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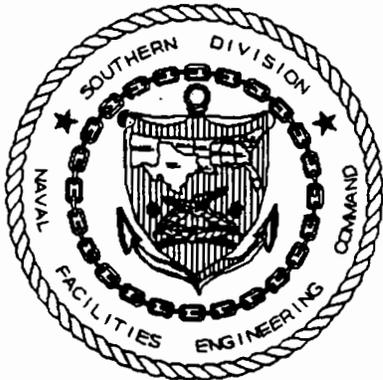
RESPONSE TO U S EPA COMMENTS RESOURCE CONSERVATION AND RECOVERY ACT
FACILITY ASSESSMENT VOLUMES 1, 2 AND 3 CNC CHARLESTON SC
3/10/1995
ENSAFE/ ALLEN AND HOSHALL

**RESPONSE TO USEPA COMMENTS
RCRA FACILITY ASSESSMENT — VOLUMES I, II, III
NAVAL BASE CHARLESTON
CHARLESTON, SOUTH CAROLINA**



Prepared for:

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**RESPONSE TO USEPA COMMENTS
RCRA FACILITY ASSESSMENT
VOLUMES I, II, III
NAVAL BASE CHARLESTON, SOUTH CAROLINA**

Note: All SCDHEC comments were incorporated into the USEPA comments, and are therefore included within this document.

GENERAL

- 1. The editorial quality of the document is poor. It has numerous misspelled words, sentences without prepositions or verbs, subjects and verbs that do not agree, parts of sentences left out, and sentences that are poorly constructed. It uses abbreviations without defining them. It lacks consistency in use of terminology and capital letters. It uses terms like "various" and "miscellaneous" when specific information is required. It indicates that information is unknown or unavailable when the purpose of the RFA is to gather that type of information.**

The entire RCRA Facility Assessment (RFA) for Naval Base Charleston, South Carolina, has been reviewed and rewritten in a more concise fashion. Spelling and grammar errors have been corrected. In addition, abbreviations have been defined, sentence structure has been corrected or improved, and the overall continuity of the document has been upgraded. Many of the sites were revisited in an effort to gather missing information, where possible. Any information that was uncovered, and that was not contained in the original document, has been added accordingly.

- 2. Generic terminology has frequently been used without an evaluation of its specific applicability. Terms like "petroleum hydrocarbons," "listed wastes," "flammable waste," "various," and "miscellaneous" provide no useful information.**

An attempt was made to remove any generic terminology that was used in the RFA, specifically concerning the waste characteristics. Each waste characteristic section has been rewritten, and has been put into a form where a more detailed list of the waste materials handled is included, followed by a list of the respective constituents of concern.

3. **There does not appear to be a clear understanding of how contaminants behave in the environment, especially air and soil gas.**

The air and soil gas pathways were not included in the RFAs for many sites at which volatile organic compounds or related materials were used. These RFAs have been revised to incorporate this information.

4. **Conclusions are drawn and recommendations are made regarding proposed action at each hazardous waste site. However, the information to support the conclusion and recommendations is frequently inadequate and sometimes contradictory.**

Each RFA has been carefully reread, and an attempt has been made to reword any sections that present information in a contradictory fashion. The information contained within the text of each RFA supports the conclusions and recommendations regarding proposed action at each hazardous waste site. Several sites have been revisited, and any additional information that was obtained has been incorporated into the report.

5. **Tables 1-1 and 1-2.**

- a. **In Volume I, information on Volume I's Solid Waste Management Units (SWMUs) has a white background while information on Volume II's SWMUs has a shaded background. However, information on Volume I's Areas of Concern (AOCs) has a shaded background while information on Volume II's AOCs has a white background.**
- b. **In Volumes II and III, all sites have a white background.**

The point is: there is no consistency in the use of shading.

Tables 1-1 and 1-2 in Volumes I, II and III have been revised, and in all cases have been presented in one consistent format. The shading and table presentation agree in all volumes. Tables 1-1A and 1-2A have been added to each volume, also been presented in the same format.

6. **Tables 1-1 and 1-2 contain some numbers in parentheses under the SWMU or AOC name. These numbers need to be explained.**

The numbers in parentheses following several SWMUs and AOCs were the building numbers which correspond to each site. These have all been removed.

7. Table 1-1 and 1-2 are not user friendly.

- a. Hazardous waste sites have been identified as needing a RCRA Facility Investigation (RFI), Confirmatory Sampling Investigation (CSI), or No Further Investigation (NFI). A column is needed in Table 1-1 and 1-2 to readily identify the proposed action at each hazardous waste site.**

A column which identifies the proposed investigative approach for each facility has been added to Table 1, Table 1A, Table 2 and Table 2A in all volumes.

- b. PAOC and temporary SWMU numbers were briefly used and then discontinued or changed. Their continued use can only prolong confusion. Building numbers where these hazardous waste sites are located are not in numerical order. It is time consuming and tedious to compare actions previously taken on a hazardous waste site at some building with actions currently being taken at that same site. EPA requests that a Table 1-1A and a 1-2A be prepared which lists all of the same information in Tables 1-1 and 1-2 but lists the buildings in numerical order.**

As per EPA's request, the information contained in Table 1-1 and Table 1-2 has been re-sorted by building number and has been presented in Table 1-A and Table 2-A. The tables presented in all volumes have been revised to a more user-friendly format. The PAOC number column has been removed from the tables since their use has been discontinued or changed and only adds confusion to the document.

- 8. Tables 1-1 and 1-2. Frequently, the material released, stored, or disposed of is identified as "Miscellaneous", "Unknown", or "Flammable". This provides no useful information. More descriptive information needs to be provided.**

In Table 1-1, Table 1-2, Table 1-1A, and Table 1-2A, the column identified as "Materials Released, Stored, or Disposed" has been elaborated on and includes additional information more specific to the nature of the any known chemicals that were used.

- 9. The Environmental Baseline Survey (EBS) and Environmental Impact Statement (EIS) have identified a number of hazardous waste sites and a number of contaminants at those sites. Much of this information is lacking from the RFAs. The EBS and EIS need to be reviewed to ensure that all hazardous waste sites have been identified, and the sites and contaminants have been incorporated into an RFA prior to beginning the RFI in those respective zones.**

During the final phases of the EBS process, all suspect sites were reviewed for inclusion in the RCRA Corrective Action process. Following that review, notifications for several sites were made for inclusion in the RCRA process. Sites which were not included involved duplicates. Those included within other units, or sites not subject to RCRA (i.e., asbestos-containing structures). The sites listed in the EIS generally conform to the EBS document. The EIS is currently being reviewed to ensure that no additional sites are listed.

- 10. Wherever references are made to Federal regulations, reference should also be made to the corresponding State regulations.**

Throughout all volumes state regulations have been added to accompany the corresponding federal regulations.

- 11. It would be helpful to have the approximate boundaries of the SWMUs and AOCs depicted in the figures, and to make their identification letters and numbers larger so they stand out more on the figures.**

In each figure, the approximate boundaries of each SWMU and AOC have been more clearly delineated, with the area outlined in bold and shaded for contrast. A broken line is used in cases where the SWMU or AOC is in a building that has been removed. A larger, bold type has been used to more clearly identify the location of the SWMU or AOC.

- 12. PAOCs 37, 69, 76, and 112 can not be located in the RFAs. Have they been omitted?**

PAOC 37 comprised of four unexploded ordnance sites which have been redesignated as AOCs 500, 501, 502, and 503. PAOC 69 consisted of an SAA on ARDM-3, a commissioned Naval vessel which will be removed in its entirety from the facility. PAOC 76 consisted of the Building 13 less-than-90-day accumulation area; this unit has been combined with SWMU 90. PAOC 112 consisted of an SAA on the SGI Barge, a commissioned Naval vessel not regulated under RCRA at Pier H, which will be removed in its entirety from the facility.

- 13. The exposure scenario is frequently limited to Naval Base employees. The exposure scenario needs to be expanded to include any people in the area including but not limited to Naval Base employees, especially in light of Base closure.**

The revised document has incorporated potential exposures to all receptors, including ecological receptors, specifically in the Cooper River and in surrounding wetlands; neighboring residents; Naval Base Charleston personnel; and future users of the area.

- 14. Based on best available information at this time, EPA has considered No Further Investigation (NFI) at this time for numerous hazardous waste sites.**

These sites have been recorded, and are to remain under this recommended action. EPA reserves the right to change this designation should information become available to merit further investigation.

SPECIFIC, VOLUME I

1. **List of Figures. Figure 5-28 identifies the site as AOC 677. Pages 5-88 and 5-89 identify the site as AOC 667. Which is correct?**

The correct AOC number is AOC 667, and Figure 5-28 and the Table of Contents has been corrected accordingly.

2. **Page 1-1. The acronym NSY is used here but in other places, e.g., Volume III Table of Contents, the acronym CNSY is used. Which is correct? Inconsistency causes confusion and therefore should be avoided.**

Throughout all volumes of the document, Naval Base Charleston, Charleston, South Carolina has been referred to as NSY, CNSY, base, Base, and Naval Base. For consistency and to avoid confusion, "Naval Base Charleston" has been chosen as the standard term. All previous abbreviations and phrases have been replaced with this term.

3. **Page 1-2. Paragraph 4 needs to be revised to not limit the RFA to any prescribed number of volumes. The number of sites will change as new sites are identified and additional RFAs prepared.**

Page 1-2, Paragraph 4 has been revised to state that the RFA currently consists of four volumes, however, additional volumes may be prepared as new sites are identified. By wording the phrase in such a manner, the RFA is not limited to any prescribed number of volumes.

4. **Page 1-2, last line. Change it to read "----AOCs identified at Naval Base----".**

The entire text of Page 1-2, Paragraph 4 has been revised to read, "Tables 1-1, 1-1A, and 1-2A summarize all SWMUs and AOCs contained within the initial four volumes of the RFA. Tables 1-1 and 1-2 are listed according to SWMU/AOC number; Tables 1-1A and 1-2A are listed according to building/facility number."

5. **Tables 1-1 and 1-2 and other places throughout RFA Volumes I and II. AOCs 534 and 654 are latrines and septic tanks. There are many former latrines and septic tanks at Naval Base Charleston, as well as sumps, drains, oil-water separators, and sewers. It has been agreed that all of these would be investigated as one SWMU (SWMU 37). For clarification, the concern at the latrines involves the piping which handles wastes and not the buildings themselves.**

The latrines that remain as separate AOCs in the RFA all discharged to the Cooper River or into wetland areas at the facility and not the sanitary sewer. For this reason, the building and the associated piping are being investigated as separate AOCs. The discharge from these units is being investigated as part of Zone J, water bodies of Naval Base Charleston.

6. **Table 1-2 states that the location of AOC 586 is "SE of Building 11". In Volume II, Figure 5-71 does not show the location of Building 11. Rather the narrative and figure indicate that this site is underneath one small part of what is currently Building 3. A clear and accurate description of the site location is needed.**

The text in Volume II, Section 5.71, Table 1-2 and Figure 5-71 have been revised, with a more clear, accurate and consistent description of the location of AOC #586. Table 1-2 lists AOC 586 as Building 1014, Temporary Powerhouse, and the location as adjacent to Building 11. The text in Section 5.71 indicates that AOC 586 consists of Building 1014, Temporary Powerhouse, and that the building was demolished between June 1956 and June 1957. Further, it indicates that in 1958 a concrete slab was put in the lot containing the former Building 1014. It is still present. The slab lies adjacent to the southeast corner of Building 11. The approximate area delineated for AOC 586 in Figure 5-71 is southeast of Building 11.

7. **Page 1-15. AOC 514 has a PAOC Reference of "31 March 1993." What is the meaning of this?**

PAOC and temporary SWMU numbers were briefly used and then discontinued or changed. Their continued use can only prolong confusion. As a result, PAOC reference numbers have been eliminated from all tables and text throughout the document. The reference "31 March 1993" in AOC 514 has also been removed.

8. **Figure 4-1 and 4-1A are illegible. They need to be replaced with figures which are legible.**

Figure 4-1 (SWMU 3 — Basewide Sewer System) and Figure 4-1A (Basewide Sanitary Sewer) have been replaced with larger, more legible drawings.

9. **Figure 4-19. This figure shows that the SWMU is located outside of Building 228 while the text indicates that it is within Building 228. Which is correct?**

SWMU 61 is outside of Building 228 in the northeast corner. The text in Section 4.19.1 has been revised to indicate this. The location of SWMU 61 has been more clearly delineated in Figure 4-19, indicating that the SWMU is outside of the building.

10. **Figure 4-44. This figure shows that SWMU's 90 and 91 are located within Building 13 while the text indicates they are outside of Building 13. Which is correct?**

The original draft RFA had one figure for all SWMUs in Building 13 (SWMUs 89-95), indicating all SWMUs were inside Building 13. The revised document has a separate drawing for each SWMU, in which each SWMU location is more clearly labeled. All SWMUs are inside the building, and the text in Sections 4.42, 4.43, 4.44, 4.45, 4.46, 4.47, 4.48, and 4.49 has been adjusted accordingly.

11. Page 4-4. What is Code 106?

Code 106 has been identified in Section 4.1.4 of the revised document as the CNSY Occupational Safety, Health, and Environmental Office. Numerous environmental incident reports are filed at this location.

12. Page 4-16 and frequently throughout the RFAs in Volumes I and II, air is ignored as a migration pathway. It must be addressed.

The possibility of air as a migration pathway was incorporated into the RFAs for all volumes, specifically in areas where volatile constituents are or were used.

13. Page 4-16. For waste characteristics, the statements are made that "This SAA stores photographic fixer. Additional characteristics are unknown." Yet, the "nature of the waste" is used as a criterion for limiting potential exposure to people. This is contradictory. A Material Safety Data Sheet (MSDS) and interviews with people working in the area should provide adequate waste characteristics.

Section 4.5.2 of the revised document describes in greater detail the photographic fixer, indicating that photographic developer chemicals include fixers with hardeners (ammonium thiosulfate, sodium sulfite, acetic acid, and boric acid). Section 4.5.2 also states that ammonia and ethylenediaminetetraacetic acid (EDTA) containers are accumulated in this SAA. The "nature of the waste" has been removed as a criterion for limiting exposure potential, since the degree of exposure should not determine the potential for exposure. Due to the volatile characteristics of the wastes accumulated in the unit, Section 4.5.3 for Migration Pathways has been revised to include air as a potential pathway.

14. Page 4-18 and throughout the RFAs, the recommended action is commonly based on storage practices. However, those storage practices are not stated, i.e., this is a recommendation not supported by facts. What are the storage practices?

In Section 4.5.6 and throughout the RFAs, the text concerning storage practices has been revised, specifically in cases where no further investigation is recommended based on these storage practices. The text has been expanded upon and specifies that NFI is recommended due to the interior accumulation of materials in closed containers for Section 4.5.6.

15. Page 4-21. The term EDTA is used without definition. EPA prefers that all documents be written in plain English but if abbreviations are used, they should be defined at least the first time they are used.

EDTA is defined as ethylenediaminetetraacetic acid in Volume I, Section 4.5.2.

16. **Page 4-87 and throughout the RFAs. The term "No Further Action" is used when "No Further Investigation" is intended. There is a significant difference between the two terms. The RFAs should be changed to read "No Further Investigation" for those site specifically identified above.**

The difference between the context of the two expressions has been duly noted. In Section 4.29.6 and in all cases where "no further action" was used, the text has been revised to read "No further investigation" as the recommended action.

17. **Page 4-95 and other places in the RFAs, statements are made that "Information required to determine _____ is currently not available." This is not acceptable. If there is enough information to identify an area as a hazardous waste site, there is enough information to say something about the waste characteristics, migration pathways, evidence of release, and exposure potential. This information needs to be included in the RFA.**

SWMU 79 and all other RFA sites for which information was not available, have been revisited and documents have been re-examined in an attempt to gather additional information. Any information that was gathered has been incorporated into the report.

18. **Page 4-146 describes the site as an inactive accumulation area in a steel shed on an asphalt floor. It says that "Because this AA is enclosed, soil, groundwater, and surface water migration is unlikely. The asphalt in the vicinity of this AA is free of cracks, ---." The recommendation is then made that "There is no evidence of a release from this unit. However, a RFI is recommended due to the nature of the waste (POLs) and the design of the unit (on top of asphalt) which may allow migration of any potential releases into the underlying soil and groundwater." This raises three points:**

- a. **Air has not been considered as a potential environmental medium.**

Air has been incorporated as a potential migration medium for this unit. The text for Section 4.50.3 has been revised to indicate that the potential for migration by air exists for SWMU 97 due to the presence of volatile materials.

- b. **The recommendation does not logically follow from the previous supporting information. In fact, they are contradictory.**

Information contained in Section 4.50 has been revised so as to maintain consistency. Soil, groundwater, and subsurface gas are included as potential migration pathways due to the cracks noted in the underlying asphalt pavement. The recommended action has been changed to a CSI. A CSI is recommended due to the accumulation of wastes in the open shed, the mobility of the wastes associated with the unit, and the multiple migration pathways.

c. **What are POLs?**

Section 4.2.1 has been revised to define POLs as petroleum, oil and lubricants.

19. **Page 4-165. The statement is made that "Based on available data, the materials present at this SWMU do not pose a threat to the environment." It then says that "Due to the limited data available and the potential for release to the environment, a RFI is recommended." This raises two points:**

a. **A risk assessment according to approved EPA guidance has not been done to support the absence of a threat.**

Since a risk assessment has not been performed at this SWMU, the statement regarding the threat posed to the environment by materials has been removed from Section 4.57.5.

b. **These two sentences contradict each other.**

Section 4.57.6 has been revised and states that an RFI is recommended due to the mobility of the wastes associated with this unit, the evidence of past releases at the unit, and the multiple migration pathways. Reference to the threat posed by materials used has been removed from the document.

20. **Page 5-18 and other places in the RFAs. "Limited exposure potential" is not an acceptable justification for No Further Investigation.**

The recommended action for a site is to be based on the absence of a release, the possibility of a release, and the evidence of a release. The text in Section 5.6.6 and all other places in the RFAs has been revised to no longer use exposure potential as the sole justification for NFI. Exposure potential has been included in the justifications, but only in conjunction with information concerning a release, and any other arguments.

SPECIFIC, VOLUME II

1. Table of Contents.

a. What do the numbers stand for that are contained in parentheses?

The numbers in parentheses stand for the building numbers in which the AOC or SWMU is located. These have been revised to read Building " " so that the Table of Contents remains consistent.

b. AOC 694. "Former" should be capitalized.

Section 5.164.1 has been corrected.

c. Beginning with page 5-118, all of the following page numbers are wrong.

The page numbers have been corrected throughout the document.

2. Page 4-1.

a. Various names are used to identify Naval Base Charleston. Terminology needs to be consistent. Sometimes it is referred to as "the naval base" and others as the "base" - sometimes capitalized and sometimes not. This is an issue that has been repeatedly addressed (and should have been resolved) in the RFI Work Plan.

Throughout all volumes of the original draft RFA, Naval Base Charleston, Charleston, South Carolina, has been referred to as NSY, CNSY, base, Base, and Naval Base. For consistency and to avoid confusion, Naval Base Charleston has been chosen as the standard term. All previous abbreviations and phrases have been replaced with this term.

b. The statement is made that "Subsurface gas migration would be unlikely due to the current site conditions." Yet, no site conditions are provided to support this conclusion.

The text in Section 4.1.3 has been revised to indicate that based on the potential presence of volatiles, subsurface gas migration is a possible pathway.

c. The statement is made that SWMU 38 is located near SWMU 39. Figure 4-1 shows the location of SWMU 38 but not SWMU 39.

Figure 4-1 has been revised to indicate the location of both SWMUs. SWMU 38 has been outlined in bold for clarity, and indicating that it is the SWMU under investigation.

3. **Page 4-6. "Of" is missing from the first sentence.**

The first sentence of Section 4.3.1 has been corrected.

4. **Pages 4-6 and 4-7. The area is described as being stained with tar, littered with piles of crushed and uncrushed asphalt, and void of vegetation. The primary concerns at the site are asphalt products, solvents, and degreasers. But the conclusion is drawn that exposure is remote because the plant has been inactive for more than 30 years. The facts do not support the conclusion.**

It has been noted that length of time that a site has been inactive does not come in to play when discussing the potential for exposure at this unit, and for all RFAs. Section 4.3.2 of the document has been revised to indicate that the waste characteristics associated with the site are waste asphalt products, solvents, and degreasers. The constituents of concern include VOCs, heavy metals, phenolic compounds, polynuclear aromatic hydrocarbons, and petroleum hydrocarbons. The exposure potential states that the potential for exposure from this unit exists for ecological receptors in the vicinity of the site, Naval Base Charleston employees who frequent the unit, and future users of the site.

5. **Page 4-12.**

- a. **Section 4.5.1, last sentence. The verb is missing.**

The last sentence of Section 4.5.1 has been reworded correctly.

- b. **Section 4.5.3, second sentence. "Than" should be "Then."**

The second sentence in Section 4.5.3 has been corrected.

- c. **Section 4.5.3 states that there is no evidence of any closure activity for the dump, surmises that it was abandoned in place, and states that most of the area is covered with concrete. Then the statements are made that "If the dump is now acting as a landfill, there is potential for migration via subsurface gas. Due to the inactive status of the dump and the current site conditions, migration via the air is unlikely." This raises three points.**

1. **"If the dump is now acting as a landfill," — Any distinction intended to be made here between a dump and a landfill is not clear.**

Section 4.5.3 has been revised to eliminate inappropriate references to a landfill.

2. **In either case, the potential exists for the migration of contaminants via subsurface gas.**

The section has been revised to address the ambient air and subsurface gas migration pathways.

3. **The active or inactive status of the dump has no effect on the migration of contaminants via the ambient air or subsurface gas.**

The section has been revised to address the ambient air and subsurface gas migration pathways.

6. **Section 4.5.5 states that "Because of its inactive status and the current site condition the potential for exposure to naval base employees should be remote."**

1. **The active or inactive status of the dump has no effect on the potential for exposure to naval base employees.**

The difference between the potential for exposure and the degree of exposure has been noted, and the document has been revised to indicate that the status of the dump has no effect on the potential for exposure. The text in Section 4.5.5 states that the unit located in the vicinity of a residential area and that exposure potential therefore exists for local residents, Naval Base Charleston personnel who frequent the unit, and future users of the site.

2. **Again, the exposure potential should not be limited to naval base employees.**

Section 4.5.5 has revised and includes the potential for exposure to local residents, Naval Base Charleston personnel, and future users of the site. Additionally, a comment has been added that no ecologically sensitive areas are in the vicinity.

6. **Page 4-13. The recommendation is made that "Due to the nature of this facility and the lack of a thorough assessment of the hazards associated with it, a CSI is recommended."**

- a. **Sufficient information about "the nature of this facility" has not been provided to support this conclusion.**

Dump operations ended in the early 1920s, its possible contents have been conservatively estimated. It is unknown which materials were burned, however paper, wood, general trash, paints, solvents, and waste oils have been included as possibilities. Additionally, it has been assumed that operating practices of the day were not as stringent as today, thus releases from the facility should not be considered uncommon.

- b. **EPA considers an RFI to be necessary for this site.**

The recommended action for SWMU 47 has been changed from a CSI to an RFI due to the probable releases from this unit, the multiple migration pathways, and the potential variety of wastes burned within this unit.

7. **Page 4-17. Section 4.7.5, second sentence says "Because it has been inactive for more than 20 years, the exposure potential is s." The rest of the sentence is missing.**

The entire wording of Section 4.7.5 has been revised. Conclusions based upon the unit's period of inactivity have been removed.

8. **Page 4-19.**

- a. **During EPA's site tours in the spring of 1993, and "old-timer" reported that he remembered that mercury was stored and spilled in an area underneath the ground floor. He said that access was through a small opening in the floor. Whether that subsurface area is called a "basement" or "hole," it needs to be investigated.**

A CSI is recommended for this unit to determine whether the area has been impacted by mercury use.

- b. **Section 4.8.4, second sentence. It says "Employees said that s spills have occurred, —" What number was intended here?**

The "s" was a typographical error. Section 4.8.4 has been corrected.

9. **Page 4-22.**

- a. **Section 4.9.1. A description is given of the first and second floors of the building but this is irrelevant. The copper dip tank was located outside of the building.**

This unit consists of a dip tank used to treat wood with a fire retardant compound. Little information has been found concerning fire retardant materials used at this site. However, compounds commonly used as fire retardants in the 1960s and 1970s were ammonium sulfate, ammonium phosphate, boric acid, and zinc chloride. It is probable that one or more of these compounds was used at this facility. The copper dip tank is designated as AOC 532.

- b. **Section 4.9.2. During EPA's September 1, 1994, tour, green residue was still caked on the concrete where the dip tank had been. Physical appearance indicates that the residue contains copper substance.**

This information has been incorporated into Section 5.25 of the RFA Volume II.

- c. **Section 4.9.3. Since the tank was located outside of the building, the description of the migration pathways inside of the building is irrelevant. Migration pathways outside of the building are needed.**

The fire retardant dip tank was inside the building. Exterior migration pathways pertinent to the copper dip tank are described in Section 5.25 of the RFA Volume II.

10. Page 4-23.

- a. **The term VSI is used. An abbreviation needs to be defined the first time that it is used.**

VSI is defined as a visual site inspection, however, the expression was no longer used in the revised document. All uses of VSI have been replaced with either "site survey" or a "visual inspection of the site."

- b. **Since the tank was located outside of the building, the evidence of release inside of the building is irrelevant.**

The fire retardant tank was inside the building.

- c. **Since the copper dip tank was identified as being located inside of the building throughout this site description when the tank was actually located outside of the building, the source and nature of the information about the tank inside of the building raises a significant question.**

The fire retardant dip tank was inside the building.

- d. **EPA agrees that an RFI is needed.**

The recommended action for SWMU 70 has been left as an RFI.

11. Figure 4-9 needs to be revised to indicate that the location of the tank was in the alcove on the northwest corner, outside of Building 5.

The location of the fire retardant dip tank inside Building 5 is shown in Figure 4-9.

12. **Page 4-25.** This site was a satellite accumulation area on top of cracked concrete. Wastes stored at this site were metal debris contaminated with heavy metals, cyanide, and acids. The statement is made that "Due to the nature of the waste, air and subsurface gas are unlikely migration pathways." EPA is concerned that this statement (and similar statements throughout the RFAs) does not reflect a clear understanding of the nature of the waste or its environmental migration pathways.

The potential migration pathways for SWMU 72 have been re-evaluated, and the text has been revised. The waste characteristics in Section 4.10.2 indicate waste materials accumulated within this unit include metal debris which may have been contaminated with plating wastes, and that the constituents of concern include heavy metals, cyanide, and acids. Due to the lack of containment structures associated with the unit, and cracks in the concrete pavement, Section 4.10.3 lists soil, groundwater, surface water, and subsurface gas as potential migration pathways. Air has also been listed as a migration route due to the potential presence of acids.

13. **Page 4-29.** The statement is made that "Because the visual evidence indicates the possibility of a release into the environment, ---" but no information has been provided to identify that visual evidence.

During the site inspection, the concrete floors inside Building 194, the flammable storage locker, and the paved areas outside the building were noted to be heavily stained with paint and ground-in blasting grit. This information has been included in Section 4.11.4 as evidence of a release. The recommended action in Section 4.11.6 has been reworded to state that a CSI is recommended for this unit due to the evidence of past releases from the unit, the multiple migration pathways, and the potential for exposure.

14. **Page 4-31.** The statement is made that:

The pool of mercury measured 10 feet in diameter and was discovered in 1969. Five pounds of mercury were vacuumed up and disposed of properly. The exposed area was scrubbed to remove any traces of mercury and the floor replaced.

EPA has two comments regarding these statements.

- a. **A pool of mercury 10 feet in diameter would weigh significantly more than five pounds.**

A pool of mercury this large would weigh significantly greater than 5 pounds. Therefore, either this incident was inaccurately reported or only a portion of the pool was removed. Based upon this discrepancy, as well as other possible variables, a CSI has been recommended for this site.

- b. **An EPA representative interviewed two eyewitnesses who were present when the floor was being removed, saw the floor being removed, saw the mercury pool, and saw the floor replaced without any remediation. Ron DeWitt, formerly with Code 106, was present during the second interview.**

Due to this information, a CSI has been recommended for this unit.

15. Page 5-1.

- a. **Since the railroad system is still operating, the statement "No evidence of closure activity was identified" is irrelevant.**

The statement has been removed from Section 5.1.3.

- b. **Section 5.1.3 and most other places throughout the RFAs regarding air and soil gas migration. EPA disagrees.**

Migration pathways throughout the RFA have been readdressed. Revisions to Section 5.1.3 indicate that since a variety of wastes are carried by the railroad system over a variety of media, soil, groundwater, and surface water are potential migration pathways. Air and subsurface gas have also been added as potential pathways due to the transportation of volatile materials by the railroad system.

- 16. Page 5-2. The statement is made that "Because the types and amount of contamination are unknown, the exposure potential to receptors is unknown." While this may be true, specific useful information is needed.**

Upon re-examining the potential and known waste materials associated with the unit, the potential migration pathways, and the known and possible releases, the exposure potential to the railroad system has been revised and states that since the railroad system covers such a large area, the potential for exposure exists for any personnel, residents, or sensitive environments in the vicinity of the Naval Base Charleston.

- 17. Figure 5-1 is illegible. All figures in the RFAs need to be legible.**

Figure 5-1, and all other unclear or illegible drawings, have been replaced with figures that are larger, more detailed, and/or more legible.

18. **Page 5-4. The statement is made that "This AOC contained creosote and possibly other listed and/or characteristic hazardous wastes." The generic information provides little useful information. Specific information is needed.**

More specific information has been provided in Section 5.2.2 by stating that waste materials associated with this AOC include creosote, pesticides, asphalt, and asphalt degradation products. Also listed are the constituents of concern, namely phenolic compounds, polynuclear aromatic hydrocarbons, chlorinated pesticides, and petroleum hydrocarbons.

19. **Page 5-8 and other places throughout the RFAs say that "A CSI is" (or is not) "recommended due to the potential migration pathways ---." This does not reflect a clear understanding of the RFI process. A CSI or RFI is conducted when a release to the environment is a possibility or a fact. "Migration pathways" is not a factor in determining whether or not a CSI or RFI is needed.**

For AOC 505 and all other cases where recommendations are based on the migration pathway, the text has been revised and recommendations now are based primarily on spill evidence. However, migration pathways have been retained as information supporting specific recommendations.

20. **Page 5-40. EPA disagrees with the proposed behavior of the contaminants in the ambient air and subsurface gas.**

The waste characteristics associated with AOC 519 include petroleum fuel and products of incomplete combustion, with petroleum hydrocarbons, VOCs, heavy metals and PAHs as the constituents of concern. Based on these constituents, namely due to the presence of volatile constituents, air and subsurface gas pathways have been included in Section 5.15.3 as potential migration pathways.

21. **Page 5-55. The statement is made that "Because the operating practices of concern (use of PCB materials) have ceased and present conditions are of no environmental concern, the potential for exposure to a receptor is insignificant."**

- a. **Ceasing use of PCB materials is not the governing factor in determining exposure potential; release to the environment is.**

The preliminary review found no spill reports, inspection reports, employee interviews, or visual observations which would indicate any release at this unit. Since no residential or sensitive areas are in the vicinity of the AOC, it is believed that exposure potential is therefore limited to Naval Base Charleston personnel who frequent the vicinity of the unit and future users of the site.

- b. **No information has been provided to demonstrate the absence of an environmental concern.**

There is no information which demonstrates or verifies the absence of an environmental concern; however, based on the preliminary review, no spill reports, inspection reports, employee interviews or visual observations were found which would indicate any releases at the unit.

- 22. **Page 5-68. EPA's August 23, 1993, letter contained an error. Instead of the site having a copper dip tank, it had vats containing shaping fluids. The copper dip tank was at Building 5. The RFA needs to be corrected accordingly.**

The corrected information from EPA's letter have been incorporated into the RFA for AOC 532, including changes to the unit characteristics, the waste characteristics, migration pathways, evidence of a release, and exposure potential. This additional information did not alter the recommended action for the site, which remains as no further investigation required.

- 23. **Page 5-71. Section 5.26.5 should read "--- approximately 250 feet ---."**

The text in Section 5.26.5 has been corrected.

- 24. **Page 5-83. It says "Due to current site conditions, the potential for exposure to naval base employees should be minimal, except for those working within Building 342" and then recommends No Further Investigation.**

- a. **Insufficient information has been provided to support the conclusion that current site conditions result in minimal exposure to people other than those working in Building 342.**

The text in Section 5.30.5 has been revised to indicate that exposure potential is limited to Naval Base Charleston personnel who frequent the vicinity of the unit, and future users of the site.

- b. **It is suggested that this section be re-written based on verbal discussions which have transpired between EPA and Naval Base Charleston.**

This statement has been removed from the revised RFA for this unit.

- c. **The same is true for Building 84 (Page 5-141), Building 91 (Page 5-227), and Building 125 (Page 5-339).**

The text in the respective sections has been revised to indicate that exposure potential is limited to Naval Base Charleston personnel who frequent the vicinity of the unit, and future users of the site.

25. Page 5-85.

- a. **The floor of the building was concrete — not bricks.**

Building 6 was revisited, and it was found that Zyglo was rinsed from the propellers with water onto the floor. The floor consists of wood blocks that are underlain with concrete. The rinsate was washed outside into the storm sewer. Currently, the wash water from this process is collected in a portable tank. The information contained in the RFA for AOC 539 has been revised to incorporate this information.

- b. **The site description does not mention that, at one time, the Zyglo was washed out of the building into the storm sewer in the street, that it is currently caught in a portable tank, or that the concrete floor has been eaten away by the Zyglo. Therefore, a release to the soil and groundwater is probable. Migration via soil gas is probable.**

The Zyglo process site was revisited and additional information was gathered. Section 5.31.3, the Migration Pathway section, has been revised, and states the following, "The entire Zyglo process was contained within Building 6. Soil, groundwater, and subsurface gas are potential migration pathways because the Zyglo has deteriorated the concrete underlying the wood blocks. Migration via surface water is likely since the Zyglo was washed out of the building and into the street, where a storm sewer drain is located. The floor of the process area, being constructed of wood blocks underlain by concrete, presents the problem of the wood blocks being saturated with Zyglo. Voids between the blocks where chemicals and metals collect are evident. Because these blocks appear to be saturated with Zyglo and the voids between them appeared to be full of metals and dust, air is also considered a potential migration pathway.

- c. **While an RFI is recommended for AOC 538 and 539, the nature of the contaminants is different. Each AOC should be investigated separately.**

Because both AOCs are in the same building, AOC 538 is mentioned in the RFA for AOC 539; however, in the revised document, the recommended action strictly calls for a separate RFI at AOC 539 due to the evidence of contamination, the potential migration pathways, and the associated exposure potential.

26. **Page 5-88. It is EPA's understanding that cyanide has never been used in the current plating plant (Building 226). What is the source of the information which indicates otherwise?**

Cyanide has been removed from the list of waste characteristics at AOC 540 in Building 226. Waste materials listed in Section 5.32.2 include acids and waste oil, with the constituents of concern including acids, petroleum hydrocarbons, BTEX, VOCs, PAHs, and heavy metals.

27. **Page 5-89. "Exposure" is misspelled.**

The text in Section 5.32.5 has been corrected.

28. **Figures 5-32 and 5-35 indicate that AOCs 540 and 543 are located at exactly the same spot. How is this possible?**

AOC 540 is related to the former Building 73, while AOC 543 is related to the former Building 1026. Both structures are no longer present; however, they were at one time in the current location for Building 226. The text has been revised to clarify this information, and Figure 5-32 and Figure 5-35 have been more clearly labeled.

29. **Page 5-105.**

- a. **The date appears to be in error.**

The date has been removed from Section 5.38.4.

- b. **EPA recommends that a CSI be conducted.**

The recommended action at AOC 548 has been changed to a CSI due to the evidence of past releases at the unit, the probability of other unreported releases, and the multiple migration pathways. Section 5.38.6 has been revised.

30. **Page 5-108.**

- a. **The fact that the site is inactive does not render exposure potential to be minimal.**

The text has been revised to state that exposure potential is limited to Naval Base Charleston employees who frequent the vicinity of the unit, and future users of the site.

- b. Sufficient information has not been provided to demonstrate that "present site conditions" render exposure potential to be minimal.**

There is no evidence to confirm the absence of a release, therefore the exposure text has been revised to eliminate the suggestion that the potential for exposure is minimal. Naval Base Charleston personnel who frequent the vicinity of the unit and future users of the site have been included as potential receptors.

- c. EPA recommends an RFI.**

The recommended action at AOC 549 has been changed to an RFI due to the probable releases from this unit in the past. Section 5.39.6 has been revised.

- 31. Page 5-111. Section 5.40.6 says "Because little is known about containment or operating practices at this AOC, a is recommended." This sentence is incomplete — what action is recommended?**

A CSI is recommended for this AOC due to the potential of past releases from this unit, the numerous migration pathways, and the associated exposure potential. The text in Section 5.40.6 has been corrected.

- 32. Pages 5-116 and 5-117.**

- a. Section 5-42-5 says "Because operating practices have ceased and present conditions are of no environmental concern, the potential for exposure to a receptor is insignificant."**

- 1. "Because operating practices have ceased ---" is not a factor in determining whether or not an RFI is recommended at a hazardous waste site.**
- 2. Sufficient information has not been provided to document present conditions.**
- 3. The presence of contaminants in the environment is always a concern to EPA.**
- 4. A Risk Assessment has not been conducted so sufficient information is not available to support the conclusion that exposure to a receptor is insignificant.**

- b. Section 5.42.6 says that "Due to the nature of operations, migration pathways and lack of a thorough assessment of the substances of concern at this site, a CSI is recommended." Compare Section 5.42.6 with Section 5.42.5 and the rest of the**

description for this site. The recommendation does not logically follow from the supporting information.

The original RFA states that because operating practices have ceased and present conditions are of no environmental concern, the potential for exposure is insignificant and then proceeds to state that due to the nature of operations, migration pathways and lack of a thorough assessment of the substances of concern at this site, a CSI is recommended. This information is contradictory. The revised document states that past operating practices were not as stringent as today, and that therefore a release from this type of unit would not be uncommon. The Cooper River is adjacent to the site and therefore the potential for exposure exists for ecological receptors in the Cooper River. The asphalt covering the surface and the limited access to this unit reduce the potential for exposure to Naval Base Charleston employees who frequent the area, and future users of the site. They do not, however, eliminate exposure potential. A CSI is still recommended due to the potential of past releases from this unit, the numerous migration pathways, and the associated exposure potential.

33. Pages 5-120 and 5-123. Same as the preceding comment.

These sections have been revised in a manner similar to that described in comment 32.

34. Page 5-129.

a. The abbreviation "TCE" needs to be identified.

TCE has defined as trichloroethylene or trichloroethene in Section 5.47.2.

b. Section 5.47.2 identifies a number of volatile organic compounds. Yet, Section 5.47.3 says that "Due to the nature of the contaminants and current site conditions, migration via air and subsurface gas is unlikely." EPA disagrees.

Section 5.47.3 has been revised to state that the potential for migration via air and subsurface gas exists for this AOC due to the presence of volatile materials.

c. Section 5.47.3 says that "Any releases within Building 77 should be contained within the structure, therefore soil, groundwater, surface water, and sediment are likely migration pathways for any outside sources."

1. It should read "--- within the structure. Therefore ---."

2. If releases are contained within the building, how can soil, groundwater, surface water, and sediment be likely migration pathways?

3. What is meant by "outside sources?"

The entire statement has been revised and now states that soil, groundwater, and surface water runoff are potential migration pathways because of the history associated with the unit, and the number of documented releases. Visible staining was noted both inside and outside the building. The potential for migration via air and subsurface gas therefore exists for this AOC due to the presence of volatile materials.

- 35. Page 5-130. Again, a CSI or RFI is conducted where there is the possibility or fact of a release of a contaminant to the environment. Lack of a thorough assessment of the hazards is not a determining factor.**

The recommended action for AOC 558 has been revised and states that a CSI has been recommended due to the documented evidence of previous releases, the numerous migration pathways, and the associated exposure potential. Reference to the lack of thorough assessment of the hazards associated with the AOC has been removed.

- 36. Page 5-132.**

- a. A description is given for a building which was built in 1909 for steam and electric generation and still serves that function. The primary constituents of concern for this facility are identified as fuel oil and diesel fuel. It is not mentioned that coal has been used at this facility. Yet, other hazardous materials identified as being associated with the facility include unidentified solvents, dry cleaning solvents, lube oil, mineral spirits, morpholine, sodium hydroxide, oil waste, oil, sodium sulfate, TCE, trisodium phosphate, and mercury; the RFA is silent on the source and industrial operations associated with these materials.**

These chemicals were used in relation with equipment maintenance and cleaning activities and as water treatment chemicals in the steam generation plant.

- b. The statement is then made that "Air and subsurface gas are unlikely migration pathways due to the nature of the potential contamination." EPA disagrees. Again this indicates a lack of understanding of the behavior of contaminants in the environment.**

Air and subsurface gas have been added to Section 5.48.3 as potential migration pathways.

- c. **Hydrochloric acid flush and transformer oil are identified as substances which have been spilled into the environment. Yet, these are not identified in the Waste Characteristics section and no information is provided on the source and industrial operations associated with these materials.**

Hydrochloric acid flush and transformer oil have been added to Section 5.48.2 as wastes associated with AOC 559.

37. **Page 5-136 and other places throughout the RFAs. Why is CSI in parentheses?**

A standardized format has been used in the revised documents. The first use of CSI defines it as a confirmatory sampling investigation (CSI) and, in subsequent sections of the document, the activity is referred as a CSI. The parentheses have been removed.

38. **Page 5-138.**

- a. **Is Building 451B the Former Building 29? Explain.**

The new volume does not refer to Building 29.

- b. **Analysis should not be capitalized.**

The *1991 Analysis for Polychlorinated Biphenyls* refers to a report and has been italicized in Section 5.50.4 to more clearly communicate this.

- c. **"Wipe sample" is the preferred term.**

Section 5.50.4 has been corrected.

- d. **The statement is made that a transformer was found to be contaminated so it was replaced, but the contaminants were not identified. What were the contaminants?**

Previous studies found the transformer to be PCB-contaminated and that it was replaced in 1991. The text in Section 5.50.4 has been revised.

39. **Page 5-144. Solvents are identified as a waste. Yet air is not considered as a potential migration pathway.**

The waste materials associated with this unit include solvents and degreasers with VOCs as the constituents of concern. Air and subsurface gas have been included in Section 5.552.3 as potential migration pathways for these constituents.

40. Page 5-153

- a. It says that "Lead-based primer, copper-containing bottom paint, and volatiles used for thinning paints are the primary constituents of concern for this AOC. Yet, the statement is made that "migration via air and subsurface gas is unlikely." EPA disagrees. Although the "volatiles" have not been specifically identified (which should be done), the term "volatiles" by definition clearly indicates an air concern whether it is in the ambient air or soil.**

Waste materials associated with this unit include paints, thinners, lead-based primer, copper-containing bottom paint, and abrasive blasting media. The constituents of concern include VOCs and heavy metals. Due to the volatile constituents, migration via air and subsurface gas is also possible for this unit.

- b. Comments have been made elsewhere in this document regarding use of the inactive status and current site conditions to determine contaminant migration or RFI justification.**

Any comments regarding the status of the AOC 566, and throughout the document, have been removed.

41. Page 5-162. The discussion regarding the gasoline spill is not prudent. This section should be re-written based on verbal discussions between EPA and Naval Base Charleston.

This section has been rewritten to describe only the specifics of the gasoline spill as well as subsequent cleanup activities.

42. Page 5-165. The discussion regarding various sites needs to be updated to consider EPA's comments in this letter.

This discussion has been revised.

43. Page 5-169, Section 5.60.6, First sentence. The word "to" is missing.

The first sentence of Section 5.60.6 has been corrected.

44. Page 5-174.

- a. Percolation is misspelled.**

The spelling of percolation in Section 5.62.3 has been corrected.

b. No consideration is given to air or soil gas as migration pathways.

Waste paint is immobile in soil and less likely to be transported in runoff. Due to the past presence of volatiles and metal particulates, air has been added as a potential migration pathway for Section 5.62.3. Both petroleum hydrocarbons and VOCs have been added as potentially migrating via subsurface gas.

- 45. Page 5-178. The statement is made that "Petroleum hydrocarbons migrating in the vapor phase would be a distinct possibility if the gas were trapped under the relatively impermeable cap of asphalt." The asphalt cap would affect the route, but not the fact, of soil gas migration. Capping the area with asphalt redirects the exposure potential but does not reduce or eliminate it.**

The document has been revised to reflect this. Section 5.63.3 now states that there were numerous cracks in the floor where petroleum products were used, and that migration to the soil and groundwater via these pathways is possible. Additionally it states that because the entire area is now paved with asphalt, surface water and sediment are unlikely migration pathways. Due to the presence of volatiles, Section 5.63.3 adds that the potential exists for migration via air and subsurface gas.

- 46. Page 5-180. Solvents have been omitted as wastes of concern.**

Section 5.64.2 has been revised to state that the waste materials handled at this unit include paints and solvents, with the constituents of concern including VOCs and heavy metals.

- 47. Page 5-189. Air has been omitted as a migration pathway.**

Section 5.67.3 has been revised to indicate that since PCBs are nonvolatile compounds which are not considered very mobile, air and subsurface gas are not considered potential migration pathways.

- 48. Page 5-192. This is an active site which should be addressed under process closure. An RFI is needed for the paint stripper discharge.**

The recommended action for AOC 583 was a CSI. This has been upgraded to an RFI due to a known release of paint stripper, as well as potential releases from USTs at the unit. The storm sewer system will be addressed separately.

49. **Page 5-201. The statement is made that "No information was found during this assessment regarding the powerhouse's design, construction, size, or use." This information should be available from Public Works.**

Additional information pertaining to the powerhouse was found and has been added to the document. Additional information for the site indicates that the powerhouse was built in 1905, and that the original 40' x 40' structure was a one-story building with a wooden frame and concrete floor. In 1935, a 53' x 40' two-story annex was added. In 1944, Building 1014 was connected to Building 1077. Records indicate that the combined structure was used for industrial salvage, which included a battery shop. Building 1014 was demolished between June 1956 and June 1957, with Building 1077 already removed prior to this time. In 1958 a concrete slab was installed in the lot containing the former Building 1014. This slab remains intact, except the east corner, which was removed when a railroad spur was installed in 1963.

50. **Page 5-210. EPA disagrees with the comments regarding air and soil gas. If acetone and petroleum products are primary constituents of concern, then air and soil gas are likely migration pathways.**

The comments from EPA have been addressed. Section 5.74.2 has been revised to state that waste materials associated within this unit include acetone and petroleum products, with petroleum hydrocarbons, BTEX, PAHs, VOCs, and heavy metals as the constituents of concern. Accordingly, Section 5.74.3 states that soil, groundwater, air, and subsurface gas are potential migration pathways for these constituents. Although acetone is infinitely soluble in water, the asphalt pavement now covering the spill area minimizes surface water as a likely migration pathway.

51. **Page 5-213. The statement is made that "Because the operations of concern have ceased and present conditions are of no environmental concern, the potential for exposure to a receptor is insignificant." And the recommendation is made that "A CSI is recommended because of the nature of operations and a lack of a thorough assessment of the presence of asbestos." The recommendation does not logically follow.**

AOC 592 has been revised. The exposure potential contained in Section 5.76.5 has been revised to indicate that no residential areas or sensitive environments are in the vicinity of this unit. Asbestos is a human carcinogen, therefore exposure is a concern to Naval Base Charleston personnel who frequent the area, and future users of the site. Since the site is inactive and has been paved with asphalt, exposure potential is considered limited. The recommendation for a CSI has been made in Section 5.76.6 due to possible past releases of a known human carcinogen, and the multiple migration pathways. Additionally, particulate releases from this unit could have impacted soil beneath the asphalt.

52. Page 5-217. What are "conexes?"

Use of the expression "conex" has been discontinued. It has been replaced with the term "small shed" to eliminate confusion.

53. Page 5-218. For Exposure Potential, the statements are made that "This site is located in the controlled industrial area of the base far from any residential areas. Some of the drains run directly to the Cooper River approximately 20 feet away."

a. While this may be true, it does not address exposure potential.

Section 5.78.5 has been revised and states that no residential areas are in the vicinity of this AOC. Additionally, it states that the concrete floor and lack of evidence of releases minimize the potential for exposure to Naval Base Charleston personnel and future users of the site. Due to storm drain discharges, the potential for exposure exists for ecological receptors in the Cooper River.

b. EPA is concerned that industrial drains run directly to the Cooper River and do not provide for the treatment of released industrial wastes. The EBS mentions a number of such industrial drains. These must be investigated. If untreated industrial wastes are being discharged directly into public waters of the United States, the practice must be abated and the discharges must be redirected to comply with a National Pollutant Discharge Elimination System (NPDES) Permit. Also, these need to be identified and investigated as a part of the RFI along with the remainder of the sewers at Naval Base Charleston.

Storm sewer system discharges to the Cooper River are to be investigated as a separate unit.

54. Page 5-220 and most other places throughout this RFA. EPA disagrees with the technical information regarding air and subsurface gas.

AOC 595 and all other places throughout the RFA have been re-evaluated and revised. In this particular case, since waste materials such as petroleum products, paints, and solvents have been handled, air and subsurface gas have been listed as potential migration pathways.

55. Page 5-239. Do should be Due.

The last sentence of Section 5.86.4 has been corrected.

56. Page 5-242.

- a. **Section 5.87.1, last sentence. The verb is missing.**

The last sentence of Section 5.87.1 has been corrected.

- b. **Section 5.87.3 describes conditions within the building but is silent regarding the leaking transformer outside of the building.**

The comment has been included in Section 5.87 that during the site inspection, stained soil was noted due to a small leak from the temporary transformer. Section 5.87.3 lists soil, groundwater, and surface water as potential migration pathways outside the building due to a leak from the temporary transformer.

- c. **Section 5.87.5 says that "Due to the facility's inactive status and current site conditions, the potential for exposure to naval base employees should be minimal." Yet Section 5.87.6 says that an "NFI is recommended for AOC #604 due to the lack of evidence of any major releases, limited migration potential, and low exposure potential. It is further recommended that the temporary transformer be repaired to prevent any further leaking and the soil beneath it be removed and disposed of."**

These statements have been recognized as contradictory and have been revised. The revised Section 5.87.5 now states, "No residential areas are in the vicinity of this AOC, however the unit is approximately 300 feet from the Cooper River. The primary potential for exposure is to Naval Base Charleston personnel who frequent the area, and future users of the site. It is believed that releases of oil contain less than 50 ppm of PCBs." The corresponding recommended action in Section 5.87.6 indicates that a CSI is recommended due to the evidence of a release from the temporary transformer outside the building, the associated migration potential, and exposure risks.

- d. **Such technical information that does not support the recommendation is a concern to EPA.**

As noted above, the text has been revised accordingly.

- 57. Page 5-257. The RFA makes no mention of the underground storage tank that was in the vicinity of this building. That tank was used for the disposal of waste oil as well as all other kinds of solvents. Reportedly, there are no records of the tank ever being emptied, suggesting that its contents leaked out into the environment. The tank has since been removed. This tank area needs to be investigated in conjunction with the Old Locomotive Shop. The comment is then made that "Due to its inactive status and current site conditions, the potential migration via surface water, sediment, and air should be minimal." No mention is made of groundwater or soil gas which EPA considers to be significant potential migration pathways.**

Information concerning the presence of a former UST has been added to the unit characteristics for AOC 613. Also added to Section 5.92.1 is information from a 1993 EPA memorandum that the UST has been removed in recent years. However, there is no documentation available regarding the tank being pumped, sampled, or any remedial activity being performed. Soil, groundwater, surface water runoff, air, and subsurface gas have all been considered potential migration pathways in Section 5.92.3.

- 58. Page 5-261 and other places throughout this RFA. Lack of a thorough assessment of the hazards associated with a site is justification for a Risk Assessment — not a CSI or RFI.**

Comments regarding the lack of a thorough assessment of the hazards associated with a site have been removed throughout all volumes. Specifically for AOC 615, the recommended action in Section 5.93.6 has been a CSI due to the nature of operations at the facility, the hazards associated with the constituents of concern, and the potential migration pathways associated with this unit.

- 59. Page 5-263. Do should be Due.**

Section 5.94.3 has been corrected.

- 60. Page 5-279. SWMU #u5 is an error. What SWMU was intended here?**

The text should read SWMU #5. Section 5.99.6 has been corrected.

- 61. Page 5-287, Section 5.102.1, third paragraph. "Of" should be deleted from the sentence.**

Section 5.102.1 has been corrected.

- 62. Page 5-288. What is TPH?**

The definition for TPH is Total Petroleum Hydrocarbons. With reference to laboratory results, this abbreviation has been defined in AOC 624.

63. **Pages 5-309 and 5-310. Section 5.110.5 says that "Because the transformer and 10C oil were removed and present conditions are of no concern, the potential for exposure to a receptor is insignificant." Section 5.110.6 says that "A CSI is recommended because of the large PCB releases and a large 10C oil leak." These contradict each other. If the "present conditions are of no concern," why is the CSI needed? What remedial action was taken to deal with the large PCB releases to render the present conditions of no concern?**

Section 5.110.5 has been revised. Revisions to Section 5.110.5 state that the exposure potential is limited to Naval Base Charleston personnel who frequent the vicinity of the unit and future users of the unit. Also, a CSI is recommended for this unit due to the evidence of past releases and multiple migration pathways associated with the unit. Spill reports or inspection reports did not provide further information regarding any releases at this site.

64. **Page 5-321.**

- a. **The third sentence refers to the dumps. Elsewhere it is referred to as the dump. Which is correct?**

The third sentence of Section 5.114.1 has been corrected to read dump.

- b. **See comments on Page 4-12 above.**

This section has been revised as described in comment 5 above.

65. **Page 5-327. Lactation should be Location.**

This spelling error in Section 5.116.1 has been corrected.

66. **Pages 5-345 and 5-346. EPA disagrees with the rationale that since the transformer fluid contained less than 50 ppm PCBs the exposure potential is insignificant. The contaminant concentration relates to impact of exposure — not potential for exposure.**

The difference between the potential for exposure and the exposure impact is recognized. Section 5.122.5 has been revised and now states that this unit is in the vicinity of residential homes, and that exposure potential therefore exists for local residents, Naval Base Charleston personnel who frequent the vicinity of the unit, and future users of the site.

67. **Page 5-355. Section 5.126.2 identifies blast media and welding supplies as the wastes but does not specifically identify the hazardous substances of concern within these. Specific information is needed here.**

Specific waste materials associated with the abrasive blasting media and welding supplies used at this unit have been added to Section 5.126.2. The constituents of concern therefore include VOCs and heavy metals.

68. **Page 5-378. No information has been provided to support the conclusion that "Due to the nature of the contaminants (pesticides) and current site condition, migration via the air or subsurface gas is unlikely."**

Section 5.135.3 has been revised and includes air and subsurface gas as potential migration pathways. Also stated is that since the majority of the area is covered with pavement or construction, the potential for migration via surface water runoff is minimized.

69. **Page 5-384. The "Dynamics RI/FS Compliance Oversight Hazardous Waste Tables (1993)" is an inaccurate and incomplete reference.**

This reference has been removed.

70. **Page 5-397.**

- a. **The site is identified as Hazardous Materials Storage which is incorrect. It is the Indoor Firing Range. See Table 1-2.**

Section 5.142 has been corrected and the title, unit characteristics, waste characteristics, migration pathways, evidence of release, exposure potential and recommended action were all revised from Hazardous Material Storage to an Indoor Firing Range.

- b. **Although the drains have been sealed, they need to be investigated as a part of the entire sewer system investigation.**

The storm sewer system will be addressed separately.

- c. **The building does not otherwise need a CSI or RFI. Rather, as with all other industrial processes, when operational closure ends, it needs to go through process closure.**

In Section 5-142 the recommendation has been made for the active industrial processes to undergo process closure once activities have been discontinued.

- d. **Figure 5-142 should also identify the location of AOCs 670 and 684.**

Figure 5-142 has been revised.

71. Figure 5-154.

- a. **This figure shows that AOC 684 is located within Building 1888 which is wrong. AOC 684 is located east of Building 1888; AOC 669 is located within Building 1888.**

AOC 694 consists of a former outdoor pistol range in the vicinity of Building 1888. Two other AOCs are in the vicinity of the unit, including AOC 669 (Building 1888 range), and AOC 670 (field south of Building 1897). All AOCs have been labeled on Figure 5-154, and the range for AOC 684 has been approximately delineated.

- b. **AOCs 669, 670 and 684 should all be shown on this figure.**

Figure 5-154 has been corrected.

72. Page 5-434. The waste characteristics for this site need to be specifically identified.

The information that has been included in Section 5.155 has been listed in as much detail as possible for a site of this nature. The text has been revised to state, "The specific materials burned at this unit are unknown. While the majority of waste burned probably consisted of paper, it is possible that flammable hazardous materials such as paints, solvents, and waste oils were also burned at this unit. Under this conservative approach, the constituents of concern would include VOCs, heavy metals, PAHs, and petroleum hydrocarbons."

73. Page 5-445.

- a. **The location of AOC 689 is not specifically identified.**

AOC 689 has been more specifically identified as the "Southern Tip of Base (Marina Parking Area)."

- b. **The migration pathways in air and soil gas is not mentioned.**

Section 5.159.3 has been revised, and air and subsurface gas have been added as potential migration pathways.

c. What is the exposure potential to people visiting the area?

Since dioxins which have entered the soil are known carcinogens, an exposure risk exists for any person visiting the area, Naval Base Charleston personnel, and future users of the site. This information has been included in Section 5.159.5.

74. Figure 5-159. The location of AOC 689 needs to be identified.

Figure 5-159 has been corrected.

75. Page 5-447.

a. The name of the EPA representative is misspelled.

Reference to the EPA representative has been removed from the document.

b. Part of the date of the EPA letter is missing.

Reference to the EPA letter has been removed from the document.

76. Page 5-448, Section 5.160.6, second sentence. This is an incomplete sentence.

The second sentence of Section 5.160.6 has been corrected.

77. Page 5-450.

a. Some of the discharges to the Cooper River are identified. Discharges which have been overlooked are the pre- and post-NPDES discharges, and the fixed and floating dry dock discharges. They need to be included.

Drydock discharges are addressed as AOC 556 within Volume I. Pre- and post-NPDES discharges are addressed as either individual discharges from specific units or are included within the RFAs for the sanitary sewer system (SWMU 37) and the storm sewer system (AOC 699).

b. Other water bodies around Naval Base Charleston have been overlooked. They need to be included.

This section has been revised to incorporate references to Shipyard Creek and Noisette Creek.

78. Figure 5-161 is illegible. All figures should be legible.

Figure 5-161 has been corrected.

- 79. The distinction between AOCs 691 and 692 is unclear. Why aren't they considered together along with all of the other water bodies?**

AOC 692 is limited to the area at the south end of the base where the berthing piers are located. It consists of the land areas where excavations have encountered free product. Conversely, AOC 691 consists of the waterfront areas adjacent to the base, and does not include the adjacent shorelines or land areas.

- 80. Page 5-456, Section 5.163.5. The issue is not whether or not base personnel are exposed. The issue is: What is the potential for exposure of all people, plants, animals, fish, and terrestrial wildlife to contamination?**

The text for Section 5.163.5 has been revised and now states that the most severe threat posed by explosives is the threat to human safety due to the reactivity of the material. No residential areas are in the vicinity of this unit. Therefore, Naval Base Charleston personnel, people in the area, and future users of the site are all potential receptors for this AOC. The proximity of the Cooper River, adjacent to this unit, creates the potential for exposure to environmental receptors within the river and neighboring ecosystems.

- 81. Page 5-458, Section 5.164.5. The issue is not whether or not base personnel are exposed. The issue is: What is the potential for exposure of all people, plants, animals, fish, and terrestrial wildlife to contamination?**

The text for Section 5.164.5 has been revised and now states that the most severe threat posed by explosives is the threat to human safety due to the reactivity of the material. No residential areas are in the vicinity of this unit. Therefore, Naval Base Charleston personnel, people in the area, and future users of the site are all potential receptors for this AOC. The proximity of the Cooper River, adjacent to this unit, creates the potential for exposure to environmental receptors within the river and neighboring ecosystems.

- 82. Figure 5-164. One site that has been overlooked is the piles of material where the 18" submerged dredge line comes onto Clouter Island. The material is gray in color and has a strong ammonia odor like lawn fertilizer. It is material that was possibly left from former munitions activities on the island. This area needs to be designated as an AOC and a CSI conducted. The EBS also identifies areas where unexploded ordnance have been located on Clouter Island. These areas need to be identified as SWMUs and included in an RFA.**

Notification of this area has been made, and this area is being addressed as a separate unit. It will be investigated as part of AOC 694.

- 83. Many sites have been identified as containing petroleum compounds. There is no consistency in the identification of the constituents in the petroleum compounds. The specific constituents within these compounds needs to be identified for each of these sites. The description from one site to another should be consistent in the quality, quantity, and presentation of the information thus making the RFA a useful document rather than a point of compliance with a regulatory requirement. One poor example is Page 5-367 which says "The primary concern at this facility is petroleum product wastes." One example where there is a better presentation of petroleum hydrocarbon constituents is Page 5-415 which lists benzene, toluene, ethylene, xylene, and polynuclear aromatic hydrocarbons; missing are the heavy metals normally associated with waste oil.**

The RFA has been revised, with a consistent description provided throughout the document for petroleum products, listing the constituents of concern as petroleum hydrocarbons, BTEX, PAHs, VOCs, and heavy metals. A more specific description could not be provided for each waste material, since in many cases there is uncertainty as to which materials were handled.

- 84. Many sites have been identified as containing battery charging stations. There is too much consistency in the recommendations. The statements are made that "no spill reports, inspection reports, or employee interviews indicate a release from this site. Staining was noted on the concrete beneath the battery bank during the VSI.—No further investigation is recommended due to the lack of evidence of past releases, limited migration pathways and minimal exposure potential. It is also recommended that the acid beneath the battery bank be cleaned up." Examples include pages 5-70, 5-79, 5-156, and 5-171. It is too circumstantial that someone would find four acid spills while conducting the RFA at Naval Base Charleston. The recommendation contradicts the supporting information and reflects an improper understanding of the RCRA regulatory process.**

Each site involving a battery-charging station was revisited, and the document has been subsequently revised.

SPECIFIC, VOLUME III

1. Table of Contents

- a. The Table of Contents has a different and less user friendly format than Volume I.**

The Table of Contents has been revised so as to correspond to Volumes I and II.

- b. SWMU 148 refers to Shop 71. This is the only site in all three volumes of the RFA which refers to a shop. Elsewhere, locations are identified according to building numbers. A building number should be used here.**

The description for SWMU 148 in Section 4.6.1 has been revised, with the shop number replaced by the building number. The text now refers to the area as "Satellite Accumulation Area, Building 194, CNSY Permit ##81".

- c. SWMU 158. Quaywall is misspelled.**

The word quaywall has been corrected throughout the document.

- d. SWMU 159 refers to this site being at Building 610. Page 4-48 says this site is located at Building 665. Which is correct?**

SWMU 159 is a SAA southwest of Building 665, outside of the building.

- e. SWMU 160. No mention is made of this being a Quaywall. Yet it is identified as such in the List of Figures and on Page 4-52. Consistent identification is needed to avoid confusion.**

The List of Figures has been corrected, and the figure name and listing are consistent.

2. List of Figures

- a. The List of Figures has a different and less user friendly format than Volume I.**

The List of Figures has been revised to a format that is user-friendly and consistent with the other volumes.

- b. Figure 4-2. The permit number is missing.**

Figure 4-2 has been corrected.

- c. **Figure 4-4. Permit should be capitalized.**

Figure 4-4 has been corrected.

- d. **Figure 4-10. The permit number is missing.**

Figure 4-10 has been corrected.

3. **Page 1-2, Last sentence. "Summarizes" should be plural.**

The sentence has been corrected.

4. **Page 4-1.**

- a. **Figures 4-1 and 4-2 indicate that SWMUs 143 and 144 are located at the same spot. They need to be revised to identify their actual locations.**

Figure 4-1 has been revised to more accurately show the location of SWMU 143 inside Building 222. The waste materials have been associated with the maintenance and waste processing typically done for the repairs of submarines. SWMU 143 consists of areas inside Building 222 that have been used for handling waste. SWMU 144 is a Satellite Accumulation Area located as shown in Figure 4-2.

- b. **No description is given of waste management practices. Specific information is needed.**

The practices used in the past have been to put the waste in a 55-gallon drum lined with polyurethane. The text has been amended to include this information. Potassium chromate solution and paint chips have also been added to the Waste Characteristics section.

5. **Page 4-4 and other places throughout Volume III. The phrase "[in accordance with R.61-7.9.262.34(c)]" is used. What does this refer to?**

The phrase in Section 4.2 and elsewhere throughout Volume III refers to the numerical designation for relevant South Carolina Hazardous Waste Management Regulations. In this case, a typographical error was made and the text should read "Hazardous and/or mixed wastes are accumulated [in accordance with 40 CFR 262.34(c) and SCHWMR R.61-79.262.34(c)] within this unit." It has been corrected accordingly.

6. **Page 4-7. This section needs to be rewritten based on verbal discussion between EPA and Naval Base Charleston.**

The text for SWMU 145 has been revised to state that it is the site of a reported mercury spill located beneath Building 13A. No other evidence of this spill was found during the preliminary document review or visual site inspection. The revised text now also indicates that interviews with present and former Naval personnel indicate that an unknown quantity of mercury was released at this unit. These revised statements no longer question the integrity of the employees who were interviewed, however, they clearly indicate that there has been no direct physical evidence to confirm that a spill occurred.

7. **Figure 4-3. The scale is wrong.**

All drawings which are not to scale have been labeled as such. Figure 4-3 is not to scale and has been corrected.

8. **Page 4-12 and other places throughout Volume III. The hazardous waste site is a metal frame/tarpaulin building sitting on an asphalt surface. The conclusion is then drawn that, since the floor is asphalt, the soil, groundwater, and soil gas may provide a route of contaminant migration. This is wrong. Since the floor is asphalt, the soil, groundwater, and soil gas are not a route of contaminant migration unless the integrity of the asphalt has been compromised — something which has not been mentioned.**

SWMU 147 has been re-evaluated entirely, and the text revisions now indicate that soil, groundwater, and subsurface gas are not considered pathways because the pier projects solely into the river and contact with these media is, therefore, not possible. Soil, groundwater, and soil gas are no longer considered as potential migration pathways.

9. **Page 4-12.**

- a. **A description of "waste oil and aerosol cans" provides little useful information. More specific information is needed about the contents of the waste oil and aerosol cans.**

Additional information added to Section 4.5.2 states that the wastes associated with this SWMU are empty aerosol cans and waste oil, and as a result the major constituents of concern are VOCs and petroleum hydrocarbons associated with waste oil and any residual material in the aerosol cans.

- b. **Section 4.5.3 notes that surface runoff to the Cooper River is one potential migration pathway, and that soil, groundwater, and soil gas are other routes of migration. Then, the recommendation is made for no further investigation. This is contradictory. The supporting information must provide sufficient information to support the recommendation.**

The recommended action for a site is to be based on evidence of a release. NFI is recommended for this site since no evidence of a release was observed during the Visual Site Inspection, and no documentation of a release was found. The text in Section 4.5.6 has been revised to reflect this information.

10. **Figure 4-5. The scale is wrong.**

Figure 4-5 has been corrected.

11. **Page 4-15. Gamlen Cold Wash is identified as a waste but the statement is made that the investigation team was not able to ascertain the chemical nature of Gamlen Cold Wash. This information is available on a Material Safety Data Sheet (MSDS) which the Occupational Health and Safety Administration (OSHA) requires be kept in the area where the Gamlen Cold Wash is used. Reference should be made to the MSDS for specific information needed.**

Gamlen Cold Wash is used as an emulsifiable solvent cleaner, with kerosene and aromatic hydrocarbon solvents as the major constituents of concern. This information has been included in Section 4.6.2.

12. **Page 4-17 says "Due to the nature of the wastes stored at this unit and its proximity to the Cooper River, potential exposure is anticipated for ecological receptors in the Cooper River, Charleston Naval Complex personnel who frequent the vicinity of this unit, and future users of the area." Then it recommends no further investigation. Again, the supporting information contradicts the recommendation.**

The recommended action for a unit is based on the evidence of a release. NFI is recommended at this unit due to the fact that it has only been in operation since June 17, 1994 and no spill reports, visual evidence, or employee interviews suggest that a release has occurred at this unit. The text for Section 4.6.6 has been revised to include this information.

- 13. Page 4-17 and other places in Volume III. Length of time that a hazardous waste unit has been in operation is not a justification for No Further Investigation.**

The facility associated with this unit is a highly classified area of Naval Base Charleston for which access was denied. The RFA was therefore written by the Naval Nuclear Propulsion Program personnel; approval of the section was subsequently received by Washington. The RFA therefore cannot be altered without approval from Naval Propulsion Program Headquarters in Washington.

- 14. Page 4-24. It is unclear as to what this SWMU is. This section contains very little useful information.**

SWMU 157 consists of areas inside Building 79A that have been used for handling waste. The reference to the less-than-90-day area has been deleted, and additional information concerning the waste handling practices in the building have been added. The waste handling practices are the same as those used in SWMU 143, Building 222. Additional waste characteristics have also been added.

- 15. Page 4-26. Section 4.9.6 notes "This SWMU is within an area in which a RCRA closure under South Carolina Department of Health and Environmental Control consent order 94-16-HW and is to be performed soon. Another RCRA closure will be performed at final facility closure."**

- a. The first sentence does not make sense. Obviously, something was left out.**

The word "and" was inappropriately used in the first sentence. The sentence has been corrected by deleting the word "and."

- b. Reference to a SWMU undergoing two RCRA closures indicates a lack of proper understanding of the RCRA regulatory process.**

The areas typically used in the past for waste handling have been areas that did not have a SCDHEC permit to operate as a hazardous waste area. When federal facilities came under the jurisdiction of hazardous waste regulations, the South Carolina Department of Health and Environmental Control (SCDHEC) gave the shipyard the consent order to operate certain areas until which time the areas could be closed, and the proper permits established. This is the purpose of consent order 94-16-HW.

- 16. Figure 4-10. The location of SWMU 152 is unclear.**

Figure 4-10 has been corrected.

17. **Page 4-32 and other places in Volume III. Storage practices is used as a reason to justify No Further Investigation. However, no information on the storage practices is provided.**

The text for SWMU 153 indicates that proper storage practices were used. The text has been expanded to include that entails accumulating wastes in a drum inside a flammable storage facility in accordance with the prescribed state and federal regulations. Storage practices have been added to other places in Volume III. Storage practices, however, were not a basis for the No Further Investigation recommendation.

18. **Page 4-36. It is unclear what waste handling practices have occurred at this facility. Section 4.13.1 says "This building was originally constructed as a torpedo warehouse. It is currently used as a storage area for nuclear material." Then Section 4.13.2 lists chromium, lead, flammable waste, and chromium/lead paint as constituents of concern. It is not clear how these constituents can be of concern based on reported uses of the facility. Specific information is needed.**

Wastes associated with the Naval Nuclear Propulsion Program were stored in this building prior to radiological processing in Building 79A. This information has been added to the Unit Characteristics section for SWMU 155.

19. **Figure 4-14. SWMU 156 is not readily located on this figure. It needs to be revised so critical information is readily locatable.**

Figure 4-14 has been revised. The surrounding area has been reduced, and SWMU 156 has been outlined in bold and labeled more clearly.

20. **Section 4.14.5 says "Due to the nature of the wastes stored at this unit and its proximity to the Cooper River, potential exposure is anticipated for ecological receptors in the Cooper River; Charleston Naval Complex personnel who frequent the vicinity of this unit, and future users of the area." Then it recommends no further investigation. Again, the supporting information contradicts the recommendation.**

The recommended action for a unit is based on evidence of a release. NFI is recommended at this SAA since proper storage practices were followed and no evidence of a release was found. This has been included in the text for Section 4.14. Additionally, Section 4.14.6 explains that proper practices consist of storing waste in 55-gallon drums contained in drip pans, availability of spill response materials, and accumulating waste in accordance with prescribed state and federal regulations.

21. Page 4-45.

- a. Quaywall is misspelled.**

The title block for Section 4.16 has been corrected.

- b. The hazardous waste site is a metal building equipped with internal containment designed to contain spills within the structure. The statement is then made that since the building is on top of a concrete paved area, soil, groundwater, and subsurface gas are potential migration pathways. Unless the integrity of the building and the integrity of the concrete have been compromised, EPA disagrees.**

Section 4.16.3 has been revised to state that since this SAA is situated on a concrete surface, soil, groundwater, and subsurface gas are unlikely migration pathways. This statement does not eliminate these routes as possibilities.

22. Page 4-47. The "nature of the waste" is used as a justification to take No Further Investigation. However, no information about the nature of the waste is provided to support the absence of a concern.

Wastes associated with SWMU 159 include used primer, grease, spent smoke tubes, and paint containers with VOCs and metals as the major constituents of concern. Aside from paint splatters, there has been no evidence of a release. The recommended action for a unit is to be based on evidence of a release, and the text for SWMU 158 states that NFI is recommended due to the proper storage practices and the lack of evidence of a release from this unit. Additions to the text describe practices consisting of storing waste in appropriate containers in a structure designed to contain spills, and accumulating wastes in accordance with prescribed state and federal regulations.