



STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Department of Environmental Management
DIVISION OF SITE REMEDIATION
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18 January 1994

Marilyn Powers, Remedial Project Manager
US Department of the Navy
NAVFACENGCOM- Northern Division
Code 1823, Mail Stop #82
10 Industrial Highway
Lester, PA 19113-2090

RE: draft NCBC Phase II RI Report and Appendices
draft NCBC Phase II Human Health Risk Assessment
draft NCBC Phase II RI Report and Appendices - Allen Harbor Landfill
draft NCBC Phase II Human Health Risk Assessment - Allen Harbor Landfill
draft NCBC Ecological Risk Assessment
Received 15 November 1993

Dear Marilyn:

This Division has reviewed the above cited draft documents and has generated the enclosed comments. In particular, the Division has noted that background concentrations throughout the report are not cited consistently. Additionally, the detection of anthropogenic compounds in "background" samples indicates that these locations may not be indicative of true background conditions. Since these compounds are not ubiquitous in nature, it is inappropriate to compare these background concentrations to site specific concentrations. The Division would therefore like to arrange a meeting with the Navy and the EPA to discuss and come to concurrence on one set of appropriate background sample concentrations for the base.

If you have any questions or would like to discuss any of these points, please contact me at (401) 277-2797.

Sincerely,

Judith Graham

Judith Graham
Engineer

cc: W. Angell, DEM DSR
R. Gottlieb, DEM DSR
M. Daly, USEPA Region 1

Telecommunication Device for the Deaf 277-6800

Naval Construction Battalion Center
Phase II Remedial Investigation Report

Volume I RI Technical Report

Page ES-6, Background Soil Characterization, General Comment

The detection of volatile organic compounds, semi-volatile organic compounds PCBs and pesticides in the background soil samples indicate that these locations were not true representative background locations because these constituents are not naturally occurring and most are not common laboratory contaminants. The report should explain the rationale used to draw comparison of site specific compound concentrations to these contaminant compounds in the background samples.

Page ES-13 and Page ES-20, Groundwater Site 02 and Site 03

Based upon the results presented, chlorinated solvents from past activities appear to be migrating through the deep groundwater aquifer. The extent of this contamination must be evaluated as the Navy begin to develop remedial action plans for these sites.

Page ES-34, Site Geology and Hydrogeology Site 07

The report indicates that groundwater movement in the Northwest portion of the site is flowing west-northwest. Therefore, the distance to the nearest residential well should be stated.

Page ES-35, Groundwater Site 07

Paragraph 1

This paragraph fails to mention vinyl chloride which has been identified as a COC and poses an unacceptable risk to human health through groundwater consumption.

Page ES-37, Conclusions and Recommendations, Site 07

The report should have addressed the potential upwelling of contaminated groundwater into the beach soils and surface water along the shore. Risk to humans via exposure to beach soils and water needs to be evaluated.

Page ES-44, Conclusions and Recommendations, Site 10

The report should mention the status of the lead investigation at the firing ranges at Camp Fogarty. Berms adjacent to the disposal areas are potential source areas for lead and need to be addressed. The Department has

previously expressed concern for this potential source of lead contamination.

Page ES-50, Inorganic Soil and Sediment Concentrations, Site 11

Please explain the Navy's rationale for comparing concentrations of inorganic contaminants in soil and sediments to alleged NCBC background levels and published USEPA and USGS regional standard ranges. At some sites, data is compared to one standard set while at other sites a different standard is used or the data is compared to more than one standard. These standard ranges can not be used to screen out potential COCs for sites. The report should consistently cite one set of standards which is agreeable to both the EPA and the RIDEM.

Page ES-57, Surface Soil, Site 13

The report should explain the increased frequency of detection and increased concentrations and of PCBs and pesticides in the surface soil at Site 13. Limited or no concentrations of these compounds were detected during the Phase I investigation. Were detection limits set too high by the laboratory during the Phase I investigation or has a release occurred in the interim?

Page ES-59, Catch Basins, Site 13

The RI should elaborate on the discharge points for the storm water drainage systems and the potential environmental impacts due to contaminant migration to these discharge points.

Page 1-16, Introduction, 1.3.3, Area Well Records

As stated groundwater data is available for the Devils Foot Road Dump from the fall 1993 sampling round. The data should be reviewed and incorporated into future submittal.

Page 2-11, 2.4.5.1, Overview of Investigation, Site 02

paragraph 2

The RI should explain why soil samples were not obtained for lab analysis from the downgradient deep well location at existing shallow well MW-3. From the groundwater data, one could conclude that deep soils are contaminated with chlorinated solvents and are a source of groundwater contamination.

Page 2-31, 2.5.2.1, Volatile Organic Compounds, Site 02

paragraph 3:

The detection of petroleum related compounds in the groundwater at Site 02

should be addressed as part of the Remedial Action plan for the tank sites.

Page 2-32, 2.5.2.1 Volatile Organic Compounds, Site 02

paragraph 2:

" ... the source of the chlorinated compounds appears to have originated at the Site-03 Solvent Disposal Area".

This statement conflicts with statements on page 3-42 (3.82 Fate and Transport, Volatile Organic Compounds, paragraph 2) which states that *"The source of this contamination is unknown and may be located some distance to the west of Site-03"*. Please explain this discrepancy and whether or not another source area is suspected.

Page 2-41, 2.6.2, Inorganic Analytes, Site 02

paragraph 1:

The report text indicates in several locations that *" The presence of a number of these inorganics in surface and subsurface soils indicates migration from soil to ground water may have occurred"*.

Please clarify these statements throughout the text. If the higher concentrations of inorganics found in the groundwater did not come from the soil, please explain their origin. Also, the continued degrading of site groundwater by soil contaminants will need to be addressed in the Feasibility Study.

Page 2-43, 2.7.1 Ecological Assessment Status, Site 02

Please correct sentence two to refer to Appendix "R" not Appendix J.

Page 2-47, 2.8.2 Fate and Transport, Site 02

Please clarify this paragraph to indicate that future use of the property may increase the potential for migration (i.e. excavation, removal of asphalt, etc.).

Page 2-47, 2.8.2 Volatile Organic Compounds, Site 02

paragraph 2:

" Due to the asphalt covering of Site 02, the leaching potential of VOCs into Site 02 groundwater is low."

VOCs have already been detected in the groundwater from soil contaminants in the present state. Please revise this statement to indicate that leaching has been occurring.

Page 3-6, 3.4.3.2 Seismic Refraction Results, Site 03

paragraph 3:

Please clarify this paragraph and paragraph 3 on Page 3-10 concerning the site bedrock depth. One sentence states that bedrock is approximately 60 feet below the surface while the other sentence refers to depth in relation to mean sea level (msl).

Page 3-38, 3.7 Human Health Risk Assessment Overview, Site 03

last sentence:

The executive summary (page ES-22) cites non-cancer HIs as ranging from 0.4 to 5, with the majority of the risk attributable to the ingestion of manganese. Please include the risks associated with manganese in this discussion.

Page 3-42, 3.8.2 Fate and Transport, Site 03

paragraph 1:

The paragraph indicates that the potential for migration is "moderate" for wind dispersion and run off of surface soils. Please define "moderate". The Department is concerned that the site may require immediate security to prevent exposure in the interim.

Page 4-11, 4.4.5.2 Field Measurements and Observations, Site 06

first paragraph, last sentence:

A sewage odor is noted in sample MW-4S, yet the description for this sample, in Table 4-1 states there is no odor. Please clarify.

Page 4-25, 4.5.1.1 Volatile Organic Compounds, Subsurface Soils, Site 06

paragraph 2:

" While elevated concentrations of ethyl benzene and total xylene were detected in one subsurface soil sample, RIDEM and USEPA Region I have yet to establish cleanup standards for total or individual VOCs".

Regardless of whether the regulatory agencies have established cleanup standards for VOCs in soil, the presence of these compounds in the environment are as a result of past activities and will need to be addressed by the Navy. Cleanup levels will be determined on a site by site basis through the risk assessments.

Page 4 - 2 8 , 4 . 5 . 1 . 4 T C L P A n a l y s e s , S i t e 0 6

The detection of two (2) subsurface soil samples at the TCLP limit for

Barium indicates that the material meets the definition of hazardous waste and must be addressed. The Division requests further deep sampling of the site to determine the extent of the barium contamination. Also, please explain if barium was considered a COC for risk assessment given that the concentration is at regulatory hazardous waste level.

Page 4-30, 4.5.2.3 Inorganic Analytes, Groundwater, Site 06

The detection of barium in the groundwater may constitute by definition a release of hazardous waste at the site. This matter needs to be addressed.

Page 4-36, 4.6.2 TCLP Analyses, Site 06

Please correct this paragraph. The detection of contamination at the TCLP regulatory limit constitutes by definition hazardous waste at the site.

Page 4-39, 4.8.1 Nature and Extent of Contamination, Site 06

Please insert the information concerning the detection of hazardous waste at Site 06.

Page 5-12, 5.4.6.2 Field Measurements and Observations, Site 07

Please correct this paragraph. VOCs and Semi-VOCs were detected in the soils and ground water at Calf Pasture Point and maybe a potential source of the OVA measurements.

Page 5-27, 5.5.1.1 Volatile Organic Compounds (VOCs), Site 07

paragraph 3:

Regardless of whether 1,1,1 TCA was or was not a component of the three known wastes disposed of at Site 07, it was detected in several well borings and needs to be addressed along with the VOC contamination in the shallow and deep ground water.

Page 5-32, 5.5.2.1 Volatile Organic Compounds, Site 07

paragraph 1:

Please determine whether the degradation products mentioned are more toxic than the original compound or compounds and discuss the conclusions in this section.

Page 5-33, 5.5.2.2 Inorganic Analysis, Site 07

paragraph 1:

The information regarding State Drinking Water Standards is incorrect. State standards parallel Federal standards except in some cases where they are

more stringent. Please correct this paragraph.

Page 5-40, 5.7 Human Health Risk Assessment Overview, Site 07

As previously stated, the potential exposure to "beachgoers" as a result of contact to soils and surface water needs to be evaluated.

Page 5-42, 5.8.1 Groundwater Assessment, Site 07

paragraph 2:

Further delineation of the horizontal extent of VOC contamination in the bedrock aquifer is required at this site.

Page 5-44, 5.8.2 Inorganic Analytes, Site 07

paragraph 1:

The text states that *"Metals have a strong affinity for clay particles and organic matter"*. This statement is irrelevant to conditions at Calf Pasture Point because clays and organic materials are not the major geologic feature (see Figures 5-6 and 5-7) and as stated on Page 5-38 inorganics have already migrated from the soils into the groundwater.

Page 5-45, 5.8.3 Human Health Risk Assessment, Scenario 2- Future Recreational

Future recreational use at Calf Pasture Point should include a beach area. The risk assessment should consider the potential exposure to groundwater through consumption as well as dermal contact and inhalation of volatiles using the shower scenario.

Page 6-16, 6.4.6.4 Vertical Hydraulic Gradients, Site 10

second paragraph, first sentence:

typo: 1.18E-2 should be 1.14E-2

Page 6-17, 6.4.6.4 Average Linear Velocities, Site 10

First paragraph, second sentence:

typo: 14 should be 24.7

Page 6-21, 6.5.1.1, Subsurface Soils, Site 10

paragraph 1 and 2:

As previously stated, 1,1,1 TCA is not a naturally occurring compound; therefore, the existence of this compound at "background" locations is anthropogenic. It is inappropriate to compare VOCs detected in site soils to anthropogenic VOCs detected in "background" locations.

Page 6-21, 6.5.1.1, Surface Soils, Site 10

The detection of toluene may not be due to lab contamination. Toluene is a common solvent used for rifle cleaning; therefore, its detection may be a result of the disposal of rifle cleaning solvents at this site.

Page 6-24, 6.5.2 Groundwater Assessment, General Comment

Please insert language in the discussion of Site 10 concerning the groundwater classification at the site and the location of the site in proximity to the Well Head Protection Area established this past year by the State.

Page 6-36, 6.8.2 Fate and Transportation, Site 10

Although the RI indicates that the potential for soil contamination migration to groundwater is low, groundwater contamination is already present and must be addressed by the Navy.

Page 7-26, 7.5.2 Groundwater Assessment, Site 11

Figure 7-3 provides the locations of the Site 11 monitoring wells, not the "Site 03". Please correct the text.

Page 7-28, 7.5.2.2 Semivolatile Organic Compounds, Site 11

top of page:

The correct site referral is Site 11, not "Site 03". Please correct the text.

Page 7-32, 7.5.3.2 Pesticides/PCBs, Site 11

paragraph 2:

Contaminants detected in the Catch Basin sediment sample may be migrating to nearby surface water outlets. All discharge points should be located and the sediments sampled to determine the extent of contamination and the ultimate impact to the environment.

Page 7-45, 7.8.1 Catch Basin Assessment, Site 11

paragraph 1:

Apparently the two upgradient samples had the highest concentrations of inorganics, please explain where the source is located.

Page 8-24, 8.5.1.2 Semivolatile Organic Compounds, Site 13

second paragraph, second sentence:

The report states that PAHs were detected in 19 of 34 samples while page 8-23 states

31 samples were taken. Please clarify.

TABLES AND FIGURES- VOLUME I TECHNICAL REPORT

Table 4-10 and Table 4-12, NCBC- Site 06

Please explain why the TCLP "hits" at hazardous waste levels were not listed. Please revise the table to list the results. Also, all TCLP analysis results and concentrations detected should be indicated in the appropriate table for each applicable site.

Table 7-15, NCBC- Site 11

Filtered groundwater constituent concentrations are frequently higher than non-filtered groundwater concentrations. Please discuss this within the body of the report.

Figures 1-6 and 1-7, Hunt Ground Water Reservoir and Regional Groundwater Contour Plan

Please re-orientate the maps to indicate north at the top of the page. This should also be done for the Allen Harbor Report figures.

Figure 1-10, Surface Water Features in the Vicinity of the NCBC Facility

Please include all coastal surface water features as well as fresh water and brackish water bodies.

Figure 6-8, Site 10

Please explain and delineate whether there is a trough or collection zone located in the vicinity of MWs 5(s)(d). Ground water appears to flow from the east and west to a central area.

Figure 6-8 & 6-9, Site 10

At what elevation is the direction of flow measured?

VOLUME II HUMAN HEALTH RISK ASSESSMENT

Page 7-15, Section 7.4.2, Qualitative Analysis of Risks, Site 10

last paragraph:

Discounting Phase I sampling, there are still six Phase II samples which exceed the secondary MCL for aluminum. Therefore, please explain how the exclusion of aluminum from the risk assessment and not underestimate risk.

Page 7-17, Section 7.4.2, Qualitative Analysis of Risks, Site 10

last paragraph:

Five out of nine groundwater samples exceed 0.015 mg/l the EPA action level for lead. It should be noted that this site overlies a GAA aquifer. Please explain how exclusion of this element will not underestimate risk.

ALLEN HARBOR LANDFILL VOLUME 1

Page ES-6, Hydrogeology

first paragraph:

Please state that the marsh is culverted under Sanford Road and that it drains into the harbor. Tidal influences through the landfill need to be elaborated on.

last paragraph:

In general, the water quality of Narragansett Bay adjacent to NCBC is classified by the RIDEM Division of Water Resources as class SA. Only a small portion of the bay adjacent to the base is classified as SC. In particular, all of Allen Harbor is classified as SA. Please correct this paragraph and all other water quality sections in this report.

Page ES-10, Surface Water, Harbor Sediment and Clam Sampling

first paragraph:

Insert the 1985 water and sediment sampling results from Allen Harbor into this report and discuss the results in this section. These analytical results influenced the Department's decision to close the harbor to shellfishing.

Page ES-16, Scenario 2 - Future Recreational

Consumption of groundwater was not considered in the risk analysis under this scenario but was considered under the future commercial/industrial scenario. Since the land use plan designates this area for conservation/recreational use and since consumption of groundwater could occur under the recreational scenario, groundwater consumption should be factored into the risk analysis.

Page ES-17, Conclusions and Recommendations

third and fourth bullets:

Clearly, the source for shallow and deep groundwater contamination is the landfill itself, please clarify that no "hot spots" were delineated during these studies.

Page ES-18, Data Limitations and Recommendations for Future Work

The Department concurs that further definition of groundwater contamination is required and notes that the recommended studies should be performed prior to the completion of remedial design. Additionally, investigation into landfill gas generation and migration are noticeably lacking. At other Rhode Island Superfund sites of this nature, these studies have been performed at the remedial investigation stage.

Page 1-16, 1.3.2 Regional Hydrology

Insert a discussion of localized surface hydrology in the immediate vicinity of the landfill. Include in the discussion impacts of the marsh and tidal influences on the landfill as well as surface water migration pathways and runoff.

Page 1-17, 1.3.3 Area Well Records

Please remove the second sentence on this page, groundwater use in the vicinity of the Devil's Foot Road dump site is not applicable to the Allen Harbor area.

Page 1-18, Section 1.3.4 Environmental Setting

last paragraph:

Again, the water quality of Narragansett Bay adjacent to NCBC is classified by the RIDEM Division of Water Resources as class SA.

Page 2-1, Section 2.2 Site History Overview

This is the Phase II RI, please rephrase the last sentence on this page. Additionally, please include in this section a brief description of disposal methods (ie: were hazardous wastes disposed of in drums or were drums reclaimed for future use?).

Section 2.4 Phase II Remedial Investigation

Please provide the following estimates:

- Volume of fill above the water table
- Volume of fill below the water table
- Average yearly horizontal flow through the landfill
- Average yearly vertical flow through the landfill

Page 2-29, Nature and Extent of Contamination

third paragraph:

Since groundwater is discharging to class SA surface water, RIDEM/DWR Ambient Water Quality Criteria are appropriate standards of comparison, please include these standards in the relevant text and tables throughout the report.

Page 2-40, Section 2.5.1.4 Inorganic Analytes

second paragraph

Reference to Table 2-6 is incorrect, the correct reference is Table 2-16.

Page 2-41, 2.5.1.5 Dioxin/Furans

The archived dioxin and furan samples should be analyzed to provide additional data for the closure.

Page 2-42, 2.5.1.6 TCLP Analysis

The detection of Cadmium at 09-MW8-04 above the regulatory limit constitutes hazardous waste by definition and should be identified as a potential hot spot for removal.

Page 3-3, Section 3.3.3 Pesticides/PCBs

last word:

Rhode Island cleanup guidance is 10 ppm.

Figures: 2-10, 2-11, 2-12, & 2-13

The deep groundwater contours are depicted at the same elevation or higher than the shallow groundwater contours and movement is indicated in opposite directions. The RI should offer an explanation of this.

ALLEN HARBOR LANDFILL VOLUME II HUMAN HEALTH RISK ASSESSMENT

General Comment

The Risk Assessment should evaluate risk to human health via contact with surface water and sediments along the toe of the landfill. Risks to humans from consumption of shellfish from this area also requires evaluation. Additional investigations may be required to determine sediment contamination concentrations versus depth of sediment. The Department is concerned that the resuspension of these sediments may be deleterious to human health and the environment.

Page 2-29, 2.3.3 Estimation of Constituent Exposure Doses

Given that the commercial/industrial worker scenario considers groundwater consumption, the recreational scenario must undergo similar evaluation. Please revise calculations to reflect groundwater consumption in the recreational scenario.

Pages 3 - 24 & 25, 3.4.2 Qualitative Analysis of Risks

The report states that risk may have been underestimated due to the exclusion of cobalt and lead from the analysis. Please provide an estimate of increased risk when these constituents are included in the analysis.

Page 3-29, 3.5.3 Site Specific Uncertainties Related to Risk Characterization

last paragraph:

It is reported that carcinogenic PAHs range in concentration from 0.042 to 110 mg/kg. This range is then compared to a mean urban concentration of 0.6 to 3mg/kg. The report concludes that these concentrations are similar. The Department disagrees with this conclusion, the upper end of the detected range is orders of magnitude higher than the upper end of the urban mean. It may be more appropriate to compare the site PAH mean to the mean urban range; however, please note that NCBC is not an urban area.

Page 3-33, Uncertainties Associated with Constituents Significantly Contributing to the Non-Cancer HIs

last paragraph:

It is inappropriate to compare manganese concentrations to antimony concentrations in up gradient wells. This is probably a typo, please check this.

Figure 2-3 Background Surface Soil Sample Locations

Sample locations 13, 14, 19, and 20 are not shown on the figure. Please locate these sample sites on this figure and other similar figures.

ECOLOGICAL RISK ASSESSMENT APPENDIX R, VOLUME II

Pages 8 and 9, Allen Harbor Watershed

The detection of PAHs, inorganics, PCBs and pesticides in the sediment samples taken at the toe of the landfill and in the western wetland indicates that contamination has migrated from the landfill to the surrounding areas and is available for bioaccumulation. The extent of this contamination beyond the toe of the landfill needs to be further defined.