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LETTER REGARDING U S NAVY RESPONSES TO REGULATOR COMMENTS ON DRAFT REMEDIAL INVESTIGATION REPORT AT NORTH GRINDER LANDFILL OPERABLE UNIT 1 (OU 1) NTC ORLANDO FL
8/16/1996
ABB ENVIRONMENTAL

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03.01.01.0001
ID 00093

August 16, 1996

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Commanding Officer
SOUTHNAVFACENGCOM
2155 Eagle Drive
N. Charleston, S.C. 29419-9010

Attn: **Ms. Barbara Nwokike, Code 187300**

Subject: Response to Comments, Draft Remedial Investigation Report,
North Grinder Landfill, Operable Unit OU1
EPA comments, dated June 11, 1996
FDEP comments dated May 30, 1996
FDEP comments, dated May 28, 1996

Dear Ms. Nwokike:

Attached is our response to EPA and FDEP comments for the North Grinder Landfill OU 1 Draft Remedial Investigation Report. These comments incorporate the results of discussions and decisions made during the June OPT meeting regarding surface soil contamination, and the discussions and decisions made regarding groundwater issues during the July OPT meeting.

Our intention is to begin incorporating the comments into the document and to resolve any issues during the September OPT meeting. Publication of the final report will only occur after acceptance of all responses. If you have questions, or need further assistance, please contact me at (407) 895-8845.

Very Truly Yours,
ABB ENVIRONMENTAL SERVICES, INC.

John P. Kaiser
Installation Manager

Enc.

cc: LCDR Catherine Ballinger (NTC, Orlando)
Wayne Hansel (SDIV)
Nancy Rodriguez (EPA)
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PROJECT REVIEW COMMENTS

DRAFT REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 1 (OU 1)
NORTH GRINDER LANDFILL
NTC, ORLANDO

Nancy Rodriguez, United States Environmental Protection Agency, Region 4

1. Page 2-26, Table 2-2 (and text)

Why were there no gross gamma, alpha, or beta soil analysis? A percentage of samples taken for non-radiation could have been screened for gamma at a minimum to confirm or rule out radium constituents.

Sampling of surface soils in landfill cover materials were taken to evaluate the quality of the cover and its adequacy as a cap or partial cap to prevent exposure of future site users to landfill materials. In the workplan, ABB-ES had always assumed that the cover materials were from a clean source, and there was no reason to presume that they might have been subject to radiological contamination. The intrusive work performed during the passive soil gas survey confirmed the assumption that the cover materials were, in fact, fill materials. Characterization of landfill materials was never a consideration during preparation of the work plan or during execution of the remedial investigation.

2. Page 3-3, Section 3.3

While the data presented in this Ecological Risk Assessment (ERA) does not indicate a potential significant risk to terrestrial ecological receptors, the surface water/sediment exposure pathway was not evaluated. Section 3.3 (Surface Water Hydrology) of the report does not present any information on surficial runoff pathways from OU 1 to nearby aquatic habitats such as Lake Spier and Lake Baldwin, nor was any surface water or sediment sampling and analysis conducted as part of this ERA. If a surficial runoff pathway from the site to nearby aquatic habitats does not exist, it should be so stated and documented in Section 3.3 of the report.

ABB-ES knows of no areas adjacent to the landfill that may have received storm water runoff from the landfill itself. More than one-half of the area over the former landfill is paved, and well-maintained grass with no signs of stress constitutes the remaining portion of the landfill. The storm sewer system that drains the parking lot and dormitory complex diverts stormwater east to Lake Baldwin. However, because of the pavement, none of this stormwater comes in contact with the landfill prior to being discharged to Lake Baldwin. ABB-ES will state in Section 3.3 and other appropriate sections of the RI report that there is no known pathway for landfill surficial runoff to nearby aquatic habitats.

3. Page 3-32

This section should be expanded to include the demography and land use within the immediate vicinity of the unit (i.e., across the street from the landfill along Burke Road, General Rees Road, and Antietam Street).

Noted. ABB-ES will expand Section 3.7 to address these concerns.

4. Page 4-20

"Background concentrations for both gross alpha and beta are from shallow wells only and may not represent background concentrations in the basal zone of the surficial aquifer". EPA recommends an additional set of background wells screened at comparable depths.

ABB-ES will install an intermediate and deep well pair upgradient of OU 1 at a location opposite the west-central portion of Building 206 along the east side of the chain link fence along General Rees Road. The deep well of this well pair will be continuously sampled with a split-spoon sampler during installation and the well will be screened to the base of the surficial aquifer to determine upgradient levels for radiological parameters at OU 1. The two wells will be useful for establishing background conditions for the intermediate and deepest portion of the surficial aquifer at NTC, Orlando. ABB-ES will also evaluate existing intermediate and deep wells (such as at Study Area 44, Herndon Annex, and OU 4) to determine their suitability for inclusion in a background data set. And lastly, ABB-ES will research the existing FDEP statewide background groundwater database determine the radiological activity in the intermediate and lower portions of the surficial aquifer in wells closest to OU 1.

5. Page 4-22, last 2 paragraphs

EPA agrees with the "most probable sources" discussion. Again, soil sampling in landfill or leachate would more likely indicate if radium paint or other technically enhanced naturally occurring radioactive material (NORM) (Table 4-6) is the source of elevated gross alpha and beta.

Comment 5 is noted. Characterization of landfill materials is not required as part of the presumptive remedy nor was it ever considered in the planning phase of this remedial investigation. In addition, Ra^{226} would be expected in downgradient shallow groundwater near the perimeter of the landfill if a radium paint source were present in the landfill. However, the concentration of Ra^{226} in groundwater collected from downgradient shallow monitoring wells does not exceed the concentrations of uranium or thorium isotopes, as would be expected if radium paint were the source of radioactivity.

6. Page 4-26, 2nd & 4th paragraphs

The hypothesis discussed here about potential natural sources for the elevated radionuclides is reasonable. Similar discussion in Section 4.4.2. Also, it would be expected that uranium and progeny along with K-40 are large natural radiation contributors, unenhanced by any landfill disposal practices.

Noted. We would remark, however, that uranium and progeny along with K^{40} are not found in deep wells furthest downgradient from the landfill, suggesting that the landfill leachate plays an active role in their presence in groundwater collected from monitoring wells around the landfill perimeter.

7. Page 5-1

"Site contaminants do not appear to be transported outside of the landfill source area at concentrations exceeding levels of concern"; EPA could not find off-site data to substantiate this statement. In Figure 4-2, several wells around the toe of the landfill have analytes in groundwater exceeding background or maximum contaminant levels (MCLs). However, EPA feels that enough information has been gathered to recommend off-site groundwater samples near the perimeter of the landfill to check the extent of outward migration.

ABB-ES will revise the subject statement to read "Site contaminants do not appear to be transported beyond areas adjacent to the landfill boundaries at concentrations exceeding levels of concern." ABB-ES recognizes that some of the wells near the mapped boundaries of the landfill have contaminants which exceed Federal and Florida MCLs. However, ABB-ES considers the wells around the toe of the landfill to be close enough to the landfill boundaries to characterize leachate near the toe of the landfill. The furthest downgradient wells (cluster OLD-U1-10, -11, -12, and cluster OLD-U1-16, -17, -18) have no contaminants at concentrations exceeding levels of concern and will serve as long term monitoring wells for OU 1.

7. Page 5-2, Sec. 5.2.2

EPA agrees that "one may reasonably conclude that the radiological contamination is due to mobilization of naturally occurring radionuclides rather than to buried radioactive material in the landfill". However, as discussed in earlier comment, without soil or leachate sampling for gross alpha, beta, and gamma in the landfill, it cannot be ruled out. Mobilization of any buried radium from paint or other DOD sources may be a long, slow release over decades or major release in the immediate or distant future. It is common to model fate and transport of radium for 10,000 years due to its 1600 year half-life. But without any historical data, and without any significant groundwater levels after 40-50 years it is highly unlikely that there is a significant radium source if there is one.

Noted.

8. Page 8-5, Sec. 8.2.3

Since there will be no drinking water pathway in the future, the above concern over an "overlooked" radium source may be unnecessary.

Noted. As part of the presumptive remedy for OU 1, the entire parcel as shown on Figure 2-1 of the BRAC Cleanup Plan (February 1996) will be subject to institutional controls prohibiting both groundwater use and excavation in the area of the landfill.

9. Page 8-5, Section 8.3

EPA agrees that a groundwater monitoring program for all wells shown in Figure 4-2 that exceed MCLs and background levels is needed to observe changes in groundwater contaminants as a function of time.

Noted.

PROJECT REVIEW COMMENTS

DRAFT REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 1 (OU 1)
NORTH GRINDER LANDFILL
NTC, ORLANDO

John Mitchell, Florida Department of Environmental Protection (FDEP)

1. **In the Executive Summary, the next to last paragraph on page iv states that the risk levels were within acceptable range for the USEPA. However, it should note that they exceed the state's risk level of 10^{-6}.**

   Noted. ABB-ES will make appropriate references in the document to Florida's 10^{-6} cancer risk level wherever references are made to USEPA's acceptable range of cancer risk levels.

2. **In Section 1.1 (Regulatory Background and Purpose) on page 2-2, an additional bullet for the Record of Decision (ROD) needs to be placed after the bullet for Remedial Investigation and Feasibility Study.**

   Noted.

3. **In Section 1.2 (Facility Background) on page 1-3, it should say that Area C is 1 mile west of the Main Base; not 4 miles east.**

   Noted.

4. (a) **In Section 2.1.1 (Aerial Photography Evaluation) on page 2-2, it indicates that photographs from Area C, which is 1 mile west of the Main Base, demonstrate the landfilling activities. I am unaware of landfilling activities in Area C, and how this would be relevant to the North Grinder Landfill which is more than a mile away.**

   (b) **Also in the last paragraph of this section it states that Figure 1-4 shows the North and South Grinder Parade Areas during the time of landfilling. These parade areas were not at the Grinder landfills during the time of landfilling. The parade fields were built on top of the landfill after it was closed. I recommend deleting the words "Parade Areas."**

   4(a) Section 2.1.1 should have alluded to Herndon Annex, not to Area C regarding landfilling activities. The reason this issue was brought into the discussion is because the landfills at Main Base, Herndon Annex, and McCoy Annex likely had similar operating practices in effect. Therefore, if refuse was burned in trenches at Herndon Annex prior to backfilling, then similar practices were probably followed at Main Base landfills.

   4(b) Noted. The words "Parade Areas" will be deleted.

5. **In Section 4.0 (Nature and Extent of Contamination), the second bullet states a statistical evaluation of the OU 1 data would be used to compare to background data, and when a constituent is shown to be significantly site related then it would be compared to Applicable, Relevant and Appropriate Requirements (ARARs) and To-be-considered (TBC) requirements and guidance. The document later states in Section 4.1 (Statistical Evaluation Approach) that if an analyte and/or compound is within ranges of expected background values then it is eliminated for risk assessment. This is not acceptable. For selection of Chemicals of Potential Concern (COPC), comparison must be made to the Florida Drinking Water Standards (Primary and Secondary), Florida Groundwater Guidance Concentrations (FGGC), Soil Cleanup Goals for Florida (SCG), Florida Surface Water Quality Standards (FSWQS), and Florida Sediment Quality Assessment Guidelines (SQAGs). The only comparison to background is for inorganic constituents, and a metal must not exceed twice the average background value determined in the NTC, Orlando, Main Base, Background Sampling Report (ABB-ES, 1995) or its promulgated standard. The only time a statistical evaluation of the inorganic constituents might be relevant, is if you compared it to all monitoring wells analyzed throughout the Main Base. You cannot compare organic compounds to background or through statistical evaluation unless that compound does not have a standard or guideline.**

   You have inferred from statements made in Section 4.1 that "if an analyte and/or compound is within ranges of expected background values then it is eliminated for risk assessment." This is not the concept which we wanted to impart with this discussion. We state in Section 4.1 that "When the statistical evaluation appears to indicate the contaminant may be site related, a preliminary evaluation was made by comparing to preliminary ARARs and TBCs...in order to focus the discussion on the contaminants that would most likely pose a concern or risk." The contaminants were not screened in Chapter 4 and eliminated from consideration in the risk assessment (Chapter 6). They were screened as described above to 'focus the discussion' on only those contaminants that, when considered with ARARs and TBCs, seemed to pose risk. Any comparisons of organic compounds to background concentrations was strictly for purposes of discussion and interpretation as we considered the "nature and extent" of contamination.

   ABB-ES proposes to leave the text largely as it is. The risk assessment (Chapter 6) selected COPCs by comparison to the appropriate standards and guidelines, as summarized in Table 6-2.

6. **In Section 4.3.2 (Surface Soil), on page 4-6 comparisons should be made to SCGs and USEPA Region III RBCs, with the lowest value used for screening.**

   Noted. See the response to comment No. 5, above.

7. **In Section 4.3.2.2 (Semivolatile Organics in Soil) on page 4-6 comparison is made to background. Organic compounds cannot be screened to background concentrations; see Comment No. 5. Also, PAHs were compared to an industrial scenario. All comparisons should be screened to residential and industrial values to be able to make adequate risk management decisions.**

   Noted. Screening against residential values is performed in the risk assessment (Chapter 6). Also see the response to comment No. 5, above.

8. **In Table 4-1 (Summary Statistics of Detected Analytes/Compounds in Surface Soil Samples), only inorganics can be compared to background screening values. The background screening value column is not applicable to the organic constituents detected; see Comment No. 5.**

   Noted. See the response to comment No. 5, above.

9. **In Section 4.3.2.5 (Inorganics in Soil) on page 4-10, comparison was only to the industrial scenario. Comparisons should be made to the residential scenario as well. The level of arsenic exceeded the residential scenario in the average of detections from 11-of-16 samples, and also exceeded the reference value (1.04 mg/kg).**

   Noted. Screening against residential values is performed in the risk assessment (Chapter 6). Also see the response to comment No. 5, above.

10. **In Section 4.3.2.6 (Interpretation of Surface Soil Data) on page 4-10, organics are compared to background; see Comment No. 5. Also, on page 4-12, I agree that the arsenic may be related to pesticide use. However, this still poses a risk due to the exceedances of the residential SCGs for arsenic and dieldrin.**

    Noted. See the response to comment No. 5, above.

11. **In Section 4.3.3.1 (Volatile Organics in Groundwater) on page 4-13, it states the DPT field screening results only showed exceedance of Federal MCLs for VOCs (benzene and tetrachloroethylene (PCE) in five locations. The Florida Primary Drinking Water Standard (FPDWS), which is lower than the Federal MCL, should have been used for comparison. The four additional sampling locations which exceeded the FPDWS were: benzene (U1P03702; U1P03901; U1P05702; and PCE (U1P00603).**

    Noted. ABB-ES will revise the discussion and table to reflect the FPDWSs.

12. **In Section 4.3.3.5 (Inorganics in Groundwater), on page 4-20 it states that beryllium, vanadium, thallium and manganese exceeded the FDEP Guideline or FGGC. Only the vanadium value is an actual guideline. Beryllium and thallium have promulgated FPDWS of 4 $\mu g/\ell$ and 2 $\mu g/\ell$, respectively. Manganese has a promulgated Florida Secondary Drinking Water Standard (FSDWS) of 50 $\mu g/\ell$.**

Noted. ABB-ES will revise page 4-20 accordingly.

13. **Section 4.3.3.7 (Bacteriological Indicators) is rather confusing. The first two sentences indicate that nine monitoring wells will be sampled for parameters Eh, DO, methane (CH4), and percent Volatile Suspended Solids (VSS) out of Total Suspended Solids (TSS). Yet, later in the paragraph, it states these parameters were only analyzed for samples from three wells containing the highest gross alpha and beta. Please clarify this section.**

ABB-ES will revise Section 4.3.3.7 by eliminating the second sentence and adding other clarifying remarks. The new section will read as follows:

"Nine wells were resampled for parameters indicative of anaerobic microbial activity to test the hypothesis that this activity is causing mobilization of naturally occurring radionuclides (Table 4-5). Two well clusters, one upgradient (OLD-U1-01, -02, and -03) and one downgradient (OLD-U1-13, -14, and -15), each with an intermediate or deep well screened in groundwater having elevated gross alpha and beta, were included to identify differences in the aquifer with depth. The remaining three wells (OLD-U1-06, -26, and -27) also displayed elevated gross alpha and beta in groundwater from the landfill perimeter. Four analyses (pH, conductivity, Eh, and DO) were performed in the field at all nine wells. Samples for methane (CH_4), TSS, and VSS analyses were only collected from the three wells from which previous samples had the highest gross alpha and beta (OLD-U1-03, OLD-U1-14, and OLD-U1-27). The analytical results are summarized in Table 4-5, which includes the previous gross alpha and beta, total dissolved solids (TDS), and total phosphorus results for comparison."

14. **Section 4.3.3.8 (Interpretation of Groundwater Data):**

a. **I do not agree with the hypothesis in the third complete paragraph on page 4-26. The downgradient monitoring well clusters OLD-U1-10, -11, and -12 and OLD-U1-16, -17, and -18, which did not have elevated gross alpha and gross beta, are 600 feet from the edge of the landfill and the downgradient monitoring wells which had exceedances of radionuclides. The leading edge of a plume could be somewhere between these well clusters. I recommend deleting this paragraph.**

While the leading edge of a plume originating upgradient from the landfill could be somewhere between the northern boundary of the landfill and the furthest downgradient well clusters, we maintain that a more likely scenario is the one described in the third complete paragraph of page 4-26. It is our interpretation that an upgradient source (i.e., a source southwest of OU 1) would likely have a rather broad well-distributed plume by the time it reaches wells downgradient from the North Grinder Landfill. The fact that the two furthest downgradient well clusters have low gross alpha and gross beta activity strengthens the interpretation presented in the report.

b. **On page 4-27, the last phrase ("the environment would be more") of the last line does not make any sense within the sentence; please clarify or correct.**

The phrase has been corrected to read "...the environment would be more oxidizing and, as a result, ...".

c. **On page 4-29, comparing FDEP's statewide background groundwater database with the OU 1 data, using only the gross alpha and gross beta data from wells located within the St. John's River Water Management District, would only be appropriate if the depth of the well screens and the type of soil at the screened depth were known. It may provide a general comparison. It would be better to have a NTC, Orlando background value for the intermediate and deep portions of the surficial aquifer to adequately enhance the hypothesis. The only background values we have are from the shallow portion of the surficial aquifer. However, in the few monitoring wells in the deeper portion of the surficial aquifer at other sites at NTC, Orlando, radionuclides haven't been present.**

Both the FDEP and OU 1 groundwater data sets represent the surficial aquifer from shallow to deep depths. Although the lithology at the screened section of the FDEP background wells is not known, the depths range from 6 to 86 feet bls (see Appendix I-5, pages I-5-126 and 127). The OU 1 deep wells ranged from 47.5 to 69.5 feet bls, and represent 33.3 percent of the OU 1 data set. The percentage of wells with depths ranging from 46 to 86 feet in the FDEP data set is 23.3. Even though there is a higher percentage of shallow wells represented in the FDEP data set, the majority of elevated gross alpha and beta values were from wells 45 feet or less in depth. Nevertheless, the median values for gross alpha were 3.7 and 3.0 for the OU 1 and FDEP data sets, respectively, and gross beta were 7.2 and 4.65, respectively.

The intention of the comparison to the FDEP data set, which was the only one available, was to give a perspective of the elevated radioactivity at OU 1 relative to a larger area. The higher gross beta population at OU 1 suggested that the landfill, which is unique to the OU 1 data set, is a probable cause for the elevated radioactivity. However, ABB-ES agrees that additional monitoring wells that screen the deeper zones of the surficial aquifer further upgradient would help validate this hypothesis (see the response to EPA question No. 4).

15. **In Section 5.1 (Potential Routes of Migration), it states that "contaminants do not appear to be transported outside of the landfill source area at concentrations exceeding levels of concern." This is not correct. Monitoring well OLD-U1-14, which is on the downgradient side of the landfill, has a gross alpha value of 37.8 pCi/ℓ which is more than double the FPDWS of 15 pCi/ℓ. This well is approximately 150 feet from the defined edge of the landfill shown in Figure 4-2.**

ABB-ES should have used the word "site" instead of "landfill source area". The discussion referred to the furthest downgradient well clusters (i.e., cluster OLD-U1-10, -11, and -12, and cluster OLD-U1-16, -17, and -18). These are the clusters which will be utilized during long term groundwater monitoring.

16. **In Section 5.2 (Persistence and Fate of OU 1 Contaminants), subsection 5.2.1 (SVOCs), on page 5-2 it states that "the elevated PAHs are not expected to affect the quality of the landfill cover." This is based on the presumption the landfill cover will remain the same. However, as NTC, Orlando is closing and the property being transferred, the presumption is invalid. It needs to be stated that the proposed reuse for the area at OU 1 is a recreational park (i.e., playgrounds; ball fields; etc.). The old barracks buildings and the parking lots will likely be removed and the soils exposed.**

ABB-ES will delete the last three sentences of Section 5.2 and will add a final sentence which will read "No PAHs have been detected in any of the groundwater analyses at OU 1."

17. **Section 6.1 (Human Health Risk Assessment) (HHRA):**

a. **On page 6-1, it states that FDEP guidance will be considered in the HHRA. Florida Drinking Water Standards (FDWS)(i.e., primary, secondary, and minimum criteria groundwater standards) are promulgated in rule and must be considered as ARARs; not guidance. The lowest promulgated or screening value from federal or state requirements or guidance should be used in the HHRA.**

The reference to Florida guidance was with respect to guidance for conducting risk assessments. Under the presumptive remedy which provides for institutional controls to prevent use of the groundwater as a source of drinking water, it was not considered necessary to conduct a comparison of groundwater quality beneath the landfill to Florida Drinking Water Standards and guidance concentrations. Per recent discussions, ABB-ES will include a comparison of groundwater quality to Florida Drinking Water Standards and guidelines in the risk assessment to demonstrate that the groundwater is unsuitable as a source of drinking water and therefore requires institutional controls to prevent such use.

b. **In Subsection 6.1.1.2 (Evaluate Quantitation Limits) on page 6-2, rephrase the end of the first sentence to read "...and Federal MCLs, FDWS, FGGC for groundwater;..."; delete potentially used for drinking water. Also, in this subsection on page 6-3, it indicates that soil contamination does not have a large impact overall, because residential use is prohibited. As stated in Comment No. 16, this is a closure facility and this presumption cannot be made. Risk screening for soils should be for residential values.**

ABB-ES will revise the end of the first sentence to read "...and federal MCLs, FDWS, FGGC for groundwater..." and will delete "potentially used for drinking water". On page 6-3, the following clarification will be included: "...because residential use will be prohibited by institutional controls." The screening process which is part of CPC selection did use Florida residential soil cleanup goals as a conservative screening measure. No revision with respect to this item will be made.

c. **In Subsection 6.1.2.2 (Risk-Based Screening), the first paragraph of this section states that groundwater will not be evaluated for risk as there are no potential users of the drinking water. This aquifer is classified as a G-II aquifer and is a potable water source. A risk assessment is required for the drinking water. Also, it states that comparisons will be made to FDWS and FGGC, but that "this comparison is not conducted to assess human health risk." Many state FDWS and FGGC are risk based; calculations are based on a risk factor of 10^{-6} or a Hazard Quotient of 1.**

In the third paragraph of this subsection, the State's SCG for lead of 500 mg/kg should be noted.

Per recent discussions, ABB-ES will include a comparison of groundwater quality to Florida Drinking Water Standards and guidelines in the risk assessment to demonstrate that the groundwater is unsuitable, based on human health considerations, as a source of drinking water and therefore requires institutional controls to prevent such use.

The State's SCG for lead of 500 mg/kg will be noted in the third paragraph of this subsection.

d. **In Subsection 6.1.2.4 (Regulatory Guidance) on page 6-9, the last phrase of the first paragraph should indicate that the "other FDEP guidance" used is the FGGC (June, 1994). Also, in the second paragraph, it should note that the SCGs leachability numbers are for organic constituents only.**

The last "sentence" of this subsection is an incomplete sentence. However, it implies that contaminants in groundwater would be considered only "when the drinking water scenarios are present or realistically expected." A quantitative risk assessment must still be performed on the groundwater due to the aquifer being classified as G-II (potable).

The first paragraph will be revised to indicate that the Florida Groundwater Guidance Concentrations (June 1994) are also used. In the second paragraph it will be noted that SCG leachability numbers are available only for organics.

Per recent discussions, ABB-ES will include a comparison of groundwater quality to Florida Drinking Water Standards and guidelines in the risk assessment to demonstrate that the groundwater is unsuitable, based on human health considerations, as a source of drinking water and therefore requires institutional controls to prevent such use. The phrase "...when drinking water scenarios are present or realistically expected" will be deleted.

e. **In Subsection 6.1.2.5 (Surface Soil) on page 6-10, Total Petroleum Hydrocarbons (TPHs) were selected as Human Health Contaminants of Potential Concern (HHCPC). This is not relevant to a CERCLA risk assessment. TPH values are relevant to petroleum contaminated soils evaluated under Chapter 62-770 (F.A.C.).**

TPH will be deleted from the list of CPCs.

f. **In Table 6-2 (Selection of HHCPC on page 6-11, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, and chrysene should not be included as HHCPC as they do not exceed their SCG or RBC.**

These compounds were retained as CPCs because they are members of a class of compounds which includes one or more CPCs as explained in the footnotes to Table 6-2. This approach is consistent with section 5.9.2 of Risk Assessment Guidance for Superfund (RAGS), 1989.

g. **In Subsection 6.1.2.7 (Groundwater), the last paragraph states a quantitative risk assessment will not be performed based on the presumption of no groundwater usage and deed restriction. This is not acceptable. Please refer to Comments 17.c and 17.d. Also, this paragraph indicates that MCLs were not exceeded downgradient of the landfill. This is incorrect. Downgradient monitoring wells which exceeded MCLs include OLD-U1-14 (gross alpha = 37.8 pCi/ℓ), OLD-U1-08 (thallium - 4.6 μg/ℓ), OLD-U1-23 (iron = 1980 μg/ℓ), and OLD-U1-17 (iron = 2420 μg/ℓ). The FDWS for gross alpha, thallium, and iron is 15 pCi/ℓ, 2 μg/ℓ, and 300 μg/ℓ, respectively.**

Although a quantitative risk assessment will not be conducted, per recent discussions, ABB-ES will include a comparison of groundwater quality to Florida Drinking Water Standards and guidelines in the risk assessment to demonstrate that the groundwater is unsuitable, based on human health considerations, as a source of drinking water and therefore requires institutional controls to prevent such use.

This paragraph will be revised to indicate that the area where MCLs are exceeded will be included in the landfill area which will be subject to institutional controls that prevent use of the groundwater as a drinking water source.

h. **In Subsection 6.1.3.1 (Characterization of Exposure Setting) on page 6-17, the second paragraph uses a presumptive remedy of institutional controls for future land use. This is inappropriate at this site as the proposed reuse of this site after base closure is for active recreation (i.e., play grounds; ball fields; etc.). The site is directly across the street from a residential area; indicating it is likely to be used daily by local children and adults. A residential scenario is appropriate for this site.**

Per recent discussions, institutional controls will be placed on the property to prohibit residential use of the property. The planned future use is recreational. The risk assessment will be based on the planned recreational use.

i. **The Subsection 6.1.3.2 (Identification of Exposure Pathways and Receptors) uses the presumptive remedy scenario throughout for soil and groundwater. As stated previously, this is inappropriate based on the proposed reuse of the site, and the classification of the aquifer (G-II). Please see previous comments.**

Although a quantitative risk assessment will not be conducted, per recent discussions, ABB-ES will include a comparison of groundwater quality to Florida Drinking Water Standards and guidelines in the risk assessment to demonstrate that the groundwater is unsuitable, based on human health considerations, as a source of drinking water and therefore requires institutional controls to prevent such use.

Per recent discussions, institutional controls will be placed on the property to prohibit residential use of the property. The planned future use is recreational. The risk assessment will be based on the planned recreational use.

j. **Table 6-4 (Summary of Human Exposure Pathways) on page 6-19 needs to include groundwater and surface soil for evaluation of a resident related to future land use.**

Although a quantitative risk assessment will not be conducted, per recent discussions, ABB-ES will include a comparison of groundwater quality to Florida Drinking Water Standards and guidelines in the risk assessment to demonstrate that the groundwater is unsuitable, based on human health considerations, as a source of drinking water and therefore requires institutional controls to prevent such use.

Per recent discussions, institutional controls will be placed on the property to prohibit residential use of the property. The planned future use is recreational. The risk assessment will be based on the planned recreational use.

k. **In Subsection 6.1.5 (Risk Characterization), on page 6-32 carcinogenic risk assessment needs to be compared to the State's acceptable risk, as well as USEPA's. It should state that the State will not accept risk greater than 10^{-6}.**

This paragraph will be revised by adding, "The Florida DEP has indicated that 10^{-6} is it's cancer risk level of concern."

Also, on page 6-41, related to the uncertainty of land use, it indicates the decision of using institutional controls prohibiting residential use. This needs to be removed; see previous comments.

Per recent discussions, institutional controls will be placed on the property to prohibit residential use of the property.

These compounds were retained as CPCs because they are members of a class of compounds which includes one or more CPCs as explained in the footnotes to Table 6-2. This approach is consistent with section 5.9.2 of Risk Assessment Guidance for Superfund (RAGS), 1989. This will be clarified in the text which explains CPC selection as noted previously.

Per recent discussions, institutional controls will be placed on the property to prohibit residential use of the property.

p. **In Section 6.1.7 (Remedial Goal Options) only the USEPA RGOs are considered. It needs to show that risk exceeds the State requirement of 10^{-6} and a HQ of 1. The risks for groundwater also need to be assessed.**

This section will be revised to identify those soil analytes with exposure point concentrations which exceed ARARs, Florida Soil Cleanup Goals or which are associated with cancer risk greater than 10^{-6} or a hazard index greater than 1 for current and planned land uses.

Although a quantitative risk assessment will not be conducted, per recent discussions, ABB-ES will include a comparison of groundwater quality to Florida Drinking Water Standards and guidelines in the risk assessment to demonstrate that the groundwater is unsuitable, based on human health considerations, as a source of drinking water and therefore requires institutional controls to prevent such use.

18. **Section 8.0 (Summary)**

a. **In Subsection 8.1.1 (Nature and Extent) on page 8-1, the first paragraph discusses the statistical comparison of all constituents to background. This statistical comparison is not acceptable. Also, organic compounds cannot be compared to background. Please refer to previous comments.**

The statistical analysis was conducted to determine which analytes are likely to be related to some type of site-related activities and which analytes that appear to be consistent with background conditions. This statistical analysis was used in conjunction with the background comparison in the risk assessment tat was conducted according to USEPA Region IV Guidance to draw conclusions about the list of analytes that are site-related.

The statistical analysis was not used to eliminate any analytes (especially organics) from the risk assessment. The simplistic background comparison used in the risk assessment has a tendency to draw conclusions that analytes are inconsistent with background based on single values that do not reflect the actual distribution of concentrations at the site (Impact of Background Screening on Selection of Contaminants of Potential Concern and Risk Estimates for Soil, Ninth Annual Conference on Contaminated Soils, Amherst, MA, October 1994, M.J. Murphy and J. Peters). The combination of the two background comparison approaches provides a broader perspective for decision-making.

b. **In Subsection 8.2.3 (Risk Assessment for Groundwater) on page 8-5, there is no assessment; however, one is necessary. Please see previous comments.**

Although a quantitative risk assessment will not be conducted, per recent discussions, ABB-ES will include a comparison of groundwater quality to Florida Drinking Water Standards and guidelines in the risk assessment to demonstrate that the groundwater is unsuitable, based on human health considerations, as a source of drinking water and therefore requires institutional controls to prevent such use. This section of the report will be revised accordingly.

c. **In Subsection 8.3 (Conclusions), on page 8-5, I do not concur with the conclusions, as can be attested to by my previous comments. The first bullet needs to indicate that surface soils pose a risk unacceptable to State requirements as they relate to a residential scenario.**

ABB-ES will reword the first bullet to include the levels of risk under a recreational scenario that would be incurred, and will also indicate that they exceed the guidelines for risk observed by the State.

Before I can agree with the second bullet that the gross alpha exceedances are caused by altered groundwater chemistry, analysis of groundwater further upgradient from the landfill is needed to eliminate or identify another possible source.

Noted. See response No. 4 to USEPA comments. We agree that such information will be useful in evaluation of radiological parameters, but still maintain that whether or not there is an upgradient radiological source, the disposition of the North Grinder Landfill site will be unaffected.

The third bullet eliminates the need for a landfill cap, because of minimal soil contamination. The soils pose a risk based on the proposed reuse of the site. Surface soils will possibly have to be remediated or capped.

ABB-ES maintains that although the soils pose a risk in excess of FDEP guidelines, remediation of soils for elevated PAHs, dieldrin and arsenic will result in minimal risk reduction and will likely be very expensive. Preliminary evaluations have revealed, for example, that remediation of PAHs from a risk perspective will be expensive and will result in virtually no risk reduction. Moreover, the low level of arsenic exceedances is within the range of background concentrations rendering arsenic remediation very difficult, if not impossible, to achieve.

19. **In Appendix B, in Table B-1 (Field GC Results), both State and Federal regulatory standards should have been used for comparison. However, only Federal MCLs were considered, but the State MCLs for benzene, TCE, and PCE are lower and would have been more appropriate for comparison.**

ABB-ES will revise the table and appropriate discussions accordingly.

PROJECT REVIEW COMMENTS

DRAFT REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 1 (OU 1)
NORTH GRINDER LANDFILL
NTC, ORLANDO

Stephen M. Roberts, Ph.D., Center for Environmental & Human Toxicology, University of Florida, Alachua, FL.

1. **This site represents an old landfill, and a presumptive remedy of containment was assumed. It was further assumed that future land use would be for commercial, industrial, or recreational purposes, and that residential land use will be precluded by a deed restriction. While these may be reasonable assumptions, it should be recognized that their use in the risk assessment dictates, in part, the management of the site. That is, by failing to explicitly address potential residential land use, a deed restriction becomes an absolute requirement.**

   The BRAC Cleanup Plan (ABB-ES, 1996) presents the reuse scenario for the parcel which includes the North Grinder Landfill as Figure 2-1. The reuse plan was developed by the City of Orlando Reuse Commission and approved by the City in 1995. The parcel which includes the North Grinder Landfill is destined to become an "active recreation" area, and is bounded on the east by a business park, on the south by a residential area/training school, on the west by General Rees Avenue and a residential area, and on the north by Glenridge Way, a residential area, and the Glenridge School. A deed restriction which includes groundwater monitoring and prohibits groundwater use, and a restriction from any excavation over the landfill has always been assumed and will be required.

2. **A related issue is the assumption that a deed restriction will prevent well construction in the vicinity of the site. It would be preferable, in my opinion, to include in the risk assessment an evaluation of risks posed by groundwater (either as a drinking water or irrigation source). If they are found to be unacceptable, this would provide a clear rationale for a deed restriction prohibiting installation of any wells.**

   It is ABB-ES's position that a risk assessment for groundwater is not required under the presumptive remedy, and that given the past history of this site, deed restrictions and long term groundwater monitoring will be required as part of the presumptive remedy.

Although a quantitative risk assessment will not be conducted, per recent discussions, ABB-ES will include a comparison of groundwater quality to Florida Drinking Water Standards and guidelines in the risk assessment in Section 6 to demonstrate that the groundwater is unsuitable, based on human health considerations, as a source of drinking water and therefore requires institutional controls to prevent such use.

3. **If the site becomes a recreational area or playground and is located very near (e.g., across the street from) a residential area, it is conceivable that site use could include frequent contact by small children (i.e., less than 6 years old). Under these circumstances, exposure could be greater than that predicted by either the child trespasser or general worker scenario, and resemble more closely typical exposure assumptions for residential land use. The exposure point concentrations for dieldrin and some of the carcinogenic PAHs exceed residential soil goals by modest margins (approx. 2-3 fold). In the case of PAHs, however, there is an area of localized high concentration which is approximately 10-fold greater than the residential soil goals. There is nothing to insure that, in the future, contact with the entire site will be random. For example, if playground equipment is placed on one part of the site, contact will be much higher with soils there than elsewhere at the site. While it is doubtful that anyone would intentionally place such an attraction over the portion of the site with the greatest surface soil contamination, effective mechanisms to prevent this from occurring at some point in the future are limited. As such, it may be prudent to conduct limited cleanup activities directed to removing soils most extensively contaminated with PAHs.**

ABB-ES maintains that, under the current reuse scenario, the risks posed by the levels of contaminants which have been detected, are well within the range of risks acceptable to the USEPA. ABB-ES recognizes that the calculated risks exceed Florida's risk guidance threshold of 10^{-6}, but stresses that the calculations are very conservative. Further, soil remediation for PAHs would result in virtually no risk reduction at great expense.

These issues were identified and discussed at length at the June 19, 1996 OPT meeting. Subsequent to that meeting, FDEP indicated that no further assessment or remediation of soils would be required.

4. **The risk assessment presents an interesting argument that the radionuclides in groundwater are of natural origin. It may be true that they are not from disposal activities at the landfill, but the presence of significant levels of radioactivity in groundwater cross-gradient from the site makes it difficult to rule out the possibility that their source is from disposal activities elsewhere. To help resolve this, it may be very useful to determine gross alpha and gross beta levels in groundwater clearly upgradient from the landfill. The absence of radioactivity upgradient from the site would support the hypothesis put forth in the risk assessment, while significant contamination there might indicate a new source (other than OU 1) which requires investigation.**

See response No. 4 in the USEPA response to comments.

5. **Sections 4 and 6 both describe efforts to identify chemicals of potential concern for this site. Thee are inconsistencies between these two sections, however:**

a) **In Section 4, OU 1 data are compared statistically with data from the Background Sampling Report to identify contaminants associated with site activities. This comparison includes contaminants that are anthropogenic in nature as well as naturally-occurring substances. Section 6 uses a much simpler comparison with background concentrations and confines such comparisons to inorganics. I have serious reservations with the background comparisons in Section 4, both in terms of the statistical approach that was used and the inclusion of anthropogenic compounds. The background comparison procedure in Section 6 is acceptable, however.**

The statistical analysis in Section 4 was conducted to determine which analytes are likely to be related to some type of site-related activities and which analytes appear to be consistent with background conditions. This statistical analysis was used in conjunction with the background comparison in the risk assessment that was conducted according to USEPA Region IV Guidance to draw conclusions about the list of analytes that are site-related.

The statistical analysis was not used to eliminate any analytes (especially organics) from the risk assessment. The simplistic background comparison used in the risk assessment has a tendency to draw conclusions that analytes are inconsistent with background based on single values that do not reflect the actual distribution of concentrations at the site (Impact of Background Screening on Selection of Contaminants of Potential Concern and Risk Estimates for Soil, Ninth Annual Conference on Contaminated Soils, Amherst, MA, October 1994, M.J. Murphy and J. Peters). In fact, this simplistic approach is so conservative that it could actually lead to the conclusion that the maximum background concentration is not consistent with background conditions. It is not unusual to see a range of concentrations of inorganics in a background data set such that the maximum concentration is greater than two times the mean background concentration. The statistical approach is more rigorous and more scientifically defensible, so its findings are given considerable weight in the findings of the RI. The combination of the two background comparison approaches provides a broader perspective for decision-making.

b) **Section 4 includes an analysis of groundwater contaminants, while in Section 6 it is assumed that groundwater at the site will never be used as a potable water source and no HHCPCs are identified for this medium. The failure to address potential risks from groundwater (under future land use scenarios) in Section 6 is a serious omission. [Note: Table 6-3 is labeled as listing groundwater samples considered in the risk assessment when, in fact, none are considered in this section.]**

Although a quantitative risk assessment will not be conducted, per recent discussions, ABB-ES will include a comparison of groundwater quality to Florida Drinking Water Standards and guidelines in the risk assessment in Section 6 to demonstrate that the groundwater is unsuitable, based on human health considerations, as a source of drinking water and therefore requires institutional controls to prevent such use.

c) **The methods for identifying HHCPCs in Section 6 are sound, but should be extended also to groundwater, using Florida primary and secondary standards and guidance concentrations as screening values. The analysis in Section 4 is questionable, and the contribution of this section to the overall report is unclear. This section should be extensively revised or deleted.**

The purpose for Chapter 4 is to discuss "Nature and Extent" of contamination and to provide a discussion about potential COCs discovered during the sampling and analysis program. Another objective in Chapter 4 is to provide an interpretation of the origin and final disposition of potential COCs which were identified. As has been stated in our response to FDEP comment No. 5, it was not the intention in Chapter 4 to use statistical evaluation to eliminate COCs from consideration, but merely to provide a framework for the interpretation regarding the nature and extent of those contaminants.

Although a quantitative risk assessment will not be conducted, per recent discussions, ABB-ES will include a comparison of groundwater quality to Florida Drinking Water Standards and guidelines in the risk assessment in Section 6 to demonstrate that the groundwater is unsuitable, based on human health considerations, as a source of drinking water and therefore requires institutional controls to prevent such use. In this context a formal selection of CPCs will not be incorporated into a quantitative risk characterization for groundwater.

REFERENCES

ABB Environmental Services, Inc. (ABB-ES), 1995, Final Background Sampling Report, Naval Training Center, Orlando, Florida: prepared for Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM).

ABB-ES, 1996, BRAC Cleanup Plan (BCP), Final Draft BRAC Cleanup Plan, Naval Training Center, Orlando, Florida: prepared for SOUTHNAVFACENGCOM.