delete the second sentence.**

- Comment incorporated.
- 9) **Section 3.1, Page 3-2, Second paragraph: Delete second sentence.**
Comment incorporated.
- 10) **Section 3.1, Page 3-2, Third paragraph: Delete paragraph.**
Comment incorporated.
- 11) **Section 3.1, Page 3-2, Fourth paragraph: Delete second sentence.**
Comment incorporated.
- 12) **Section 3.1, Page 3-2, Fifth paragraph: Delete second sentence.**
Comment incorporated.
- 13) **Section 3.1, Page 3-2, Sixth paragraph: Delete third sentence.**
Comment incorporated. Additionally, the words "In addition," have been removed from the last sentence of the paragraph.
- 14) **Section 3.1, Page 3-2, Last paragraph: Delete the words "and dissolved."**
Only discussions of dissolved constituents not detected have been eliminated in this section. Dissolved manganese was detected.
- 15) **Section 3.2, Page 3-3, Second paragraph: Revise this paragraph to the removal of acetone and the two pesticides from Table 2-4.**
Comment incorporated. Second paragraph changed to read:
"Two VOCs (i.e., methylene chloride [MC] and 2-butanone) and one SVOC (i.e., bis(2ethylhexyl)phthalate) were detected in soil. The non-detect analytical results for 2-butanone were rejected by the data validator due to poor instrument response factor during initial calibration. The concentrations of all organic constituents detected in soil were well below their respective human health and ecological criteria (Table 3-2)."
- 16) **Section 3.2, Page 3-3, Third paragraph: Delete the second sentence.**
Comment incorporated. In addition, the first sentence has been deleted because the same content is in the first sentence of the fourth paragraph.
- 17) **Table 3-1: Eliminate constituents deleted from Table 2-3 and revise calculations and text accordingly**
Comment incorporated. Bromofluorobenzene; 2-fluorobiphenyl; 2-fluorophenol; 2,4,6-tribromophenol; total arsenic, copper, selenium, zinc; and all of the dissolved constituents removed from the table. Calculations redone using new methodology discussed in conference call. Non-cancer risk CAHI below 1; no cancer risk CAHI. Text in Section 4 revised to reflect revised screening process.
- 18) **Table 3-2: In SSL column, add "(HQ=0.1)" to column header and multiply non-cancer values by 0.1. Also, please add an SSL value for mercury at an SSL with**

HQ=0.1 of 0.2. Also, please add a new row for arsenic as a non-cancer risk constituent with a residential RBC (at HQ=0.1) of 2.3 and an industrial RBC (HQ=0.1) of 61. Also, please change all "averages" to "means," as eco concerns may be reduced by referencing means at Site 7 that are similar to or less than background. Also, add an SSL comparison column (at HQ=0.1) for maximum site concentrations. Finally, revise all calculations and related text accordingly.

Comment incorporated. Table 3-2 revised with above modifications. Calculations done using new methodology discussed in conference call. Non-cancer risk RBC CAHI of 0.73 (manganese) eliminated when manganese concentration compared to RBC at HQ=1; non-cancer risk SSL CAHI (manganese and mercury) of 1.4 reduced to 1.22 when manganese and mercury concentrations compared to SSL at HQ=0.5; no cancer risk CAHI. Text in Section 4 revised to reflect revised screening process.

- 19) **Section 4.1, Page 4-1, Step 1: Add the following text to the end of the first sentence: "to identify any constituents that should be considered for remediation," and replace "If a USEPA MCL has not been established for a constituent" with "Next" in second sentence.**

Comment incorporated. The paragraph now reads:

"the maximum site concentration of each detected constituent is compared to its USEPA MCL to identify any constituents that should be considered for remediation. Next, the maximum site concentration is then compared to its tapwater RBC at a hazard quotient (HQ) of 0.1."

- 20) **Section 4.1, Page 4-1, Step 1, Groundwater section: Delete the second sentence, move the sentence about lead to a new paragraph and reference the biokinetics model, and add antimony and chromium to the beginning of the third sentence.**

Comment incorporated. This section now reads:

"As shown in Table 3-1, there are no exceedances of screening criteria for the organic constituents detected in groundwater. Further, none of the inorganics (total analysis) detected exceeds its respective MCL. However, the maximum concentrations of antimony, chromium, iron, and manganese are above their respective adjusted tapwater RBCs. Therefore, these four inorganic constituents are carried forward in the screening process for groundwater. These exceedances are designated in the "Max" column in Table 3-1 with a superscripted letter "c."

The maximum concentration of lead (i.e., 30 µg/l) is twice the lead action level (i.e., 15 µg/l). However, as noted above, lead is not included in the general screening process; rather, its level is evaluated using a biokinetics model and discussed in Section 4.1.1."

- 21) **Section 4.1, Page 4-2, Step 2, Groundwater section: Eliminate lead discussion.**

Comment incorporated. Second sentence deleted.

- 22) **Section 4.1, Page 4-2, Step 3: If CAHI exceedances are identified, the constituents become COCs, not COPCs. Please delete the word "potential" and change "COPC" to "COC."**

Comment incorporated. Step 3 now reads:

"Following this calculation, the individual AHIs for non-cancer and cancer risks are summed separately and designated the "Cumulative AHI," or "CAHI". The CAHI for cancer risk is then multiplied by 10^{-6} . If the CAHI for non-cancer risk is less than the screening criterion of 1 and the CAHI for cancer risk is less than the screening criterion of 1×10^{-6} , no constituents of concern (COCs) are identified and the screening process ends. If one or both criteria are exceeded, the individual constituents responsible for the exceedance are considered COCs and the screening process advances to Step 4."

- 23) **Section 4.1, Page 4-2, Step 3, Groundwater section: Please delete the second sentence, add the phrase "do not" before "exceed" in the first sentence, and add the following text: "The non-cancer risk CAHI is 0.97 and the cancer CAHI is 0. This screening indicates that there is no unacceptable risk related to the groundwater at Site 7."**

Comment incorporated. Groundwater section now reads:

"For Site 7 groundwater there is no cancer-risk CAHI and the non-cancer risk CAHI is below 1 (i.e., 0.99). Therefore, this screening indicates that there is no unacceptable risk related to the groundwater at Site 7. Note that the lead concentration detected in well 7GW01 is addressed using the biokinetics model (discussed in Section 4.1.1)."

- 24) **Section 4.1, Page 4-2, Step 3, Soil section: Please add: "The non-cancer risk for aluminum, arsenic, iron, and manganese in soil at Site 7 is 2.32 and the cancer CAHI, related to arsenic is 6.9×10^{-6} , well within the 10^{-4} to 10^{-6} risk range the EPA accepts. These four constituents are considered COCs in soils at Site 7."**

Comment incorporated. In addition, the SSL comparison has been added to the screening process at this step. Therefore, the soil section now reads:

"The non-cancer risk RBC CAHI (i.e., 2.32), from aluminum, arsenic, iron, and manganese, is above the screening criterion of 1. The non-cancer risk SSL CAHI (i.e., 1.95), from antimony, chromium, manganese, and mercury, is also above the screening criterion of 1. Therefore, these seven constituents are considered COCs, and are designated as such in the RBC COC/SSL COC column of Table 3-2.

The cancer risk RBC CAHI (i.e., 6.9×10^{-6}) and cancer risk SSL CAHI (i.e., 1.15×10^{-4}) are both from arsenic and are both within the 10^{-4} to 10^{-6} risk range EPA accepts."

- 25) **Section 4.1, Pages 4-2 and 4-3, Step 4: Replace all instances of "COPC" with "COC" and "average" with "mean."**

Comment incorporated. In addition, because the screening process has been modified, the content of the original Step 4 has been modified. This step now reads:

"Because there are no COCs identified for groundwater in Step 3, it was determined that the groundwater at Site 7 poses no unacceptable risk and the screening process stopped there. Therefore, the remaining steps of the screening process apply only to soil.

For inorganic constituents in soil, if any of the cancer risk or non-cancer risk CAHIs exceed the screening criteria in Step 3, then for each AHI group that exceeds (i.e., non-cancer and/or cancer risk), the mean site concentration of each AHI constituent is calculated and these means are compared to the mean facility background concentrations. If the mean soil constituent concentration is less than the mean background concentration, the constituent is eliminated as a COC for the remaining screening steps."

- 26) **Section 4.1, Page 4-3, Step 4, Groundwater section: Eliminate this section because no COCs identified in Step 3 and add the text: "For groundwater the risk screening stopped at Step 3, where it was determined that the groundwater posed no unacceptable risk at Site 7."**

First part of comment incorporated. Second part of comment addressed in response to Comment #25 above.

- 27) **Section 4.1, Page 4-3, Step 4, Soil section: Replace all instances of "COPC" with "COC" and "average" with "mean."**

Comment incorporated. In addition, because the screening process has been modified, the content of the original Step 4 soil section has been modified. This section now reads:

"Of the seven COCs identified in Step 3 (i.e., aluminum, antimony, arsenic {cancer and non-cancer risk}, chromium, iron, manganese, and mercury), only the mean concentrations of manganese and mercury exceed the mean facility background concentrations. These exceedances are designated in the "Site Mean Above Background Mean?" column of Table 3-2."

- 28) **Section 4.1, Page 4-3, Step 5: Replace all instances of "COPC" with "COC."**

Comment incorporated. In addition, because the screening process has been modified, the content of the original Step 5 has been modified. This section now reads:

"For all constituents whose mean site concentration exceeds the mean facility background concentration, the CAHIs for non-cancer and cancer risks are recalculated (RBC CAHIs and SSL CAHIs separately). If the recalculated non-cancer risk CAHI is less than 1, the constituents are no longer considered COCs. If the recalculated cancer risk CAHI is in the range of 10^{-6} to 10^{-4} , the constituents are no longer considered COCs."

- 29) **Section 4.1, Page 4-3, Step 5, Groundwater section: Please eliminate this text and add that there were no COCs identified for groundwater at Site 7.**

Please see the first paragraph of the response to Comment #25 above.

- 30) **Section 4.1, Page 4-3, Step 5, Soil section: Please replace "COPC" with "COC" and add "at Site 7" after "soil" in the first sentence.**

Comment incorporated. In addition, because the screening process has been modified, the content of the original Step 5 soil section has been modified. This section now reads:

“The recalculated non-cancer risk RBC CAHI for soil at Site 7 is 0.73 (manganese only). Therefore, there are no remaining COCs for soil with respect to RBCs.

The recalculated non-cancer risk SSL CAHI for soil at Site 7 is 1.4 (manganese and mercury). However, if manganese and mercury are the only COCs, then the SSL screening values they are compared to should be at an HQ of 0.5. If this comparison is made, mercury is eliminated because the maximum value (i.e., 0.36 mg/kg) is less than the SSL at an HQ of 0.5 (i.e., 1 mg/kg). This leaves manganese as the only COC, because its maximum value (i.e., 1,160 mg/kg) is greater than its SSL (i.e., 950 mg/kg). Manganese is further discussed under the Human Health Risk Summary (Section 4.1.1) and Ecological Risk Summary (Section 4.1.2).”

31) Section 4.1, Page 4-3, Step 6: Please add “at a HQ=0.1 and” to the first sentence.

Comment incorporated. Because the screening process was modified, the SSL comparison was combined with the RBC comparison in Step 1 (and Step 6 was eliminated), which now reads:

“the maximum site concentration of each detected constituent is separately compared to its residential RBC at an HQ of 0.1 and its SSL at an HQ of 0.1. The comparisons are made separately because of the different risk exposure pathways. The RBC is a measure of risk associated with direct contact with soil constituents; the SSL is a measure of the potential for the constituent to leach to groundwater, resulting in an unacceptable level there.

Of the detected constituents presented in Table 3-2, only the maximum concentrations of four inorganics (i.e., aluminum, arsenic {cancer and non-cancer risk}, iron, and manganese) exceed their respective residential RBCs at a HQ of 0.1. These exceedances are designated in the “Max” column of Table 3-2 with a superscripted letter “d.”

The maximum concentrations of five inorganics (antimony, arsenic {cancer risk}, chromium, manganese, and mercury) exceed their respective SSL at an HQ of 0.1. These exceedances are designated in the “Max” column of Table 3-2 with a superscripted letter “e.”

Note that following additional removal activities at Site 7, the excavation bottom was re-sampled and analyzed for mercury only. The mercury result for this second sample, identified as B005-2, is used in the screening process.”

32) Section 4.1, Page 4-3, Step 5, Soil section: Please delete the last sentence of the first paragraph, add “It is assumed that there was a corresponding reduction in other constituents, including beryllium,” add discussion from new SSL column and CSSLs and comparison to mean facility as well as maximum facility background, delete “An SSL has not been established for mercury” from second paragraph, and replace “COPC” with “COC”.

As noted above, Section 6 has been eliminated, including the beryllium discussion because it was not considered a COC during the screening process. The SSL discussion was incorporated throughout the modified screening process. Additionally, the following text regarding beryllium was added to the soil inorganics discussion in Section 3.2:

“Of these 12 inorganics, the maximum concentrations of beryllium, lead, nickel, vanadium, and zinc exceed only the BTAG screening criteria. And of these five inorganics, only the average and maximum concentrations of beryllium are above the facility background average and maximum concentrations. However, the maximum beryllium concentration (i.e., 6.26 mg/kg) is from the original excavation bottom sample (i.e., B005). Additional soil was removed from the bottom of the excavation after this sample was collected. The concentration of mercury, which was the only constituent analyzed for in both the initial excavation bottom sample (i.e., B005) and the excavation bottom sample collected after additional soil removal (i.e., B005-2), declined by two orders of magnitude. Assuming a corresponding decline in the other inorganic constituents, the remaining beryllium concentrations are likely similar to those of the facility background concentrations (i.e., mean and maximum).”

- 33) **Section 4.1.1, Page 4-4, third paragraph: Please drop arsenic and lead and add antimony and chromium to the list and mention that the CAHIs were below screening levels.**

Comment incorporated. Third paragraph under Section 4.1.1 now reads:

“The potential for migration of site-related constituents and exposure through the groundwater pathway also was significantly reduced because of the landfill debris removal activities. Groundwater analytical data indicate that there has been no discernible impact to groundwater from constituents formerly present in the Site 7 landfill. Antimony, chromium, iron, and manganese were detected in Site 7 groundwater at concentrations exceeding comparison criteria, but the CAHI calculated for these constituents is below the USEPA screening value of 1. Additionally, the detected concentrations of antimony, iron, and manganese are less than those detected in the background monitoring well (i.e., 5GW06).”

- 34) **Section 4.1.1, Page 4-4: Please add a short discussion about the biokinetics modeling results for lead.**

Comment incorporated. The following text has been added after the third paragraph of Section 4.1.1:

“

- 35) **Section 4.1.1, Page 4-4, last paragraph: Please eliminate the sentence referencing the industrial RBC, eliminate the word “approved” with respect to the background soil levels, replace “COPC” with “COC,” and reference the adjusted hazard index in the next to last sentence.**

Comments incorporated. The last paragraph now reads:

"Aluminum, arsenic, iron, and manganese were detected in soil at concentrations greater than the adjusted (i.e., HQ=0.1) residential RBC screening criteria (USEPA, October 2000). However, the mean concentrations of aluminum, arsenic, and iron are below the facility background subsurface soil average concentrations. Therefore, when the CAHI is recalculated for manganese alone, the resulting value (i.e., 0.73) is below the USEPA screening level of 1. Based on this information, the constituent levels remaining in Site 7 soil do not pose a significant risk to human health over those of natural background levels."

36) Section 4.1.1, Page 4-4: Please add a summary paragraph about the SSL evaluation.

Comment incorporated. The following paragraphs have been added at the end of Section 4.1.1:

"Antimony, arsenic, chromium, manganese, and mercury were detected in soil at concentrations greater than the adjusted (i.e., HQ=0.1) SSL screening criteria (USEPA, October 2000). However, the mean concentrations of antimony, arsenic, and chromium are below the facility background subsurface soil average concentrations. Therefore, when the SSL CAHI is recalculated for manganese and mercury alone, the resulting value (i.e., 1.4) is just above the USEPA screening level of 1. However, with only these two COCs remaining, the SSL screening should be done at an HQ of 0.5. When this is done, mercury is eliminated as a COC and the resulting CAHI is based on manganese alone (i.e., 1.2). Although the average manganese concentration at Site 7 (i.e., 718 mg/kg) is greater than the average facility background manganese concentration (i.e., 585 mg/kg), the average is skewed by the maximum detected concentration (i.e., 1,160 mg/kg), which is less than the maximum facility background concentration (i.e., 1,240 mg/kg). Additionally, as noted in the groundwater discussion above, the concentration of manganese detected in Site 7 groundwater (i.e., 114 µg/l) is below that of background (i.e., 129 µg/l), suggesting the manganese concentrations in soil at Site 7 have not leached to groundwater to produce levels above those of natural background conditions.

Based on the above information, the constituent levels remaining in Site 7 soil and groundwater do not pose a human health risk over those of natural background levels."

37) Section 4.1.2.1, Page 4-5: Please add a short paragraph discussing the eco screening presented in Section 3 (pages 3-3 and 3-4) in relation to depth of samples and comparison of sample results (mean and spread, refer to Table 3-2) with background (mean and max) for the facility.

Comment incorporated. The following text has been added at the end of the second sentence of the third paragraph under Section 4.1.2.1:

"Of the 11 constituents whose maximum concentrations exceed BTAG screening criteria (i.e., aluminum, antimony, beryllium, chromium, iron, lead, manganese, mercury, nickel, vanadium, and zinc), only the mean and maximum levels of three (i.e., beryllium, manganese, and mercury) are not comparable to the facility background mean and maximum concentrations. Of these three, only the beryllium

concentration from the initial bottom excavation sample is dissimilar to the facility background concentrations. Because additional soil was removed, the remaining beryllium concentrations are believed to be similar to the facility background levels. Furthermore, all of the measured concentrations are for subsurface soil samples and not readily available for exposure.”

- 38) **Page 4-5: Please add a new section (4.1.4) on Risk Management and Uncertainty Analysis. In the new section discuss the uncertainty of risk from compounds without tox criteria, the eco screening risk based on samples from 2-3 feet deep that generally reflect facility background, and why we accept the potential leaching to groundwater risk indicated by SSLs (small area, not detected in groundwater, and sample results mostly close to background, etc.)**

Comment incorporated. Section 4.1.4 added as follows:

“The ultimate objective of evaluating the Site 7 data is to ensure that remaining constituent concentrations in site media do not pose potential current or long-term risks to human health and the environment over those of natural background conditions. In every evaluation, there are uncertainties with respect to the analytical data, the regulatory screening levels, and conclusions drawn with respect to potentially remaining risks. A rigorous effort is made to reduce those uncertainties, thereby managing potentially remaining risks.

For Site 7, soil and groundwater data that are used to evaluate risk were validated in order to increase the certainty that the reported concentrations are accurate and precise. However, not all constituents detected in Site 7 media have associated human health or ecological screening criteria (e.g., lead has no MCL or RBC; bis(2-ethylhexyl)phthalate has no flora or fauna BTAG limits; aluminum, antimony, arsenic, and beryllium have no fauna BTAG limits, etc.). Therefore, even with validated data some uncertainty remains regarding the risks associated with exposure to these constituents.

However, risk management decisions are made regarding these uncertainties that minimize their potential affects. For example, even though the ecological screening process identified several constituents above BTAG limits, the data were for soil collected 2 to 3 feet below the ground surface and, therefore, not readily available to ecological receptors. Additionally, most of the data were similar to levels reported for natural background conditions.

The SSL screening process indicated that manganese is present in soil at levels that may leach to groundwater and produce unacceptable concentrations. However, it should be noted that there is uncertainty in the SSL values because they have been calculated using general data, rather than site specific data. Furthermore, although the SSL screening indicates a potential leaching risk concerning manganese, the manganese level detected in groundwater at the site is similar to that detected in background groundwater.

Finally, it is recognized that although there is always uncertainty associated with any data or a risk screening process, the former Site 7 landfill area was relatively small (i.e., several feet), the waste material (i.e., contaminant source) has been removed,

potential exposure to remaining constituent concentrations in the soil and groundwater is unlikely, and the remaining concentrations are generally similar to background levels.”