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LETTER REGARDING U S NAVY RESPONSE TO REGULATOR COMMENTS FOR
OPERABLE UNIT 2 (OU 2) WORK PLAN WITH ATTACHMENT NTC ORLANDO FL
5/7/1996
ABB ENVIRONMENTAL



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May 7, 1996

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Commanding Officer
Southern Division
Naval Facilities Engineering Command
Attn: Barbara Nwokike, Code 1873
2155 Eagle Drive
N. Charleston, SC 29406

Subject: Response to Comments for OU2 Work Plan, NTC Orlando
EPA comments, dated September 5, 1995
FDEP comments, dated May 11, 1995
CTO 107, Contract No.: N62467-89-D-0317

Dear Barbara:

Attached is our response to EPA and FDEP comments for the McCoy Annex Landfill OU 2 (Draft) RI/FS Workplan. Please review our response to comments. These will be fully discussed during the June 18 and 19, 1996 OPT meeting. We are in the process of making appropriate revisions to the text and/or figures to reflect the comments but will not produce the final document until we have discussed our responses with the other OPT members.

Should you have any questions regarding the comments please call me at (904) 269-7012.

Very Truly Yours,

ABB ENVIRONMENTAL SERVICES, INC.

Richard P. Allen
Project Technical Lead

RA/lak
Attachment

cc: Nancy Rodriguez, USEPA Region IV (2 copies)
John Mitchell, FDEP (2 copies)
Wayne Hansel, SOUTHDIV
John Kaiser, ABB-ES
Mark Salvetti, ABB-ES
LCDR Ballinger, NTC Orlando
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ABB Environmental Services Inc.

PROJECT REVIEW COMMENTS

DRAFT REMEDIAL INVESTIGATION AND FEASIBILITY (RI/FS)
WORKPLAN
OPERABLE UNIT 2 (OU 2)
McCOY ANNEX LANDFILL
NTC, ORLANDO

David Clowes, Florida Department of Environmental Protection (FDEP)

1. Section 2.6, page 2-14 should be corrected to explain that sample locations based on statistics and a grid pattern are not biased samples, but are random or unbiased samples.

There is confusion in the terminology which ABB-ES used in the statistical sampling section presented in Section 2.6. Some of that confusion may have resulted from the fact that there is a typographical error in Section 2.6, p. 2-14, bullet item no. 2. In the third line of that bullet, the word "biased" should have read "based". To correct any remaining confusion, the text has been revised as follows. The two bulleted items now read:

• Samples to evaluate gas generation and migration from the landfill will be taken. Hydrologic, groundwater, and surface soil data will be collected on a grid or biased basis due to the potential heterogeneity involved.

• In areas where contamination is considered to be either unlikely or more homogeneously distributed (sediment and surface water) a statistically based sampling methodology will be applied."

In addition, in the second paragraph on p. 2-15, fifth line, the phrase "...will not exceed..." has been replaced by "...will equal or exceed...".

2. Section 2.7.1. The ingestion of and direct contact with groundwater by future area residents should be considered a likely pathway, not just a potential deviation from the considered pathways. Florida Water Quality Standards (Chapters 62-520 and 62-550, F.A.C.) were established to protect the quality of Florida's Class G-I and G-II groundwater resources as potential drinking water supplies. Thus, even if the present scenario does not consider consumption and exposure to the groundwater, all future scenarios should consider groundwater consumption and exposure, as well as resource protection/restoration.

Subsection 2.7.1, potential deviation no. 2, p. 2-19, has been rewritten so that it now reads:

"(2) Contaminated offsite groundwater. It is possible that contaminants have leached into the groundwater from contact with landfill materials, and that area residents are currently withdrawing this water from the surficial aquifer (or may in the future) and using it in sprinkler systems for irrigation (potential inhalation and dermal contact of contaminants) and/or as a potable water source."

It is ABB-ES's position that this pathway should remain a potential deviation, since in an urban environment, it is unlikely that area residents are utilizing the surficial aquifer as a potable water source. It is our view that insufficient contamination exists in the surficial aquifer that would result in an inhalation and/or dermal exposure risk. However, this pathway will be evaluated during the RI portion of this investigation.

3. Section 3.4.1, Page 3-9. As decided at the [BCT] meeting [of January 12 and 13, 1995], one soil sample should be collected from each acre (99 samples), with each soil sample composed of five equidistantly spaced sample locations within each acre. Note, discrete soil samples should be collected for VOC analysis: therefore, one VOC sample should be collected from the center location of each acre.

It is ABB-ES's position that the landfill cover was derived from a clean source and is uniform in nature. As such, it should not be treated as a potentially contaminated medium. The objective for sampling and analysis of the landfill cover is to evaluate the quality and competency of the cover for engineering considerations in the design of the landfill cap.

Accordingly, the first paragraph of Subsection 3.4.1, pp. 3-8 and 3-9 has been rewritten to read:

"The surface soil sampling program will be conducted based on the sampling methodology presented in Section 2.6. For the McCoy Annex Landfill, one surface soil sample per four acres will be taken (for a total of approximately 25) within the depth range of 0 to 1 foot. Samples would be located within the landfill cover material and sampled systematically throughout the landfill footprint. Each sample would be composited from five locations within the central portion of each four acre block as indicated in the composite pattern presented as a figure. Samples taken for VOCs would not be composited, but would be taken from the central node of the composite pattern. Statistical evaluation of contaminants will be completed, and outliers will trigger additional sampling to characterize contaminant distribution."

4. Section 5.1.4. Ranges of Remedial Goal Options (RGOs) for carcinogenic chemicals of concern (COCs) ($1E-4$ to $1E-6$) and hazard quotients (10, 1, and 0.1) for non-carcinogenic COCs are not acceptable. With the inclusion of the inhalation pathway in the calculation of RGOs/Cleanup Levels, FDEP default criteria are $1E-6$ for carcinogenic COCs and 1.0 hazard

quotient for non-carcinogenic COCs.

Comment 4 is noted. ABB-ES is aware of FDEP policy regarding a cancer risk of greater than 1E-6. In order to achieve project objectives, potential remedial alternatives will be evaluated by comparing their effectiveness in reducing risk within the EPA allowable risk range (1E-4 to 1E-6). This evaluation will permit a comparison of risk reduction versus the associated cost of each alternative so that risk management decisions can be made.

5. Appendix A. The updated 1994 Florida Ground Water Guidance Concentrations booklet contains the Maximum Concentration Levels (MCLs) and numerical interpretations by Departmental toxicologists of the promulgated narrative minimum criteria standard. The Primary and Secondary Drinking Water Standards are established in Chapter 62-550, F.A.C. and promulgated as groundwater standards in Chapter 62-520, F.A.C. For those constituents in the booklet that do not have Primary or Secondary Drinking Water Standards, the Department considers their numerical interpretations as minimum criteria and trigger/screening values for assessment purposes. Furthermore, the Department would consider them cleanup levels unless alternate ones are approved by the Department.

Comment 5 is noted.

PROJECT REVIEW COMMENTS

**DRAFT REMEDIAL INVESTIGATION AND FEASIBILITY (RI/FS)
WORKPLAN
OPERABLE UNIT 2 (OU 2)
McCOY ANNEX LANDFILL
NTC, ORLANDO**

Greg Brown, Florida Department of Environmental Protection (FDEP)

Bullet No. 1. The EPA's presumptive remedies for municipal landfills may not be completely transferable to the subject mixed industrial landfill. EPA has specific criteria for the use of presumptive remedies at municipal landfills that may not apply to this particular mixed industrial landfill. For example, if there is groundwater contamination, the investigators should consider the need to find source areas, or "hotspots", within the landfill that if removed would make the chosen presumptive remedies more effective and reliable.

ABB-ES recognizes that there may be some differences between the McCoy Annex Landfill and the generic municipal landfill to which the presumptive remedy will be applied. However, during the BCT meeting of January 12 and 13, it was discussed and agreed upon by the BCT that, consistent with the preamble of the presumptive remedy, any aspect of the CERCLA municipal landfill should be utilized where applicable. Source areas, or "hot spots" will be addressed during the geophysical and passive soil gas field investigations. If potential hot spots are determined, they will be investigated and, if confirmed, will be considered for early removal.

Bullet No. 2. Landfill caps have other design criteria than just prevention of direct contact of source material with receptors. Infiltration, runoff, and erosion control, among others, should also be considered if applicable to the ultimate remedial design objectives.

ABB-ES recognizes that cap design will be an essential element of the remedial alternative under the presumptive remedy.

Bullet No. 3. I'm glad to see a statistically biased sampling scheme, but I'm skeptical of the statistically "biased" [sic] approach proposed in the work plan. The proposed nonparametric approach may be robust in assuming independent and uncorrelated data, but that generally doesn't exist in environmental data since it tends to be regionalized (i.e., spatially related). In addition, Region IV has expressed skepticism about statistical techniques such as nonparametric methods that can not estimate the power of the test. Some discussion is in order for this subject.

The use of nonparametrics for statistical evaluation will be limited to the evaluation of sediment and surface water data. For these media, it is assumed that contaminant distribution will be more homogeneous and thus will not be biased. Nonparametrics relies

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on the randomization of sample location with the assumption that any location carries an equal probability of being sampled, thus ensuring bias sampling from unknown processes. This approach is consistent with the identified population (upper quartile) and confidence interval (95%) and will support the evaluations of risk and potential remedial alternatives.

Bullet No. 4. Since the Navy is being "cutting edge", they may also wish to use the EPA's recent DQO process. This process defines two DQO categories: (1) screening data, with definitive confirmation, and (2) definitive data. Use of this process may further "streamline" the RI/FS while maintaining protectiveness.

The recent EPA DQO process was used in the proposed sampling program through (1) the identification of populations to be defined, and (2) through identification of acceptable confidence intervals to which those populations are identified. Thus, this assures the data collected will be focused, streamlined, and supportive of risk and remedial alternative evaluations.

Bullet No. 5. The FS will be an engineering document and the Final FS should be signed, sealed, and dated by the Florida Registered Professional Engineer with responsible charge for its preparation. There are specific criteria for demonstrating engineering responsible charge in F.S. 471 and Rule 61G15, F.A.C. I also refer you to the Remedial Action Plan Guideline, ESS-13, prepared by the Bureau's Engineering Support Section. Although this guideline was prepared specifically for Remedial Action Plans, it contains useful guidance for other engineering documents prepared in the State of Florida and submitted to a public agency for review and approval. In particular, the letter from the Office of Attorney General dated November 5, 1992, and referenced in ESS-13 indicated:

"There are individuals and companies not licensed as engineers or geologists who do "environmental consulting". Some of the individuals or companies have expertise in related areas (i.e., biology, chemistry, etc.). It is possible for some of these individuals and companies to play a role in the preparation of these documents, provided they do so under the direct supervision of a professional engineer or professional geologist."

Bullet item 5 is noted.

PROJECT REVIEW COMMENTS

**DRAFT REMEDIAL INVESTIGATION AND FEASIBILITY (RI/FS) WORKPLAN
OPERABLE UNIT 2 (OU 2)
McCOY ANNEX LANDFILL
NTC, ORLANDO**

Nancy Rodriguez, United States Environmental Protection Agency (EPA)

I. General Comments

1. The data generated should be presented graphically as contour maps, delineating the contaminants of interest and their critical concentrations as determined by PRGs or similar risk-based mechanism.

How will the use of Non-Parametric Statistical methods be used? The methods for comparison to background for selection of COPCs was not discussed in detail? Please note that the Region IV Office of Health Assessment prefers the 2X background criterion to statistical methods of comparison.

The field and analytical data generated during the RI will be presented graphically as contour maps whenever appropriate and whenever such data presentation will facilitate a better understanding of potentially complex spatial relationships between various chemical parameters.

The evaluation of investigatory data in the comparison to background will be handled through the use of some of the more widely used statistical approaches (i.e., Mann-Whitney, Student T, and Box and Whisker plots). These approaches will attempt to identify outliers within preselected data populations and established confidence intervals. This will support the comparison of site data to established background concentrations and/or ranges.

The use of nonparametrics for statistical evaluation will be limited to the evaluation of sediment and surface water data. For these media, it is assumed that contaminant distribution will be more homogeneous and thus will not be biased. Nonparametrics relies on the randomization of sample location with the assumption that any location carries an equal probability of being sampled, thus ensuring against biased sampling from unknown processes. This approach is consistent with the identified population (upper quartile) and confidence interval (95%) and will support the evaluations of risk and potential remedial alternatives.

Section II. Specific Comments

1. Page 2-22, first full paragraph. It says:

"The potential exposure of maintenance workers in direct contact with landfill wastes is avoidable, and risks to human health far outweigh the convenience of maintaining such utilities in the future."

The first full paragraph of Page 2-22 will be rewritten as follows:

"From a regulatory standpoint, the McCoy Annex Landfill will be treated as a closed landfill. However, current reuse scenarios include its continued use as a golf course, with residential areas outside of, but adjacent to the closed landfill. For purposes of this RI/FS workplan, it is assumed that no utilities pass through the former landfill nor do irrigation lines penetrate through the soil cover into landfill materials. If such utilities exist, therefore, they will be removed from service or replaced with utilities that do not penetrate the soil cover into landfill materials. This will protect maintenance workers from potential exposure to direct contact with landfill wastes."

2. Page 2-24. Ordnance. If ordnance was in fact disposed of in the landfill, how will it be detected?

As previously stated, there are no records which indicate that ordnance was disposed of in the landfill. The primary intent of the geophysical survey which is planned (magnetometer, terrain conductivity [Geonics EM-31D], and ground penetrating radar surveys) is to map the boundaries of the landfill and to locate "hot spots" that might warrant source removal to support the selected remedial alternative. If future information is disclosed that indicates a strong likelihood of UXO, then a time domain metal detector survey (Geonics EM-61) could be added to complement the suite of techniques already in place.

3. Page 5-3, recreational users and inhalation of landfill gases. As well as site maintenance workers, recreational users, presumably golfers, should also be evaluated for exposure to landfill gases.

We view as unlikely the potential exposure of recreational users to landfill gases, which is why this exposure route has not been included as a probable condition on the Conceptual Site Model, Figure 2-4 (Page 2-18). Inhalation is included as a potential deviation, however, and inhalation exposure to landfill gases will be evaluated as part of the human health risk evaluation (Section 5.1.3 Exposure Assessment).

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USEPA comments, dated September 5, 1995

EPA Comments on the Draft RI/FS Work Plan for Operable Unit 1, North Grinder Landfill, were included in the response to comments for Operable Unit 2, McCoy Annex Landfill. Those comments have been reviewed in the context of OU 2, and our response follows.

1. Sect. 1.1, p. 1-1: The second sentence is repeated in the text of the first paragraph.

Comment 1 is not appropriate for OU 2, McCoy Annex Landfill.

2. Sect. 2.2, p. 2-2: A minor discrepancy between Chapter 1 and this section concerning the timing of the Army Air Command's acquisition of the property has been noted. A statement in the first paragraph of this section indicates that landfilling operations started between 1939 and 1947, at a time when the property was under control of the Army Air Command. According to Chapter 1, the Army Air Command acquired the property in August 1940. Is the earlier landfill start date, 1939, simply an observation based on review of aerial photos?

Comment 2 is not appropriate for OU 2, McCoy Annex Landfill.

3. Sect. 2.3, p. 2-7: In discussing the potential for interaquifer migration of contaminants, the common occurrence of sinkholes in the area should be acknowledged.

Comment 3 is noted and text has been revised as follows: in Section 2.3, p. 2-4, second complete paragraph, after last sentence ending with "...flow rates in the surficial aquifer," insert the following: "The prevalence of karst activity and sinkhole development throughout the Greater Orlando area will be considered in the hydrogeologic characterization."

4. Sect. 2.6, pp. 2-17 through 2-19: The entire description of the statistical sampling method is unclear, making it difficult to evaluate relative to EPA guidance on the subjects of sampling plan design and data quality objectives (DQOs). For example, on page 2-17 it says:

...two different sampling strategies will be applied to the different media within and surrounding the landfill.

- *Samples to evaluate gas generation and migration from the landfill will be taken. Hydrologic and groundwater data will be collected on a grid or block basis due to the heterogeneity involved.*
- *In areas where contamination is considered to be either unlikely or more homogeneously distributed (sediment, surface water, and surface soil), a statistically biased sampling methodology will be applied.*

This section was confusing because of the inaccurate use of the terminology.

There are two types of environmental sampling strategies. The first type seeks to sample areas in

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which contamination is known or suspected. It is called biased, purposive, judgmental, or "hot-spot" sampling. This first type generally seeks information regarding the maximum level of contamination present.

The second type seeks to sample areas in which contamination is not known to be present. It is called random, systematic, statistical, grid-based or unbiased sampling. However, there are some differences between these. This second type generally seeks to 1) determine the areal extent of contamination; and 2) determine if contamination is present in areas hitherto believed to be "clean."

Further on, the work plan indicates that non-parametric statistics will be used to determine levels of confidence and sample sizes. EPA guidance on the subjects of sampling design and DQOs generally stress the need to establish a decision rule and specify limits on decision errors. Using the surface soil sampling plan (Chapter 3) as an example, what does it mean to say that we are 95 percent confident that the maximum contaminant concentration encountered is greater than the 0.75 quantile, in terms of making a right or wrong decision about whether remedial action is required?

In determining the number of samples to collect, it is often necessary or desirable to know the identity of the principle contaminants in the medium being sampled, something about data distribution and variability, the screening or cleanup standard site data will be evaluated against, and the analytical detection limits for each contaminant. Again, using surface soil sampling as an example, we know little or nothing about surface soil contamination at the Grinder Landfill that could aid us in developing a statistically based sampling plan. However, there are two pieces of information that need to be obtained from the initial round of soil sampling: (1) standard surface soil samples to determine if landfill contents have impacted the surface; and (2) the depth to the landfill contents.

Also, in this discussion, there was no consideration of the receptors and the exposure units appropriate for these receptors. Briefly defined, an exposure unit (EU) is the area of an environmental medium a receptor will routinely contact during the course of a day. For example, a recreational user might be a youth baseball/softball player who will move over 1-2 acres (the size of a baseball field) whereas the site worker will probably range over the entire 15 acres of the landfill.

The sampling strategy should consider EU for the two scenarios - recreational user/site worker and off-site resident. How much of a given medium will they contact in a day? Sampling should be designed to estimate the RME concentration of a contaminant within that EU. If sampling within each EU is adequate and the maximum detected concentration of a contaminant is less than the risk-based level or regulatory standard, then a finding of No Further Action would be supported.

The choice specified in the document is to take fewer samples and use statistical means to support decision. EPA suggests that statistics and consideration of the receptors should be used to develop a sampling plan, the results of which could support decisions without additional recourse to statistics.

Comment 4 has been incorporated into the work plan for OU 2, McCoy Annex Landfill in a similar manner to the OU 1 work plan. Specifically, the two bulleted items at the bottom of page 2-14 have been revised to now read:

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- " • Samples to evaluate gas generation and migration from the landfill will be taken. Hydrologic, groundwater, and surface soil data will be collected on a grid or biased basis due to the potential heterogeneity involved.
- In areas where contamination is considered to be either unlikely or more homogeneously distributed (sediment and surface water) a statistically based sampling methodology will be applied."

In addition, in the second complete paragraph on p. 2-15, fifth line, the phrase "...will not exceed..." has been replaced by "...will equal or exceed...".

ABB-ES believes that any detailed discussion of receptors over and adjacent to the landfill and the exposure units (EU) appropriate for these receptors is unnecessary given that the presumptive remedy will be utilized. However, the sampling approach outlined above addresses EPA concerns regarding EU criteria addressed in comments and at the January 12 and 13, 1995 BCT meeting. The sampling approach proposed is sufficient to support the FS and any risk evaluations which may need to be conducted.

5. Sect. 2.7.1., pp. 2-20 through 2-22: The conceptual site model presented in this section represents a significant compression of the generic conceptual site model presented in EPA's fact sheet on the Presumptive Remedy for CERCLA Municipal Landfill Sites. This can be accounted for in part by discounting contaminant release/transport mechanisms that are not active at the Grinder Landfill (e.g., surface expression of leachate). However, some release mechanisms and exposure routes have been omitted without explanation. Also, the probable release mechanisms and potential deviations are not consistent with application of the presumptive remedy. Examples of some of the inconsistencies and problems with the conceptual site model are as follows:

Direct contact/ingestion has been retained as a probable exposure pathway for terrestrial wildlife but identified as a potential deviation for humans. The presumptive remedy's cover component will eliminate this pathway for humans and should eliminate this pathway for most terrestrial wildlife. We would expect to see a substantial portion of the sampling effort to be devoted to assessing probable release mechanisms, but no biota or subsurface landfill sampling is planned to assess this potential ecological risk. Either the direct contact/ingestion pathway for terrestrial wildlife should be identified as potential deviation or the lack of sampling for a probable exposure pathway should be explained.

Volatilization and inhalation of volatile organic compounds (VOCs) buried in the landfill should be presented as a distinct transport mechanism and pathway from landfill gas. Generally, we are referring to methane when we mention landfill gas. Methane poses a significant potential risk due to explosivity and to a lesser degree, poses a risk as an asphyxiant. VOCs, such as tetrachloroethylene and other chlorinated solvents that may have been landfilled, are carcinogens. Methane and VOCs pose different risks and require different sampling strategies. Therefore, they warrant distinction in the conceptual site model.

Potential deviations (1) and (2) need to be more clearly distinguished. As written, they appear to be identical. Surface water and sediments in nearby lakes and ponds may be impacted by discharge of groundwater contaminated by landfill leachate. Surface water and sediment in ponds and lakes could also be impacted by contaminants carried in surface water runoff from the landfill as the soil cover erodes. Another deviation which is not reflected in the conceptual model but is covered in the sampling plan is human receptor contact with or ingestion of contaminated surface soil. As a result of settlement, erosion, inadequate cover placement at landfill closure, or utilities excavation, waste and contaminated soil may be exposed at the landfill surface. Sampling directed at determining soil cover thickness and presence of contaminants is appropriate and is included in the sampling plan. But, this potential deviation should be depicted in the conceptual site model.

Comment 5, Paragraph 2 is not appropriate for OU 2, McCoy Annex Landfill, as the Conceptual Site Model, p. 2-18, is somewhat different than for OU 1.

In Comment 5, Paragraph 3, ABB-ES observes that under the presumptive remedy, a proper cap or adequate cover materials will be installed, and containment, treatment or venting of landfill gases will take place. The presumptive remedy, along with a maintenance and monitoring program to be included with the remedy, eliminates the need to consider these pathways in the conceptual model. However, it should be noted that sampling data will be collected from appropriate media to permit proper engineering design.

In Comment 5, Paragraph 4, potential deviation no. 2, p. 2-19, will be rewritten to read:

"(2) Contaminated offsite groundwater. It is possible that contaminants have leached into the groundwater from contact with landfill materials, and that area residents are currently withdrawing this water from the surficial aquifer (or may in the future) and using it in sprinkler systems for irrigation (creating potential inhalation and dermal exposure) and/or as a potable water source."

Sampling of landfill cover soil is intended for engineering design purposes and not for pathway and exposure concerns as represented in the conceptual model. Landfill cover thickness, continuity and quality concerns are addressed under the presumptive remedy.

6. Sect. 2.7.2.2., pp. 2-24 through 2-26: EPA risk assessment guidance requires development of current exposure estimates and potential future exposure estimates. To avoid confusion, land use options from the base reuse plan should be referred to as "future reuse scenarios" rather than "current reuse scenarios".

The list of potential receptors appears incomplete and requires some clarification. The site maintenance worker at the landfill may be exposed to landfill gas (methane), VOCs and

contaminated soil or waste. Recruits housed in the barracks adjacent to the landfill and off-base residents just to the west of the landfill should be identified as potential receptors. Methane gas could potentially migrate laterally through the soil and accumulate at explosive levels in nearby buildings. An attempt should be made to better define the distinction between on-site and off-site receptors. For this purpose, on-site might be defined by the boundary of the landfill as determined by geophysical survey and sampling.

Instead of assuming that no utilities pass through the former landfill, historical records of the local government, Navy and Air Force should be checked.

In Comment 6, Paragraph 1, the workplan assumes that landfill cover will be maintained to prevent exposure to humans, but that the cover may not prevent exposure to burrowing terrestrial biota. For purposes of these discussions, onsite refers to anything within the boundary of the landfill as defined by the geophysical survey and sampling programs.

In Comment 6, Paragraph 2, the conceptual site model and Tables 2-4 through 2-6 indicate that both probable and potential exposure pathways will be evaluated during the RI. The conceptual site model considers the presence of landfill gases, regardless of the source of the contaminant, thus keeping the emphasis on a simple conceptual site model. The proposed 175 soil vapor implants around the perimeter of the landfill will permit monitoring for contaminants at a sampling frequency appropriate to findings of prior soil vapor analyses.

In Comment 6, Paragraph 3, ABB-ES recognizes that there may be some utilities which currently pass through the landfill wastes. But the use of the presumptive remedy would preclude the maintenance of existing utilities or installation of any future utilities. This is why ABB-ES has stated that any future reuse scenarios would involve the abandonment of any utilities which pass through landfill wastes.

7. Section 2.7.3.2, p. 2-35: The listing of probable and potential contaminated media in the second paragraph should be revised as follows:

The probable contaminated media are subsurface soil (within and beneath the landfill) and groundwater; potential contaminated media include air, surface water, surface soil, and sediment.

The first sentence in the third paragraph should be revised as follows:

the likely CPCs at the North Grinder Landfill include organics, inorganics, chemicals derived from biomedical waste, and possibly radionuclides.

Comment 7 will be treated in the OU 2 work plan consistent with the corresponding section in the OU 1 work plan.

8. Section 2.8, p. 2-41: The value of surface geophysics to determine soil cover thickness is questionable given prevailing landfill operation and closure practices in the 1960s. We would not expect to see an abrupt change in soil density or soil type between the "final cover" and intermediate or daily soil cover as we would at a landfill closed in the 1990s. In the sixties, the same local soil would be used for daily, intermediate, and final cover. There may not have been any specifications for final cover regarding compaction and thickness. Over the years, the soil cover may have settled or eroded such that it now contains entrained waste and is indistinguishable from soil mixed with the waste. This problem is acknowledged on page 3-3. To ensure that we do obtain sufficient data to assess cover adequacy, EPA recommends that soil cover thickness be determined at each soil gas sampler location and at each surface soil sampling station (after the soil sample is collected).

Comment 8 was discussed at the BCT on January 12 and 13, 1995 (regarding the OU 1 work plan), and the BCT agreed to proceed as outlined in the workplan, with the proviso that if the geophysical program is inconclusive regarding the thickness of final cover, then hand-augured holes will be used to verify the thickness of the cover material at an appropriate number of locations. EPA suggested that soil cover thickness be determined at each soil gas sampler location and at each surface soil sampling station. As approximately 1800 soil gas samplers will be installed during the passive soil gas program (they will be installed on grid nodes 50 feet apart over the landfill footprint), ABB-ES suggests that soil cover thickness be measured at 10% of these locations, or a maximum of 180 locations. ABB-ES suggest that this effort is sufficient to support engineering cap evaluation. Appropriate text will be added in Chapter 3.0 to reflect this.

9. Table 2-5, p. 2-43: To make clear EPA's position, please note that in the description of probable condition and reasonable deviation for groundwater, we interpret "contaminated" to mean contains contaminant concentrations at levels that pose a risk to human health and "offsite" to mean beyond the "zone of discharge" as defined in FDEP regulations.

Comment 9 is noted.

10. Sect. 2.9, pp. 2-45 and 2-46: This section should be deleted or substantially revised since it pays only lip service to CERCLA guidance on the data quality objectives (DQO) process. data collection objectives are specified, but not DQOs. EPA's *Data Quality objectives process for Superfund, EPA/540/g-93/071* describes a seven step DQO process. Prior to and during the development of the RI work plan, ABB completed the first four steps but failed to complete the next three critical steps: develop a decision rule; specify limits on decision errors; and optimize the sampling design. At this late stage, it would not be productive to do more than develop a decision rule for each medium. An example of a decision rule for soil cover might be: if the mean soil cover thickness is less than two feet, the cover will be considered inadequate and require remedial action.

Comment 10. One of the goals of a workplan is to establish DQOs that will support

risk evaluation and remedial alternative evaluations. As agreed upon at the BCT, decision rules for determining whether remediation is warranted will be developed during the RI evaluation consistent with the presumptive remedy, with input from EPA and FDEP. At this point in the RI/FS process, it is not deemed appropriate to develop decision rules for potential pathways and exposures, since they have not been demonstrated to exist.

It is ABB-ES's view that the proposed sampling plan and associated DQOs sufficiently support the project goal of collecting data to support the presumptive remedy and evaluate possible remedial technologies and risks associated with potential pathways, as shown in the conceptual site model. As stated in the EPA comment, the effort to develop acceptable error in the sampling program is not warranted when considering that remedial alternatives to eliminate the probable pathways have already been determined. Thus, the focus of data collection and evaluation is for the support of engineering design and not risk evaluation.

11. Sect. 3.1, p. 3-1: Two objectives should be added to the geophysical survey program. One, determine the depth of waste fill relative to groundwater. It is important to determine if waste lies below the water table because this will impact selection of remedial technologies. Two, support and supplement intrusive methods to define subsurface lithology.

Comment 11 was discussed at the BCT meeting of January 12 and 13, 1995 and it was agreed that ABB-ES would not revise the workplan because (1) geophysics will probably not be of use in determining the depth of waste at OU 2, and (2) it will also likely be of little use in defining subsurface lithology since the literature indicates the surficial aquifer is reasonably homogeneous.

Any uncertainties which remain after the remedial investigation is completed can be managed through development of contingent actions during the remedial alternatives evaluation and design.

12. Sect. 3.2, pp. 3-3 and 3-4: Please specify the number of passive soil gas samplers that will be installed and the method for selecting sample locations. Since the passive soil gas samplers do not produce air or soil gas concentration data, use of the results may be limited to identifying areas within the landfill where volatile liquids are buried. However, unless the samplers are closely spaced this effort may not produce meaningful results. Contrary to the first bullet item, the data produced by the passive samplers will not be of use in designing a soil gas collection system because the results cannot be used to evaluate risk due to inhalation of toxic VOCs. In order to determine if VOCs are being released through the cover at levels that may pose a risk to onsite receptors, it makes more sense to measure ambient air concentrations of target compounds at multiple locations on the landfill.

Is the methane sampler identified in this section a conventional explosive gas meter? Also, the critical values for methane are the lower explosive limit (LEL), about 4% to 5%, and

25% of the LEL. Is the specified accuracy of the meter to be used (0.3 to 5.0 percent) a percent of total volume of percent of the methane concentration?

In response to Comment 12, up to 1800 passive soil gas samplers will be installed on a 50-foot grid over the landfill footprint. At the BCT meeting of January 12 and 13, 1995, it was agreed that the passive soil gas data was to be used only in engineering considerations during cap design and would not be used for evaluating risk. After the presumptive remedy is implemented (which will likely include an enhanced soil cover or installation of an impermeable cap with a venting system), a portion of the monitoring program under the presumptive remedy will include ambient air monitoring.

In accordance with discussions at the BCT meeting of January 12 and 13, 1995, ABB-ES will use an Industrial Scientific MX251 Combustible Gas Analyzer or equivalent to measure methane concentrations in the cover materials during the installation and retrieval of the passive soil gas samplers. The text of the workplan will be revised accordingly.

13. Sect. 3.3, pp. 3-5 through 3-7: The strategy for subsurface investigation using the Terraprobe and Cone Penetrometer Testing (CPT) requires major adjustments. ABB proposes to start with the TerraProbe™ and collect groundwater samples at the water table and at refusal or thirty feet, whichever is shallower. Next, a cone penetrometer rig would be used to map subsurface lithology and collect shallow depth groundwater samples at 15 locations and at six locations, collect groundwater samples, every ten feet in the surficial aquifer. This approach, in EPA's opinion, is backwards, redundant, and results in sampling groundwater, blindly. A better approach would be to first map the subsurface lithology using the CPT, possibly preceded by a geophysical survey, identify the more transmissive zones within the surficial aquifer, then selectively target these zones for groundwater sampling.

What is the "desired sampling depth" for the TerraProbe™ installed perimeter gas samplers? Methane and VOCs could be expected to preferentially move laterally within the more transmissive zones above the water table. It may be best to do some exploratory soil borings or CPT probes before installing the gas samplers.

Comment 13 is noted. During discussions at the BCT on January 12 and 13, 1995, ABB-ES presented the rationale for the subsurface investigation strategy presented in the workplan. In those discussions, a step-by-step approach was presented starting with the geophysical program, and continuing with the TerraProbe™, cone penetrometer, and monitoring well installation programs. This resulted in a consensus from members of the BCT that the strategy is sound. Accordingly, the text will not be revised.

14. Sect. 3.4.1, p. 3-8: Regarding the first paragraph, please note the comments above on DQOs and statistically based sampling design.

PCBs should be included in the list of analytes for surface soil samples. However, some of the secondary parameters listed are appropriate only for aqueous samples.

In accordance with changes made in Section 2.6 resulting from EPA comment no. 4, the first paragraph in Subsection 3.4.1, pp. 3-8 and 3-9 was revised to be consistent with the biased sampling approach suggested by EPA and FDEP. This first paragraph now reads:

"The surface soil sampling program will be conducted based on the sampling methodology presented in Section 2.6. For the McCoy Annex Landfill, it is proposed that one surface soil sample per four acres be taken (approximately 25) within the depth range of 0 to 1 foot. Samples would be located within the landfill cover material and sampled systematically throughout the landfill footprint. Each sample would be composited from five locations within the central portion of each four acre block as indicated in the composite pattern presented in Figure 3-? (new figure to be added, similar to Figure 3-4 in the RI/FS workplan for OU 1, North Grinder Landfill). Samples taken for VOCs would not be composited, but would be taken from the central node of the composite pattern."

As per discussions at the BCT meeting of January 12 and 13, 10% of samples in each media (soils, groundwater, surface water, and sediment) will be submitted for PCB analysis. Dioxins will only be analyzed if PCBs are detected. The text has been revised in several places to reflect this modification.

15. Sect. 3.4.2, pp. 3-8 through 3-10: The closest body of surface water in the assumed groundwater flow direction, Lake Spier is about 1800 feet from the landfill. Given the likely problems that would arise in assessing data from a lake in an urban setting, additional contingencies should be applied to subsurface water sampling plans. Sample surface water if groundwater is contaminated and it is likely that contaminants have migrated to the surface water body.

What is the basis for the list of radionuclides that various media samples would be tested for? Attached is a listing of radionuclides and corresponding DOD installation sources prepared by region IV's Office of Radiation Programs. Please review this list and make appropriate adjustments to the radionuclide list for environmental media sample analysis in this work plan.

Leachability analysis of sediment samples would provide no useful data. Total constituent analysis (dry weight basis) is all that is needed. Also, PCBs should be run if sediment samples are collected.

Comment 15 is not applicable to OU 2, the McCoy Annex Landfill. The text in Subsection 3.4.2, Paragraph 1 should remain unchanged.

Regarding Paragraph 2 of Comment 15, in ABB-ES's view, since the base has not

verified the source of the radium used in the painting process, both potential sources (Uranium and Thorium) and daughter products would be analyzed. This would also be useful in comparing against upgradient concentrations since these radionuclides can lead to high levels of radium (through decay) that would not be a result of base activities. Specific radionuclides would only be analyzed if MCL exceedances of gross alpha and background screening values for gross beta were detected.

Regarding Paragraph 3 of Comment 15, it is ABB-ES's position that leachability analysis is vital in the consideration of the impact of potential remedial technologies when remediating sediments. For example, in an aquatic environment, one needs to consider the impact of remediating sediments versus leaving them in place. Leachability analysis will give a more accurate indication of any long term impact involved in leaving sediments in place than total constituent analysis. PCBs will be treated as discussed in Comment 14.

16. Sect. 3.5, p. 3-12: The well types "up gradient", "lateral", "downgradient" and characterizations should be defined in the text.

The terms listed in Comment 16 will be defined appropriately in the text. The following text will be added to the workplan on p. 3-13 in the middle of the third complete paragraph:

"'Upgradient' refers to any point in the direction from which groundwater flows. 'Downgradient' refers to any point in the direction toward which groundwater flows. The term 'lateral' refers to any location located downgradient that is also offset laterally from the direction of groundwater flow. Implicit in all three terms is their spatial relationship to a point of interest, in this case, the McCoy Annex Landfill. 'Characterization' is a term that refers to the placement of monitoring wells within a contaminant plume such that they characterize the plume sufficiently to predict contaminant concentrations and migration pathways. The ultimate goal of the placement of characterization wells and wells outside of a contaminant plume is to enable evaluation of risks, remedial alternatives, and further monitoring to support potential remedial actions."

17. Sect. 5.1.3, pp. 5-3 and 5-4: The text indicates that cancer risks and hazard indices will be determined for CPCs. Risks and HIs should also be determined for each scenario. Presumably, the recreational user/site worker will be exposed to landfill gas and surface soil. Presumably, the offsite resident will be exposed to surface soil and groundwater, the assumption being that the gas will become diluted in its passage off the landfill. It is important to determine the total risk for a receptor from all media.

Risks and hazards should be calculated for a receptor in each given use scenario. By restricting the risks to pathways or media, the actual cleanup levels may be too high. In this regard, the NCP (40 CFR 300) states:

For known or suspected carcinogens, acceptable exposure levels are generally concentration levels that represent an excess upper bound lifetime cancer risk to an individual between 10^{-4} and 10^{-6} ...

on page 8-16 of RAGS, it states:

... the risk assessor should clearly identify those exposure pathway combinations for which a total risk estimate or hazard index is being developed.

Supplemental region IV Guidance on PRGs and RGOs (attached) indicates that chemicals of concern (COCs) are determined in regard to each *use scenario*

Regarding Comment 17, ABB-ES wishes to clarify that implementation of the presumptive remedy will eliminate any exposure risks onsite, and as such, exposure risks onsite will not be evaluated. Offsite risks will be evaluated consistent with identified exposures indicated on the conceptual site model or as developed during the remedial investigation.

18. Sect. 6.2, p. 6-4: Placing soil cuttings back in the borehole(s) is acceptable only for shallow borings (i.e., 10 feet or less) In addition, the borehole must not have encountered a major change in lithology or extend below the water table.

Comment 18 is noted. The first sentence of Section 6.4 has been revised to read, "IDW will be containerized for characterization and classification." No IDW will be redeposited back to its originating borehole. IDW will be handled in accordance with Chapter 6 of the workplan and the POP (ABB-ES, 1994a, Section 4-10, pp. 4-68 to 4-70).

19. Sect. 6.6, p. 6-6: Please note that RCRA waste listings are retroactive. RCRA listed wastes or contaminated media containing listed waste, if actively managed after the effective date of the RCRA regulations must be managed in accordance with RCRA subtitle C regulations, regardless of when the listed wastes were originally disposed. Also, is there text missing between the bottom of page 6-6 and the top of the next page?

Part 1 of Comment 19 is noted. To address Part 2 of Comment 19, the first complete sentence on p. 6-7 has been deleted.

20. Sect. 6.8, pp. 6-7 and 6-8: EPA does not believe it is necessary or reasonable to leave the time limit on storage of IDW at the Field Staging Area open-ended. ABB and the navy should commit to the removing and/or disposing of all classes of IDW within a limited number of days (e.g., 30 days) after field work is completed, or relevant analytical data is received, whichever is less. Also, you should note that EPA Region IV and state RCRA Compliance Program Offices have taken enforcement action against facilities that store RCRA hazardous IDW in unapproved (i.e., lacking a permit or interim status) storage units for greater than 90

days.

Except when exposure to radioactive materials occurs, the incidental contact with waste or contaminated media by personal protective equipment (PPE) typical of CERCLA site investigations does not warrant management of PPE as hazardous waste. Generally, PPE should be handled as a non-hazardous, solid waste.

It is the Navy's position that IDW will be handled in a manner consistent with the CERCLA program (even though NTC, Orlando is not an NPL-listed site) and consistent with RCRA requirements and base standard procedures.

Regarding Part 2 of Comment 20 (PPE), the text under the heading PPE has been revised to read, "The incidental contact with waste or contaminated media by personal protective equipment (PPE) typical of CERCLA site investigations does not warrant management of PPE as non-hazardous, solid waste. However, if exposure to radioactive materials occurs, PPE will only be regarded as hazardous if radiological measurements indicate radioactivity in excess of 2,000 pCi/g."

21. Sect. 7.0, p. 7-1: The RI report should be made available to the NTC Restoration Advisory Board for review when it is submitted to the BRAC Cleanup Team.

Comment 21 is noted.

22. Sect. 8.1, p. 8-1: Please note that the referenced presumptive remedy for CERCLA landfill sites is applicable to CERCLA municipal landfill sites. This presumptive remedy may be applicable to the military base landfills on a case-by-case basis.

Comment 22 is noted. During the BCT of January 12 and 13, 1995, it was discussed and agreed upon by the BCT that, consistent with the preamble of the presumptive remedy, any aspect of the CERCLA municipal landfill should be utilized where applicable.

23. Table 8-1, pp. 8-2 through 8-6: Regarding the description of the composite barrier on page 8-3, please note that a 20 millimeter thick membrane is almost an inch thick. EPA recommends a minimum thickness of 30 mils for the synthetic membrane component of a composite cover system.

There does not appear to be any difference trench vents and interceptor trenches in the process options listings for landfill gas. Consider eliminating one.

Regarding Comment 23, Part 1, text on Table 8-1, p. 8-3 has been revised to read "Compacted clay covered with a synthetic membrane (0.020 to 0.030 inches minimum) followed..."

Response to Comments

USEPA comments, dated September 5, 1995

For Part 2 of Comment 23, Table 8-1, on p. 8-6, ABB-ES has eliminated interceptor trenches in the process options listing.

24. Appendix A, p. A-5: 40 CFR Part 270 should be deleted from the ARARs list. The permitting requirements of 40 CFR part 270 are administrative, not substantive standards. Also, we recommend that 40 CFR Part 258 be cited in lieu of, or in addition to 40 CFR part 257.

As recommended in Comment 24, 40 CFR Part 270 was deleted from the ARARs list because no offsite remedial actions are anticipated. ABB-ES has also replaced 40 CFR Part 257 with 40 CFR Part 258 as the more appropriate solid waste regulation.