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18 AUG 1994

U. S. Environmental Protection Agency (3HW71)
Region III
Office of Superfund
Attn: Mr. Robert Thomson
Va./W.Va. Federal Facilities
841 Chestnut Building
Philadelphia, Pennsylvania 19107

Re: EPA Comments on the Draft Final Remedial Investigation,
Risk Assessment, and Feasibility Study for Site 1,
Camp Allen Landfill at Naval Base, Norfolk, Virginia

Dear Mr. Thomson:

We are in receipt of your letter dated October 25, 1994.
Enclosed please find the response to your comments. These
comments have been previously discussed with you at the
April 21, 1994 meeting at your office with Mr. Ken Walker and
Mr. Dave Forsythe of this command. It was understood that these
responses were sufficient in order to finalize the Remedial
Investigation and Feasibility report.

We are also sending for your review under separate cover,
Exposure Concentrations, Selection of COPCs, and Exposure Input
Parameters to be used in the Final Risk Assessment. The final
version of the Risk Assessment will be forwarded shortly after
your comments are received or by October 5, 1994.

If you have any questions, please contact the Remedial Project
Manager, Mr. Dave Forsythe, at (804) 322-4783.

Sincerely,

N. M. JOHNSON, P.E.
Head
Installation Restoration Section
(North)
Environmental Programs Branch
Environmental Quality Division
By direction of the Commander

Enclosure

Copy to: (w/encl)
DEQ (Mr. Scott McMillan)
COMNAVBASE Norfolk (Code N42B, Ms. D. Bailey)
Baker Environmental (Ms. Jeri Tregaser)
Administrative Record File (Naval Base Norfolk)

Attachment I
USEPA Comment Responses
Camp Allen Landfill RI/FS

Draft Final RI Report

USEPA Comment 1. Available information indicates that municipal waste incinerator ash does not characteristically contain toxic dioxins. Therefore, soil samples were not analyzed for dioxins. In addition, chlorophenols, which are dioxin precursors, were not detected in site media.

USEPA Comment 2. Yes. This is clearly detailed in Section 2.0 Environmental Setting.

USEPA Comment 3. Yes. See USEPA Comment 2.

USEPA Comment 4. Yes it is. This consideration is noted throughout the RI Report.

USEPA Comment 5. The Yorktown Aquifer has the potential to be a future drinking water source. However, the Yorktown Aquifer in the vicinity of the site is not currently being used as a drinking water source, and there are currently no plans to develop the Yorktown Aquifer in the vicinity of the site. Local businesses and residents are connected to public water.

USEPA Comment 6. No. As indicated in Section 2.7.3; available information indicates that the Columbia Aquifer is not suitable as a drinking water source and is limited to non-potable uses.

USEPA Comment 7. Information related to pH is not included in the referenced material. Site-specific pH data will be added to Table 2-2.

USEPA Comment 8. Soil samples were collected as discrete grab samples. This will be clarified in the RI Report.

USEPA Comment 9. Sediment samples were collected as discrete grab samples. This will be clarified in the RI Report.

USEPA Comment 10. Geophysical coverage was based on historical disposal information. Area B disposal was limited to trench and fill operations related to the Salvage Yard fire.

USEPA Comment 11. Agreed. The Navy is considering a future PA/SI effort to address this area, which is located outside of the Camp Allen landfill.

USEPA Comment 12. This drainage ditch is wholly situated on Navy property and the northern portion of the ditch borders a narrow strip of land owned by the Norfolk & Portsmouth Belt Line Railroad. Please note that the "extensively dumped debris" is truly miscellaneous litter and not landfilled materials. There is no evidence of possible contaminant migration from Navy property to private property via the drainage ditch in this area resulting from the miscellaneous litter noted. Based on surface water flow direction and shallow groundwater discharge points, it appears surface water and shallow groundwater flow would be from private property to Navy property. This section will be revised to reflect this information.

USEPA Comment 13. Based on field observations, sample refusal was due to a boulder or riprap in the drainageway. This will be clarified in the RI Report.

USEPA Comment 14. Pollution tolerant species were observed; however, population abnormalities were not noted at the family level. This information will be added to the RI Report.

USEPA Comment 15. No physical abnormalities were noted in the terrestrial organisms observed. The species observed were those that would be expected to occur in a primarily urban environment. Because they are urban species, they would be somewhat tolerant of pollution.

USEPA Comments 16 & 17. Area A subsurface soils were not analyzed for metals because, based on previous investigation results (Section 1.0), organic constituents were the primary contaminants of concern. Dissolved metal concentrations detected in monitoring wells were generally below MCLs, and suspended solids data indicate that total metals detected in monitoring wells were the result of well turbidity and are not representative of actual conditions.

USEPA Comment 18. Beryllium was analyzed for in the surface soils (See Appendix Q). Table 5-13 will be revised accordingly.

USEPA Comments 19 & 20. The Federal MCL for beryllium is 4 µg/L. No State equivalent currently exists. Therefore, the detection limit of 2 µg/L is appropriate.

USEPA Comments 21, 22, & 23. Since submittals of the Draft Final RI/RA Reports to EPA, analytical data have been modified for corrections. Maximum concentrations of all media and areas of concern will be presented in Appendix A of the Final Baseline Risk Assessment. It should be noted here that the following changes in areas of concern have been made for the purposes of determining COPCs and exposure point concentrations in the Final Baseline Risk Assessment:

- Area B surface soils have been grouped according to the following areas of concern: landfill area (inside the fenceline), outside of the landfill area (location SSB-09 situated outside of the fenceline), pond area (SSB-05), and elementary school area;
- Sediment samples have been stratified as shallow and deep sediments;
- Area B surface water/sediment locations have been categorized to define either the pond area or the elementary school area; and
- Surface water/sediment sample location SWB/SDB-05 has been regrouped with the Area A sampling locations since this is situated along Ingersol Street, on the Area A-side of the salvage yard.

The maximum concentrations presented in USEPA comments 21-23 were noted and checked against updated Appendix A tables to be presented in the Final Baseline Risk Assessment. Table 1 presents a summary of corrections to EPA's list of maximum concentrations.

TABLE 1

Area/Medium	Parameter	USEPA Maximum Concentration	Corrected Maximum Concentration
Area A Subsurface Soil	2-Butanone	17,000 µg/kg	91,000 µg/kg
	Benzo(a)pyrene	165 µg/kg	70 µg/kg
Area A Sediment	Vanadium	190 mg/kg	180 mg/kg
	Benzo(a)pyrene	570 µg/kg	320 µg/kg
Area A Surface Water	1,2-Dichloroethene	4 µg/L	20 µg/L
Area A Groundwater - Deep Aquifer	Tetrachloroethene	14 µg/L	4 µg/L
Area B Sediment (1)	4,4'-DDT	2,500 µg/kg	4,400 µg/kg
	Copper	22,700 mg/kg	298 mg/kg
	Lead	1,750 mg/kg	497 mg/kg
	Mercury	19.35 mg/kg	1.4 mg/kg
	Nickel	1,255 mg/kg	42.3 mg/kg
	Vanadium	542 mg/kg	130 mg/kg
Area B Surface Water - Camp Allen Elementary School Vicinity	Total Copper	27.1 µg/L	27.1 µg/L (no change)
	Total Lead	53.6 µg/L	53.6 µg/L (no change)
Area B Surface Water - Landfill Area B General Vicinity (Pond Area)	Vinyl chloride	22.0 µg/L	22.0 µg/L (no change)
	Acenaphthene	0.7 µg/L	10U µg/L
	Bis(2-ethylhexyl)phthalate	7.0 µg/L	9 µg/L
	Total Zinc	202 µg/L	202 µg/L (no change)
	Dissolved Zinc	111 µg/L	111 µg/L (no change)
	Dissolved Barium	151 µg/L	151 µg/L (nochange)
Area B Shallow Aquifer (both areas combined)	Dissolved Arsenic	51.1 µg/L	16.4 µg/L

(1) All constituents and corresponding maximum concentrations listed by EPA were detected in sediment samples collected from the pond area. These were presented under the heading "Camp Allen Elementary School vicinity," rather than under the heading of "Landfill Area B General vicinity." It is assumed that no listing for maximum concentration of constituents detected in sediments were provided by EPA for the Elementary School vicinity.

USEPA Comment 24. Yes, "ambient" air samples are considered to be background locations. Based on surface water and sediment sample analytical results which do not correspond to those detected in the air, background air sample results are more likely to be the result of surrounding area land use (i.e., Naval Air Station).

USEPA Comment 25. General comments regarding maximum constituent concentrations (RI Report, Section 6.0 and FS Report, Section 1.0); response not necessary.

USEPA Comment 26. Site-specific background soil data were not collected because most soils investigated during the RI are not natural soils, but are fill material. Location-specific background data collected from other areas of the Base, would in all likelihood, not be representative of site conditions. Subsequent comparisons to site data would, therefore, not be statistically defensible. Given this situation, published soil data related to regional inorganic concentration ranges were used to adequately characterize background conditions for purposes of the RI Report. Please note that ultimate conclusions presented in the Baseline Risk Assessment take this situation into account, as the COPC selection process retained the primary toxic/heavy metals for a conservative evaluation.

USEPA Comment 27. See response to USEPA Comment 26.

USEPA Comment 28. Although several inorganic constituents detected in site sediment samples exceeded applicable sediment quality criteria, no direct trend is apparent between sample locations and inorganic constituents/concentrations. Based on results of the Baseline Risk Assessment (including modification of COPCs and exposure input values resulting from agency review), ICR and HI values derived for current sediment exposure scenarios fall within acceptable ranges.

USEPA Comment 29. See response to USEPA Comments 26, 27, and 28.

USEPA Comment 30. In general, primary conclusions presented in the RI Report hold true. Site background information does not impact remedial alternative considerations. RI conclusions are not "stand-alone" as FS considerations are based on conservative assumptions used in the Baseline Risk Assessment.

Draft Final Baseline Risk Assessment Report

* Draft copy of these responses were faxed to EPA prior to the April 1994 meeting. The asterisk indicates changes to the draft responses as a result of that meeting.

USEPA Comment 1. Risk Based Screening was developed by USEPA Region III toxicologists to replace the relative toxicity screening approach presented in the Data Evaluation Section (Section 5.0) of Risk Assessment Guidance for Superfund (RAGS 1A). The Risk Based Screening approach provides an absolute determination of single chemical risk which must be used in conjunction with the other selection criteria presented in RAGS 1A, Section 5.0. Region III toxicologists have stated that the Risk Screening Approach is not to be used as a standalone decision making tool for any application. Use of RBC values should, therefore, be used in conjunction with other chemicals of potential concern (COPC) selection criteria presented in the baseline risk assessment. The selection criteria presented in the baseline risk assessment for evaluating COPCs will be revised to include the use of Region III RBCs as directed by USEPA.

*USEPA Comment 2. COPCs were selected based primarily on Site history and prevalence (frequency of detection and concentration) in environmental media. Site-specific background data for the Camp Allen Landfill Site is not available. Site-specific background soil data was not collected because soils investigated during the RI are not natural soils, but fill material. Location-specific background data would in all likelihood, not be representative. Subsequent comparisons to site data would, therefore, not be statistically defensible. Other considerations for the selection of COPCs include blank data, literature background concentrations, comparison to RBCs and comparisons to federal and State standards or criteria.

Chemicals detected in blanks were qualified appropriately as "B" by the data validator. These chemicals were not considered as COPCs for quantitative evaluation in the baseline risk assessment. Chemicals not qualified by the data validator on a sample delivery group (SDG) basis were evaluated using the blank evaluation procedure in RAGS 1A, which states that:

Blanks should be compared with results from samples with which blanks are associated. It is often impossible, however, to determine the association between certain blanks and certain data. In this case, compare the blank data with results from the entire data set.

Chemicals which were eliminated from consideration include methylene chloride, acetone, 2-butanone, toluene bromodichloromethane, dibromochloromethane, phenol, di-n-butylphthalate and bis(2-ethylhexyl)phthalate. This criterion was not, however, applied globally to the data. Best professional judgement was used to determine which comparisons made sense. For example, trichloroethene (TCE) was detected in rinsate samples RSA303 and RSA301 at 1 µg/L. Site samples containing less than or equal to 5 µg/L of this chemical (not considered to be a common laboratory contaminant) were not globally eliminated from consideration in the baseline risk assessment because of TCEs potential as a site related contaminant. Text will be clarified to better reflect the elimination of blank related contaminants.

Another factor contributing to the elimination of a chemical as a COPC was chemical ubiquity in the environment. For example, PAHs which occur from the incomplete combustion of all organic matter should be detected with frequencies warranting their inclusion as COPCs given the sensitivity of the analytical methods. PAHs were detected frequently in environmental media at CAL, but were not retained as COPCs because maximum detected values did not exceed their respective RBCs in either Area A or B. Text will be revised to better address the elimination of PAHs as COPCs.

It should be noted that PAHs do not occur singularly, but as a mixture. Therefore, the selection of PAHs as COPCs must be evaluated as such, particularly in the case of carcinogenic COPCs, where toxicity is relative to benzo(a)pyrene.

Pesticides and PCBs were frequently detected in surface soils, subsurface soils, shallow and deep groundwater, surface waters and sediments. A reexamination of the analytical data, led to the conclusion that certain pesticides and PCBs exceed their respective RBC values.

After a reexamination of the data, the following pesticides and PCBs will be retained as COPCs in their corresponding environmental media because of RBC exceedances:

AREA A

- Shallow Groundwater
Aldrin
- Surface Soil
PCB-1260
- Subsurface Soils
PCB-1254
PCB-1260
- Shallow Sediments
PCB-1260

AREA B

- Shallow Groundwater
Dieldrin
- Deep Groundwater
Dieldrin
- Surface Soil (Pond)
PCB-1260
- Subsurface Soil (Pond)
PCB-1260
Dieldrin
- Shallow Sediments (Pond)
4,4'-DDD

All appropriate environmental COPC concentrations will be compared to residential RBCs. All analytical data will be reevaluated in the Final Baseline Risk Assessment to ensure that COPCs have not been overlooked and potential health risks underestimated. Text and risk calculations will be revised to reflect the addition of new COPCs.

USEPA Comment 3. PAHs were not eliminated solely on the basis of their ubiquitous nature. In addition, please see USEPA Comment 2 response.

USEPA Comment 4. New selection criteria will be documented that describes the selection of all chemicals (pesticides included) as COPCs.

*USEPA Comment 5. A comparison to background soil inorganic concentrations is not possible because background soil data is not currently available and soil samples taken from the landfill are not native soils but fill material. The lack of site-specific background data will be addressed in the Final Baseline Risk Assessment. Inorganic contaminant concentrations will be evaluated using the most recent USEPA COPC selection criteria including a comparison to RBCs. Please see USEPA Comment 2 response.

USEPA Comment 6. Please see USEPA Comment 5 response.

USEPA Comment 7. Justification for eliminating methylene chloride and 2-butanone will be provided.

USEPA Comment 8. The criteria and assumptions applied to the selection and elimination of all chemicals as COPCs, including PAHs and pesticides/PCBs, will be provided in the Final Risk Assessment.

USEPA Comment 9. Please see USEPA Comment 2 response.

USEPA Comment 10. Comparisons of semivolatile data for surface waters to applicable criteria and standard is presented in the Remedial Investigation report. A limited comparison of data to standards and criteria will be added to the Baseline Risk Assessment Report.

USEPA Comment 11. Please see USEPA Comment 2 response.

USEPA Comment 12. Agreed. Documentation will be provided if available or text will be appropriately modified to clarify the statement about pesticides in sediments.

USEPA Comment 13. Please see USEPA Comment 2 response.

USEPA Comment 14. Selection of COPCs in deep sediments will be reevaluated in the final version of the baseline risk assessment by comparison to residential soil RBCs.

USEPA Comment 15. Pesticides will be reevaluated using the most recent USEPA Region III COPC selection criteria. Please see USEPA Comments 2 and 12 responses.

*USEPA Comment 16. Volatile organic chemicals (VOCs) were detected in several surface water samples in Area A and B, but not in the ditch behind the Camp Allen Elementary School (RI Report, Section 6.0). If VOCs (which are relatively water soluble) are not detected in surface water samples they are not likely to be present in sediments. In general, sediment sample VOC results correlate to corresponding surface water sample locations. However, the lack of these data will be discussed as part of the uncertainties section.

USEPA Comment 17. Please see USEPA Comment 1 response.

*USEPA Comment 18. Agreed. Individual well samples (not average concentrations) will be evaluated in both shallow and deep aquifers throughout the site. Care will be taken to define the central tendency of each potential contaminant plume. Text and calculations will be revised to reflect this.

USEPA Comment 19. Organic contaminants are generally the most environmentally mobile contaminants at any hazardous waste site. It is reasonable to assume that if volatile organics are not detected in a manner consistent with known plumes at the site, their presence is probably not site related. Therefore, other less mobile contaminants (i.e. PCBs, pesticides, semivolatiles and inorganics) should not be present due to site activities. Additionally, it must be noted that a shallow groundwater hydrogeologic barrier (drainage ditch) exists between Area A of the Camp Allen Landfill and Glenwood Park. Analytical results from shallow groundwater monitoring wells in this area further support that detected constituents in noted residential well groundwater samples are not site related. This rationale will be clarified in Section 2.3.2.

USEPA Comment 20. Comment acknowledged. Raw analytical data are presented in Section 5.0 of the Remedial Investigation Report.

USEPA Comment 21. Agreed. Documentation will be provided to support the elimination of 2-butanone as a COPC.

USEPA Comment 22. Justification will be provided. The potential for these contaminants to be site related will be discussed.

USEPA Comment 23. COPC selection criteria will also be applied to the groundwater data.

USEPA Comment 24. Methylene chloride was identified as a laboratory contaminant. Its presence in any environmental sample at any hazardous waste site must always be viewed with suspicion because of its use as a common laboratory solvent.

The ubiquitous nature of freons (chloro-fluoro methanes, ethanes) and chlorinated solvents used as propellants and solvents in numerous commercial products must be recognized by the Agency. Furthermore, these chemicals were not detected in other environmental media investigated at the landfill (particularly soils and groundwater). However, air data will be reevaluated in response to Agency comments to determine whether it is necessary to include air COPCs in the baseline risk assessment.

USEPA Comment 25. Methylene chloride was detected in laboratory blanks. This will be explained in the Final Baseline Risk Assessment.

USEPA Comment 26. Air data will be reevaluated in the Final Baseline Risk Assessment.

USEPA Comment 27. Air data will be reevaluated in the Final Baseline Risk Assessment.

USEPA Comment 28. Agreed. Air data will be reevaluated in the Final Baseline Risk Assessment.

USEPA Comment 29. Air data will be reevaluated in the Final Baseline Risk Assessment. A comparison to RBCs will also be applied to air data to select COPCs.

USEPA Comment 30. Agreed. This statement will be clarified to reflect the fact that volatilization as a removal mechanism is not as important when evaluating groundwater and subsurface soils.

USEPA Comment 31. A more detailed numerical evaluation of potential exposure to volatiles and fugitive dusts via the air pathway will be included in the baseline risk assessment. It is doubtful, however, that outdoor exposure to volatiles emanating from hoses used in watering lawns and washing cars will be significant given the concentrations of contaminants and the infinite dilution potential of outdoor air.

USEPA Comment 32. Please see USEPA Comment 31 response.

USEPA Comment 33. Agreed. Please see USEPA Comment 31 response.

USEPA Comment 34. Excavation and home building would result if the landfill areas were developed for residential purpose, however, the nature of the landfill areas makes future residential development a remote possibility. If homes are constructed in the future, backfilling around foundations and landscaping (planting trees, grass flowers and shrubs) would be necessary for esthetic purposes and limit the potential for fugitive dust emissions by residents. Potential dust emissions will, however, be evaluated in the Final Baseline Risk Assessment.

USEPA Comment 35. Comment acknowledged.

USEPA Comment 36. Please see USEPA Comment 19 response.

*USEPA Comment 37. Future residential property use is not a true no action scenario in that houses would be constructed, additional roads cut, existing buildings razed, steam lines dismantled, and landscaping activities conducted. It is reasonable to assume that certain exposure scenarios such as residential exposure to fugitive dusts would be limited by landscaping and lawn maintenance activities. However, the potential for future residential exposure to fugitive dusts will be evaluated in the Final Baseline Risk Assessment.

USEPA Comment 38. A discussion of the future potential use of groundwater and the potential discharge of groundwater to the ditches will be included in the text.

USEPA Comment 39. Subsurface soils will be evaluated using a potential construction worker scenario. Because of the nature of the site, such exposure is highly unlikely. Future potential resident exposure to subsurface soils will not be evaluated at the Camp Allen Landfill Site.

USEPA Comment 40. Agreed. Statements concerning the use of certain non-detect values will be revisited and these data will be included in the derivation of the 95 % upper confidence interval of the data.

USEPA Comment 41. Agreed. Groundwater will be reevaluated in the Final Baseline Risk Assessment.

USEPA Comment 42. State Comment 44. Potential dermal contact with contaminants in groundwater was evaluated as per RAGS 1A. The 1992 Dermal Guidance Document was used as a source for permeability constants. The use of non-steady state techniques will, however, be used when possible in the Final Baseline Risk Assessment.

USEPA Comment 43. Please see USEPA Comment 31 response.

USEPA Comment 44. Please see USEPA Comment 42 response.

USEPA Comment 45. State Comment 47. Latest available RfDs and CSFs will be addressed in the Final Baseline Risk Assessment.

USEPA Comment 46. Please see USEPA Comment 45 response.

USEPA Comment 47. An explanation will be provided that discusses the mobility of the VOCs and the relative immobility of the semivolatiles, pesticides, PCBs and inorganics. The discussion will also evaluate the data obtained from the newest monitoring wells and the residential well data. Logically, the more mobile contaminants would be detected in these wells before the less mobile constituents. This discussion will be presented in detail in the Final Baseline Risk Assessment.

USEPA Comment 48. Agreed. Text in the Baseline Risk Assessment will reflect this potential.

USEPA Comment 49. Data validation qualifiers should be presented in the Remedial Investigation Report and not the risk assessment.

USEPA Comment 50. Agreed. Please see USEPA Comment 41 response.

USEPA Comment 51. PAHs will be reevaluated using RBCs in the Final Risk Assessment. If they are retained as COPCs potential human health risks will be derived using USEPA-approved equations.

USEPA Comment 52. Comment acknowledged. It is believed that indoor air quality in the Brig and the Camp Allen Elementary School is unaffected by contamination at the Camp Allen Landfill. However, the relationship between indoor air data and chemical

concentrations in environmental media in the vicinity of the Brig and Elementary School will be further evaluated in subsequent versions of the baseline risk assessment. This evaluation will include an examination of all potential contaminant migration pathways from the Landfill to the Brig and the School. Pathways in the evaluation will include potential intrusion of vapors (emanating from potentially affected underlying groundwater) through cracked foundations, volatilization from soils to ambient air and a more thorough review of the types of cleaning products and solvents used in each building to explain other possible sources of indoor air contamination.

USEPA Comment 53. No DNAPL was found at the site.

USEPA Comment 54. Residential well summary data are presented in Section 6.5.3 of the Remedial Investigation Report.

USEPA Comment 55. Agreed. The shower model will be corrected to reflect the USEPA suggested inputs. Use of these new inputs, however, will not have a significant effect on the total site risk values presented in the Final Baseline Risk Assessment.

USEPA Comment 56. Air data will be reevaluated in the Final Baseline Risk Assessment. 1,1,1-Trichloroethane will be assessed and other potential sources of this chemical in indoor air will be addressed.

USEPA Comment 57. Vinyl chloride was retained as a COPC in surface water at the site and was evaluated quantitatively in the Baseline Risk Assessment. The concentration of a chemical in any medium is not an indication of the magnitude of risk. Risk is the result of exposure to the chemical in a given medium. Surface water risks at Camp Allen fell within USEPA's target risk range of 10^{-6} to 10^{-4} .

USEPA Comment 58. More comprehensive air monitoring is not necessary based on the first round of air monitoring results. Outdoor air samples did not contain significant levels of COPCs and indoor air sampling suggested that the site was not affecting indoor air quality (no vinyl chloride or TCE).

USEPA Comment 59. The linear regression will be presented in the revised baseline risk assessment.

USEPA Comment 60. Comment acknowledged.

USEPA Comment 61. Risk calculations will be revised to reflect the inclusion of additional COPCs in certain media and quantitative evaluation of the air exposure pathway. All appropriate summary table and supporting documentation for the addition of these items will be provided. The results of the Baseline Risk Assessment will not be significantly affected given the magnitude of the risk associated with contamination in groundwater.

Draft Final Feasibility Study Report

* Draft copy of these reports were faxed to EPA prior to the April 1994 meeting. The asterisk indicates changes to the draft responses as a result of that meeting.

USEPA Comment 1. The assumptions upon which the FS is based will be reviewed following resolution of comments on the Remedial Investigation and Risk Assessment.

USEPA Comment 2. Since direct remediation of surface water is impractical, vinyl chloride and other VOCs detected in the Area B Pond must be addressed by addressing the source of this contamination, which is the Area B Landfill. The removal action at Area B will address the source of contamination. A No Action surface water alternative can be included in the FS that would include periodic monitoring of the surface water to determine if contaminant levels gradually decrease as a result of the removal action. If contaminant levels in the surface water do not decrease, other remedial measures could be considered, such as expanding the shallow groundwater extraction system in Area B to intercept groundwater discharging to the pond.

USEPA Comment 3. No references to cleanup levels are made in Section 5.2. Soil and groundwater cleanup levels will be developed as discussed in the responses to Comments 7 and 8, respectively.

USEPA Comment 4. The potential risks to human health associated with the sediments are currently within acceptable levels. If necessary, the sediment alternatives will be reevaluated following resolution of comments on the Remedial Investigation and Risk Assessment. The sediment alternatives will not be revised if the revised risk levels are within acceptable levels.

USEPA Comment 5. The potential for off-site contaminant migration via the upper (water table) and lower (Yorktown) aquifers was addressed in the FS through development of the groundwater extraction and treatment alternatives. Interconnection and associated potential for downward contaminant migration between the upper and lower aquifers is discussed in Sections 1.1 and 1.3 in the FS.

USEPA Comment 6. Volatile organic compounds (VOCs) were detected in four out of 55 residential wells sampled in Glenwood Park. The detections appear to be isolated occurrences that are unrelated to disposal activities at Area A. Although 1,2-dichloroethane, a constituent of concern at Area A, was detected in residential well 55, no VOCs have been detected in monitoring wells A-MW8A, A-MW9A, and A-MW10A (located between Area A and residential well 55). These results do not indicate a connection between site contamination and the 1,2-dichloroethane detected in well 55. Furthermore, for the water table aquifer, the drainage ditch located between Area A and Glenwood Park serves as a hydrogeologic boundary between these areas. The discussion in the FS concerning the residential well sampling results will be expanded to include this information.

USEPA Comment 7. Soil cleanup levels were not developed in the FS because little data were available on the nature and extent of contamination within the "hot spot" area assumed for Area A. Soil cleanup goals have now been developed based on the results of the subsurface soil pre-design investigation. The soil cleanup goals and supporting calculations are provided in Attachment II. Following regulatory review, these goals will be incorporated into the FS.

Soil cleanup goals were developed based on attainment of Maximum Contaminant Levels (MCLs) in shallow groundwater immediately below the source area in order to protect the lower Yorktown Aquifer to its potential future beneficial use (i.e., drinking water supply). Since the MCLs for the contaminants of concern are less than the federal Ambient Water Quality Criteria and Virginia Water Quality Standards, soil cleanup goals are also protective of surface water.

The developed soil cleanup goals will be used to estimate remediation areas of concern for the Feasibility Study and Remedial Design. It should be noted that since Area A is a landfill, the remedial action objective (RAO) for the soils is groundwater protection rather than soil cleanup. Therefore, achievement of this RAO will not necessarily be based on attainment of the developed soil cleanup goals since they represent theoretical values calculated through modeling. The cleanup goals were developed using conservative assumptions (see Attachment II) and may not be representative of actual site conditions. Therefore, achievement of groundwater protection will be determined through development of treatment system performance curves and through evaluation of actual environmental monitoring results (i.e., via ongoing monitoring of contaminant levels in groundwater and in

the extracted vapors from the in situ vacuum extraction system, the preferred treatment alternative for the soils). Soil contaminant concentrations may eventually reach asymptotic levels below which contaminant levels cannot be reduced via in situ vacuum extraction. If treatment system performance curves indicate that the cleanup goals for some or all of the contaminants cannot be achieved, then the soil cleanup goals will be reevaluated.

*USEPA Comment 8. The groundwater cleanup goals were based on attainment of federal Maximum Contaminant Levels (MCLs) in order to protect the Yorktown Aquifer to its potential future beneficial use (i.e., potential future drinking water supply). The cleanup goals, shown in Attachment II, are protective of an incremental cancer risk of 1×10^{-4} and a hazard index of 1. MCLs may be impossible to achieve since it has been demonstrated that groundwater contaminant levels typically reach asymptotic levels, which may exceed MCLs. Performance curves will be periodically (e.g., annually) developed to monitor the effectiveness of the groundwater remediation system. If the performance curves indicate that asymptotic levels have been reached, which exceed MCLs for some contaminants, then the cleanup goals will be reevaluated at that time.

Unlike the Yorktown Aquifer, the beneficial use of the shallow aquifer is non-potable use. Non-potable use cleanup goals were developed for the shallow aquifer, which are based on a 1×10^{-6} cancer risk level and the exposure pathways of incidental ingestion and dermal absorption of contaminants during outdoor activities, such as car washing and lawn watering.

*USEPA Comment 9. For each area of contamination (Areas A1, A2, and B), the potable-use and non-potable-use groundwater cleanup alternatives included in the FS (Alternatives 3 and 4) will be combined into one alternative entitled "Protection of Water Table and Yorktown Aquifers to Their Beneficial Uses through Extraction and Treatment." Under this alternative, the remedial action objective will be to protect the water table aquifer to its potential future beneficial use (non-potable use) and the Yorktown Aquifer to its potential future beneficial use (potable use).

USEPA Comment 10. Air risks will be summarized in the FS based on the reevaluation made in the Risk Assessment.

USEPA Comment 11. As discussed in response to Comment 6, the few detections of VOCs in residential wells appear to be isolated occurrences that are unrelated to disposal activities at

Area A. The residential well samples were only analyzed for VOCs because these compounds are the primary contaminants of concern at Area A. The semivolatile and inorganic contaminants were detected less frequently in the shallow groundwater than the VOCs and are significantly less mobile in the environment. Therefore, given the few isolated detections of VOCs in the residential wells and the absence of VOCs in monitoring wells A-MW8A, A-MW9A, and A-MW10A, there is no reason to suspect site-related semivolatile or inorganic contaminants in the residential wells.

USEPA Comment 12. EPA has not provided specific comments on the Risk Assessment concerning inorganics in groundwater. As discussed in Section 1.3.2, the inorganics detected in certain wells are believed to be associated with turbidity present in the wells. This conclusion is based on comparisons of total versus dissolved inorganic concentrations and the results of linear regression correlations developed between inorganic contaminants and naturally occurring elements (i.e., iron and manganese). Furthermore, inorganic contaminants detected at elevated concentrations did not correlate with the VOC detections.

USEPA Comment 13. Appropriate sections of the FS will be revised based on the revisions made to the Remedial Investigation and Risk Assessment.

USEPA Comment 14. All cleanup level calculations will be included in the appendices to the FS.