

N61165.AR.002791
CNC CHARLESTON
5090.3a

RESPONSE TO COMMENTS DRAFT RESOURCE CONSERVATION AND RECOVERY ACT
FACILITY INVESTIGATION ZONE K REPORT DATED 10 DECEMBER 1997 CNC
CHARLESTON SC
6/11/1999
ENSAFE INC.

**COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY
CHARLESTON NAVAL COMPLEX
CHARLESTON, SOUTH CAROLINA
CTO-029**



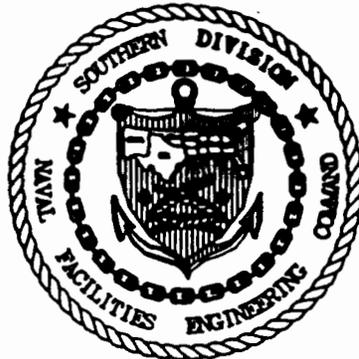
RESPONSE TO COMMENTS FOR

**DRAFT ZONE K
RCRA FACILITY INVESTIGATION REPORT
(Dated December 10, 1997)**

Prepared for:

**Department of the Navy
Southern Division
Naval Facilities Engineering Command
Charleston, South Carolina**

**SOUTHDIV Contract Number:
N62467-89-D-0318**



Prepared by:

**EnSafe Inc.
5724 Summer Trees Drive
Memphis, Tennessee 38134
(901) 372-7962**

**June 11, 1999
Revision: 0**

**RESPONSE TO SOUTH CAROLINA DEPARTMENT OF HEALTH
AND ENVIRONMENTAL CONTROL (SCDHEC)
COMMENTS ON THE DRAFT ZONE K
RCRA FACILITY INVESTIGATION REPORT
Dated December 10, 1997**

Johnny Tapia

Comment 1:

Please correct Figure 1.2 for the recent change of name for SWMU 166 and the addition of SWMU 185, which now is identified as the sewer system. Please refer to the new RCRA permit, effective September 17, 1998, for more information.

Response 1:

The figure and any text affected by the change has been revised.

Comment 2:

Page 1.7, "Scope" should be revised to reflect the current situation at the Naval Annex sites, in accordance with comment # 1. This comment also applies to Table 1.1. Please revise accordingly.

Response 2:

The text has been revised per comment #1.

Comment 3:

Figure 2.4 should be updated to show all monitoring wells installed to date. This comment also applies to Figure 2.5. The most updated lithologic cross-sections should be included in this figure. Please revise.

Response 3:

The Section 2 text and figures have been revised to include all wells installed to date. The only wells missing from the figure are those associated with SWMU 166 which were still being installed as recent as June 1999.

Comment 4:

Section 3.2.8 "Aquifer Characterization", should be specific to the areas of Zone K, which are not contiguous to the Naval Base. For example, as stated in the text, the Naval Annex would have the same aquifer characteristics than the aquifer in Zone A. This statement and the text should be revised accordingly.

Response 4:

Section 3 of the report discusses investigation methodology. This is generally the same for every zone. If there are site specific variations, then these will be discussed appropriately in that particular report. Section 2 of the report is a site specific discussion of the geology and hydrogeology for Zone K. The text in Section 3.2.8 has been modified to more clearly state "aquifer characterization methodologies" are similar to those in the Zone A RFI report.

Comment 5:

Section 4.3 "Zone K Data Validation Reports", should be specific about the deficiencies and/or problems found or identified from the review of the data validation reports. As written, this section only repeats the results of the data validation reports without an interpretation of them. This section should define the problems encountered and specify considerations that need to be taken in account during the review of the report. Please revise this section to make it meaningful to the report.

Response 5:

This section is intended to be a summary to make the reviewer aware of the outcome of the validation process. The report has been revised to make the section as meaningful as possible without being too redundant with what is contained in the validation reports.

Comment 6:

Section 5.0 "Data Evaluation and Background Comparison", should be revised in accordance to the following comments:

- Due to the difficulty on collecting subsurface soil samples, it was agreed (Conference call 10/20/97) to use generic soil screening levels as the Clouter Island's reference concentration for subsurface soils. These numbers should be depicted on table 5.5. Please revise and correct section 5.0 and table 5.5 accordingly.
- For groundwater reference concentrations at Clouter Island, only one well was installed. Only one well is not enough data to determine reference concentrations. It was agreed to use either Tap water RBCs or MCLs as the screening levels. The 2X the detected concentration column should be deleted, it is not appropriate. Please revise and correct section 5.0 and table 5.7 accordingly.

Response 6:

- Section 5 and Table 5.5 have been revised accordingly.

- **Four rounds of groundwater samples have been collected from the background well at Clouter Island. These data were used to develop shallow groundwater background concentrations that have been incorporated into the text and tables of Sections 5 and 10.6.**

Comment 7:

Section 6.2.1 "Soil to groundwater Cross-Media Transport", Page 6.16:

- This section should appropriately justify the use of 1,000,000 mg/Kg as the soil screening level (SSL) for trivalent chromium at Clouter Island. The report makes reference to the Technical Background Document to justify this value, however this reference was not found or, for that matter, any reason that would justify the use of 1,000,000 mg/Kg as the SSL for trivalent chromium. Please appropriately justify and revise.

Response 7:

The justification is provided in the *Technical Background Document*, Appendix A: Generic SSLs, Table A-1, page A-5. The listing for chromium III does not contain a value but rather a footnote "g". The footnote says "chemical specific properties are such that this pathway is not of concern at any soil contaminant concentration." This in essence says that EPA does not feel that even if pure chromium III is present that the soil to groundwater pathway is not an issue. This is the reason for the screening level presented.

Comment 8:

Section 6.2.1 "Soil to groundwater Cross-Media Transport", Page 6.17:

- The first paragraph in this page tries to justify, based solely on assumptions, the use of the higher value of background reference concentration, for screening of contaminants. This approach is not acceptable and should be modified. The Naval Annex has distinctly two aquifers zones that are not interconnected. This approach should be modified. Please revise.

Response 8:

It is unclear to the Navy where the reviewer got the impression that two distinct aquifer zones are present at the Annex. If this was said in the report then the text is in error. The entire saturated thickness of the surficial aquifer is sand and is interconnected. The Navy believes the approach is valid.

Comment 9:

Section 7.3.4 "Selection of Contaminants of Potential Concern", Page 7.7:

- The soil screening value for 2,3,7,8 - TCDD equivalents (TEQs) should be the one listed on the Region III RBC table. The value of 1 ppb is the EPA suggested residential cleanup level. By screening TEQs before the risk calculations, we could be underestimating the risk at any given site. Please correct and include TEQs on the risk calculations as appropriate.

Response 9:

The Navy agrees with screening soil TEQ concentrations using the Region III RBC; however, this is accomplished in the site specific nature and extent sections (Section 10). For risk management purposes, USEPA has determined that a 1 ppb screening level is an appropriate starting point for setting cleanup levels for dioxin in soil at RCRA sites (see *Approach for Addressing Dioxin in Soil at CERCLA and RCRA sites*, OSWER Directive 9200.4-26, April 13, 1998). The 1 ppb cleanup level is used in the risk assessment for each site and for risk management decision making purposes.

Comment 10:

Table 8-1 should be corrected in accordance with comment # 1.

Response 10:

The table has been corrected to reflect the referenced name changes.

Comment 11:

Section 8.4 "Ecological Chemicals of Potential Concern":

- This section lists the criteria for the selection of ECPCs in soil. This screening criteria should also include ecotoxicity values, which are conservative numbers that represent a threshold value for ecological effects. Usually these values are selected from research of appropriate literature or in consultation with risk assessors. The screening should be done only for complete exposure pathways, as described in the conceptual model. Screening detections only against background reference concentrations, which are anthropogenic, may not be protective enough of ecological receptors. Please revise this section.

Response 11:

The selection criteria for Zone K ECPCs in surface soil have been revised to include several ecotoxicity values, including the USEPA's recommend ecological benchmarks for military bases, the *Preliminary Remediation Goals for Ecological Endpoints* (Efroymsen, et.al.1997), and plant and terrestrial invertebrate benchmarks as presented in *Toxicological Benchmarks*

for Potential Contaminants of Concern for Effects on Soil and Litter Invertebrates and Heterotrophic Process (Will and Suter, 1995) and Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Terrestrial Plants (Efroymsen, et.al., 1997).

Comment 12:

Figure 8.3 "Conceptual Model" needs clarification for subzones (K-1, K-2, K-4) and how they relate to exposure pathways. For example, K-2 and K-4 have the pathway of soil ingestion / direct contact for terrestrial wildlife, however the soil to food ingestion pathway is not clear what subzone applies to. Please revise the figure for clarity and include a legend.

Response 12:

Figure 8.3 has been revised as suggested

Comment 13:

The most conservative ecotoxicity values obtained from literature research should be included in tables 8.4a, 8.4b, 8.5a, and 8.5b. The objective of including these values is for comparison purposes with detections and reference concentrations, in order to identify ecological chemicals of potential concern (ECOPC). Please revise these tables accordingly.

Response 13:

The table has been revised to include the ecological benchmark recommended by the USEPA for military bases (as per December 1998).

Comment 14:

Table 8.4b and 8.5a should be revised to include appropriate footnotes.

Response 14:

Footnotes have been added to Tables 8.4b and 8.5a.

Comment 15:

The results of the qualitative ecological risk characterization for infaunal invertebrates for subzones K-2 and K-4 should be summarized on tables that contain ranges of detections, TRV ranges, etc. The EPA Region 4 guidance for ecological risk assessment indicates that the TRV value used for comparison should be the most conservative one. Including the range of TRVs from research studies would help on the decision to whether proceed further with a more detailed risk assessment or stop the assessment. Ranges of detections would provide the same kind of view for a more informed risk management decision. Please revise section 8.8.2.

Response 15:

For those parameters which have multiple detections and multiple reported benchmarks, a range of values have been presented.

Comment 16:

Section 8.8.3 "Terrestrial Wildlife", Page 8.35:

- This section needs to clarify, according to EPA guidance, that if HQ/HI values are near but below 1.0, may be indicative of potential ecological impacts, when TRVs values based on the Lowest Observed Adverse Effect (LOAEL) were used to calculate the Hazard Quotient /Hazard Index. Please revise this section accordingly.

Response 16:

The section have been revised to discuss ecological risk posed by those parameters at concentrations near but not above the respective LOAEL-based TRV.

Comment 17:

Section 8.8.3 "Terrestrial Wildlife", Page 8.36:

- Hazard Quotients for subzones K-2 and K-4 are presented on tables 8.9a, 8.9b, 8.10a and 8.10b, however neither the text nor the tables present the values for Hazard Index (HI) for the three wildlife species selected. The Hazard Index value should be calculated for the contaminants that exhibit consistent modes of toxicity and effect endpoints. Please revise this section and tables accordingly.

Response 17:

The tables have been revised to include the new HI values.

Comment 18:

Section 8.10 "Risk Summary":

- This section should also present Hazard Index (HI) results in accordance with previous comments. Please revise accordingly.

Response 18:

The section has been revised to present HI values.

Comment 19:

All site-specific discussions should include the data for all four rounds of groundwater sampling in the final report. The additional data will confirm or refute the presence of contaminants at each individual site.

Response 19:

All four rounds of groundwater data have been included in the revised report.

Comment 20

SWMU 161

Table 10.1.3, page 10.1.5:

- The value for the soil screening level for copper is listed in table 6.4 as 457 mg/Kg. Please correct this value on table 10.1.3 and the number of detections exceeding the soil screening level.

Response 20:

The table has been revised.

Comment 21:

SWMU 162

Section 10.2.2 "Nature and Extent of Contamination", Page 10.2.8:

- This section should correct the text of the "Semivolatiles Organic Compound in Soil" to replace TEQs by BEQs. Additionally, correct the heading of figure 10.2.2.

Response 21:

The heading and text have been revised.

Comment 22:

The ecological risk assessment related to Ecological Subzone K-4, which includes the area of SWMU 162, found that further evaluation is required for the protection of ecological receptors at subzone K-4. This conclusion should be acknowledged in section 10.2.7 "Corrective Measures Considerations" which summarizes risk posed by media and receptors. Please modify this section.

Response 22:

Because multiple sites may be encompassed in each ecological subzone, any further evaluations recommended in the Zone K ERA are included in the Conclusions and Preliminary Recommendations Section 11.

Comment 23:

SWMU 163

The results of four quarters of groundwater data are needed to reach a final decision on this site due to the potential leaching problem posed by PCE in soil boring 163SB003 and N-nitroso-di-n-propylamine in soil boring 163SB002. Please include these data in the final report.

Response 23:

As stated above all four quarters of groundwater data will be provided in the revised report. Additional soil sampling and monitoring well installation/sampling were completed at this site based on new information regarding site history. The new data have been included in the revised report as well.

Comment 24:

SWMU 164

The investigation has demonstrated that isolated areas at SWMU 164 have soil contamination, however it is not clear why samples were not taken closer to the blasting operation. There are no samples within 50 feet of the operation. Please justify this approach, or more samples should be collected closer to the blasting operation, since it is obviously expected that the area next to the blasting operation would be more likely impacted.

Response 24:

The reason samples were not collected closer is that the blast booth is an enclosed structure sitting on a concrete slab within the confines of a building. The sample locations were chosen based on storm water runoff drainage patterns and selecting the nearest unpaved surfaces that would receive the runoff since this is believed to be the primary migration pathway. Per the December 1998 project team meeting, the floor of the building was checked to determine if cracks or other potential migration pathways exist to determine if any additional samples are warranted.

A survey of the floor was completed in March 1999 and no cracks or other potential migration pathways for the blast media were noted.

Comment 25:

AOC 693/694

Section 10.6.2, "Nature and Extent of Contamination", page 10.6.9:

- This section should add for pesticides/PCBs in soil that delta-BHC also exceeded its soil screening level. Please revise.

Response 25:

Delta-BHC was not detected in any subsurface soil sample.

Comment 26:

Page 10.6.11, Section "Groundwater Sampling and Analysis" should be given the right section number. Please replace 10.2.3 by 10.6.3.

Response 26:

The section number will be revised accordingly.

Comment 27:

Section 10.6.5.1 "AOC 693 and 694 – Soil to Groundwater Cross Media Transport":

- This section should correct the calculation of Soil Screening Levels. A DAF=10 should be used instead of a DAF of 20. Groundwater at Clouter island is very shallow, such that prevented the collection of most of the subsurface soil samples. Please revise this section and its conclusions, including table 10.6.7.

Response 27:

The text has been revised to include a DAF=10 for all soil to groundwater cross media transport at Clouter Island.

Comment 28:

Section 10.6.6.6 "Risk Uncertainty":

- This section should discuss the risk contribution of effects that TEQs have in the risk assessment. The maximum TEQ calculated value is within 10% of the RBC value for 2,3,7,8 -TCDD. Please revise this section.

Response 28:

Although the maximum TEQ calculated is within 10% of the RBC it is far below the 1 ppb project screening level used in risk management purposes. Section 7.3.9 has been revised to include a explanation of the use of the project screening level and the RBC and the risk uncertainty associated with its use.

Comment 29:

The ecological risk assessment related to Ecological Subzone K-2, which includes the area of AOCs 693 and 694, found that further evaluation is required for the protection of ecological receptors at subzone K-2. This conclusion should be acknowledged in section 10.6.7 "Corrective Measures Considerations" which summarizes risk posed by media and receptors. Please modify this section.

Response 29:

Because multiple sites may be encompassed in each ecological subzone, any further evaluations recommended in the Zone K ERA are included in the Conclusions and Preliminary Recommendations Section 11.

Comment 30:

AOC 696

The use of a FI/FC factor to estimate the exposure point concentration (EPC) has been previously allowed by the Department. However, the FI/FC factor must be appropriate for every situation, it must be site-specific. At AOC 696 a FI/FC of 0.1 was used based on the assumption that a normal size residential lot is 0.5 acres. By doing this, we are considering a larger area than the area on the AOC itself, and much larger than the area that was actually investigated (samples collected). On the other hand, a ½ acre residential lot is extremely large if we consider the average residential lot size in the area on the facility. Based on this, the FI/FC term should be recalculated based on a 0.25 acre residential lot size. Please revise the risk calculations for AOC 696 based on this change.

Response 30:

An interim measure removal action has been performed at this site and the confirmation samples indicate the action was successful in removing the contaminants of concern to non-detect levels. Since the risk has been mitigated the FI/FC factor used is irrelevant at this point and the Navy does not see the need to expend resources on this exercise.

Comment 31:

If possible, the results of the Interim Measures at this site should be included in the report. If the site's main concerns, identified from the results of the baseline risk assessment, were taken care of by the IM, there might be no need to take this site to the CMS stage. Please include this information.

Response 31:

The results of the interim measure will be briefly discussed and the completion report incorporated by reference.

Comment 32:

Table 10.8.16 did not include Worker-based Remedial Goal Options. Please revise this table.

Response 32:

The table has been accordingly.

Comment 33:

AOC 698

The RBC value for TEQs (0.0043 ug/Kg) was exceeded at the only sampling location that these compounds were analyzed for. Please revise table 10.9.2 to include the appropriate data, and modify the corresponding text. Additional sampling may be needed to determine TEQs extent in the area.

Response 33:

The table has been revised in accordance with the comment. With respect to the possible need for additional sampling, a tentative agreement was reached at the December 1998 project team meeting to perform a comprehensive evaluation of dioxin data with the intent of using the existing data to develop a better understanding of the presence of dioxins.

Comment 34:

Section 10.9.2, "Nature and Extent of Contamination in Soil", page 10.9.6:

- It was observed in appendix E that the detection limits for SVOCs, especially PAHs, were considerably high in comparison to the RBCs values. This section should discuss these high detection limits and how it relates/ affects the confidence on the presence of SVOCs at soil boring 698SB001. Detection limits were high for B(a)P and Dibenzo(a,h)anthracene on all eight soil borings at AOC 698. Please revise.

Response 34:

The levels that the reviewer has expressed a concern over are actually practical quantitation limits (PQLs), not detection limits. The typical PQL for PAHs in soil is 330 $\mu\text{g}/\text{Kg}$. The PQLs for the samples in question range from 340 $\mu\text{g}/\text{Kg}$ to 440 $\mu\text{g}/\text{Kg}$. The variation is almost certainly caused by the moisture content of the sample. Because this is a recurring comment from zone to zone, the Navy chose to include a method detection limit (MDL) study from the contract laboratory in Section 4 for the benefit of the reviewer. For example, on page 4.20 the reviewer can see that benzo(a)pyrene, which has the lowest RBC of the PAHs at 88 $\mu\text{g}/\text{Kg}$, had a corresponding method detection limit is 83 $\mu\text{g}/\text{Kg}$. Any values detected between the MDL and PQL are reported with a "J" qualifier. The Navy does not agree with the need to revise this section since there is not a confidence problem with the data.

Comment 35:

The results of the first round of groundwater sampling were used for the risk assessment calculations. The second round of groundwater sampling had even higher detections for some BTEX compounds. The results of subsequent rounds of groundwater sampling indicated that well 698GW001 has consistent contamination with BTEX compounds. Further assessment is needed to determine the extent of contamination. Complete results of the groundwater investigation should be included in the final RFI report.

Response 35:

The Navy agrees with the reviewers observation that BTEX has been detected consistently over all 4 quarters and all the data have been included in the final report.

Comment 36:

The "Risk Uncertainty" section should discuss the increasing trend of TPH detections in groundwater at AOC 698. Please revise.

Response 36:

For practical purposes the TPH detections in the first and second round samples can be considered equivalent. The diesel range organics only increased from 6020 $\mu\text{g}/\text{L}$ to 6400 $\mu\text{g}/\text{L}$ (6%) and the gasoline range organics from 450 $\mu\text{g}/\text{L}$ to 500 $\mu\text{g}/\text{L}$ (11%). Variability introduced by sampling and analytical techniques alone could account for this small of a difference. The concentrations were significantly less the third and final time the well was sampled (non-detect for DRO and 170 $\mu\text{g}/\text{L}$ for GRO). TPH detections are not considered in the risk assessment and are not included in the risk uncertainty discussion. The Navy disagrees with the suggestion that the concentrations are increasing.

Comment 37:

Section 11.0 "Conclusions and Recommendations", page 11.1:

- The last paragraph of this section should modify the statement that expresses that SCDHEC usually accept a residential risk range between 1E-04 to 1E-06. This statement is not accurate. The Department will make a decision, based on risk management, on a site-specific basis and considering all factors involved. Please revise.

Response 37:

The section has been revised per the comment.

Comment 38:

- Section 10.10, please correct to include a map with location of background sampling for Clouter Island.

Response 38:

A map showing background sampling locations will be included.

Comment 39:

The preliminary recommendations listed on table 11.1 are accepted as preliminary only and could change based on the Navy's response to this set of comments and the review of additional data that may be collected to complete the RFI phase for Zone K. The final decision on the Zone K sites will be included in the letter approving the revised and final RFI report.

Response 39:

The Navy agrees with this statement.

**Paul Bergstrand, SCDHEC
30 September 1998**

General Comments

Comment 1:

The maps and figures provided in this document show little improvement and often less information from the original RFA site maps and figures. One example is SWMU 161. The oil water separator is not indicated, groundwater flow is not represented, direct push well locations were not shown, and the locations of adjacent monitoring wells installed for SWMU 166 were not included. Another example is AOC 696. The location of stressed vegetation was not indicated and the 100 ug/kg iso-contour northwest of the fence is drawn incorrectly. All maps and figures in RFI reports should accurately convey as much relevant information as accurately as possible. Maps and figures in this report should be revised.

Response 1:

The Navy agrees with this comment. The maps and figures have been revised to include pertinent information.

Comment 2:

Detections in soil and groundwater are presented in tables that focus on the frequency of detections (given as a fraction), the range of detections and the mean of detections. In some cases, the sample location of the maximum detections is included in the text. In order to graphically represent the extent of contaminant detections, the reviewer must refer to a "hits" table from an appendix and manually enter the data on a site map. While the frequency, range and mean are important components of the report, maps and figures of the extent of contamination detections must also be provided in the RFI Report format.

Response 2:

The revised report includes hits tables within the text of the site specific discussions and maps depicting COC concentrations.

Comment 3:

Chapter 5. The section on Nature and Extent makes two major assumptions. The first assumption is that the potential source of contamination is fully understood. The second assumption is that because all sample locations were biased on the potential source of contamination, the contaminant detections from the RFI sample locations represent the maximum concentration possible. However, the contamination detected at SWMUs or AOCs may not always be easily linked to the last occupant or documented waste process. The concern is that low level detections will be

screened out and the full extent of contamination will not be delineated. A prime example of this is the AOC 696 Interim Measure to remove PCB contaminated soils. The draft RFI report states that "*due to the infrequency of detection, the low number of groundwater protection level exceedances, and the fact that all of the exceedances were reported from the upper-interval samples only for both compounds, there are not recommended for further fate and transport assessment*". The only chemicals in the draft RFI report considered to be driving risk/hazard in soils at the site are arsenic and beryllium. The Interim Measure Confirmation Report, however, documents one PCB confirmation sample at 35.3 ppm. This level of PCBs is twenty times the maximum value of 1.7 ppm reported in the Draft RFI Report. The Navy must carefully delineate the vertical and horizontal extent of contamination once RFI sampling has confirmed the presence of contamination.

The RFI Reports should make better use of site maps, adjoining monitoring wells, isocontours, tag maps and data tables to represent the nature and extent of site contamination.

Response 3:

The Navy agrees with the recommendation to make better use of available information and this will be reflected in revised maps/tables. The Navy does not fully agree with the reviewers interpretation of how data is evaluated. The primary objective of the RFI sampling is to collect enough data to adequately characterize a site so that the team can make justifiable decisions. Often the source of contamination is not well understood and it is unrealistic to assume that the maximum concentration of COCs identified has been detected with the number of samples usually collected. Enough samples are collected to establish whether or not a concentration gradient exists and reasonably determine the magnitude of the problem. Remedial actions, particularly "dig and haul" type commonly used for interim measures, often require a slightly greater density of samples to more accurately calculate volumes to better estimate disposal costs. In the example cited above, enough samples were collected to determine a problem existed and make a decision that the site was a perfect candidate for an interim measure rather than additional investigation. It is also noteworthy to point out that the confirmation results supported the original conclusion that the PCB contamination was not a threat to groundwater due to it's limited mobility.

Comment 4:

The groundwater Maximum Contaminant Levels (MCLs) are not addressed in the screening process, are barely acknowledged in the text and when they are mentioned they are usually dismissed because the shallow groundwater is not considered by the Navy to be a "potable" water source. An example of this can be found on page 10.9.42. The State's position is that all groundwater is potential drinking water and should be protected using MCLs. MCLs must be a part of the data evaluation and included in the screening process because they are the state standards. Furthermore, there are MCLs that are lower than risk Based Concentrations (RBCs)

used for screening. The RFI Reports must include MCLs in the evaluation and screening of analytical data.

Response 4:

MCLs have been included in the screening and evaluation process.

Comment 5:

Numerous Direct Push Temporary Monitoring Wells (DPT) have been installed throughout the Annex as part of the SWMU 166 study. This information was primarily utilized for the selection of permanent monitoring well locations for SWMU 166. The DPT results and a map of the sample locations should be included with the Zone K RFI Report as well as the Zone K RFI SWMU 166 Addendum.

Response 5:

The RFI addendum for SWMUs 166 and 185 includes maps of the DPT sample locations and results. This addendum will be incorporated into the final RFI upon its completion.

Comment 6:

The introductory paragraph describing each SWMU and AOC should include the age of the unit and the years of operation. The age of the unit and the years of operation were not reported on SWMUs and AOCs 161, 162, 163, 164, 696 and 698. This is important information and should be included in the RFI Report.

Response 6:

The introductory paragraphs have been revised to include all pertinent information that can be found for each site.

Comment 7:

The data validation summary reports appear to be filed randomly in Appendix F. The laboratory analytical data and the data validation summary reports in Appendices E and F should be separated by site with tabs in the Final FRI Report. This should occur with other Zone Reports as well.

Response 7:

The data validation reports appear in order by "sample delivery group" or SDG which is exactly how the laboratory reports the data. SDGs consist of no more than 20 samples and often contain samples from multiple sites, particularly when only a few samples are collected per site. Each SDG has a batch set of QA/QC samples associated with it for use in the validation process. Separating the validation reports out by site would require significant

effort and the redundant presentation of QA/QC data. The SDG number is currently included on all the data sheets so the reviewer can determine which validation report contains the corresponding data evaluation. The Navy feels that the reports are filed appropriately. Tabs specifying the SDG number have been added to make the individual reports easier to locate.

Specific Comments

Comment 8:

Page 4.7, Diluted Samples

- A) Please explain table 4.2.
- B) This report should clearly identify which samples were diluted and why. The report should also state which samples, once diluted, had a method detection limits that was too high to be compared with reference concentrations, RBCs, MCLs, etc.

Response 8:

Table 4.2 was prepared in response to previous comments and it's purpose was to provide a listing of diluted samples along with an indication of the cause for the need for the dilution. In this case it shows that the dilutions were necessary due to high concentrations of contamination. Additional text has been added to the report to clarify the intent of the table and explain it's contents.

Comment 9:

Page 4.10, Zone K Data Validation Reports

- This section discusses the analytical detections in method blanks, trip blanks, etc. This report would benefit greatly by placing the information in a table format comparing detection versus blank and organized by SWMU/AOC.

Response 9:

The information has been organized by SWMU/AOC.

Comment 10:

Page 4.15, Method Detection Limit Study

- Please explain these tables. Note that pages 4.16 and 4.17 have typographical errors (ug/l and ug/kg).

Response 10:

Text preceding the tables has been added to explain why the MDL study information is presented. The reason the study was included are the numerous comments received in the past regarding elevated detection limits when in fact what was actually being reported were quantitation limits. The Navy felt it would benefit the reviewers to see what the detection limits were for the analytical methods used to demonstrate that the methods were capable of detecting contaminants below levels of concern such as RBCs or MCLs.

Comment 11:

- Page 6.18, Groundwater to Surface Water Cross-Media Transport

- This section of the report discusses the potential cross-media impact from the Naval Annex to the surface water in the Cooper River. The investigation of SWMU 166 has presented evidence that the interstate I-26 ditches are gaining and are withdrawing groundwater contamination from the aquifer into the ditch. This section considering impact to the Cooper River should be re-evaluated in light of the gaining ditches.

Response 11:

This section has been revised appropriately.

Comment 12:

Page 6.19

- This section of the report states "*If groundwater concentrations do not exceed tap water risk-based screening levels or background concentrations, no significant threat relative to migration potential exists*". This statement assumes that the most contaminated groundwater has been identified during the first round of groundwater samples, which is not always the case. The wells could be located at the leading or trailing edge of the contamination plume. RFI Reports should evaluate and discuss groundwater contaminant concentrations with respect to seasonal groundwater flow patterns, soil variability, known waste management processes, the potential influence of leaky sewers, RBCs, MCLs, etc. This section of the RFI Report should be revised.

Response 12:

This statement is part of the generic text describing the general approach to evaluating data regardless of how many rounds of data are present. The only reason why one round was

typically evaluated is because report schedules did not allow for the inclusion of multiple rounds of data when the drafts were prepared. The information requested is presented in appropriate places throughout the report and the Navy does not see the value in revising the generic text which is similar to that approved in previous reports.

Comment 13:

Page 9.8, Groundwater Cleanup Goals

- This section references the Zone A RFI Report which states in part "*The CMS will provide information to support the development of cleanup goals. The following information may be required:*"
 - * *The MCL values if promulgated under the Safe Drinking Water Act.*
 - * *Background concentration.*
 - * *An alternate standard (i.e., Alternative concentration limit)*

Additional considerations will include the classification and primary use of the contaminated groundwater unit, proposed future uses for groundwater, proximity to surface water, etc".

- The Navy must cleanup groundwater contamination to MCL. If no MCL exists, the Navy must cleanup to the RBC water standard. If no MCL or RBC exists, cleanup levels will be the PQL, natural background, or anthropogenic background as appropriate. Alternate concentration limits (ACLs) can be established in some cases as appropriate under the regulatory requirements of the particular program and/or the Departments regulation (R.61-68) and guidance on groundwater mixing zones. If all requirements are met, ACLs may become the cleanup standards. In addition, technical impracticability may be a consideration and, if so, determination should be made following EPA Directive 9234.2-25. This section of the report should be modified.

Response 13:

The Navy acknowledges SCDHECs position and has revised this section of the Zone A report.

Comment 14:

Page 10.1.3, SWMU 161

- SWMU 161 had one round of soil samples collected from the surface and subsurface at seven sample locations. One duplicate sample was collected and submitted for Appendix IX analysis. The volatiles acetone and 1,2 dichloroethane, a semivolatile di-n-butylphthalate and a dioxin (TCDD TEQ) were all detected in the second interval soil sample. Neither

the text nor the maps show where the detections were. All detections were below their respective CNC screening level and are therefore dropped from consideration. The Navy, however, has not proven these are the maximum values of the contaminants in the subsurface soils. The Navy has not explained the presence of these contaminants in the subsurface soils. Only one sample from the seven locations was submitted for dioxin analysis, dioxins were detected and yet the SWMU is recommended for No Further Action because the sole detection was below the screening values. The presence of these contaminants was confirmed, however the extent has not been examined. Additional assessment is necessary before a CMS decision can be made.

Response 14:

As agreed in previous responses, the revised report will contain hits tables and maps of COCs within the site specific discussion sections. The Navy believes the ubiquitous presence of dioxins in soil at low levels is well documented and does not warrant further assessment. For example, dioxins were detected in all 10 samples collected from the various sites at the annex (including grid locations) with TEQ values ranging from .01 to 11.91 ng/Kg. The TEQ value for the one location sampled for dioxins at SWMU 161 was .46 ng/Kg. By comparison, dioxins were detected in all 32 samples from Clouter Island with TEQ values ranging from .01 to 3.9 ng/Kg. Similar results have been observed in other zones including the sediments from Zone J which would likely be the ultimate sink for this particular contaminant. Continued monitoring for dioxin does not appear substantiated especially when considering the maximum TEQ value observed in any zone has not even exceeded 50% of the suggested EPA cleanup goal of 1 $\mu\text{g}/\text{Kg}$. Also, analytical results from monitoring well 161001 (January 1999) show dioxins were not detected in filtered or unfiltered samples. Per discussions held at the December 1998 project team meeting, the Navy is going to compile the data from all samples analyzed for dioxins, regardless of zone, and perform statistical analyses on the data set so that the project team can make an informed decision regarding whether not more sampling is required.

Additionally, the data presentation will be revised to make better use of the existing information to try to explain the presence of the compounds detected. For example, acetone was detected in 2 subsurface soil samples at concentrations of 7 and 8 $\mu\text{g}/\text{Kg}$ respectively. Prior to making any decisions to sample further for this compound the team should consider that acetone was detected in blanks associated with 8 of the 10 sites investigated in Zone K and the grid samples. Even though the detections of 1,2 dichloroethane and di-n-butylphthalate are difficult to explain, the fact remains they were detected in the subsurface at only 1 of 8 locations and neither of these were detected in the numerous groundwater samples collected at SWMUs 161 and 166, in particularly downgradient well, 166016.

Comment 15:

Page 10.1.11, SWMU 161

- SWMU 161 had one monitoring well installed near the oil water separator. The oil water separator was not represented on the site map. One congener of dioxin was detected in the first round of groundwater samples. The remaining three rounds of groundwater samples did not include analysis for dioxin. The presence of this contaminant has been confirmed, however the extent has not been examined. Additional samples are necessary before a CMS decision can be made.

Response 15:

The oil-water separator has been added to the figure. Even though the Navy does not believe dioxins are present in groundwater it is difficult to refute the data from the first round without additional data. The Navy collected an additional sample for dioxin analysis at this site in January 1999. Both a filtered and unfiltered sample were submitted for analysis since it is likely the dioxin detected was a result of suspended sediment in the samples since dioxins are hydrophobic in nature. Dioxin was not detected in either sample.

Comment 16:

Page 10.1.12 Table 10.1.7, SWMU 161

- This table presents a dioxin soil screening level (SSL) for soil to groundwater cross media transport at 950 ng/kg. The maximum concentration detected from the one subsurface soil boring is less than the SSL at 0.46 ng/kg (TCDD TEQ), however the first round groundwater sample from a well eighty feet away is contaminated with dioxin. Subsequent groundwater samples were not analyzed for dioxins. The site specific SSL for dioxin should be recalculated.

Response 16:

The SSLs for the site have been revised and the Navy feels these are protective of groundwater. The collection of the additional sample as described in the previous response provides evidence to defend this position.

Comment 17:

Page 10.2.1, SWMU 162

- The age of the unit and the length of time the unit was in operation should be included in the introductory section.

Response 17:

The section has been revised to include all available information for this unit.

Comment 18:

Page 10.2.9 Figure 10.2.2, SWMU 162

- The 100 $\mu\text{g}/\text{kg}$ isocontour is drawn with a solid line along the south west edge of soil boring 3 which represents a known contaminant gradient. This, however, is not the case as there were no soil samples to document the gradient. An inferred isocontour should be represented with a dashed line. This figure should be corrected. Additional samples may be necessary before a CMS decision can be made.

Response 18:

The figures have been revised. Prior to collecting any more samples the team needs to evaluate the significance of the benzo(a)pyrene equivalent concentrations at this site.

Comment 19:

Page 10.2.14 Table 10.2.6, SWMU 162

- This table presents a dioxin SSL for soil to groundwater cross media transport at 950 ng/kg. The maximum concentration detected from the one surface soil sample is less than the SSL at 3.47 ng/kg (TCDD TEQ) and the one subsurface soil boring is less than the SSL at 0.03 ng/kg (TCDD TEQ), however there were no groundwater samples collected and analyzed for dioxins. There is no evidence that groundwater is not contaminated with dioxins. Groundwater samples should be collected before a CMS decision can be made.

Response 19:

At the concentration detected there is no reason to suspect that dioxins would be a threat to groundwater. The project team has tentatively agreed to an approach for determining whether elevated detections of metals in groundwater truly represents groundwater impacts or if suspended solids in the monitoring wells are biasing the results. The same approach is applicable to dioxins and several wells (including the well at SWMU 161 discussed above) were sampled in January 1999 following the approach. These data indicate that the SSLs are protective of groundwater and that no further sampling is necessary. As discussed earlier, the Navy is going to compile the data from all samples analyzed for dioxins, regardless of zone, and perform statistical analyses on the data set so that the project team can make an informed decision regarding whether not more sampling is required.

Comment 20:

Page 10.3.7 Figure 10.3.2, SWMU 163

- The 100 ug/kg isocontour is drawn with a solid line along the south east edge of soil boring 2 which represents a known contaminant gradient. This, however, is not the case as there were no soil samples to document the gradient. An inferred isocontour should be represented with a dashed line. This figure should be corrected. Additional samples may be necessary before a CMS decision can be made.

Response 20:

The figure has been deleted in the final report. Further research on this site revealed that the "concrete pit" was once a coal storage bin and that a wash rack once existed to the southeast of the pit. Additional sampling was completed at this site and the data are included in the final report.

Comment 21:

Page 10.3.2 Figure 10.3.1, SWMU 163

- The single permanent monitoring well 163GW001 is up gradient of the site. The presence of dioxin in groundwater has not been explained. The site soil SSL for groundwater protection may need to be recalculated. Furthermore, the Navy's position that PCE and N-Nitroso-Di-N-Propylamine have not affected the groundwater is questionable given the up gradient placement of the permanent monitoring well. PCE was detected in the soil below the concrete at 990 ppb which is above the SSL of 30 ppb. N-Nitroso-Di-N-Propylamine was detected in subsurface soils at 620 ppb which is above the SSL of 0.025 ppb. Additional monitoring wells should be installed and sampled before a CMS decision is made.

Response 21:

As stated in previous responses the Navy does not believe additional sampling for dioxins is necessarily warranted. However, given the new information on the history of the site, additional monitoring wells were installed and sampled. These data are in the final report.

Comment 22:

Section 10.4, SWMU 164

- There were no monitoring wells installed at this location. None of the surficial or subsurface soil samples were analyzed for VOCs. Only one surficial sample was analyzed for Appendix IX parameters. Seven of nine surface soil samples were positive for Diesel

Range Organics (DRO). Second round soil samples did not analyze for DRO. The action that would logically follow the sand blasting of ferrous metals would presumably be painting. Where this painting would occur has not been addressed. Additional samples for paint constituents and volatiles are necessary before a CMS decision can be made.

Response 22:

Additional research revealed that a paint booth was operated at this facility. The site figures have been revised to show the former paint booth. As decided in the December 1998 project team meeting, the project team agreed that a site visit was needed to determine if a viable contaminant migration pathway such as cracks in the floor exist. A survey was performed in March 1999, no cracks or other potential migration pathways were observed. Painting occurred in an enclosed booth near the center of the building.

Comment 23:

Section 10.6, AOCs 693 and 694

- A) Seven temporary monitoring wells were installed at Clouter Island less than two hundred feet from the Cooper River. The average distance between the wells is approximately 200 feet. This document should indicate the status of those temporary monitoring wells.
- B) Mercury is a component of primers. The presence of mercury in 21 of 23 surface and 8 of 9 subsurface soils above the site specific SSL is documented as well as the presence of mercury in groundwater in three monitoring wells. Detections of mercury in two of three monitoring wells were above the MCL of two ppb. The extent of mercury contamination in soil and groundwater at Clouter Island should be defined. Mercury in soil and groundwater at Clouter Island should be added to the CMS.
- C) Dioxin was detected in all 23 surface soil samples and in 9 of 9 subsurface soil samples, all at less than the site specific SSL. Dioxins, however, were detected in all four rounds of groundwater samples which again brings the SSL calculations into question. Dioxins in soil and groundwater at Clouter Island should be added to the CMS.
- D) Volatiles including trichloroethene and semi-volatiles including naphthalene were detected in groundwater sampling rounds three and four. Trichloroethene was less than the MCL but above the RBC. The source and possible extent of the VOC trichloroethene in groundwater should be defined. The VOC trichloroethane in groundwater should be added to the CMS.

Response 23A:

As of May 1999 these wells were still in place. The wells were resampled in January 1999 and it did not appear their integrity had been compromised. The wells are scheduled to be properly abandoned. If monitoring wells are needed for long term purposes new wells will be installed using better construction techniques.

Response 23B:

The project team agreed that it would be appropriate to collect several more samples outside the area which could have reasonably been impacted by site operations. Also, additional research concerning the composition of primers indicated that mercury was a component of some primers. Additional soil sampling was performed in January 1999 which included mercury. Although mercury was detected in most of the surface and subsurface samples, no surface concentration exceeded its RBC and only one subsurface concentration exceeded its SSL. Only one sample (fourth round from 693003) exceeded the MCL of 2 ppb. No mercury was detected in the filtered or unfiltered samples collected in January 1999. Based on the risk evaluation, mercury is not included in the CMS.

Response 23C:

Please refer to the comment response 33 in the first set of SCDHEC comments and comment response 19 above.

Response 23D:

Neither of these compounds were detected in the three previous sampling rounds. The project team needs to determine the significance of these detections given that TCE or naphthalene were detected in any soil samples at the site. Based on the risk assessment, these compounds have not been included in the CMS.

Comment 24:

Page 10.6.82, AOCs 693 and 694

- This section discusses potential corrective measures for soils and groundwater. The Navy should avoid bias in the presentation of potential corrective measures (i.e., *in addition to no further action*) and should rely on the CMS process to determine the appropriate corrective action to be taken.

Response 24:

The text has been revised to eliminate potential bias in the presentation of corrective measures alternatives.

Comment 25:

Page 10.8.1, AOC 696

- This section states "*The (dielectric) fluid was determined to contain less than 50 ppm PCBs.*" Please review the January 1998 Interim Measure Completion Report for AOC 696 which documents the dielectric fluids in the transformers contained up to 73 ppm PCBs. The RFI report should be modified.

Response 25:

The RFI report has been revised to include the more recent information regarding the PCB content of the dielectric fluid.

Comment 26:

Section 10.8, AOC 696

- There are no monitoring wells associated with this AOC. The Section 10.8.2 reports the full extent of PCB contamination was determined during two rounds of soil sampling. The PCB contamination appears to stop at the fence in Figure 10.8.2. The section concludes that only the maximum detection of 1,780 ppb exceeded "*the de facto groundwater protection screening level of 1,000 ppb*" at that one location. Section 10.8.3.3 summarizes the fate and transport and determines no further action is needed since the PCB detections were infrequent and that there were a low number of SSL exceedances. The Interim Measure report, however, documents the highest contamination at a confirmation sample. The confirmation sample SPORT536-8 had 35,300 ppb PCB which is 20 times the maximum value reported in the RFI. Groundwater monitoring wells should be installed because the contamination exceeded the "de facto" groundwater protection screening level of 1,000 ppb. PCBs in soils and groundwater should be included in the CMS.

Response 26:

As a conservative measure, both surface and subsurface soil results were compared to SSLs. The reason for this step was to address potential concerns in the cases where subsurface samples were not collected due to encountering a shallow water table. In this case the maximum RFI sample result (please refer to response 3 above for an explanation of max. RFI results vs. interim measure confirmation results) was detected in the 0-1' surface interval. The subsurface result of 93.5 ppb from the same location shows a marked decrease which is expected considering the chemical and physical properties of PCBs. An interim measure consisting of a soil removal was performed in the area of elevated concentrations. Confirmation samples from the bottom of the excavation were non-detect for PCBs again confirming the vertical migration was very limited. If the intervening layer of soil between the contaminated interval and the groundwater table is proven to be clean then it seems

logical to assume that groundwater would not be impacted. The Navy disagrees with the need for monitoring wells at this site on the basis of the non-detect confirmation sample results.

Comment 27:

Page 10.9.1, AOC 698

- A) There is one permanent monitoring well at this AOC. There were six DPT monitoring wells that were driven to a depth of ten feet and utilized a two foot screen. The DPT wells were analyzed for VOCs, TPH-GRO and TPH-DRO. Semi volatiles were not included in the analysis. The laboratory report sheets indicate elevated detection levels in three of the six DPT samples. This was not discussed in the text. The elevated detections levels should be evaluated and presented in the text of the RFI Report.
- B) Trichloroethene was reported at 4 ppb from DPT 698GP006 which was collected at 12:30 on 28 February 1997. The previous DPT sample collected at 11:15 on that day was 166GP03334 and reported combined TCE/DCE level of 1.7 ppm. This previous sample was collected at 11:15 on 28 February 1997. The suggestion that the reported 4 ppb trichloroethene is cross-contamination appears plausible and may even account for the elevated detection levels.
- C) The laboratory data validation sheets for the DPT data do not appear to be included in Appendix F. This should be confirmed and the laboratory validation data sheets presented in Appendix F of the revised RFI Report.
- D) The age or history of the above ground storage tank (AST) with the concrete berm was not presented in the text. How the boiler was supplied prior to the bermed AST should be determined and reported. The pipe run from the AST to the boiler room was not indicated on any of the site figures. Most tank contamination is a result of piping leaks. Therefore, soil sample locations and possible monitoring well locations should be influenced by the location of tank pipe runs. The pipe run information for this AOC should be provided before the RFI is finalized.
- E) Monitoring well 698GW001 reported Benzene for four quarters at or above the MCL, Naphthalene for four quarters, TPH diesel in two of four quarters and TPH gasoline in three of four quarters. The water table in this vicinity is reportedly 8 feet below the ground surface (BGS). The surface soil samples were collected from 0 -1 foot and the subsurface soil samples were collected from 3 -5 feet BGS. Additional samples collected to the water table should delineate soils which may be continuing to leach contaminants into the groundwater.

- F) One duplicate soil sample was analyzed for Appendix IX constituents. The results indicated the presence of pesticides, dioxin and TPH in the soil. One monitoring well was installed side gradient to the duplicate soil sample and has documented the presence of pesticides and petroleum constituents in groundwater. The Navy has not determined the extent of pesticides or petroleum in soil or groundwater at this site. Additional up gradient and down gradient soil and water samples for VOCs, SVOCs, metals, and pesticides must be taken before a CMS determination is made.

Response 27A:

The samples were not analyzed for semi-volatiles since these were screening level samples. The TPH analysis could serve as an effective indicator as to whether a semi-volatile scan is needed. TPH was not detected in any of the screening samples. Additional soil samples were collected and analyzed for SVOCs in January 1999 to determine the extent of possible SVOC contaminants. These data have been included in the final report. The elevated quantitation limits (please refer to response 33 in the first set of SCDHEC comments) in question pertain to methylene chloride and are a result detections of methylene chloride in an associated trip blank. An indication to the reviewer that blank contamination was present is the "J" flag which follows the "U" non-detect flag. During the validation process the quantitation limits are raised to equal the concentration detected in the blank as the Navy would not have any confidence that reported detections below that level would be actual contamination.

Response 27B:

The Navy agrees with this observation.

Response 27C:

The laboratory data validation sheets for the DPT data are included in Appendix F and provide an explanation for comment 27A above.

Response 27D:

Additional information regarding the pipe run from the AST has been obtained. This information along with any other pertinent information that could be found is provided in the final report.

Additional samples were collected in the area of the piping run.

Response 27E:

Additional samples were collected in the area of the piping run and taken at depths of 0-1 and 3-5 feet bgs. The 3-5-ft interval was determined to cover the depth of the supply lines feeding the boilers in the building. Given that no SVOCs or VOCs were detected in any subsurface sample precludes the need to go deeper.

Response 27F:

Following the submittal of the draft report, four additional samples were collected and analyzed for pesticides. Concentrations appeared to increase away from the site so four more samples were collected in January 1999 for pesticides. The only pesticide detected above an RBC was heptachlor epoxide at locations 698SB002 and 698SB011 with the highest concentrations at SB011. Phase III borings surrounding these locations did not have any detected pesticide concentrations exceeding an RBC. Also, no pesticides were detected in any subsurface soil samples indicating the immobility of these compounds. Although one pesticide (alpha-BHC) was detected in the fourth round groundwater sample, this was its first detection and it was not detected in soil. Based on the soil data, no pesticides appear to be leaching to groundwater. Continued pesticide monitoring in well 698001 is warranted to substantiate the alpha-BHC detection.

As mentioned in the response to comment 27E above additional samples were collected to address the petroleum concerns as well. The round 1 DPT data appears to have delineated the extent of VOCs and TPH. No VOCs were detected in any soil samples; BEQs only exceeded the RBC at location SB020. BTEX parameters detected in well 698001 have decreased 60 to 70% since reaching a maximum in round 2 samples. Only benzene was detected (6 $\mu\text{g/L}$) slightly exceeding its MCL of 5 $\mu\text{g/L}$ in the fourth round sample. Downgradient DPT point 166GP064 confirmed the limited extent of petroleum groundwater impact with no BTEX detections at that location (app. 130 ft downgradient). Continued monitoring of VOCs and SVOCs is warranted to track the decrease of these compounds in groundwater.

The only analytical parameter the Navy disagrees with are metals which were not identified as a concern during the initial round of sampling.

Comment 28:

GRID Samples

- Grid or background samples were collected at the Naval Annex and at Clouter Island. Background samples are not associated with SWMUs or AOCs and are assumed to be unaffected by Naval activities (i.e., clean). The Naval Annex samples reported SVOCs in 4 of 9 locations, TPH in 8 of 9 locations and dioxins in 2 of 2 locations. The Clouter Island samples reported SVOCs in 2 of 4 locations, pesticides/PCBs in 3 of 4 locations and dioxins in 3 of 3 locations. The Navy should investigate high or pervasive constituents at the grid locations which may be associated with or a result of prior naval activities.

Response 28:

Background samples are assumed not to be related to any SWMUs or AOCs; however, in industrial areas it can be reasonably assumed that other anthropogenic sources of contamination are present. The SVOC results from other zones have been used to calculate a BEQ background level that is not used for screening but is intended for use during the risk management decision making process. Additional text has been added to provide a plausible explanation where possible for compounds detected in the grid samples. If cause for concern exists, the grid locations in question will be singled out as "other impacted areas" similar to what has been done in other zones. If the problems are deemed significant by the project team the area will be designated as a site.