7/19/2005

TRANSMITTAL

TO: George Landreth Shell
FROM: Dante Rodriguez, EPA

SUBJECT: Draft Comments on Risk Assessment, Soil & NAPL Operable Unit
Del Amo Superfund Site

CC: Larry Bone, Dow
John Dudley, URS
Safouh Sayed, DTSC

EPA has reviewed the report entitled, “Revised Draft Baseline Risk Assessment Report, Del Amo Site, Los Angeles, California,” by GeoSyntec Consultants & URS Corporation, dated May 19, 2005. This report was submitted pursuant to the Administrative Order on Consent, EPA Docket No. 92-13. Attached are EPA’s draft comments on this submittal. I still need to review some issues with my risk assessor, who is currently on vacation, before issuing our comments in final form. California DTSC has not yet completed its review, and will also submit its comments at a later date.

In order to facilitate your review of the comments, I have separated them into groups as follows:

(1) Clarity/Editorial/References Comments. The purpose of these comments is to improve the clarity of the presentation without changing the meaning or adding new ideas. These comments include editing wording; adding phrases, sentences, and references; and correcting spelling, grammar, and references.

(2) Additions Needed Comments. The purpose of these comments is to add information or ideas to the presentation, beyond merely clarifying the current presentation. This includes adding sentences, adding new discussions, and adding new tables and figures.

(3) Issue Comments. The purpose of these comments is to raise issues with the approach taken in the risk assessment. This includes issues where EPA questions or disagrees with an approach taken in the risk assessment or presentation thereof, and either asks for a response or directs a certain action to be taken. This also includes issues where EPA asks for an additional analysis to be performed and presented.

Given these draft comments, we should proceed with our planned meeting on July 26 to discuss the issues raised. As I mentioned earlier, I will do everything I can to ensure the appropriate participants attend the meeting. However, as the EPA risk assessor is on vacation until July 18, I cannot absolutely confirm his availability for the meeting until he returns. Likewise, the DTSC risk assessor is on vacation, but will return on July 5, enabling us to obtain confirmation from her next week.
I look forward to working with you and your team to address the issues and complete the risk assessment for the Soil & NAPL OU at the Del Amo Superfund site. I can be reached at (415) 972-3166, or via email at rodriguez.dante@epa.gov.
Comments On “Revised Draft Baseline Risk Assessment Report Del Amo Site Los Angeles, California” May 19, 2005

Clarity/Editorial/References Comments

1. Section 1.0, 2nd paragraph, 2nd sentence: Edit as follows, “The site This risk assessment excludes . . .”

2. Section 1.0, 2nd paragraph, 5th sentence: Correct the typographic error as follows, “This OU4 OU consists of . . .”

3. Section 1.0, 3rd paragraph, last sentence: Edit as follows, “. . . by a recent field survey, as discussed in Section 4.4.”

4. Section 2.3.2, 2nd paragraph, 4th sentence: Add as follows, “Elevated VOC concentrations were most prevalent in the tank farm, pits and trenches, and process areas . . .” Numerous red dots indicating elevated VOCs are seen in the pits and trenches area on Figure 8, which was specifically referenced two sentences prior.

5. Section 2.3.5, 2nd paragraph, last sentence: This sentence states that the deep soil gas data are judged to reflect volatilization of benzene from the groundwater. Delete this sentence. The rest of the sub-sections in this section merely describe where screening exceedances are located. Analyzing the cause of the exceedances, as this sentence does is incongruous.

6. Section 2.3.5, 3rd paragraph: In the last sentence, edit as follows, to make the tenses grammatically correct (since you are discussing the conclusions of a past report), “Additionally, comparison of the indoor air and outdoor air measurements presented in Tables 6 and 7 indicates indicated that it is was likely the ambient outdoor air quality has had a significant impact on the indoor air concentrations.”

7. Section 2.3.5, 4th paragraph: Edit the first and second sentences as follows, to make the tenses correct, “While the detected concentrations of the above compounds exceeded ambient air PRGs, it is uncertain whether this is was the result of subsurface sources. More specifically, the elevated VOC concentrations may be have been associated with ambient (background) air, recent activities conducted within the sampling buildings, . . .”

8. Section 2.3.7, 1st paragraph, last sentence: The reference “CH2M Hill, 1998” is a reference to the Groundwater Feasibility Study. This document, however, is not where groundwater health risks were evaluated. The correct reference would be to “Joint Groundwater Risk Assessment, Montrose and Del Amo Sites,” dated February 1998, by McLaren Hart and Dames & Moore. Make this change to the sentence and add this document to the references list in Section 9.0.
9. **Section 2.3.8, last paragraph, last sentence**: Edit as follows, "...which was used extensively for DDT production at the nearby Montrose Property."

10. **Section 3.1, 5th paragraph**: Edit the third sentence as follows, in order to maintain consistent use of the term throughout the section, "Data for 112 of the 254 non-RI/FS samples (44%) were found to be..."
    Edit the fourth sentence similarly to the third, "The 112 non-RI/FS samples considered suitable..."
    Insert a sentence after the current fourth sentence, indicating that the non-RI/FS data evaluation is documented in Appendix A.

11. **Section 3.1, last paragraph, 2nd sentence**: Edit as follows, "A summary of the types of chemicals detected at the site is presented in Table 9."

12. **Section 3.2.2, 2nd paragraph**: The second sentence states that the mobile lab data were determined to be sufficiently reliable to be used in the risk assessment, and provides a citation of "URS, 2000." After this sentence, add a sentence stating "This reference documents this data processing step."

13. **Section 3.2.3, 5th paragraph**: In the first bullet item, the last sentence references a USEPA document dated 1996, but no USEPA document is listed in the references with that date. Perhaps you meant to reference USEPA 2002c? Correct the reference appropriately.
    In the second bullet item, the first sentence incorrectly references a "DTSC, 2005" document, but the appropriate reference citation is "CalEPA, 2005." Correct this.

14. **Section 3.3, 1st paragraph**: Add to the end of the paragraph, "Furthermore, a hypothetically exposed receptor would only be exposed to contaminants within the building and land parcel where they work. Thus, each parcel should be a separate exposure area."

15. **Section 3.3, 2nd paragraph**: In item (1), the reference in the first sentence should be "URS, 2004," rather than 2003.
    In item (2), add the following after the existing sentence, "This includes soil gas samples that were converted into equivalent soil matrix values."
    In item (3), the last sentence references Section 4.0 for further details regarding the criterion used to screen metals. Where specifically in Section 4 are you referring the reader? Be more specific with your reference.

16. **Section 3.3, 3rd paragraph**: The sentence states that parcels were not selected as EAPCs if they did not meet the criteria mentioned in the paragraph above. However, Table 11 shows several more EAPC-defining criteria, including potentially elevated soil gas, potentially elevated indoor air concentrations, not having performed indoor air sampling, being surrounded by other EAPCs, and minimal data having been collected. Fix this statement as appropriate to reflect these other criteria.

17. **Section 3.3, 5th paragraph**: Edit the first sentence as follows, to make it read smoother, "Both Two of the potential receptors associated with each EAPC were trench workers..."
and hypothetical future residents and residential land use scenarios could potentially be associated with each EAPC.”

Edit the fourth and fifth sentences as follows, to convey the ideas more clearly, “In general, smaller exposure areas will have a higher EPC, because a receptor may be exposed to only a small hot spot area. If a receptor is exposed to a larger area that includes a small hot spot, their exposure to the hot spot is more limited because they are assumed to spend time in the other parts of the area too. Hot spots will not have a chance to be influenced by surrounding areas with lower levels of contamination. Risks for these the trench worker and residential scenarios were estimated based on . . .”

18. **Section 3.4, 3rd sentence:** Add to the sentence as follows, “. . . relative to Region IX or CAL-modified PRGs, as explained in the following subsections.”

19. **Section 3.4.1, 1st paragraph:** In the first sentence, add as follows, “Background concentrations are those chemical concentrations . . .”

   In the second sentence, spell out the meaning of the acronym “cPAHs,” as this is the first occurrence of the acronym in the report.

   Add to the fifth sentence as follows, “For this risk assessment, the background comparison for metals used . . .”

20. **Section 3.5, 2nd paragraph, last sentence:** The sentence states that for the Del Amo site, EPCs were calculated for each EAPC as a 95UCL of the arithmetic mean or the maximum observed concentration, whichever is lower. Clarify that this approach was used for the commercial exposure scenario, and that a different approach was used for the residential and trench worker exposure scenarios, whereby the maximum values were used. This is further explained in the last paragraph of the section.

21. **Section 3.5, last paragraph:** The first sentence references “the processing steps described in Section 3.3,” but Section 3.3 is the EAPC selection section, not data processing. Section 3.2 is the data processing section. Clarify whether Section 3.2 is your intended reference.

   Edit the second and third sentences as follows, to improve clarity, “For commercial exposures, the average (95UCL) was used as the RME input concentration, using all of the data collected within an EAPC were used to calculate the average and RME input concentrations for commercial exposures. For the hypothetical future resident and trench worker exposures, maximum values (maximum detect concentrations or ½ the detection limit, whichever was higher) of COPCs for each EAPC were used as the EPCs for the hypothetical future resident and trench worker.”

22. **Section 4.0, last paragraph, last sentence:** The sentence states that the methodology used to calculate the EPCs are also discussed in this section. Since this was also discussed in the previous section, you should add the following to the sentence, “The rationale for exposure area selection and the methodology used to calculate the exposure point concentration are also discussed further in this section.”

23. **Section 4.1, 2nd paragraph, last sentence:** Edit the sentence as follows, to make it more accurate, “Residential exposure pathways are indicated as only potentially complete in
the CSM due to the low probability of future residential site development hypothetical nature of this pathway."

24. Section 4.2.3, last sentence: The sentence references “CH2M Hill, 1998” as the groundwater risk assessment. However, Section 9.0 presents this reference as the Joint Groundwater FS, which is a different document than the Groundwater Risk Assessment. The correct reference would be to “Joint Groundwater Risk Assessment, Montrose and Del Amo Sites,” dated February 1998, by McLaren Hart and Dames & Moore. Make this change to the sentence and add this document to the references list in Section 9.0.

25. Section 4.3, 3rd paragraph: This section introduces the concept of LADDs and ADDs, but leaves the reader wondering where, in the report, they are calculated and presented. Add a sentence to this third paragraph that points the reader to Section 4.3.3, where LADDs and ADDs are dealt with further.

26. Section 4.3.1, 5th paragraph: Add to the first sentence as follows, to improve clarity, "Hypothetical future residents were assumed, for the RME scenario, to be exposed . . ."

27. Section 4.3.2, 1st paragraph, 1st sentence: Edit as follows, “Cancer risk or non-cancer hazard are calculated by first estimating the COPC concentration EPC to which an individual is exposed.”

28. Section 4.3.3.1, 1st equation: The equation says “ADD/LADD=”. Edit it to say “ADD or LADD=”. The way it is currently depicted makes it look like you are dividing ADD by LADD. This depiction also appears in Section 4.3.3.2 second paragraph, and Section 4.3.3.3 first paragraph and second paragraph (8th sentence – 2nd to last). Edit these items as well.

29. Section 4.3.3.2, 2nd paragraph, definition of variables: The definition of the variable “SA” incorrectly presents units as “cm^2.” Change it to “cm^2/day.”

30. Section 4.3.5, 4th paragraph: The first sentence references Table X.3.4. Is this “X” correct, or is this a typographical error. Correct this if it is incorrect.

31. Section 4.3.6.1, 5th paragraph: After the second sentence, add the following new sentence, “The source layer was assumed to have infinite thickness.”

The third sentence references “USEPA, 1997d,” but Section 9.0 contains no such reference. Did you intend to refer to USEPA, 1997b?

The fifth sentence refers to USEPA (2000). Is this reference supposed to be for 2000 a or b? Clarify and correct.

32. Section 4.3.6.1, 7th paragraph: Edit the second sentence as follows, to make it clearer, "Indoor air exposures were evaluated by first using the maximum detected chemical concentrations in groundwater on a site-wide basis (highest concentrations found at the whole site) in the Tier 1 vapor model."

Add to the end of the paragraph the following sentence, “The EPCs resulting from this modeling exercise are presented in Table 12c.”

33. Section 4.3.6.1, 9th paragraph: After the first sentence, add the following sentence, “An infinite thickness of the source was assumed.”
34. Section 4.3.6.2, 1st paragraph: The first sentence states that tier 2 modeling was conducted for EAPCs where tier 1 modeling resulted in cancer risk greater than \(10^{-6}\) and non-cancer hazard greater than 1. The “and” highlighted should be “or.”

Insert the following sentence after the first sentence, “Tier 2 vapor modeling was also conducted for EAPCs where Tier 1 modeling, using underlying groundwater contamination as the contaminant source, found such elevated risks.”

35. Section 4.4.1: Edit the fourth and fifth sentences as follows, “Portions of the site not developed with structures are either paved for parking, or developed with landscape material consisting of ornamental trees, lawns, low-growing common weeds, or bare ground—and shrubs, or undeveloped, with weeds or bare ground characterizing the surface. Land use adjacent to the site is mixed residential, light industrial, and commercial, and transportation (large streets and freeways).”


37. Section 6.1.1, 1st paragraph: The first sentence references Table 20. Add a reference to Figure 21 too, which depicts the risks on a map.

Edit the third and fourth sentences as follows, “... maximum detected concentrations in one of several from the soil samples collected from this parcel. This one soil sample with the maximum concentration had the only...”

Add a sentence after the 6th sentence, which mentions “elevated detection limits,” to clarify the meaning of that term, as follows, “Elevated detection limits are when some of the samples had higher detection limits than other samples for the same chemical. To account for this, those samples were assigned the value of one half the detection limits. These samples were called "elevated detection limit" samples, and they were used in the calculation of the 95UCL values.”

38. Section 6.1.1, 3rd paragraph, 3rd sentence: Edit the third sentence as follows, “... elevated risks are based on chemical data from only a few sample locations.”

39. Section 6.1.2, 1st paragraph: Edit the first sentence as follows, “... (2) Tier 1 plus Tier 2 modeled indoor air concentrations (Tier 2 considered only BTEX) from shallow and deep soils and groundwater; and...”

Edit the third sentence as follows, “Indoor air exposures from groundwater sources were evaluated on a site-wide basis for all COPCs (exposures calculated using highest concentrations found at the whole site) and...”

40. Section 6.1.2, 4th paragraph: Edit the first sentence as follows, “... inside or near the a building.”

Edit the third sentence as follows, “The inspections found that the buildings were used for a variety of functions...”

41. Section 6.1.2, 6th paragraph, 3rd sentence: Add the following to the sentence, “... benzene concentrations can range up to 0.13 mg/m\(^3\) in indoor air (see references in Table 28).”
42. Section 6.1.2.3, 1st paragraph, item #3, 2nd sentence: Edit the sentence as follows, "... it was not included in the risk characterization for that EAPC (even if the chemical is a subsurface COPC)."

43. Section 6.1.2.3, 3rd paragraph, 1st sentence: Add to the sentence as follows, "... are listed in Table 20 and shown in Figure 22 for the commercial worker scenario."

44. Section 6.1.2.4, 1st paragraph, 2nd sentence: The sentence appears to incorrectly refer to Table 26, where Table 25 seems to be the correct reference. Confirm and correct.

45. Section 6.1.2.4, 2nd paragraph: Edit the paragraph as follows, "Chemicals resulting in an elevated risk, based on... and non-cancer hazard greater than 1) and the Tier 1 model, were then evaluated on an EAPC-specific basis. This evaluation was conducted for benzene, PCE and PCE, estimating a cumulative risk. The This EAPC-specific evaluation was... and Appendix F). The 13 EAPCs were chosen based on whether they had adequate soil gas data. Soil gas data was deemed preferable for use in the Tier 2 modeling. The Tier 1 analysis was conducted for PCE and TCE, and the Tier 2 model was used for benzene. Individual and cumulative risk estimates for these three chemicals in the 13 EAPCs are presented in Table 27-26."

46. Section 6.2: Edit the third and fourth sentences as follows, "... and prevent inappropriate land uses inconsistent with current zoning at the site in the future are being evaluated as part of the FS. Residential exposure pathways are indicated as only potentially complete in the CSM (Section 4.1) due to the existing zoning and low probability of any other type of future residential site development hypothetical nature of this pathway."

47. Section 6.2.2.1, 2nd paragraph: The first sentence references Appendix H as the location of the tier 1 and tier 2 modeling. Appendix F contains the tier 2 modeling results, which seems to be what you were trying to reference. Confirm and correct.

Correct the typographical error in the second sentence, "... if both shallow and deep soil gas data were available..."

48. Section 6.2.2.1, 4th paragraph, 1st sentence: Edit as follows, "The elevated residential risk estimates were..."

49. Section 6.3, 2nd paragraph, 1st sentence: The sentence incorrectly cites the lead model as being a USEPA lead model, whereas it is a DTSC model (according to what you said earlier in the report). Correct this as appropriate

50. Section 7.0, 2nd paragraph: Edit the second sentence as follows, "... is also presented in Section 7.2 7.1." It appears that the reference to Section 7.2 is incorrect, as that section discussed exposure assumptions, not COPC selection and concentrations.

The third sentence references Section 7.3 and 7.4 as the places where exposure assessment and toxicity assessment are discussed. This appears to be incorrect, as Section 7.2 discusses exposure assessment and Section 7.3 discusses toxicity assessment. Confirm and correct this.

The fourth sentence references Section 7.5 as the location where the uncertainty in risk characterization is discussed, but it appears that the reference should be to Section 7.4. Confirm and correct this.
51. **Section 8.1.2.3, 2nd paragraph, 1st sentence:** Edit the sentence as follows, ". . . and were mid-above 1x10^4 at EAPC 19."

52. **Section 8.2:** Edit the second sentence as follows, ". . . and prevent inappropriate land uses inconsistent with current zoning at the site in the future . . . ."

   Edit the last sentence as follows, ". . . due to the existing zoning and low probability of any other type of future residential site development hypothetical nature of this exposure scenario."

53. **Section 9.0, American Society for Testing and Materials:** Add the acronym "(ASTM)" after the author.


   Under the author "Johnson, P.C. and R.A. Ettinger," add the acronym "(J&E)."

   The references listed under the author "URS" are out of place alphabetically. Relocate them appropriately to just before the USEPA entries.

54. **Table 8:** For the third column, edit the title as follows, "Number of Results Samples," in order to be consistent with the wording in the other tables. (Unless you had a good reason for calling the column "Results" rather than "Samples" in this table).

   In the "Note" section, add a note stating that the samples are from the water table zone.

55. **Table 11, bottom notes, item #4:** The note defines criteria #4 as being metal concentrations exceeding ambient background and/or residential PRG. This should be just an "and" statement, not an "and/or" statement. Edit accordingly.

56. **Figure 21:** EAPC #23 has a risk greater than 5x10^-5, so it should be colored as well. Correct this.

   Make a colored designation for parcels between 5x10^-5 and 10^-6.

   In the legend, the second colored designation from the top says that it depicts EAPCs where outdoor soil risk is greater than 5x10^-6. It should read 5x10^-5. Correct this.

   In the green box (above the title box), change the title "EAPCs with Hazard >1" to read "EAPCs with Hazard ≥1."

57. **Figure 22:** In the green box (above the title box), change the title "EAPCs with Hazard >1" to read "EAPCs with Hazard ≥1."

### Additions Needed Comments

58. **Section 3.1, 3rd paragraph:** Add a sentence to the paragraph that indicates to the reader where the RI/FS data set can be found. This would be easiest done by referencing the forthcoming Soil & NAPL RI report.

59. **Section 2.3.5, 3rd paragraph:** The first sentence uses the term "PEL/20." Define or explain this term, as its meaning would not be clear to readers unfamiliar with the project.
60. **Section 3.2.3, 5th paragraph:** The preceding paragraphs describe the soil gas-soil matrix conversions. Can you provide a reference to a past memo that further documents the conversions? If such a document is available, it can be referenced in a sentence inserted after the first sentence of the paragraph. (I briefly reviewed my files, but could not identify a document that showed the actually converted data. Perhaps URS can identify such a document.)

61. **Section 4.3.6, General:** The attenuation factors that were derived for shallow soils using the JEM (with no BTEX biodegradation assumption) are 8E-5 and 4E-5 for residential and commercial buildings, respectively. These alpha values predict that the soil gas concentrations will be reduced by a factor of 10,000 (1/8E-5) for residences and 30,000 (1/4E-5) for commercial buildings. Since these site-specific attenuation factors are outside the range recommended in EPA's Vapor Intrusion Guidance, some additional discussion is needed. Specifically, tell what site-specific inputs to the model were incorporated that led to these less conservative alpha values. Add this discussion to the report in an appropriate location, which could be Section 6.1.2 or 6.2.2, or Appendices E and F.

62. **Section 4.3.6.1, and other sections:** The draft risk assessment report had included modeling predictions from both the Tier 1 (JEM) and Tier 2 (DLM) models. However, in this revision, only the estimates for the Tier 2 are presented. Thus, the reader loses some important contextual information that was available in previous drafts. Provide Tier 1 modeling results for all parcels. Edit the report in the following locations to appropriately reference the information.

   a. **Section 4.3.6.1, 8th paragraph:** Tell where the tier 1 risk results (using the groundwater as the source) are located.

   b. **Section 6.1.2.4, 1st paragraph, 2nd sentence:** The sentence references Appendix D as the place where the Tier 1 chemical specific risk estimates for groundwater vapors are located. I could not locate all these calculations in Appendix D; it only showed the risk estimates for indoor air using one type of EPC, either the modeled or the measured values. Identify the location of calculations; if they have not been provided, add them to an appropriate appendix.

   c. **Appendix E:** This appendix only contains the model input parameters and equations, not the actual model results. Provide the model results.

63. **Section 4.4.2.1:** In the eighth sentence, add cattails as a common form of vegetation present. (There is a large patch of it adjacent to the Waste Pits, on the LADWP land.)

   The tenth sentence states that the vegetation provides negligible habitat for vertebrate wildlife. There are lots of rodents and gophers inhabiting the Waste Pits and adjacent open space parcels, and there are lots of birds living in the trees therein as well. Don’t these count? Modify the statement to reflect these observations.

64. **Section 6.4.1, 3rd paragraph:** The fourth sentence notes that the potential for unidentified indoor sources associated with normal buildings facilities and operations bias high the measured indoor air concentrations. This was never mentioned in Section 6.1.2, but it should be. This section, Section 6.4.1, is the summary section, and should only be
summarizing information that had been presented in the earlier sections. Add a discussion of this issue in an appropriate location in Section 6.1.2.

65. **Section 7.0, General**: It has been nearly five years since the last version of the Del Amo risk assessment was submitted to the agencies. Review and compare the toxicity values used in this current report, to current values. For those chemicals, for which new toxicity information may lead to a different predicted risk at the site (e.g., Naphthalene) than shown in this report, add a discussion in the uncertainties section (Section 7). Include a discussion of the changes to toxicity values and its effect on the current report; the discussion can be either qualitative or semi-quantitative.

66. **Figures, General**: Add a figure(s), like Figures 21 and 22, for the residential risk results.

67. **Response to Comments, EPA Comments, #8 and 9**: The comments pertained to the depths from ground surface to the top of contamination that the model would use as input parameters. The responses indicated that a sensitivity analysis was conducted, comparing the results of changing the depth from 7.5 feet to 5 feet (for the shallow contamination scenario), and that the 7.5 foot assumption (for shallow) and 30 foot assumption (for deep) were agreed upon in the 4/2/02 conference call (and documented in meeting minutes). The minutes indicated that the agencies agreed to the 7.5 foot value and 30 foot value if the Respondents include a discussion of this issue in the uncertainties section of the report. I could not locate such a discussion. Add a discussion of this item in the uncertainties section (Section 7.0).

**Issue Comments**

68. **Section 4.3.1, 5th paragraph, 2nd sentence**: The sentence states that for the CT residential scenario, the exposure duration was assumed to be 6 years for adults and 2 years for children, consistent with the average residence time of 9 years at one location. This does not appear to be consistent. Shouldn’t the exposure duration be 9 years for adults and children, if the average residence time is 9 years?

69. **Section 4.3.6, General**: The report provides a good evaluation of subsurface data in terms of calibrating the vapor intrusion model, but we would like to see greater attention paid to the air measurements, to provide a more balanced reporting of the data. Indoor air measurements were conducted on three separate occasions, under representative conditions (HVAC systems operating), and away from potential indoor sources, as determined by building inspections and vapor monitoring instruments. These data have not been the focus of the risk assessment, yet they offer the most direct measurements for evaluating worker exposures. Similar to the background evaluation for inorganics, indoor air results should also be statistically evaluated to determine if trends exist that are linked to subsurface contamination. Perform this evaluation and ascertain whether indoor levels of benzene differ spatially across the site. For example, do the indoor benzene levels correlate with subsurface contamination (e.g., NAPL areas) or show any other spatial trend? Do indoor benzene levels, for those buildings that were identified as using benzene related products, differ statistically from buildings that were not identified as having an indoor source?
Section 4.4.3: Edit the sentence as follows, "Based on the above information, there is no complete exposure pathway on-site to ecologically sensitive species ecological receptors, and, accordingly, no quantitative ecological assessment was conducted." Sensitive, endangered or threatened species are not the sole determining factors in ecological risk assessments. EPA policy for Superfund ecological risk assessment requires us to consider risk to all ecological receptors, thus the revision broadens the sentence.

Section 6.0, and other sections: There had been a comment on the original draft risk assessment regarding wording of the "acceptable risk range" concept. In responding to the comment, the agencies and PRPs had agreed that Dante and John would work together to compose some acceptable wording. However, we never followed up on this task. So, this group of comments addresses the wording of this subject.

a. Section 6.0, 3rd paragraph: Edit the paragraph as follows, "The maximum acceptable risk level for a site is typically between 10^4 and 10^6, and is selected on a case-by-case basis by USEPA. The risk range between 10^4 and 10^6 is commonly called the "discretionary risk range." For the purposes of this risk assessment section, estimated commercial and trench worker risks are compared to greater than a 5x10^5 benchmark will be discussed. This benchmark was selected based on preliminary parcel grouping criteria suggested by EPA for use in the site Feasibility Study where active remediation was not anticipated for those parcels with commercial/trench worker risks of less than 5x10^5 by EPA for discussion, rather than the 1x10^4 level, to provide an additional factor of safety when distinguishing which EAPCs definitely warrant remedial action (typically those with 1x10^4 risk or HI =1) from those that only may warrant remedial action. Risks estimated for hypothetical future residents are compared to both the mid-point of the acceptable discretionary risk range (1x10^5) and the upper bound of the acceptable discretionary risk range (1x10^4) to highlight those parcels where the risk is greatest. Both types of risks, commercial/trench worker and residential, are also compared to the 1x10^6 level."

b. Section 6.4.1, 3rd paragraph: The fifth sentence describes the RME risks for indoor air as being within the "NCP risk range." Use the term "NCP discretionary risk range" to reference the range from 10^4 to 10^6. Or just compare the risk estimates to the numbers 10^5, 10^6, etc. This would be consistent with the rest of the descriptions in Section 6.

c. Section 8.1.2.3, last paragraph, last sentence: Edit the sentence as follows, "... driven by indoor air data are within the NCP discretionary risk range (10^4 to 10^6), with the exception of EAPC 19."

d. Section 8.2.1, 1st paragraph, 1st sentence: Edit as follows, "... above the upper bound of the NCP discretionary risk range (>10^4) for the . . ."

e. Section 8.2.2, 1st paragraph, 1st sentence: Edit as follows, "... above the upper bound of the NCP discretionary risk range (>10^4) for . . ."

Section 6.1, and other sections: Risk estimates for any parcel that is at or above one in a million (10^6) excess lifetime cancer risk should be discussed in the risk characterization section. One in a million risk is EPA's point of departure. Any parcel-specific estimate
above this risk level will require a risk management decision, so it is important to discuss these risks in the body of the report. Make the following changes in the report to address this issue:

a. Section 6.1.1, 1st paragraph: The paragraph discusses the EAPCs that exceed the 5x10^{-5} risk level. Add to the paragraph a discussion or presentation of the parcels with risk between 5x10^{-5} and 1x10^{-6}.

b. Section 6.1.1, 3rd paragraph, last sentence: The sentence mentions that all risks (for this exposure pathway) were below 5x10^{-5}. Add to the paragraph a discussion or presentation of the parcels with risk between 5x10^{-5} and 1x10^{-6}.

c. Section 6.1.2.1, 1st paragraph: The paragraph mentions the EAPCs where the risks exceeded 5x10^{-5}. Add to the paragraph a discussion or presentation of the parcels with risk between 5x10^{-5} and 1x10^{-6}.

d. Section 6.1.2.2, 1st paragraph: The paragraph mentions the EAPCs where the risks exceeded 5x10^{-5}. Add to the paragraph a discussion or presentation of the parcels with risk between 5x10^{-5} and 1x10^{-6}.

e. Section 6.2.1, 1st paragraph: The paragraph discusses EAPCs with risks exceeding 10^{-5}. Add to the paragraph a discussion or presentation of the parcels with risk between 10^{-5} and 10^{-6}.

f. Figure 21: Make a colored designation for parcels between 5x10^{-5} and 10^{-6}.

g. Figure 22: Make a colored designation for parcels between 5x10^{-5} and 10^{-6}.

73. Section 6.1.2.3, and Appendix H, General: EPA does not agree with the exercise of selecting "most representative" indoor air concentrations (Appendix H). The decision matrix forces the user to choose between either indoor modeled or measured air concentrations as being "most representative" for each contaminant and for each building. The resulting indoor risk estimates (combining contaminant-specific risks) are a mixture of modeled and measured air values. This does not appear to be technically justified. Indoor measured and modeled data are fundamentally different. Indoor air measurements reflect actual exposures to an air pollutant under current conditions, whereas the indoor modeled values (if accurate), reflect incremental exposures due to the vapor intrusion pathway. Keep the modeled and measured data sets separate in the report, and present both risk estimates in Figure 22. Combining different data sets is not only technically flawed, but it also makes it nearly impossible to compare different parcels with the same risk metric or yardstick. Keeping the two data sets and risk estimates separate will also eliminate the need to develop criteria that attempt to identify the "most representative" data (as shown in Appendix H). Finally, the term "representative" was not defined in the report, and it appears to be used in a manner that is inconsistent with EPA exposure/risk assessment guidelines. Therefore, delete Section 6.1.2.3 and Appendix H.

74. Section 6.1.2.4, 2nd paragraph, 1st sentence: The sentence states that for the groundwater to indoor air pathway, EAPC-specific risks were only calculated for chemicals whose individual risk (based on site-wide maximum) exceeded 10^{-6} or HI=1. It seems that this approach leaves many chemicals out of the EAPC-specific risk calculation, making it less conservative. Shouldn't we use all the groundwater chemicals together for the EAPC-specific risk estimates?
George -

As requested, here are EPA's risk assessment comments in draft. We can discuss at our July 26 meeting. Thank you for all your efforts and great work by Ruth, Robbie, John, Erich, etc.

-Dante

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