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LETTER TRANSMITTING COMMENTS ON RESOURCE RECOVERY AND CONSERVATION  
ACT FACILITY INVESTIGATION REPORT ZONE B DATED 1 MARCH 1996 CNC  
CHARLESTON SC  
10/18/1996  
SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

CERTIFIED MAIL

October 18, 1996

LCDR Paul Rose  
Officer in Charge, Caretaker Site Office  
Naval Facilities Engineering Command, Southern Division  
Building NH-45  
Charleston Naval Base  
Charleston, SC 29408-2020

Re: Zone B Draft RCRA Facility Investigation  
(RFI) Report, Dated March 1, 1996  
Charleston Naval Base  
SC0 170 022 560

Dear LCDR Rose:

The South Carolina Department of Health and Environmental Control (Department) and the U.S. Environmental Protection Agency (EPA) have reviewed the above referenced Zone B Draft RFI Report according to applicable State and Federal Regulations, and the Charleston Naval Base's Hazardous Waste Permit, effective June 5, 1990. Based on this review the Charleston Naval Shipyard has not adequately fulfilled the requirements of Permit Condition IV.C.4.

Comments from both the Department and U.S. EPA are attached. Within thirty (30) days upon receipt of this letter, please make the specified changes and resubmit the Zone B RFI Report to the Department and U.S. EPA for review.

Should you have any questions regarding this issue, please contact me at (803) 896-4179 or Paul Bergstrand at (803) 896-4016.

Sincerely,



Johnny Tapia P., Environmental Engineer Associate  
Hazardous Waste Permitting Section  
Bureau of Solid & Hazardous Waste Management

Attachments

cc: Paul Bergstrand, Hydrogeology  
Rick Richter, Trident EQC  
Brian Stockmaster, SOUTHNAVFACENGNCOM  
Tony Hunt, SOUTHNAVFACENGNCOM  
Doyle Brittain, EPA Region IV

**Comments on**  
**Charleston Naval Base**  
**Draft Zone B RFI Report**  
**Dated March 1, 1996**  
**Received August 8, 1996**

**Johnny Tapia**

1. On page v of the Table of Contents, Sections 11, 12, and 13 of the Report have not been included in this page. Page v of the Table of Contents should be corrected.
2. Page 1-11 defines "Confirmatory Sampling Investigation" (CSI) as part of the Corrective Action process, and previous pages also stated that AOC 507, in Zone B, was warranted a CSI in the approved RCRA Facility Assessment (RFA) of June 1995. A RCRA Facility Investigation (RFI) is the next step that follows a CSI, if required.

Based on the above it is not clear, as explained in page 1-11, if the report presented here is the CSI Report or the RFI Report for AOC 507.

The text that describes the scope of every phase of the Corrective Action process seems to contradict the investigative approach outlined in the RCRA Facility Assessment (RFA) for AOC 507. The text describing the investigation phases and the objectives of this report as a CSI or RFI should be clarified.

3. On tab 5, Section 5.2.10 is titled "Test Results for AOC 507" and should presumably present the results of the sampling conducted at AOC 507; however the data presented on table 5.3, as part of section 5.2.10, shows the results of the calculations for UCL's based on the grid-based sampling strategy at Zone B.

It is also stated that on Page 5-13 in reference to table 5.3 that "concentrations of these chemicals (aluminum, arsenic, and manganese) that exceed their respective RBCs are below their corresponding UTLs." A review of table 5.3 and the analytical data on Appendix D, showed that this statement is not true, as presented, for Aluminum and Manganese.

This table should be checked to ensure that correct calculations were made and that the correct RBC values were used for comparison. In addition, there is a discrepancy on the number of samples considered in the UCL's calculations for Aluminum (12), while in the rest of chemicals was 15.

4. On page 6-4 of the Fate and Transport Section has not included Table 6.2. The title of this table is "Fate and Transport Properties and Screening Levels."

Table 6.2 that summarizes chemical and physical properties of all the chemicals found on Zone B should be included with the revisions.

5. On page 7-16, Human Health Risk Assessment Section.  
Paragraph two reads:

"Should existing features be maintained under the future industrial site use, direct exposure to affected areas (surface soil) would be effectively precluded." This sentence is saying that a future industrial use of the site has already been decided. This is not the case, as described on page 7-17 in the following phrase:

"Because Zone B is part of BRAC III, they cannot assume future site use with any certainty." This sentence would contradict what it was expressed on page 7-16. This contradiction should be clarified.

6. Section 9.8 describes a ranking system that will use a weighting factor developed by the Navy during the Corrective measures Study (CMS). It is the Department's understanding that the development of any ranking system to place an "order of desirability" for the Corrective Measures Alternatives specified for a particular site, will not preclude from selecting the most appropriate alternative that effectively accomplishes the selected cleanup goal, independently of the "order of desirability" recommendation, based on the Navy's weighting factors.
7. On table 10.1.2, Organic Compounds Analytical Results for Soil, the RBC values for 2-Butanone (MEK) and Toluene have zero missing. This observation is based on the RBC values as presented on EPA's Region III Risk-Based Concentration Tables from April 19, 1996.

The RBC values on this table should be revised, in conjunction with table 10.1.6.

8. It was noted during the review of the Baseline Risk Assessment that calculations of risk values are rounded down to the nearest unit, for individual exposure pathways, medium, and chemicals independently. The Department believes that individually (by pathway, medium and chemical) obtained risk values should be kept as calculated and be rounded, as shown, in the table that shows the final summary of risks. Using this approach will avoid carrying errors through the calculations that in some cases could be significant.

Additionally, the format of the tables that present the results of the Risk Assessment calculations, makes hard to understand and difficult for the reviewer to find relevant numbers because of the lack of use of dividing lines or grid to separate values. Total values should also be highlighted and enclosed in a box for quick reference. Some examples of tables's formats have been included as a reference of the way the Department will like to see the Risk Assessment calculations presented.

*CARCINOGENICITY - SLOPE FACTORS (1)*

CAS No.	Element	Slope Factor		
		Ingestion (Risk/pCi)	Inhalation (Risk/pCi)	External Exposure (Risk/yr. per pCi/g soil)
10045-97-3	Cesium-137 *	2.80E-11	1.90E-11	2.00E-06
15046-84-1	Iodine-129	1.90E-10	1.20E-10	4.10E-09
13981-16-3	Plutonium-238	2.20E-10	3.90E-08	2.80E-11
15117-48-3	Plutonium-239	2.30E-10	3.80E-08	1.70E-11
13966-00-2	Potassium-40	1.10E-11	7.60E-12	5.40E-07
13982-63-3	Radium-226	1.20E-10	3.00E-09	6.00E-06
15262-20-1	Radium-228	1.00E-10	6.60E-10	2.90E-06
10098-97-2	Strontium-90 *	3.60E-11	6.20E-11	0.00E+00
14133-76-7	Technetium-99	1.30E-12	8.30E-12	6.00E-13
10028-17-8	Tritium	5.40E-14	7.80E-14	0.00E+00
13966-29-5	Uranium-234	1.60E-11	2.60E-08	3.00E-11
15117-96-1	Uranium-235 *	1.60E-11	2.50E-08	2.40E-07
7440-61-1	Uranium-238 *	2.80E-11	5.20E-08	3.60E-08

(1) HEAST (1993a)

(2) Values for Radium-226 (CAS No. 13982-63-3 ) and decay chain products.

\* Values for isotope and decay chain products.

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TABLE #  
FACILITY NAME  
SITE NAME

**Total Carcinogenic and Noncarcinogenic Risk by Medium**

	Total RME Cancer Risk <sup>(1)</sup>	Total RME Hazard Quotient
<b><u>Current Visitor<sup>(2)</sup></u></b>		
Soil 0-2' bls	2E-07	3E-03
Soil 0-4' bls	-	-
Surface water	1E-08	8E-04
Sediment	3E-07	6E-04
Groundwater	-	-
<b>Receptor Total</b>	<b>5E-07</b>	<b>4E-03</b>
<b><u>Future Worker<sup>(3)</sup></u></b>		
Soil 0-2' bls	5E-06	1E-01
Soil 0-4' bls	5E-06	9E-02
Surface water	-	-
Sediment	-	-
Groundwater	2E-05	4E-01
<b>Receptor Total</b>	<b>2E-05</b>	<b>5E-01</b>
<b><u>Future Resident<sup>(4)</sup></u></b>		
Soil 0-2' bls	2E-05	2E+00
Soil 0-4' bls	2E-05	2E+00
Surface water	7E-07	2E-02
Sediment	3E-06	4E-03
Groundwater	7E-05	3E+00
<b>Receptor Total</b>	<b>9E-05</b>	<b>5E+00</b>

**Note:**

1. RME - reasonable maximum exposure
  2. Dermal exposure to surface water and ingestion and dermal exposure to sediment are considered complete pathways for the current visitor.
  3. Surface water and sediment pathways are considered incomplete for the future worker due to site controls.
  4. Combined adult/child future resident used except where child resident used for ingestion and dermal contact with surface water and sediment.  
Risk and hazards were calculated for both 0-2 ft. and 0-4 ft. soil intervals; receptor totals reflect the interval with the highest risk estimate.
- \* - Indicates incomplete pathway for this receptor at this site and medium.

NC - not calculable due to lack of toxicity data for COPC.

**BOLD** - Receptor risk equals or exceeds USEPA target risk range of 1 E-06 to 1 E-04 or hazard quotient of 1.

TABLE #

CARCINOGENIC AND NONCARCINOGENIC RISK SUMMARY  
 BY RECEPTOR AND MEDIUM.  
 FACILITY NAME  
 SITE NAME

Receptor Pathway	RME Cancer Risk <sup>(2)</sup>						RME Hazard Quotient				
	Medium: <sup>(1)</sup>	SL 0-2'	SL 0-4'	SW	SD	GW	SL 0-2'	SL 0-4'	SW	SD	GW
<b>Current Visitor<sup>(3)</sup></b>											
Ingestion		2E-08	--	--	1E-07	--	5E-04	--	--	2E-04	--
Dermal Contact		5E-09	--	1E-08	1E-07	--	2E-02	--	8E-04	4E-04	--
Inhalation of Volatiles		NC	--	--	--	--	NC	--	--	--	--
Inhalation of Particulates		4E-11	--	--	--	--	9E-06	--	--	--	--
<b>Medium Total</b>		<b>3E-08</b>		<b>1E-08</b>	<b>3E-07</b>		<b>2E-02</b>		<b>8E-04</b>	<b>6E-04</b>	
<b>Receptor Total</b>				<b>3E-07</b>					<b>3E-02</b>		
<b>Future Worker<sup>(4)</sup></b>											
Ingestion		5E-06	5E-06	--	--	2E-05	2E-02	2E-02	--	--	4E-01
Dermal Contact		1E-06	1E-06	--	--	--	7E-03	8E-03	--	--	--
Inhalation of Volatiles		NC	NC	--	--	--	NC	NC	--	--	--
Inhalation of Particulates		8E-09	1E-08	--	--	--	NC	3E-04	--	--	--
<b>Medium Total</b>		<b>5E-06</b>	<b>6E-06</b>			<b>2E-05</b>	<b>3E-02</b>	<b>3E-02</b>			<b>4E-01</b>
<b>Receptor Total</b>				<b>2E-05</b>					<b>4E-01</b>		
<b>Future Resident<sup>(5)</sup></b>											
Ingestion		2E-05	2E-05	4E-08	1E-05	5E-05	6E-01	6E-01	1E-03	1E-02	2E+00
Dermal Contact		3E-06	3E-06	9E-07	2E-06	2E-07	2E-02	3E-02	2E-02	3E-03	8E-02
Inhalation of Volatiles		NC	NC	--	--	1E-05	NC	NC	--	--	6E-01
Inhalation of Particulates		8E-08	1E-07	--	--	--	NC	1E-02	--	--	--
<b>Medium Total</b>		<b>2E-05</b>	<b>2E-05</b>	<b>9E-07</b>	<b>2E-05</b>	<b>7E-05</b>	<b>6E-01</b>	<b>7E-01</b>	<b>3E-02</b>	<b>2E-02</b>	<b>3E+00</b>
<b>Receptor Total</b>				<b>1E-04</b>					<b>4E+00</b>		

(1) SL -- soil from 0-2' bls, and 0-4' bls; SD -- sediment; SW -- surface water; GW -- ground water.

Risk and hazards were calculated for both 0-2 ft. and 0-4 ft. soil intervals; receptor totals reflect the interval with the highest risk estimate.

-- Indicates incomplete pathway for this receptor at this unit and medium.

NC - not calculable due to lack of toxicity data for COPC.

(2) RME - reasonable maximum exposure

(3) Dermal exposure to surface water and ingestion and dermal exposure to sediment are considered complete pathways for the current visitor.

(4) Surface water and sediment pathways are considered incomplete for the future worker due to site controls.

(5) The future resident totals for a combined adult/child resident except ingestion and dermal contact with surface water and sediment totals for child resident.

**BOLD** -- Receptor risk equals or exceeds USEPA target risk range of 1 E-06 to 1 E-04 or hazard quotient of 1.

TABLE #

CHEMICALS CONTRIBUTING SIGNIFICANTLY TO  
 HUMAN HEALTH RISK.  
 FACILITY NAME  
 SITE NAME

Receptor Medium	Chemical	CAS <sup>(2)</sup> Number	Receptor vs. Medium		Receptor vs. Medium	
			RME Risk <sup>(3)</sup>	Percent	RME HQ <sup>(4)</sup>	Percent
<b>Current Visitor</b>						
	Soil 0-2' bls		NONE		NONE	
	Primary Contributing Chemicals Total		NA		NA	
	Receptor vs. Medium Total		3E-08		2E-02	
<b>Surface Water</b>						
	Primary Contributing Chemicals Total		NA		NA	
	Receptor vs. Medium Total		1E-08		8E-04	
<b>Sediment</b>						
	Primary Contributing Chemicals Total		NA		NA	
	Receptor vs. Medium Total		3E-07		6E-04	
	Receptor Total <sup>(3)</sup>		3E-07		3E-02	

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**MEMORANDUM**

**TO:** Johnny Tapia, Environmental Engineer Associate  
Hazardous Waste Permitting Section  
Bureau of Solid and Hazardous Waste Management

**FROM:** Paul M. Bergstrand, Hydrogeologist   
Division of Hydrogeology  
Bureau of Solid and Hazardous Waste Management

**DATE:** 15 October 1996

**RE:** Draft Zone B RFI Report for Naval Base Charleston  
Revision 0 Dated 21 February 1996  
Charleston County  
SC0 170 022 560

**GENERAL COMMENTS**

- 1) The line numbers on each page is an excellent idea and should aid comments and revisions.
- 2) The following should be added to p 3-4 line 8, p 3-13 line 10, and p 4-3 line 16 through 19 "..... which is a SC certified laboratory".
- 3) The boundaries of Zone B are inconsistent within the document and the June 1995 RFA Report. The western boundary is drawn east of Avenue "D" in Figures 1-4, 2-1, 2-7, 10.2.1 and 10.2.2. The boundaries should be consistent in the revised document.
- 4) Review of the following Sections was deferred to EPA:
  - a) Section 6 Fate and Transport
  - b) Section 7 Human Health Risk Assessment
  - c) Section 8 Ecological Risk Assessment
  - d) Section 9 Corrective Measures

- 5) AOC 507 was drawn in a different location in the June 1995 RFA Report (figure enclosed). The revised document should verify and plainly state the investigated area was the actual location of Building 1010.
- 6) The revised document should include a copy of the 1908 map which details Building 1010. The copy of the area in question may be reduced to fit in the document binder.

#### SPECIFIC COMMENTS

- 7) p. 1-5 line 6 Delete "Today, NAVBASE Charleston is in the process of shutting down operations."
- 8) p. 5-1 This Section, titled **Nature and Extent of Contamination**, does not describe the nature or the extent of contamination in Zone B, but actually describes the approach and technical methods used to determine soil background conditions for Zone B. Section 5 should be retitled in the revised document.
- 9) p. 10-1 This section, titled **Site-Specific Evaluations**, does not provide a plain summary or table of positive results which may be correlated to sample locations. All results are reported statistically, arithmetically or as a percent. None of which answers the simple question, "Has the horizontal and vertical extent of contamination been defined?" Once the extent of contamination is clearly understood, the statistical evaluation of results, the determination of risk and the chemicals of significance may be made. The revised document, and future reports of findings, must provide a clear, succinct and comprehensive understanding of the horizontal and vertical extent of site contamination.
- 10) p. 10-5 This section is titled **Nature and Extent of Contamination in Soil** and should in part summarize the organic compound analytical results for soil. This section, however, has immediately compared the first round analytical data to Region III risk based concentrations (RBC). Comparing the initial analytical results to RBC is premature at this point in the

report. Since this is the first time this data is being presented, all positive results should be reported, all positive results should be shown on a table with the corresponding sample number and all positive results should be shown on a site map. Only after a full explanation of the extent of contamination is presented should the data be compared to RBCs.

RBC tables have several limitations which should be addressed in this report. The RBC table limitations include; the cumulative risk from multiple contaminants or media; the full extent of contaminants have been delineated; the RBC table should not be used as a substitute for a site-specific risk assessment. The revised document should address the issues raised in this comment.

- 11) p. 10-11 Section 10.1.4.1 discussed soil-to-groundwater cross-media transport and in doing so has compared maximum reported concentrations to groundwater protection soil screening levels (SSLs) which also have several limitations which should be addressed in this report. In short, the conclusion reached in this section is that soil concentrations are not expected to impact the shallow aquifer. This conclusion, while possible, cannot be supported at this time (see comments # 9 and 10). This cross-media transport model apparently assumes the full extent of soil contamination is known and that there is a vertically downward contaminant migration path. This model, however, cannot explain the presence of benzene in subsurface soil which is below a "clean" upper soil sample or the unusual longevity of benzene in the environment (80+ years). Furthermore, this model does not account for the possibility of soils being contaminated by contaminated groundwater and finally, this report has not addressed the source of trichloroethene in surface and subsurface soils.

Because of the age of the AOC, the uncertainty of the location of the AOC, the presence of contaminants in surface and subsurface soils, the shallow depth to groundwater, and the variability of groundwater flow, a supplemental CSI should be performed at this site using shallow ground water wells and sampling for VOCs and SVOCs. The groundwater sampling could be performed at the same time as the collection of the additional soil samples. The revised document should address the issues raised in this comment and include supplemental CSI groundwater sampling.

JUN 8 1995

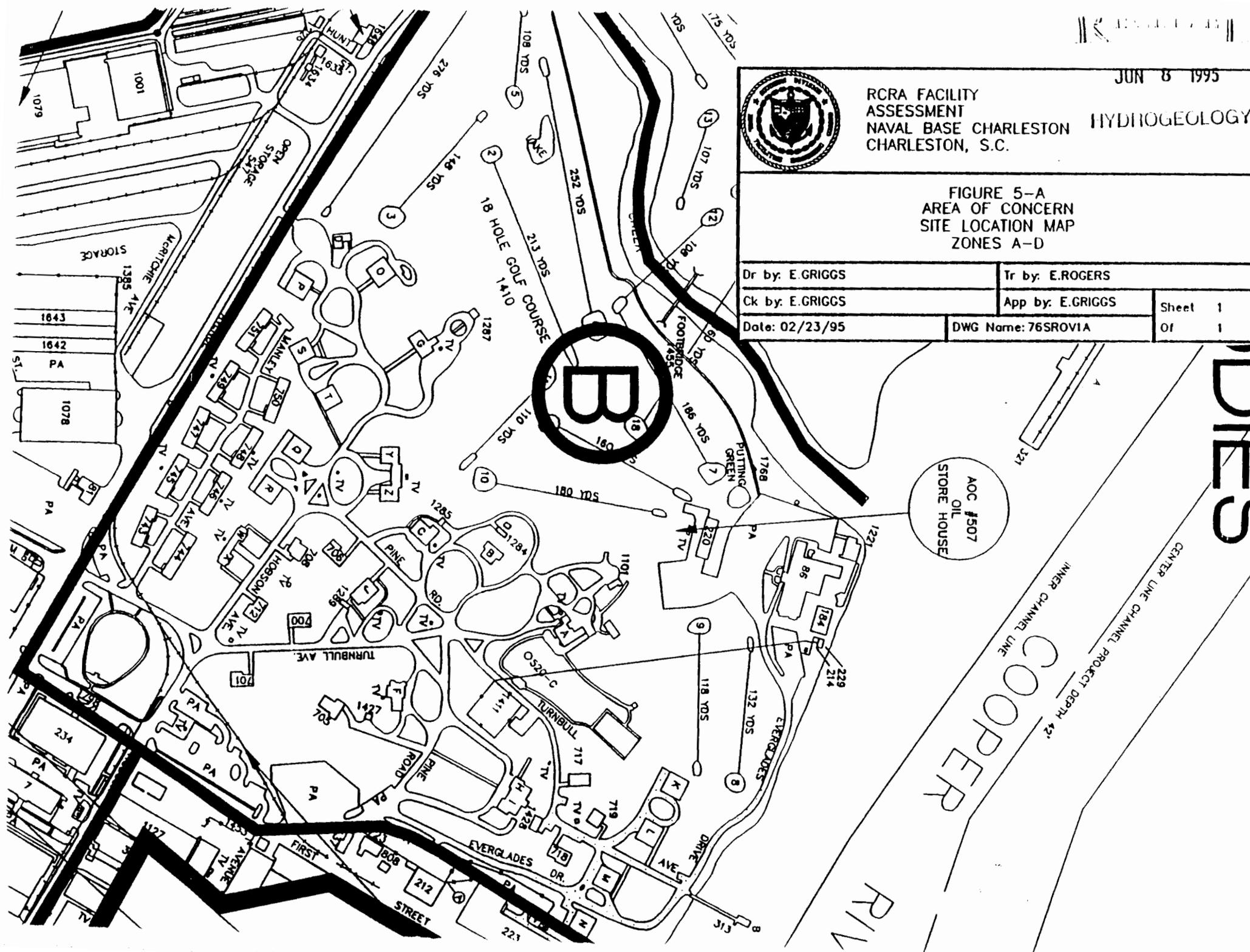


RCRA FACILITY  
ASSESSMENT  
NAVAL BASE CHARLESTON  
CHARLESTON, S.C.

HYDROGEOLOGY

FIGURE 5-A  
AREA OF CONCERN  
SITE LOCATION MAP  
ZONES A-D

Dr by: E.GRIGGS	Tr by: E.ROGERS	Sheet 1 Of 1
Ck by: E.GRIGGS	App by: E.GRIGGS	
Date: 02/23/95	DWG Name: 76SROVIA	



ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON THE  
RESOURCE CONSERVATION AND RECOVERY ACT FACILITY INVESTIGATION  
REPORT FOR ZONE B

GENERAL

1. General comments on human health risk assessment made for the Zone H RFI Report apply for the Zone B RFI Report and are not specifically repeated here.
2. EPA agrees that ecological risks related to Zone B, Area Of Concern (AOC) 507 appear to be minimal, based upon the limited habitat within Zone B, the small area of contamination, and the apparently limited migration pathways to ecological habitats of concern.

SPECIFIC

1. The transmittal letter states in part that:

The purpose of this letter is to submit the revised Zone B RCRA Facility Investigation (RFI) Draft Report -  
--.

This is the first draft Zone B RFI Report submitted to EPA so EPA does not understand the significance of the word "revised."

2. Page vi, List of Tables, Tables 2.6 and 2.7: The footnotes are missing.
3. Page xiv, Abbreviations, Acronyms, and Symbols for NAVBASE Zone B: Why is the acronym for the Wisconsin Occupational Health Laboratory used in a Naval Base Charleston, South Carolina document?
4. The format used for Sections 5.0 (Nature and Extent of Contamination) and 10.0 (Site-Specific Evaluations) makes the text difficult to follow. Except for a discussion of data related to background comparisons, the actual nature and extent of contamination are not presented until Section 10.0, after the presentation of the risk assessments. It would be easier to understand if Sections 5.0 and 10.0 were combined in the Final Zone B RFI Report.
5. Page 5-1, Sections 5.0 and 5.1, and Page 5-13, Section 5.2.10: In the text, clarify that the comparison of detected organic and inorganic chemical concentrations to the USEPA Region 3 RBC Table pertains only to the protection of human health and does not address protection of ecological receptors.
6. Page 5-12, Section 5.2.9: Reference is made to Ohio EPA guideline documents. The Ohio guideline documents should be deleted and South Carolina guideline documents used instead.

7. Page 6-1, Section 6.0: The theory and application of Fate and Transport are discussed. The discussion leads up to, but stops short of, making a conclusion. The questions that need to be answered here are:
  - a. What is the contamination, where is it coming from, where is it going, and how is it getting there? And,
  - b. What is the horizontal and vertical extent of contamination?
8. Statistical Comparison to Background. This comparison was performed correctly, but on Page 7-10 and on Table 10.1.3, the background "reference" concentration should be identified as the Upper Tolerance Level.
9. Page 7-29, Section 7.6.4: In part, this section says:

In addition to the standard tabular presentation of risk/hazard, summary risk and hazard contour maps were plotted (where appropriate) for applicable environmental media to provide a visual supplement. Contour maps are generally developed to show the distribution and concentration of individual chemicals or groups of chemicals, or the risk/hazard associated with potential exposure through applicable pathways.

As an extension of conventional risk/hazard determinations, risk and hazard were calculated based on each COC's concentration at each sample location. Maps were constructed for each pathway for which sufficient data were available to produce relevant contours. Maps and other graphics were prepared only when they were considered a useful aid in data interpretation and/or CMS decision-making. Narratives are provided where graphical presentations were inappropriate. If COCs were not identified in the HHRA for a specific site or an adequate narrative explanation could be provided, risk contours were not developed for that site.

EPA recognizes the benefit of, and need for, these types of maps and strongly urges that they be produced. Where there are not sufficient data to produce relevant contours, these data need to be collected. These types of maps are critical to the entire CMS process, including determining where a Corrective Measures Study (CMS) is and is not needed, what it is needed for, and what it will cost. Subsequent to the submission of this draft Zone B Report, EPA has reviewed draft maps which would satisfy this concern.

10. Page 7-40, Section 7.7.7: The commitment is made to present site-specific HHRA risk and hazard maps in Section 10 of the final RFI Report. These maps are missing in Section 10 of this draft report. EPA can not approve an incomplete RFI Report; those maps need to be provided for EPA review in the draft report. Subsequent to the submission of this draft Zone B Report, EPA has reviewed draft maps which would satisfy this concern.

11. Page 8-1, Section 8.0: The statement is made that:

This methodology is described in detail in the Final Zone J RFI Work Plan (submitted November 22, 1995).

This raises two points:

- a. A Comprehensive RFI Work Plan has been developed and approved for work to be done at two or more zones. Each Zone Work Plan is intended to be specific for that zone. Thus, any reference to a more detailed description of this methodology should be to either the Comprehensive RFI Work Plan or a Section in the Zone B RFI Work Plan.
  - b. The Zone J RFI Work Plan is still draft and should be referred to accordingly.
12. Page 8-2, Figure 8.1: This figure is difficult to read, with respect to the relative locations of Ecological Study Areas (ESAs) I and II and Zone B. It would be better to add or substitute a figure like Figure 1.4, Page 1-10, with the addition of ESAs I and II.
13. Page 8-3, Sec. 8.0: In Paragraph 2, clarify whether "samples collected within the larger area" refers to the Zone B grid samples.
14. Page 8-4, Section 8.1:
- a. Paragraph 1 states that the Zone B Ecological Risk Assessment (ERA) was limited to a half-acre area surrounding AOC 507. However, Paragraph 2 apparently presents surface soil data for a subset of the grid-based Zone B sampling locations in addition to those from AOC 507. It is not clear which sampling locations were used; it would help to include a figure showing the sampling locations used in the ERA.
  - b. According to Page 5-3, Section 5.2.1, the purpose of the grid-based soil samples was to determine background levels of inorganics. Therefore, it is not clear why some of the grid-based soil samples were combined with

AOC 507 soil data for evaluation in the Ecological Risk Assessment.

15. Pages 8-5 to 8-6, Table 8.1, and Pages 8-6 to 8-7, Table 8.2: See the comments given above for Section 8.1. The surface soil data for AOC 507 should be presented in a format similar to that used for Pages 10-5 to 10-9, Tables 10.1.2 and 10.1.3. The grid-based data can be used for a background comparison for inorganics.
16. Page 8-7, Section 8.2:
  - a. Give examples to support the statement that "some contaminant concentrations were above concern levels that would indicate risk to certain terrestrial groups."
  - b. Add a statement concerning the presence or absence of contaminant migration routes from AOC 507 to nearby areas of ecological concern. For example, address possible migration pathways from AOC 507 to the nearby Cooper River (e.g., via surface water runoff, ground water discharge). (See Pages 10.10 to 10-11, Section 10.1.4.)
17. Page 9-1, Section 9.0 says in part that:
 

the RFI Report should discuss whether the extent of contamination has been defined, and propose recommended actions for the SWMUs and AOCs, such as collection of additional samples, proceed into a Corrective Measures Study, or No Further Investigation, whichever is appropriate.

EPA agrees with this former SCDHEC comment. Yet, Section 9.0 does not fully satisfy this comment. This section summarizes what is contained in the USEPA guidance document RCRA Corrective Action Plan (USEPA, 1994) rather than dealing with the site specific CMS issues. Section 9.0 is a very important section which should serve as a focal point for the rest of the Zone B RFI Report. It should summarize which areas are clean and require No Further Investigation, which areas need additional samples (how many, where, what type, etc.), and which areas should proceed into the Corrective Measures Study. Further, it should identify the boundaries of each site ("the extent of contamination"). The extent of contamination is critical to designing a CMS.
18. Page 9-21, Section 9.8: A discussion is presented of a system for ranking the corrective measure alternatives. The statement is made that:

The ranking system will apply a weighing factor selected by the Navy to determine the importance of each corrective measure criterion.

However, the use to be made of that information is not provided. It should be noted that RCRA corrective action includes a public participation process. Specifically, while the Navy can recommend corrective measure alternatives, public input will be actively solicited and weighed heavily in the decision which will be made by the RCRA Permitting Authority (i.e., SCDHEC) as to which actual corrective measure is selected for each site. This emphasizes the importance of getting and keeping the Restoration Advisory Board informed and actively involved in the decision making process throughout the RFI and CMS.

19. Page 10-1, Section 10: These discussions need to conclude with a discussion of the horizontal and vertical extent of contamination which is critical to the design of a Corrective Measures Study (CMS) where a CMS is needed and to the transfer of property where an area is demonstrated to be "environmentally clean." Maps should display these areas.
20. Page 10-1, Section 10.0:
  - a. See the comment given above for Section 5.0, concerning use of the Region 3 RBC table in relation to human health risk but not for ecological risk.
  - b. Add a subsection presenting a summary of the ecological risk assessment (as stated in Paragraph 1 of Section 10.0).
21. Page 10-13:
  - a. It says:
 

The results of the Wilcoxon rank-sum tests did not identify any additional COPCs.

Change to:

... any additional inorganic COPCs.
  - b. Manganese in groundwater. Manganese was present at up to 2040  $\mu\text{g}/\text{l}$  in shallow and 504  $\mu\text{g}/\text{l}$  in deep groundwater. Based on recent changes to the RfD, the risk-based concentration for manganese in water is 860  $\mu\text{g}/\text{l}$ . Note that the concentration in shallow groundwater exceeds this.

22. Page 10-42, Section 10.2.2, and Page 10-47, Section 10.2.4: Statements are made that:

Acetone and MEK are considered common lab artifacts .

This raises three points:

- a. Good laboratory practice has ways of avoiding, or at least minimizing, lab artifacts.
  - b. Good laboratory practice has ways of identifying when a chemical in a sample is a true sample ingredient and when it is a laboratory artifact.
  - c. Simply identifying that a chemical is sometimes found as a lab artifact does not explain the chemical in the samples collected at Naval Base Charleston. Should such a lab artifact question arise, EPA would expect the laboratory to identify and resolve the issue or the Contractor to collect additional samples for analysis in a different laboratory. Fact rather than conjecture is needed here.
23. Page 11-1, Section 11.1: Reference is made to sampling to be conducted which:

will be discussed in the final version of this report, along with the final conclusions and recommendations regarding risk and corrective measures requirements for BEQ contamination onsite.

EPA can not approve an incomplete RFI Report; those data need to be provided for EPA review in the draft report.