

**NORTHEAST CAPE FUDS, ST. LAWRENCE ISLAND, ALASKA
DRAFT RISK ASSESSMENT WORKPLAN, PHASE III REMEDIAL INVESTIGATION
REVIEW CONFERENCE**

INTRODUCTION

The environmental cleanup of Northeast Cape follows state and federal regulations which outline a process for identifying contamination, evaluating the potential risks posed by chemical contamination, and making management decisions to address existing problems. Risk assessment is a tool we use to evaluate data collected at contaminated sites. The risk assessment process allows project managers, scientists, and other stakeholders to identify and assess how people, animals, or the environment may be affected by chemical releases from the site.

Risk assessment practices and inputs to equations can be tailored to site-specific conditions. However, four basic conditions are needed:

- a chemical release (e.g. source of contamination),
- a transport medium (e.g. movement of the chemical through soil/sediment/water/food),
- a complete exposure pathway (e.g. a way that the chemical may come in contact with a receptor such as through eating, skin contact, or breathing),
- and an exposed population (e.g. uptake of the chemical by a person, animal or plant).

Standard equations (using site-specific assumptions about ingestion rates, etc.) are used to quantify the level of exposure to a particular chemical via a certain pathway. Toxicological data is then reviewed to determine the nature and probability of adverse health effects associated with amounts of a particular chemical. The final step of the risk assessment combines the information on exposure and toxicological effects to predict the likelihood of adverse effects.

1. OVERVIEW OF COMMENTS

Ten sets of comments were received by the Corps of Engineers and the full text/responses are compiled in the Response to Comments document. The following persons submitted written comments:

Jeff Brownlee, Stephanie Pingree; Alaska Department of Environmental Conservation (ADEC)
Lisa Geist; U.S. Army Corps of Engineers, Alaska District, Environmental Engineering (EN-EE)
Larry Tannenbaum, Ronie Shackleford; U.S. Army Center for Health Promotion and Preventive
Medicine (USACHPPM)
Guy McConnell; USACE, Alaska District, Environmental Resources (EN-CW-ER)
Pamela K. Miller; Alaska Community Action on Toxics (ACAT)
Jesse Gologergan; ACAT
June G. Martin; ACAT
Kendra Zamzow; ACAT
Ronald J. Scudato; R&M Technologies, Inc.
Morgan Apatiki; Gambell Community Liaison

Some common themes have been identified in the comments received. A majority of the comments can be grouped into categories of concern, which are outlined below.

a. Incomplete Site Characterization

A number of commenters questioned the completeness of previous phases of remedial investigation. In particular, the issue of contaminant migration from the Suqitughneq River to the marine environment was raised. Concerns were raised that the site characterization is inadequate to conduct a risk assessment and feasibility study, and the nature and extent of contamination is virtually unknown based on past sampling efforts. Particular concerns were raised about sites classified as “no further action”, the range of contaminants identified (including pesticides, dioxins, explosives), sampling in the marine environment, sites with minimal sampling, characterization subsequent to completion of the demolition work, and inadequate time for effective characterization of the White Alice sites.

ADEC	#37 (p. 9)
Miller	#2, 4, 5 (p. 22)
Zamzow	#4-5 (p. 34)
Scrudato	#1-3 (p. 43-47)

Response: Regarding the possible migration of contamination from the Suqi River to the marine environment, contaminants most often accumulate in the sediments of a waterbody. Recent preliminary sediment sampling results from the Suqi River (Site 29), including the lagoon/estuary area, showed PCBs at non-detect levels (< 0.005 – 0.02 mg/kg). The lagoon/estuary is the most likely location for contaminants to accumulate as sediments are deposited into this slower-moving portion of the system. In addition, significant concentrations of chemicals have not been detected in the water column of the Suqi River. Since PCBs were not detected in the lower reaches of the Suqi River, sampling of the marine environment is not warranted.

Regarding sites that may become designated no further action, the remedial investigation at Northeast Cape has followed a tiered approach. ADEC has agreed with our approach to site characterization, through participation in review of prior workplans. Additional sampling of certain sites is not warranted based on knowledge of site conditions and previous sampling results. For example, Site 1 was investigated during the initial site visit and Phase I remedial investigation, and there were no physical indications of distressed vegetation or charred debris which might indicate a previously burned area.

Samples have been analyzed for a wide range of chemicals at Northeast Cape, based on site knowledge and reasonable assumptions about their potential presence. For example, explosive chemicals are normally suspected at active military ranges or impact areas. However, there is no record of Northeast Cape being used for target practice, range exercises, or bombing exercises. Therefore, explosive chemicals would not be expected throughout Northeast Cape.

b. Background Sampling

Additional clarification was requested by several commenters regarding the location and number of background sampling locations.

ADEC	#2 and 4 (p. 1)
USACHPPM	#3 (p. 13)
Zamzow	#8 and 10 (p. 40)

Response: Seven background tundra soil samples, four background gravel soil samples, five co-located surface water and sediment background sample sets, one sediment background sample, and three background groundwater samples were collected during Phase I, II, and III fieldwork. The locations of these background samples were chosen based on their distance from known or suspected contaminated areas, their location upgradient from known or suspected contaminated areas, lack of historical or visual

evidence of military use in the area, and the characteristics of matrices in relation to those at the sites of concern (e.g. tundra and gravel). ADEC has agreed with the selection of background sampling locations. In some cases, biogenic interferences from natural organics seem to be contributing to measured levels of petroleum compounds in the background samples.

c. Marine Environment

Several commenters raised concerns about evaluation of the marine environment. In particular, commenters wanted sampling or evaluation of marine mammals (walrus, seal) and other possible receptors (waterfowl, shellfish, other higher trophic level animals) included in the risk assessment. Concerns were raised about the migration of fish and marine mammals, long range contamination, and exposure through the food chain.

ADEC	#12 (p. 3), #37 (p. 9)
Miller	#10 (p. 24)
Gologergan	#1 (p. 26)
Martin	#2 and 4 (p. 29)
Zamzow	#4 (p. 34), #6 (p. 39)
Apatiki	#9 (p. 50)

Response: Preliminary sediment sampling results from the lagoon/estuary reach of the Suqi River indicate non-detectable levels of PCBs. The lagoon/estuary is the most likely location for contaminants to accumulate as sediment are deposited into this slower-moving portion of the system. Therefore, we conclude that there is no significant migration of contaminants to the marine environment. Exposure through the food chain will be evaluated by focusing on consumption of anadromous fish. We recognize that a complete exposure pathway may exist to other marine animals, however the diet of marine mammals includes much more than just fish from the Suqi River. The fraction of their diet which is composed of fish from the Suqi River is small relative to other food sources or the yield of fish from the Suqi River. Furthermore, fish are directly exposed to potentially contaminated site media (sediments/water) during a very sensitive life stage (reproduction and early development). Therefore, anadromous fish are believed to be sentinel species for potential impacts to other marine organisms.

d. Other Ecological Receptors

Several commenters questioned the ecological endpoints selected for quantitative evaluation in the risk assessment. For example, other potential receptors such as waterfowl may have higher exposure than the glaucous gulls, reindeer must be considered as potential receptors and monitored, tundra voles, marine mammals, shellfish, other birds and higher trophic level animals should be tested.

ADEC	#17 (p. 5)
Miller	#9 (p. 23), #10 (p. 24)
Gologergan	#2 (p. 26)
Martin	#6 (p. 30)
Zamzow	#6 (p. 39)

Response: Regarding waterfowl, it is unlikely there are significant populations of breeding freshwater waterfowl that have exposures to freshwater surface water bodies in the vicinity of the NE Cape site. This is evidenced by the fact that local residents of Savoonga are not reported to harvest eggs from such species, but do harvest significant numbers of eggs from marine species including the common murre. Reindeer are considered as potential receptors throughout the workplan. However, further monitoring of reindeer won't be evaluated until the risk assessment is completed. ATSDR has completed a health consultation regarding consumption of reindeer and did not recommend any change in subsistence diets.

Regarding testing of other higher trophic level animals, our approach focuses on modeling known levels of contaminants that are found in surface soils to amounts that may be found in the tundra vole. This approach is a more efficient use of limited resources for sampling/analysis. It is not efficient to sample higher trophic levels, and tissue concentrations alone are not an indication of risk.

e. Air pathways

Several issues and questions were raised regarding inhalation of chemicals of potential concern. In particular, windblown contamination must not be dismissed, evaluation of VOCs and dust in indoor air, air sampling for asbestos/other contaminants, concerns for volatilization and inhalation pathway.

ADEC	#9 (p. 2)
Miller	#12 (p. 24)
Gologergan	#5 (p. 28)
Martin	#5, 7 (p. 30)
Apatiki	#2 (p. 48)

Response: Potential migration of VOCs from subsurface soil to indoor air will not be quantitatively evaluated based on the rationale presented in the workplan for potential migration of VOCs to outdoor air (snow cover present most of the year, precipitation and cold temperatures minimize volatilization, and soils have re-vegetated at most sites). However, the inhalation of VOCs derived from surface water or groundwater while bathing will be evaluated. Periodic monitoring for asbestos in air was conducted by Nugget Construction during active demolition activities, and future demolition work would also include limited air monitoring, however further testing is not anticipated at this time.

f. Dietary assumptions, selection of ingestion rates

Clarification was requested by several commenters regarding how the community surveys were used to make site-specific food ingestion assumptions and which food types were evaluated. In addition, commenters raised the issue of food storage and exposure frequency assumptions, determining exposures for sensitive subpopulations, accounting for risks due to stress/anxiety, and accounting for historical use of subsistence resources.

ADEC	#11 (p. 2), #12 (p. 3), #36 (p. 8)
USACHPPM	#6 (p. 14)
Miller	#7 (p. 23), #14 (p. 25)
Zamzow	#2 (p. 33), #3 (p. 34)

Response: Interviews and survey results obtained in the spring of 2001 provided information on specific plants and animals that are harvested by local residents for subsistence food consumption. This information permits a general understanding of approximate portions of the local diet that are comprised of subsistence items (e.g. locally harvested plants, fish and marine mammals), as well as frequencies of consumption of specific foods. However, the information does not provide actual quantities consumed. Consequently, other food intake information was obtained from an updated report prepared by the Alaska Department of Fish and Game. Information obtained from interview and surveys with local residents was used to validate the subsistence food consumption rates obtained from ADFG. Regarding storage of food, we believe the exposure frequency of fish and plants is representative of the duration of time with the greatest potential impact to receptors. Sensitive subpopulations will be accounted for with the use of uncertainty factors, as described in the workplan. While stress and anxiety are real and potentially significant contributors to one's overall state of health, these effects cannot be evaluated under current health risk assessment procedures prescribed by ADEC or USEPA policies and guidance. The health risk

assessment presented in the workplan is limited to chemical exposures and our current knowledge of contaminant concentrations and effects.

g. Maternal milk pathway

Clarification was requested regarding how this pathway will be evaluated.

ADEC #30 (p. 7)
USACHPPM #5 (p. 14)
Miller #6 (p. 23)

Response: There are relatively few chemical for which pharmacokinetic models (how a chemical is absorbed, metabolized and eliminated in the body over time) and toxicological data are available to quantitatively evaluate this pathway. Also, the toxicity values for the primary chemical of concern associated with this pathway, PCBs, are based on or protective of reproductive effects and protection of the developing fetus. Consequently, potential impacts of PCBs on reproduction and development will be taken into consideration through quantitative evaluation of more traditional exposure pathways including food consumption, and incidental ingestion and dermal contact with soil/sediment/water. The maternal milk pathway will be qualitatively evaluated in the uncertainty analysis.

h. Cumulative risk

Additional explanation was requested regarding how cumulative risks will be addressed in the risk assessment, including synergistic effects.

ADEC #10 (p.2), #14-15 (p. 4), #26 (p. 7)
Miller #3 (p. 22)

Response: See full response to comments document. Cumulative risks will be calculated following ADEC procedures.

i. Dermal exposure

Several questions and cautions were raised regarding the evaluation of the dermal exposure pathway, including its unsuccessful application to assessing ecological risks.

ADEC #29 (p. 7)
USACHPPM #13 (p. 16)
Martin #5 (p. 30)

Response: We agree that assessing dermal risks for ecological receptors is problematic, and will instead be addressed under the uncertainty assessment. Potential human health dermal risks from petroleum compounds will also be evaluated under the uncertainty section.

j. Other issues

There are many other issues, comments, editorial points, and questions that the various commenters raised related to both the details presented in the draft Risk Assessment Workplan and the overall RI/FS process underway at Northeast Cape. Please refer to the detailed Response to Comments document for the full text of comments and responses.

Item No.	Location	COMMENTS	Review Conference	MWH Response	USAED Response
----------	----------	----------	-------------------	--------------	----------------

1.	Table 1-1	Please clarify if the yes in the last row of each site indicates that all the constituents of concern and the contaminated media for each site will be investigated or if only the rows with "yes" are to be sampled for 2001 RI work. If not, the rationale for not sampling should be provided. For example: will DRO, zinc, lead, and PCBs in surface water be sampled at Site 28?		Table 1-1 was taken from the Preliminary Conceptual Site Model (CSM) prepared by the USA Center for Health Promotion and Preventive Medicine (USACHPPM, 2001). Table 1-1 will be revised to clarify the presented information.	
2.	Figure 1-3	Please include rationale in the work plan and risk assessment to justify the locations chosen for background sampling. From this figure and the data available in the work plan, it is difficult to evaluate whether the locations chosen for background sampling represent true background.		Background sampling site selection rationale is presented in previous environmental sampling work plans for each background sample site. In general, the background sampling sites were selected based on their distance from known or suspected contaminated areas, their location upgradient from known or suspected contaminated areas, lack of historical or visual evidence of military use of the areas, and the characteristics of matrices in relationship to those at the sites of concern (e.g., tundra soil, gravel).	
3.	Section 3.0	The work plan does not present enough information to determine whether the number, type, and location of samples are adequate for the risk assessment. Please add text or expand Table 3-1 to show how many samples were collected or will be collected in each media, at each location.		Section 3, Data Summary/Evaluation, was not intended to provide a comprehensive inventory of all samples collected at Northeast Cape during Phase I, II, and III investigations. This section presents an overview of how data are evaluated; Table 3-1 summarizes the media sampled by site. For numbers of samples, sampling methods, sample locations, analytical methods, and results, the reader should refer to the Phase I, II, and III summary reports. Text has been added to direct the reader to these documents.	
4.	Section 4.1 Paragraph 2	Please discuss the number and types of background samples collected. The adequacy of the background investigation and the appropriateness of the statistics cannot be evaluated in the work plan.		Text added: Seven background tundra soil samples, four background gravel soil samples, five co-located surface water and sediment background sample sets, one sediment background sample, and three background groundwater samples were collected during Phase I, II, and III fieldwork.	
5.	Section 4.2 Last sentence	Please don't use the terms "acceptable" or "unacceptable" when describing risk. This wording is used several times in the document. Please search throughout document and reword to say that the results of the risk calculations were above or below EPA or ADEC criteria.		Concur. The words "acceptable" and "unacceptable" in reference to risk have been eliminated from the document. Text in the RAWP will be revised to indicate that the results of risk calculations will be described as either above or below ADEC and USEPA cancer risk or noncancer hazard criteria.	
6.	Section	Please change the title of this section to Exposure Assessment.		Correction made.	

Item No.	Location	COMMENTS	Review Conference	MWH Response	USAED Response
----------	----------	----------	-------------------	--------------	----------------

7.	4.2.1 Section 4.2.1.2 First Sentence	The first sentence refers to SOPC. This seems to be the first usage of this acronym and it is confusing to switch from COPC to SOPC. Please use the COPC acronym.		Correction made.	
8.	Section 4.2.1.2 Second Paragraph Third sentence	Please insert "trophic level" between "higher" and "animals"		Correction made.	
9.	Section 4.2.1.5.1	Please include a discussion regarding why VOCs in indoor air are not addressed in the risk assessment.		Potential migration of VOCs from subsurface soil to indoor air will not be quantitatively evaluated in the human health risk assessment, based on the rationale provided in Section 4.2.1.5.1 for potential migration of VOCs to outdoor air. Please note, however, that inhalation of VOCs derived from surface water or groundwater while bathing will be evaluated, as described in Section 4.2.1.6.2.	
10.	Sections 4.2.1.5.2 and 4.2.1.5.3	Please specify how risk derived from surface water and risk derived from groundwater for the same pathways (drinking/showering) will be separated when calculating cumulative risk.		Groundwater pathways for drinking water consumption and bathing are incomplete for current receptors, as indicated in Section 4.2.1.5.2 and Figure 4-1. Therefore, these pathways will only be quantitatively evaluated for surface water for current receptors. For future receptors, both surface water and groundwater may potentially be used for potable uses (e.g., drinking water consumption and bathing). For future receptors, the risks for each media will be calculated separately and the highest risk for potable uses of surface water or groundwater will be included in the cumulative risk calculation across all potentially complete media and pathways.	
11.	Section 4.2.1.5.5 and Table 4-1	Please clarify how the interviews with local users of food products were used to make the food ingestion assumptions. Please provide citation for the particulate emission factor (PEF).		Interviews and survey results obtained in the spring of 2001 provided information on specific plants and animals that are harvested by local residents for subsistence food consumption. This information permits a general understanding of approximate portions of the local diet that are comprised of subsistence food items (e.g., locally harvested plants,	

REVIEW COMMENTS PROJECT: Northeast Cape DOCUMENT: Draft Risk Assessment Workplan LOCATION: St. Lawrence Island, Alaska					
DATE: 12/13/01 REVIEWER: Jeff Brownlee, Stephanie Pingree (ADEC) PHONE: (907) 269-3053					
Item No.	Location	COMMENTS	Review Conference	MWH Response	USAED Response

				<p>fish and marine mammals), as well as frequencies of consumption of specific foods. However, the information does not provide actual <i>quantities</i> consumed (in grams per day, for example). Consequently, other food intake information (e.g., total or subsistence food consumption rates for subsistence populations). To address this deficiency, subsistence level food consumption rates obtained from an updated report prepared by the Alaska Department of Fish and Game (ADFG) entitled, <i>Subsistence in Alaska: Year 2000 Update</i> (ADFG, 2000). Information obtained from interviews and surveys with local residents was used to validate the subsistence food consumption rates obtained from ADFG (2000).</p> <p>The particulate emission factor (PEF) of 1.3×10^9 cubic meter per kilogram (m³/kg) is the default value cited in Table 4-8 of USEPA Region 10's <i>Interim Final Guidance: Developing Risk-Based Cleanup Levels at Resource Conservation and Recovery Act Site in Region 10</i> (USEPA, 1998). The source of this value will be cited in revisions to Table 4-1.</p>	
12.	Section 4.2.1.5.5	Please clarify which food types will be evaluated in the risk assessment and how well these match the species collected and consumed by subsistence users. Please explain why shellfish will not be evaluated. Shellfish appear to be a significant food source based on the interviews.		<p>Species of plants and fish that were identified from interviews and surveys as subsistence foods that are harvested at the NEC site were sampled during the 2001 field investigation. Chemical concentrations measured in these samples will be quantitatively evaluated in the human health risk assessment. Survey results do not indicate that shellfish are harvested from the NEC site in significant numbers. During the 1999 field season, ENRI and the Corps of Engineers conducted an ecological assessment of the Suqi River. The workplan anticipated collecting mollusks from the estuary, near the mouth of the stream in order to evaluate the potential for ecological effects in this area. However, no mollusks were found in the Suqitugneq River outflow areas.</p> <p>In addition, preliminary sampling results from recent sediment sampling in the downstream reach of the</p>	

Item No.	Location	COMMENTS	Review Conference	MWH Response	USAED Response
----------	----------	----------	-------------------	--------------	----------------

				<p>Suqitughneq River, the lagoon/estuary area, did not detect PCBs. Thus, it appears that potential impacts to marine shellfish are minimal. Nevertheless, potential impacts to marine invertebrates, including shellfish, will be evaluated as part of the ecological risk assessment. If this evaluation suggests that marine shellfish may be exposed to significant concentrations of contaminants, this pathway may be further evaluated for human exposures.</p>	
13.	<p>Section 4.3.3 Second paragraph Fourth bullet</p>	<p>A UF of 10 for extrapolating the LOAEL to NOAEL is consistent with EPA guidance, but not ADEC guidance. The ADEC Risk Assessment Procedures Manual recommends a UF of 25 for this extrapolation. Please use the ADEC UF.</p>	Withdrawn		
14.	Section 4.3.4.3	<p>Please specify how the contribution of lead to cumulative risk will be evaluated.</p>		<p>Consistent with ADEC's <i>Guidance on Calculating Cumulative Risk, Final Draft</i> (ADEC, 2000), lead is not included in the cumulative risk calculations. Potential health effects associated with lead will be reported separately from cumulative risk estimates. Text in Section 4.3.4.3 will be revised to clarify this issue.</p>	
15.	Section 4.4 Sixth sentence	<p>Please separate the hazard indices between target organs and tissues.</p>		<p>Although not specifically stated in the RAWP, the intended approach to be used in the calculation of noncancer hazard estimates for the NEC site is to calculate a total noncancer hazard index (HI) for each source area assuming all chemicals have a common toxicological endpoint. If the total HI is below a value of one based on this 'worst-case' analysis, then no further evaluation will be conducted. Alternately, if the total HI is greater than a value of one, then the HI will be segregated by target organ-specific effects. This issue will be clarified in revisions to Section 4.4.</p>	
16.	Section 4.5 and Section 5.2.5	<p>Please expand the discussion on uncertainty in the risk assessment.</p>		<p>Sections 4.5 and 5.2.5 were only intended to identify the general <i>categories</i> of uncertainty to be described in the Uncertainty Analysis sections for the human health and ecological risk assessments, respectively. More detailed, site-specific discussions will be presented in the Draft RI Report.</p>	

Item No.	Location	COMMENTS	Review Conference	MWH Response	USAED Response
----------	----------	----------	-------------------	--------------	----------------

17.	Section 5.2.1.3.2 Fifth paragraph	Earlier text states that the only breeding population of birds at Northeast Cape is the glaucous gulls. The discussion of why waterfowl do not have possible high exposure seems flawed. The third statement that females feed little while nesting isn't relevant if they are not breeding, also, the eggs have already been laid (while the female was foraging). Please provide additional justification for the low exposure conclusion or change to a higher exposure.		Concur. It is likely that birds nesting at NEC would also breed and develop eggs there. However, it is unlikely that there are significant populations of breeding freshwater waterfowl (e.g., Canada goose or mallard) that have exposures to freshwater surface water bodies in the vicinity of the NEC site. This is evidenced by the fact that local residents of Savoonga are not reported to harvest eggs from such species, but do harvest significant numbers of eggs from marine species including the common murre. Because the common murre forages in the open marine environment, it is unlikely that they would receive exposures comparable to those potentially received by the glaucous-winged gull. Text in Section 5.2.1.3.2 will be revised to clarify this issue.	
18.	Section 5.2.2.3	Please provide the citation for dry to wet tissue conversion.		The dry-to-wet weight tissue conversion of 0.12 was derived from Chapter 3 of USEPA's <i>Screening Level Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities</i> (USEPA, 1999).	
19.	Section 5.2.2.4	The last sentence directs the reader to an incorrect section. The discussion of the BCF is in Section 5.2.2.4.1.		Correction made.	
20.	Section 5.2.2.4.2	There is a typographical error in the heading - multiplier instead of multiplies.		Correction made.	
21.	Table 5-1	Please provide definitions for the rankings in the table.		Table 5-1 will be updated to include definitions of species status rankings.	
22.	Table 5-2 Table 5-6	Please include a note on table stating that none of the species are threatened and endangered (T&E). At first glance the table appears incomplete.		Note added.	
23.	Table 5-7	There is no way to verify the adequacy of the measured plant and fish tissue concentrations. Please note that the biological sampling was performed in current and previous investigations and reference.		Please see the 1999 Phase II Work Plan Addendum, 1999 Phase II Addendum Report, and 2001 Phase III Biological Sampling Plan for details regarding the number of samples collected, the species sampled, sampling and analytical methods, and results. Text and references added to Section 5 text and Table 5-7.	
24.	Figure 5-8	The discussion associated with estimating COPEC concentrations in Ecological Indicator Receptors is not adequate, and it is not possible to verify the equations. The calculations proposed for the risk assessment are different from those present in the USEPA 1999 guidance cited. Please		Please note that the methods used to estimate exposures for ecological indicator species are described in detail in Section 5.2.2. Figure 5-8 merely summarizes the equations that are to be used in dose calculations for ecological indicator species. All	

Item No.	Location	COMMENTS	Review Conference	MWH Response	USAED Response
----------	----------	----------	-------------------	--------------	----------------

		<p>explain and justify these modifications in the work plan.</p> <p>Please justify that the calculations designed for use at a hazardous waste combustion facility are appropriate for use in this risk assessment.</p> <p>Please cite all the values used in the equations.</p> <p>Please discuss if the chemicals of concern at combustion waste facilities are applicable at Northeast Cape.</p> <p>Please discuss how petroleum will be handled in the ecological risk assessment.</p>		<p>equations used to estimate COPEC concentrations in ecological indicator species are derived from USEPA (1999). Equations from Figure 5-8 under the headings 'Equations for C_{OMN}' and 'Equations for C_{CARN}' are irrelevant for this evaluation because none of the indicator receptors will be consuming omnivorous or carnivorous prey as a primary diet component. These equations will be removed from Figure 5-8.</p> <p>The media transfer and exposure dose equations presented in USEPA's <i>Screening Level Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities</i> (USEPA, 1999) are generic in nature, and are not specific to products of combustion (i.e., oxidized chemicals). USEPA (1999) lists a variety of chemical classes that these methods are applicable to, and these chemical classes are representative of the contaminant types present at the NEC site.</p> <p>Once the specific COPECs are identified for the NEC site based on Tier I screening, chemical-specific inputs to the dose equation can, and will, be provided.</p> <p>Please see our response, above, regarding the applicability of the methods described in USEPA (1999) to chemicals present at the NEC site.</p> <p>Ecological hazards for petroleum hydrocarbons will be evaluated based on the use of sampling results for specific indicator chemicals (e.g., benzene, toluene, ethylbenzene, and xylenes [BTEX] and polynuclear aromatic hydrocarbons). Although, ADEC has developed RfDs for individual petroleum hydrocarbon fractions, these toxicity values were developed based on the protection of human health. Therefore, they will not be used to evaluate ecological receptors. In addition to the evaluation of indicator chemicals, as described above, potential impact of petroleum hydrocarbon mixtures such as DRO will be evaluated through the use of toxicity reference values (TRVs) for</p>	
--	--	--	--	--	--

Item No.	Location	COMMENTS	Review Conference	MWH Response	USAED Response
----------	----------	----------	-------------------	--------------	----------------

				surrogate compounds (e.g., naphthalene). Text in Section 5.2.3.1 will be revised accordingly.	
25.	3.1	What does the last sentence of this paragraph refer to? It states that environmental media data will be used for the HHERA. Please clarify that this also includes biota sample data.		Text clarified.	
26.	4.1	It is confusing how cumulative risk will be accounted for in the Tier I screening phase. What should be done is site data is compared to one-tenth the Tables B1, B2 and C concentrations. Cumulative risk should be calculated during Tier II, as described.		In accordance with 18 AAC 75.325, cumulative risk should be calculated for Methods Two, Three and Four. Since Tier I screening will be conducted under Method Two, cumulative risks will be calculated and presented as described in Section 4.1 of the RAWP. Please clarify whether ADEC recommends an alternate approach.	
27.	4.1	For some compounds which do not have risk-based benchmarks, it may be more appropriate to qualitatively screen these compounds based on surrogate information rather than only qualitatively address them.		Concur. We would prefer to use toxicity information from surrogate chemicals to the extent that is appropriate, and will revise text in Sections 4.1 and 4.3 accordingly.	
28.	4.2	Please clearly define and specifically indicate the individual <i>source areas</i> that risks will be calculated for.		The source areas that will be evaluated in the risk assessment for Northeast Cape are summarized in Table 1-1. The term 'source area' refers to locations where releases to environmental media have occurred or could be occurring, as described in Section 4.2.1.1.	
29.	4.2.1.5.1	Please describe how dermal exposure to RRO and DRO will be evaluated.		Please note that potential dermal exposures to DRO and RRO will not be quantitatively evaluated because of uncertainties in extrapolating oral RfDs to the dermal route of administration. The potential uncertainties in not quantifying this pathway will be addressed in the uncertainty analysis. Text in Section 4.3.4.2 will be revised to clarify this issue.	
30.	4.2.1.5.6	Specifically, how will the maternal milk exposure pathway be considered? The text indicates it will not be quantified but no information is presented on how it will be evaluated.		Please note that toxicity values for one of the primary COPCs associated with the maternal milk exposure pathway (i.e., PCBs) are either based on, or are protective of, reproductive effects and protection of the developing fetus. Consequently, potential impacts of PCBs on reproduction and development will be taken into consideration through quantitative evaluation of more traditional exposure pathways including food consumption, and incidental ingestion and dermal	

Item No.	Location	COMMENTS	Review Conference	MWH Response	USAED Response
----------	----------	----------	-------------------	--------------	----------------

				contact with abiotic media (e.g., soil, sediment and water). For other chemicals, the maternal milk pathway will be qualitatively evaluated in the Uncertainty Analysis section. Text in Section 4.2.1.5.6 will be revised accordingly.	
31.	4.2.1.6.1	Will the 95 percent UCL on the mean be calculated for each source area? Please indicate what sampled area will be included in each EPC calculation.		Yes, exposure point concentrations (EPCs), doses and risks will be estimated for each source area. The source areas to be evaluated in the risk assessment for the NEC site are summarized in Table 1-1. Text in Section 4.2.1.6 will be revised to clarify this issue.	
32.	4.3.4.2	Please clarify that one-tenth of the method two soil and groundwater cleanup levels will be used for screening purposes.		Please note that Section 4.3.4.2 refers to the toxicity values that will be used in the Tier II risk assessment. The Tier I risk assessment will be conducted under Method two and one-tenth the Method Two groundwater cleanup levels will be used, as described in Section 4.1 of the RAWP.	
33.	4.3.4.2	DEC has developed RfDs and RfCs for petroleum hydrocarbon ranges. If another method to evaluate petroleum toxicity is to be used, this needs to be further explained. What is proposed in this section is not consistent with DEC procedures.		Agreed. Text in Section 4.3.4.2 will be revised to reflect that RfDs and RfCs published in <i>Guidance for Cleanup of Petroleum Contaminated Sites</i> (ADEC, 2000) will be used to calculate risks for petroleum hydrocarbon ranges.	
34.	4.3.4.3	Specific adjustments that are to be made to the IEUBK model should be outlined.		Concur. Input parameters for abiotic and biotic inputs to the IEUBK model will be revised to reflect the exposure parameters presented in Table 4-1 of the RAWP. Text will be added to Section 4.3.4.3 to clarify this issue.	
35.	4.4	DEC does allow for the use of a carcinogenic risk range (1.0×10^{-6} to 1.0×10^{-4}) for method four risk assessments under 18 AAC 75.325(h). If the risk range is to be proposed, information must be presented as to why deviation from the risk standard of 1.0×10^{-5} is appropriate.		Please note that the provisions under 18 AAC 75.325(h) apply to proposed cleanup levels, and the rationale for deviation from the risk standard of 1.0×10^{-5} includes technical feasibility, long-term and short-term effectiveness, and other considerations. Please clarify that ADEC considers this discussion appropriate to the results of the Method 4 risk assessment.	
36.	Table 4-1	Please add references to this table.		Complete citations for references are included in Section 6.0, consistent with the remainder of the document. Individual values will be cited as appropriate.	

Item No.	Location	COMMENTS	Review Conference	MWH Response	USAED Response
----------	----------	----------	-------------------	--------------	----------------

		<p>The soil ingestion rates seen incorrect. It appears the child and adult rates have been switched. Adult soil IR is commonly 100 mg/day and child is 200 mg/kg. Please indicate the reference for the visitor soil ingestion rate. Often 50 mg/day is used as industrial setting but this does not appear to fit the soil contact expected for a visitor.</p> <p>Please indicate the reference and rationale for the exposure time parameter for inhalation of constituents volatilizing from surface water/groundwater.</p> <p>Although people may harvest plants and fish three months out of the year from the site, these resources may be stored and exposure to contaminants in the food may exist year-round. This needs to be investigated and explained. Therefore, the exposure frequency for ingestion of plants and fish may not be appropriate.</p> <p>The fraction intake from site (FI) is used in the exposure equations but not defined in this table. Please indicate what FI is going to be used.</p> <p>Explain exactly how the plant and fish ingestion rates were derived. For instance, what references was used to assume locals consume 1 pound per day of wild food and plants comprise 2% of the total daily consumption of wild foods. This all needs to be explained further. The document referenced is an overview of subsistence in all of Alaska. Applicability to this area needs to be presented.</p>		<p>The reviewer is correct in that soil ingestion rates for the adult and child resident were inadvertently switched. Soil ingestion rates will be revised as suggested. Soil ingestion rates are not currently available for a visitor. The visitor soil ingestion rate is based on assumptions for an industrial worker visiting the site. This assumption will be footnoted in Table 4-1.</p> <p>The exposure time parameter for inhalation of chemicals volatilizing from surface water/groundwater is 0.25 hours per day. This value is derived from average shower times as cited in Table 4-6 of USEPA's <i>Interim Final Guidance: Developing Risk-Based Cleanup Levels at Resource Conservation and Recovery Act Site in Region 10</i> (USEPA, 1998). This reference will be appropriately cited.</p> <p>Exposure frequency of fish and plants is representative of the duration of time with the greatest potential impact to receptors.</p> <p>Fractional intake will only be considered if an alternate method of deriving the exposure rate for consumption of locally harvested plants and fish is used. Text will be added to clarify this issue.</p> <p>Fish and plant ingestion rates were derived from ADFG (2000). These values were also compared to site specific survey results as described in our response to Comment No. 11, above.</p>	
37.	General	<p>Contaminant migration from Suqitughneq River to the estuary and eventually the marine environment has not been shown to the department to be fully characterized. This needs to be done</p>		<p>Additional characterization of the Suqi River was conducted during the 2001 field season. Preliminary sampling results are contained in the Site</p>	

REVIEW COMMENTS PROJECT: Northeast Cape DOCUMENT: Draft Risk Assessment Workplan LOCATION: St. Lawrence Island, Alaska

DATE: 12/13/01 REVIEWER: Jeff Brownlee, Stephanie Pingree (ADEC) PHONE: (907) 269-3053

Item No.	Location	COMMENTS	Review Conference	MWH Response	USAED Response
		before proceeding with the risk assessment. The conceptual site model is based on the assumption that contaminants are not reaching the marine environment, although this has not been shown.		Characterization Technical Memo (November 2001) and indicate PCBs are not present (detection limits ranging from 0.005 – 0.02 mg/kg) in the sediments of the Suqitughneq River, including the lagoon/estuary area.	
38.	General	Surface water and sediment should also be screened again Alaska water quality standards (18 AAC 70).		Please note that site media will be screened in the risk assessment according to the provisions of 18 AAC 75 and ADEC's <i>Risk Assessment Procedures Manual</i> (ADEC, 2000). We believe that potential comparison of media concentrations against ARARs, including Alaska water quality standards, is best performed as part of the feasibility study for the NEC site.	
39.	5.1	Presenting the screening benchmarks in the work plan will ensure agreement on the COPEC for the risk assessment. The screening procedure can not be evaluated based on the information presented.		We believe that it was premature to identify chemical-specific benchmarks in the RAWP because fully validated laboratory data was not available at the time of RAWP preparation. Furthermore, COPECs for individual source areas will only be identified <i>after</i> completion of Tier I screening.	
40.					

Item No.	Location	COMMENTS	Review Conference	MWH Response	USAED Response
1.	p. iv	The acronym ILCR is not completely spelled out. Please add.		Correction made.	
2.	p. v	The complete acronym USACE is misspelled. Please correct <i>Army</i> for Army.		Correction made.	
3.	p. 1-7, Table 1-1	The various subdivided cells are hard to follow. Perhaps split column heading for CoCs and Contaminated Media.		Correction made.	
4.	p. 3-1, Section 3.2.2	Please add clarification that an independent data review is also conducted by the Corps of Engineers, including quality assurance samples analyzed by a 2 nd laboratory.		Text added.	
5.	p. 4-2	Note that additional screening numbers may be utilized for sediment comparisons, such as the NOAA benchmarks. However, these values primarily indicate the potential for biological effects, not necessarily human health impacts. This should be discussed with ADEC.		Text will be added to the end of Paragraph 3 of Section 4.1 indicating that sediment concentrations will also be screened against ecological criteria, including NOAA sediment benchmarks or other applicable values, as described in Section 5.1 for the protection of the environment.	
6.	p. 4-4	How will the statement regarding benthic invertebrates as most likely to bioaccumulate contaminants be addressed?		The evaluation of exposures and potential impacts of contaminants on benthic invertebrates (e.g., shellfish) will be evaluated through a comparison of surface water and sediment concentrations to ecological toxicity benchmarks. This evaluation will serve as a first 'line of evidence' to assess whether or not higher animals, including humans, may potentially be exposed to bioaccumulating chemicals at significant concentrations. Please also note that fish potentially consuming invertebrates were collected from the Suqi River and lagoon/estuary, and risks associated with contaminants detected in these samples will be quantitatively evaluated in the human and ecological risk assessments.	
7.	p. 4-6	How will the indoor air inhalation pathway for dust be quantitatively evaluated? Provide additional explanation here or later in the workplan.		Text in Section 4.2.1.5.1 will be clarified to indicate that the inhalation of indoor dust pathway will be evaluated by calculating potential indoor dust intakes and dust-associated contaminant exposures and risks. Please also note that the equation for quantifying exposure doses for the 'indoor dust' pathway is presented in Section 4.2.1.6.2.	
8.	p. 4-9	Should the equation given for the UCL for the normal distribution be calculated using the mean of the transformed data		Thank you. Text in Section 4.2.1.6.1 will be revised to indicate that the 95 percent UCL on the arithmetic	

REVIEW COMMENTS PROJECT: Northeast Cape DOCUMENT: Draft Risk Assessment Workplan LOCATION: St. Lawrence Island, Alaska					
DATE: 12/7/01 REVIEWER: Lisa K. Geist , Alaska District EN-EE PHONE: (907) 753-5742					
Item No.	Location	COMMENTS	Review Conference	MWH Response	USAED Response

		(or untransformed)?		mean for a normal distribution will be calculated based on the mean of the <i>un</i> transformed data.	
9.	p. 5-4	I don't believe the 1999 and subsequent field work documented pink salmon in the Suqi River, only in the nearby Tapensak River and Seepenpak Lagoons.		Correction made.	
10.	p. 5-4	Regarding shellfish, while they may be present in and around the NE Cape site, they were not observed during the 1999 fieldwork.		Text added.	
11.	p. 5-5	Even though vegetation will not be quantitatively assessed in the ecological risk assessment, please add clarification that plants will be qualitatively evaluated for potential adverse effects.		Text will be added to Section 5.2.1.3.1 to indicate that potential impacts to plants will be qualitatively evaluated.	
12.	p. 5-14	Please correct the equation in section 5.2.2.4.2 to be a quotient and the misspelling in the section title.		Corrections made.	
13.	p. 5-16	The text states that Site Utilization Factors will be calculated for each source area, however if more than one source area is encountered by a receptor, how will that be taken into account?		There is substantial uncertainty in evaluating the potential cumulative impacts of multiple source areas on a receptor due to the relative quality of habitat associated with each source area, the distance between source areas, and their relationship to a receptor's foraging range. Where it makes logical sense to group source areas due to proximity, habitat quality, and foraging range, site groupings will be evaluated in the ecological risk assessment. Otherwise, the potential for multiple source areas to affect ecological receptors will be addressed qualitatively.	
14.	p. 5-28	Please verify that the cross fox home range is correct and in the appropriate units.		The cross fox home range will be revised. The home range estimate should read 1004 acres.	

Item No.	Location	COMMENTS	Review Conference	MWH Response	USAED Response
1.	Page 1-3, Section 1.2.1	<p><u>Comment:</u> The identification of human and ecological receptors that are appropriate for evaluation within a risk assessment doesn't appear to be captured by the third or the fourth bullet points on the page.</p> <p><u>Recommendation:</u> Consider adding a new bullet point after the third one, or modify the third bullet point to say that appropriate human and ecological receptors for evaluation are identified/described.</p>		Agreed. The third and fourth bullets will be revised to indicate that these activities are applied to human and ecological receptors that are <i>appropriate</i> for evaluation in a risk assessment.	
2.	Page 1-6, Table 1-1	<p><u>Comment:</u> When using material (in whole or in part) from another parties' work, it is appropriate to reference the source.</p> <p><u>Recommendation:</u> Reference USACHPPM 2001 for Table 1-1 in whole or in part.</p>		Reference added.	
3.	Page 4-1, Section 4.1	<p>Tier I Screening Assessment</p> <p><u>Comment:</u> The first and third paragraphs make mention of "comparisons of analyte concentrations to ambient concentrations", and "analytes in soil that exceed ambient concentrations". What specifically is meant by "ambient concentrations"? Is the text describing the background screening of potential chemicals of concern? If so, what specific statistical comparison is performed to make a determination that there is a COPC (i.e., a site-related chemical)?</p> <p><u>Recommendation:</u> Please provide a clarification and modify the text as appropriate.</p>		Yes, text describing "comparison of analyte concentrations to ambient concentrations" refers to background screening of chemicals of potential concern. Clarification of this issue, and the statistical methods employed during background screening, will be presented in revised text. The word "ambient" has been replaced with "background" throughout the text.	
4.	Pages 4-3 and 4-4, Section 4.2.1.2	<p>Constituent Fate and Transport</p> <p><u>Comment:</u></p> <p>(1) When using material (in whole or in part) from another parties' work, it is appropriate to reference the source.</p> <p>(2) As currently worded, the text of the Section's last sentence is confusing two thoughts. In its 2001 preliminary Conceptual Site Model, CHPPM stated that the historical nature of the contaminant releases in conjunction with the relatively brief lifespans of ecological receptors, makes for a case that toxicological effects or impacts could very likely be <u>absent</u>. The identified sentence is saying that the effects or impacts "may continue to be present today." This statement is inconsistent with recalling that there are still evident signs of</p>		<p>(1) Reference added.</p> <p>(2) Please note that this statement also appears in Section 6.3 of the <i>Preliminary Conceptual Site Model</i> (CHPPM, 2001). However, we agree that evidence of past historical releases or impacts does not necessarily imply that toxicological effects may still be occurring. Text in the last paragraph of Section 4.2.1.2 will be revised accordingly.</p>	

Item No.	Location	COMMENTS	Review Conference	MWH Response	USAED Response
----------	----------	----------	-------------------	--------------	----------------

		<p>the historical contaminant releases. <u>Recommendation:</u> (1)Reference USACHPPM 2001 for Section 4.2.1.2 in whole or in part. (2)Please reword the last half of the Section's last paragraph, to a) separate the fact that evidence of chemical releases are still present from any anticipated findings, and b) to have the paragraph suggest the opposite of what it does in the draft, i.e., have the paragraph conclude saying that "toxicological effects ort impacts may well be absent today."</p>			
5.	Page 4-8, Section 4.2.1.5.6	<p>Maternal Milk Exposure Pathway <u>Comment:</u> The Section's fourth sentence is somewhat confusing. <u>Recommendation:</u> Consider truncating the sentence after the word "fetus".</p>		Correction made.	
6.	Page 4-8, Section 4.2.1.6, Page 4-12, Section 4.2.1.6.2, and Table 4-1	<p>Quantification of Exposure <u>Comments:</u> Table 4-1 should be referred to "up front" in Section 4.2.1.6 instead of at the end of Section 4.2.1.6.2. Table 4-1 should be provided as the next page after its first reference. Also, the sources of the exposure parameters should be provided in Section 4.2.1.6 and not only at the end of Table 4-1 (similar to what was done in Section 4.3.5 for the Toxicity Information Sources). Also, for the exposure parameters, clarify how the sources will be used. Will they be used as a hierarchy in the order listed, or will they all be treated equally and the most conservative value used? <u>Recommendations:</u> List the sources of the exposure parameters "up front" in Section 4.2.1.6. Provide Table 4-1 after its first reference. Explain how the sources of exposure parameters will be used (hierarchy or most conservative).</p>		<p>Our preference is to include a description of the exposure assumptions <i>following</i> the presentation of the exposure dose equations. We propose to include an additional subsection (Section 4.2.1.6.3) within Section 4.2.1.6 that (1) references Table 4-1, and (2) identifies the sources of exposure parameters and the basis of their selection.</p> <p>Please note: our customary report format includes placing full-page tables and figures at the end of each section in which they appear to minimize interruptions to the text flow.</p>	
7.	Page 4-16, Section 4.3.5	<p>Toxicity Information Sources <u>Comment:</u> If the primary sources are listed, what are the additional sources of toxicity information that may be used? Also, are the sources listed in the order that they will be used (a hierarchy applied in the order that they are listed), or will all of the sources be viewed equally and the most conservative value chosen? The sources of toxicity data should be moved "up</p>		Text in Section 4.3.5 will be revised to indicate the hierarchy of toxicity values that will be used in the human health risk assessment. We believe that it is more appropriate to present the specific sources of toxicity information following a general discussion of the nature of toxicity information that will be evaluated. Therefore, we propose to leave the	

Item No.	Location	COMMENTS	Review Conference	MWH Response	USAED Response
		<p>front" in Section 4.3. <u>Recommendation:</u> Specify the additional sources and clarify how they will be used (hierarchy or most conservative value). Consider moving Section 4.3.5 "up front" in Section 4.3.</p>		<p>discussion of toxicity information sources in Section 4.3.5. Please let us know if you disagree.</p>	
8.	Page 5-1, Section 5.1	<p>Tier I Screening <u>Comment:</u> The second sentence presents a difficulty. Specifically, ARARs should not appear in the list of values against which detected compounds are to be compared and screened. ARARs rightful place in the risk assessment process is after a risk assessment is completed, and the need for a remedial action is clear. ARARs are the media concentrations that are to be attained as a result of the remedial action. It is important to note that ARARs are not necessarily risk-based. Additionally, we question whether ARARs for ecological risk assessment exist altogether. Also, the IRIS database was not intended to be a source of toxicity information for ecological assessments. <u>Recommendation:</u> Ensure that references to ARARs be removed from the text here and anywhere else they may appear in the subject document. Please remove the last bullet point on the page ("USEPA IRIS"), because it is not applicable to ecological risk assessment.</p>		<p>Agreed. Text in Section 5.1 will be revised to eliminate the implication that screening against ARARs will be performed as part of the Tier I assessment. Please note that USEPA's IRIS Database is identified as one of the potential sources of ecological toxicity benchmarks in Section 4.2.4.4 of ADEC's <i>Risk Assessment Procedures Manual</i> (ADEC, 2000a). Although we agree that this source is seldom used in ecological risk assessments, we propose to leave it in for consistency with ADEC guidance.</p>	
9.	Page 5-2, Section 5.2	<p>Tier II Baseline ERA <u>Comment:</u> There is an error in the first sentence. The Tier II assessment, like the Tier I does not calculate "risks". It is important to note and for the Work Plan to acknowledge that none of the forecasted work described in the subject document assesses risk. The output of both the Tier I and Tier II efforts are hazard quotients (HQ), which are screening tools. HQs above 1.0 do not indicate an unacceptable risk condition. As is clear from the literature, HQs are measures of levels of concern only. <u>Recommendation:</u> Please remove the reference to risk being calculated in the Tier exercise. Ensure that all references in the subject document that refer to risk being calculated or measured are removed. As examples, modify the last sentence in Section 5.2.1.3.1, next-to-last paragraph (pages 5-6) by inserting the words "potential for" before "risk"; and in the</p>		<p>Agreed. Text in Section 5.2 will be revised to indicate that the ecological risk assessment includes the calculation of HQs, and results in an estimation of the potential for ecological impacts.</p>	

Item No.	Location	COMMENTS	Review Conference	MWH Response	USAED Response
		second sentence of Section 5.2.1.3.3, last paragraph, insert "estimation of" before "potential".			
10.	Page 5-3, Section 5.2.1.1.3	<p>Birds</p> <p><u>Comment:</u> The next-to-last sentence mentions that waterfowl were observed during the August 2001 field investigation. What species were observed?</p> <p><u>Recommendation:</u> For completeness in reporting, identify the waterfowl species observed during the investigation.</p>		Text changed to read that unconfirmed sightings of juvenile waterfowl (species unknown) were made at the Suqitughneq River and nearby wetlands during August 2001.	
11.	Page 5-6, Section 5.2.1.3.1	<p>Terrestrial Habitats</p> <p><u>Comment:</u> The cross fox, described here as an appropriate receptor to evaluate, has the scientific name, <i>Vulpes vulpes</i> (pages 5-9). This is the scientific name of the red fox, however. Are the cross fox and the red fox, one and the same species?</p> <p><u>Recommendation:</u> Please address the query.</p>		The cross fox and the red fox are indeed the same species. "Cross" and "red" describe the color patterns that can be found among these animals (also "black" and "silver"). All these color patterns can occur in a single litter. The only fox species in Alaska that is different is the Arctic Fox (<i>Alopex lagopus</i>). To minimize confusion, red fox references in the document have been changed to cross fox.	
12.	Page 5-14, Section 5.2.2.4.2	<p>Use of Food Chain Multiplier Ratio to Estimate Biomagnification from Ingestion of Animal Matter</p> <p><u>Comment:</u> "Multiplier" is misspelled in the Section heading.</p> <p><u>Recommendation:</u> Please make the correction.</p>		Correction made.	
13.	Pages 5-16 to 5-17, Sections 5.2.2.6.6 to 5.2.2.6.8	<p>Skin Surface Area / Chemical-specific Dermal Absorption Fraction / Soil Adherence Factor</p> <p><u>Comment:</u> The dermal absorption pathway has never successfully been evaluated in ecological risk assessments. Although algorithms exist for evaluating this route, the lack of toxicity information limits the incorporation of the pathway in an assessment to the uncertainty section.</p> <p><u>Recommendation:</u> Delete the three identified Sections from the revised Work Plan. Acknowledge in appropriate points in the text that dermal exposures will undoubtedly be occurring, but that the necessary tools for quantifying the exposures and for estimating the probability of toxicological effects are presently not available.</p>		Agreed. Dermal exposures will be qualitatively, rather than quantitatively, evaluated for ecological receptors due to the uncertainties in quantifying this pathway. Section 5.2.2.6 will be revised accordingly. The uncertainties associated with not quantitatively evaluating this pathway will be described in the ecological uncertainty analysis.	
14.	Page 5-18, Section 5.2.4	<p>Risk Characterization</p> <p><u>Comment:</u> The text discusses the summing of HQs. For several reasons this practice is generally discouraged. Also, there are a number of points that need to be incorporated into</p>		Please note that ADEC's <i>Guidance on Calculating Cumulative Risk, Final Draft</i> (ADEC, 2000b) indicates that "the noncarcinogenic HI is calculated for ecological receptors" and "the ecological	

REVIEW COMMENTS PROJECT: Northeast Cape DOCUMENT: Draft Risk Assessment Workplan LOCATION: St. Lawrence Island, Alaska					
DATE: 12/10/01 REVIEWER: Larry Tannenbaum, Ronie Shackelford, USACHPPM PHONE: (410) 436-7718					
Item No.	Location	COMMENTS	Review Conference	MWH Response	USAED Response

		<p>the text regarding the HQ value scheme provided.</p> <p><u>Recommendation:</u> Embellish the text, acknowledging that the summation of HQs often leads to misleading statistics, and also indicating that the practice is generally contra-indicated. In the revised text, note that the HQ value scheme shown derives from toxicity testing in an aquatic framework, and also that a high HQ or HI does not necessarily mean that any receptor is exhibiting ill health.</p>		<p>noncarcinogenic risk management level is set at a HI of 1.0." However, this guidance, as well as ADEC's <i>Risk Assessment Procedures Manual</i> (ADEC, 2000a), recommends summing HQs by target organ response. Text in Section 5.2.4 will be revised to acknowledge that the HQ value scheme is derived from toxicity testing in an aquatic framework, and that a high HQ or HI does not necessarily mean that representative ecological receptors are experiencing adverse health effects.</p>	
--	--	--	--	--	--

Item No.	Location	COMMENTS	Review Conference	MWH Response	USAED Response
----------	----------	----------	-------------------	--------------	----------------

1.	General	Rich, This needs to be accompanied by a short, plain language summary that explains the work plan in layman's terms		See USAED Response.	The Alaska District will attempt to provide a short summary of the final workplan in easier to understand terms.
2.	Page 1-2 Last Paragraph	Insert – “and the Alaska District, Corps of Engineers” after (ENRI)		Text added.	
3.	Page 1-2 Last Paragraph	Replace “toxins” with “contaminants”		Replaced “toxins” with “contaminants”	
4.	Page 1-2 Last Paragraph	Insert – “and the Corps” after (ENRI)		Text added.	
5.	Page 1-3	Question What about FDA or other guidance regarding levels of contaminants in foods?		USEPA, ADEC and USACE guidance were used as <i>primary</i> sources in generating methods for conducting the human health and ecological risk assessments. We will also evaluate other information sources, potentially including FDA contaminant advisories, when conducting the risk assessments. In addition, FDA resources may be used to reference food consumption patterns and rates. The list of guidance documents will be revised accordingly.	
6.	Page 2-2 Bullet 4	Replace (candidate) with (endangered) note that this bird will not occur on St. Lawrence Island, it's pelagic		Short-tailed albatross (<i>Phoebastria albatrus</i>) will be changed to “endangered”. Sightings in Alaskan Waters are reported by Alaska National Heritage Program (AKNHP) near St. Lawrence Island (AKHP, 1998). Occurrence in the waters near St. Lawrence Island could potentially expose these birds to contamination through food chain transfer by consumption of anadromous fish species from St. Lawrence Island. However, if you have information that this species does not regularly occur near St. Lawrence Island then we will eliminate	

Item No.	Location	COMMENTS	Review Conference	MWH Response	USAED Response
----------	----------	----------	-------------------	--------------	----------------

7.	Page 2-2 Last Paragraph	Replace "threatened and endangered "with "special status"		mention of this species. Correction made.	
8.	Page 4-4	Question How do we address concerns that populations outside NE Cape could be affected?		It is our contention that the following groups of receptors are protective of all potentially complete exposure pathways to human receptors: <ul style="list-style-type: none"> • Current fisher/hunter/gatherer, adult • Current fisher/hunter/gatherer, child • Future resident, adult • Future resident, child • Current incidental visitor, adult We believe that populations outside of NEC that may be associated with a complete exposure pathway would have lower exposures and, hence, risks than one of the above mentioned categories. If you have specific populations outside of NEC that are of concern please specify them so that we can adequately address those concerns.	
9.	Page 4-7 under Section 4.2.1.5.5 Third paragraph	Dolly Varden Earlier, they are called "Arctic Char." Be consistent		ADF&G lists Arctic char and Dolly Varden as two separate species, based on the following rationale. Arctic char (<i>Salvelinus alpinus</i> Linnaeus) is a closely related cousin of the Dolly Varden (<i>Salvelinus malma</i> Walbaum). It was only in the 1980s that taxonomists established the relationship between these species in North America. This relationship, however, is still under consideration by some scientists. There are some external characteristics that can be used to differentiate between Arctic char and Dolly Varden. Arctic char generally have a shorter head and snout, a trait particularly evident in spawning males. The tail of an Arctic char has a slightly deeper fork than that of a Dolly Varden, and the base of the Arctic char's tail is narrower (ADF&G, 2001b). Please advise if you have information that contradicts ADF&G's assessment.	
10.	Page 5-3 under Section 5.2.1.1.2	Question Add fox?		Fox are listed in the paragraph.	
11.	Page 5-9	Reference: "many mammalian"		Note that "many" refers to mammalian AND avian	

Item No.	Location	COMMENTS	Review Conference	MWH Response	USAED Response
----------	----------	----------	-------------------	--------------	----------------

	under Tundra Vole	There are only two mammalian species at the site that eat voles – arctic fox and reindeer.		species. Also note that cross fox are known to live at Northeast Cape and arctic fox may occur there. With reindeer, a minimum of three mammalian species at NEC may eat voles; however, according to “Reindeer Facts and FAQ’s” (UAF website), reindeer eat rodents if nutritionally stressed during springtime, not as a regular part of their diet.	
12.	Page 5-21 Table 5-2	Delete column referencing State Status State of AK does not have listing status equivalent to the Feds		(Terrestrial Mammals table) Clarification added.	
13.	Page 5-22 Table 5-3	Delete column referencing State Status State of AK does not have listing status equivalent to the Feds		AKNHP (1998) and ADF&G (2001b) both show listing status for State and federal designations consistent with State of Alaska Statute. AKNHP also has their own list. Any reference to AKNHP state status will be removed from the tables. In addition to the State of AK endangered species list, ADF&G also has an administrative list “Alaska Species of Special Concern”. Being listed as a species of special concern does not of itself convey special protection. However, “game” may not be legally taken except under terms of a permit issued by ADF&G (except, of course, for species for which there are hunting seasons). When ADF&G issues permits to take game for scientific/educational or other purposes, they take particular interest in requests that involve collection of species of special concern. Species that are listed as Species of Special Concern will be noted as such and a footnote will be added to explain this status.	
14.	Page 5-23 Table	Delete column referencing State Status State of AK does not have listing status equivalent to the Feds		Please see our response to Item 13.	
15.	Page 5-23 Table	Replace “C, P/E” with “E” in Federal Status column for albatros		The suggested change will be made and cited as ADF&G (2001b).	
16.	Page 5-24 Table 5-4	Delete column referencing State Status State of AK does not have listing status equivalent to the Feds		Please see our response to Item 13.	
17.	Page 5-24 Table 5-4 Heading	Replace “at” with “in the vicinity of”		Text changed to read “at or near.”	
18.	Page 5-24	Replace “T” with “E” under the column which states Federal		The suggested change will be made and cited as	

Item No.	Location	COMMENTS	Review Conference	MWH Response	USAED Response
----------	----------	----------	-------------------	--------------	----------------

	Table 5-4	Status		ADF&G (2001b).	
19.	Page 5-24 Table 5-4	All marine mammals are "protected" under Federal Laws, not just polar bears.		Agreed and noted. "Protected" will be removed from the table.	
20.	Page 5-25 Table 5-5	Delete column referencing State Status State of AK does not have listing status equivalent to the Feds		Please see our response to Item 13.	
21.	Page 5-25 Table 5-5 Heading	Insert "or near" after "at"		Text added.	
22.	Page 5-25 Table 5-5 Heading	Insert "or near" after "at"		Text added.	
23.	Figures 5-4 thru 5-6	Question Why do figures 5-4 – 5-6 include species that do not occur on or anywhere near St. Lawrence Island?		Species that do not appear on Tables 5-2 through 5-6 should not appear on Figures 5-4 through 5-6. Furthermore, Tables 5-2 through 5-6 will be re-evaluated for accuracy. Species that have not previously been sighted at NEC will be removed from these tables.	

Item No.	Location	COMMENTS	Review Conference	MWH Response	USAED Response
----------	----------	----------	-------------------	--------------	----------------

1.	General	Thank you for extending the time for review and comment on the Risk Assessment Work Plan. I am providing comments on the October 2001 Draft Risk Assessment Work Plan Phase III Remedial Investigation for Northeast Cape, St. Lawrence Island, Alaska. I think that it is important to invite all RAB members to attend the review session for this document in January, even if they have not formally commented on the document. All RAB members should receive copies of all comments the Corps received on the Risk Assessment and the Corps' responses.		Noted.	
2.		I am concerned that the site characterization (including Phases I, II, and III), is inadequate to conduct a risk assessment or feasibility study. The nature and extent of contamination is virtually unknown because of the spottiness of past sampling efforts. Complete characterization and removal of contamination sources is necessary to fully protect the health of the people of Saint Lawrence Island and the environment. Contamination of the marine environment and marine subsistence species have not been examined. The study area is defined as a 4 square mile area of <i>land</i> --this must be expanded to include the estuarine and marine areas of NE Cape.		The nature and extent of contamination are known well enough that ADEC approves of the Alaska District proceeding with the risk assessment. The need for further characterization and/or removal of contaminant sources to protect the health of St. Lawrence Island residents and ecology cannot be determined until the risk assessment is completed. Risks to the marine environment and marine species are being evaluated in the risk assessment as explained in Section 5.2.	
3.		The risk assessment does not consider possible synergistic effects of multiple chemicals or cumulative effects of the chemicals released into the NE Cape environment (e.g., heavy metal interactions with PCBs or PAHs).		Please see Section 4.1 where cumulative risk evaluation is discussed in detail.	
4.		The document does not justify classification of any sites as "No Further Action." None of the sites have been adequately characterized to make a determination of NFA. There has been no quantitative characterization of Site 1. If it was a burn site, there is potential for dioxin/furan contamination--this must be assessed.		The Risk Assessment Work Plan was not intended to provide justification for sites that have previously been classified as "No Further Action." Please see Phase I, II, and III work plans and reports for detailed rationale regarding NFA sites. Note that Site 1 has been investigated repeatedly and thoroughly; no hazardous structures, hazardous debris, or CON/HTRW was observed at this site, and there were no visual indications of potential contamination such as distressed vegetation or charred debris.	
5.		I am not convinced that all potential contaminants (COPCs) have been identified (e.g., range of solvents, pesticides,		Noted.	

Item No.	Location	COMMENTS	Review Conference	MWH Response	USAED Response
----------	----------	----------	-------------------	--------------	----------------

6.		<p>dioxins, furans).</p> <p>Although children are considered in the risk assessment, the draft dismisses breast milk as a potential exposure pathway. The potential for mothers to transfer contaminants to a developing fetus and breast-feeding baby must be considered.</p>		<p>Please note that exposure of nursing infants to lipophilic contaminants through consumption of maternal milk was identified as a potentially complete exposure pathway, as described in Section 4.2.1.5.6 of the RAWP. However, there are relatively few chemicals for which pharmacokinetic models and toxicological data are available to quantitatively evaluate this pathway. Please also note that toxicity values for the primary COPC associated with this exposure pathway (i.e., PCBs) are either based on, or are protective of, reproductive effects and protection of the developing fetus. Consequently, potential impacts of PCBs on reproduction and development will be taken into consideration through quantitative evaluation of more traditional exposure pathways including food consumption, and incidental ingestion and dermal contact with abiotic media (e.g., soil, sediment and water). The maternal milk pathway will be qualitatively evaluated in the Uncertainty Analysis section. Text in Section 4.2.1.5.6 will be revised accordingly.</p>	
7.		<p>Exposures are determined for healthy adults and children. The assessment must fully determine the effects of exposures to the most vulnerable people, including pregnant women, developing babies, those with illnesses such as diabetes, and immune, endocrine, or neurological disorders. People who are taking prescription drugs (especially immune-suppressing drugs) may also be compromised.</p>		<p>Please see Section 4.3.3, where the use of uncertainty factors is discussed. Uncertainty factors will be used to account for "sensitive subpopulations with the human population."</p>	
8.		<p>Potential exposures should include past and future use of surface or groundwater, not only for drinking and/or bathing, but also for cooking.</p>		<p>Use of surface and groundwater for cooking is accounted for by the ingestion pathway.</p>	
9.		<p>ATSDR made conclusions about reindeer based on very limited sampling. Reindeer must be considered as potential receptors for contaminants that may affect people on Saint Lawrence Island--regular monitoring is required.</p>		<p>Reindeer are considered as potential receptors throughout the RAWP. Further monitoring of the reindeer won't be evaluated until the risk assessment is completed.</p>	

REVIEW COMMENTS PROJECT: Northeast Cape DOCUMENT: Draft Risk Assessment Workplan LOCATION: St. Lawrence Island, Alaska

DATE: 12/17/01 REVIEWER: Pamela K. Miller, ACAT PHONE: (907) 222-7714

Item No.	Location	COMMENTS	Review Conference	MWH Response	USAED Response
10.		Marine mammals and waterfowl should be included as potential receptors in the exposure assessment. Seals and other marine mammals/birds may spend significant time in the NE Cape area--people may be exposed through consumption of these species.		Marine mammals and waterfowl are included as potential receptors in the exposure assessment but were not selected as indicator receptors for the reasons specified in Section 5.2.1.5.	
11.		Salvaged building materials present a potential source of contamination and must be evaluated, including building materials used at camps and in the village.		The primary contaminants associated with building materials that have the potential to be salvaged from the NEC site are asbestos-containing materials (ACM) and lead-based paint. As described in Section 4.2.1.1 of the RAWP, scheduled demolition of the existing structures and buildings includes removal of all ACM and lead-based paint. Consequently, exposures to these materials and potential long-term health risks will not be evaluated because the buildings are scheduled for demolition and removal. Please also note that the FUDS Program cannot address beneficially used materials/buildings.	
12.		Windblown contamination must not be dismissed.		Please note that inhalation of wind-borne contaminants was identified as a potentially complete exposure pathway, as described in Section 4.2.1.5.1 and Figure 4-1 of the RAWP. However, this pathway was deemed to be insignificant relative to other potential exposure pathways, due to environmental conditions that exist on St. Lawrence Island and site-specific conditions. Please also note that indoor inhalation of airborne dust derived from soil or sediment that has been tracked indoors is generally a more significant exposure pathway in such climates. This indoor inhalation pathway will be quantitatively evaluated in the human health risk assessment, as described in Section 4.2.1.5.1. The outdoor inhalation of wind-borne contaminants pathway will be <i>qualitatively</i> addressed in the Uncertainty Analysis section. Text in Section 4.2.1.5.1 will be revised accordingly.	
13.		The assessment must consider congener-specific impacts of PCBs because environmental and health effects vary substantially among the congeners.		As explained in the section on chemical-specific assumptions, PCBs will be evaluated in accordance with ADEC procedures. ADEC does not require congener-	

REVIEW COMMENTS PROJECT: Northeast Cape DOCUMENT: Draft Risk Assessment Workplan LOCATION: St. Lawrence Island, Alaska					
DATE: 12/17/01		REVIEWER: Pamela K. Miller, ACAT		PHONE: (907) 222-7714	
Item No.	Location	COMMENTS	Review Conference	MWH Response	USAED Response

14.		The assessment ignores risks such as stress and anxiety to the community and individuals (stress and anxiety affects health outcomes), displacement from NE Cape traditional fishing and hunting areas, impacts to culture, health or environmental damage from past exposures.		specific risk assessment. While we acknowledge that such stresses are real and potentially significant contributors to one's overall state of health, these effects cannot be evaluated under current health risk assessment procedures prescribed by ADEC or USEPA policies and guidance. The health risk assessment procedures prescribed by ADEC and USEPA, and presented in the RAWP, are limited to <i>chemical</i> exposures and our current knowledge regarding contaminant concentrations and effects.	
15.		The risk assessment purports to determine "whether current concentrations of chemicals present in site media pose an <i>acceptable</i> risk to human health and the environment". This risk assessment is based on questionable assumptions and that a 1/100,000 end point is "acceptable". The community must determine what is "acceptable." The Corps or contractor should explain and justify the use of the mathematical formulae and assumptions used in the risk assessment process. Risk assessment is not a "community friendly" process. I recommend an honest exposure evaluation after known contamination sources are removed and the site has been fully characterized in a systematic and thorough manner.		The words "acceptable" and "unacceptable" in reference to risk have been eliminated from the text. Explanations and justifications for mathematical formulae and assumptions are provided throughout the document; note that this risk assessment work plan follows ADEC and USEPA guidance. Note also that NEC has been characterized systematically and thoroughly enough that ADEC approves of the Alaska District proceeding with the risk assessment.	

REVIEW COMMENTS PROJECT: Northeast Cape DOCUMENT: Draft Risk Assessment Workplan LOCATION: St. Lawrence Island, Alaska

DATE: 12/17/01 REVIEWER: Jesse Gologergen PHONE: (907) 222-7714

Item No.	Location	COMMENTS	Review Conference	MWH / Alaska District Response	USAED Response
1.		<p>Marine Mammals—Walrus and seal are the two main food sources for the people of Savoonga and Gambell. The meat is stored in freezers or dried and is consumed year round. Why are tests not being done on them? If you are having trouble in obtaining samples to be tested, the local residents of Savoonga would be resources to go to. More and more, we are finding lesions in the fatty areas of walrus and seal. Samples were collected by Greenpeace a few years ago but funding ran out before all of the samples could be tested so results have not been given to the residents of Savoonga and Gambell. Maybe you can get results and/or samples for testing from them. Yes they are migratory but so are fish and you have been testing fish for contamination. If marine mammals eat the fish and humans eat the meat of the mammals, we are ingesting contaminants not only from fish, but from contaminated walrus and/or seal as well, thereby doubling our "minimum recommended allowance" of contaminated foods.</p>		<p>Marine mammals live over a wide area, and accumulate contaminants from multiple possible sources, including pollution that is ubiquitous in the atmosphere and oceans. Sampling must focus on possible impacts that can be directly related to Northeast Cape. Our approach has been to sample the Suqi River to determine if any significant amounts of chemicals are present in the sediments or waters that could be transferred to the marine environment. The most recent sampling conducted included sediment samples collected from the Suqi River Lagoon/Estuary. The preliminary results indicate the sediments do not contain detectable levels of PCBs. Fish, including anadromous species, have been sampled rather than marine mammals because fish are directly exposed to potentially contaminated media at NEC. Furthermore, fish are exposed to site media during a very sensitive life stage (reproduction and early development). Therefore, anadromous fish are believed to be sentinel species for potential impacts to other marine organisms including marine mammals. If site-derived chemicals are detected in fish tissues at potentially harmful levels, the need to perform additional biomonitoring will be evaluated.</p>	
2.		<p>Rodents such as the Tundra Vole live in and around Northeast Cape year round and would be very good candidates for testing. I know that the ATSDR have recommended that you test them and I hope that you do so.</p>		<p>Our approach focuses on modeling known levels of contaminants that are found in surface soils to amounts that may be found in the tundra vole. This approach is a more efficient use of limited resources for sampling/analysis. ATSDR has not specifically recommended testing of Tundra Voles; their recommendations focused on other local food sources such as reindeer and plants.</p>	
3.		<p>(a) Will there be any testing of fish caught in the nearby rivers & lagoons of Sipenpak and Tapisak? Half of the fish tested by the ATSDR were 4" or smaller. These are not the fish that are consumed by the people of Savoonga and Gambell. Since fish are migratory, they go into other rivers to spawn so even if the test results from the one done by the ATSDR say it is safe to</p>		<p>(a) Migratory fish were collected from the Suqi and Tapisak River in August 2001. The field crew attempted to catch fish from the Sipenpak Lagoon, but was unsuccessful. Appendix C of the draft Risk Assessment Workplan (October 2001) contains a trip report on this fish data collection effort. The report</p>	

Item No.	Location	COMMENTS	Review Conference	MWH / Alaska District Response	USAED Response
----------	----------	----------	-------------------	--------------------------------	----------------

		<p>eat fish in small amounts, they could be misleading. Larger fish acquire larger amounts of contaminants.</p> <p>(b) The Sipepak & Tapisak Rivers/Lagoons are very close to Northeast Cape so the fish caught in them should be tested and the results from these tests should be sent to the residents of Savoonga and Gambell AS SOON AS THEY ARE RECEIVED.</p> <p>(c) The ATSDR sampling consisted of composite tests. Further tests need to be done in a different manner.</p>		<p>describes the sizes of fish collected, the locations, and methods used. The objective of collecting fish tissue samples was to provide data that could be used to develop the human health and ecological risk assessments. Individual fish samples were analyzed for PCBs, PAHs, and metals. The fish sampling targeted the largest fish available. No additional testing of fish is planned; however, the need for further testing will be evaluated after the risk assessment is completed.</p> <p>(b) Preliminary chemical data results are summarized in the Site Characterization Technical Memorandum (November 2001). These results should be used with caution, however, since an independent data review has not yet occurred. The draft Phase III Remedial Investigation Report will contain all data collected, risk assessments, and evaluations of the findings. This document will be available sometime in March 2002.</p> <p>(c) Edible-sized fish were collected and analyzed individually. Fish were collected from the Suqitughneq River, as well as the Tapisaghak River. The field crew attempted to catch fish from the Seepenpak Lagoon, but was unsuccessful. The fish samples were prepared several different ways based on local consumption patterns. Individual fish were subdivided for analysis into samples of fillets with the skin on, fish heads, and fish eggs, or a fillet and remains of body (like a whole fish sample) as outlined in the Biological Sampling Plan (Table 2-2). During the field activities, the Alaska District also authorized analysis of an additional 12 fish tissue samples (various parts). Montgomery Watson also conducted a survey of people's eating habits and locations where subsistence foods are collected prior to implementing the fish and plant sampling this past summer. The results of this survey are included as Appendix B of the draft Risk Assessment Workplan (October 2001).</p>	
--	--	--	--	---	--

Item No.	Location	COMMENTS	Review Conference	MWH / Alaska District Response	USAED Response
----------	----------	----------	-------------------	--------------------------------	----------------

4.		<p>This isn't in the Final Work Plan but was mentioned by a RAB Member during the last RAB Meeting. Will surrounding areas of contaminated soils that have been removed be removed as well? The workers have noted that sites with contaminated soils are being cleaned as directed but the workers can tell that the contamination has spread to a much larger area than what was thought to be. After the area is dug up and removed, it is filled with clean gravel which in turn is contaminated by the surrounding soil that has not yet been removed. Essentially, the COE are leaving behind areas that are "clean" but not thoroughly. If and when you do go back, there's just going to be more of the same work on the same spot just to get all of it whereas you can get the entire area and use the time and resources to do other clean ups in other areas. Please tell me that this will not be allowed to happen.</p>		<p>Areas of contaminated soil were removed as part of Nugget's scope of work as an <u>interim</u> remedial measure only. Clean gravel was placed in the excavated areas to ensure that a hazard was not created (open pits, etc.), and to remove the exposure pathway to contaminated subsurface soils. While contamination may extend further than originally anticipated, these issues will be addressed as part of the overall site cleanup process and a future remedial action. The process of completing the site investigation to document the nature and extent of contamination is still underway. The next steps are to complete a risk assessment to determine how much contamination needs to be removed/addressed (i.e. safe levels), and then a feasibility study to determine the best methods for meeting the cleanup objectives.</p>	
5.		<p>Will air samples be taken for testing of air borne contaminants such as asbestos?</p>		<p>Nugget Construction was required to periodically monitor the air for levels of asbestos during their building demolition and asbestos-abatement activities. The next contract for future demolition work (i.e. White Alice site) will also include requirements for monitoring airborne asbestos during abatement activities, in accordance with applicable federal regulations. Additional air testing is not anticipated once the possible asbestos-containing materials are removed from the NE Cape site.</p>	
6.		<p>My last comment would be for the ACOE use local residents in helping with the clean up. Use their input and advice. There are things that are being overlooked by the COE that many residents have expressed concerns over. A few of the residents were heard in the last RAB meeting, many do not attend but do have legitimate concerns and comments. I noticed that you surveyed people but only 4 surveys were included in the Phase III Work Plan material. Were these the only ones surveyed? Will you be doing more surveys WITHIN the village of Savoonga and/or Gambell?</p>		<p>No additional surveys are planned at this time. The survey conducted in Savoonga for the Phase III Work Plan was focused on a select group that the community liaison helped identify. The objectives of that survey were to identify native plants used for subsistence purposes and methods of fish consumption. Since the beginning of the remedial investigation process at Northeast Cape, input from local residents has been solicited, and the Alaska District will continue to consult with the community.</p>	

Item No.	Location	COMMENTS	Review Conference	MWH / Alaska District Response	USAED Response
----------	----------	----------	-------------------	--------------------------------	----------------

1.		<p>When testing for identified flora for possible contaminants, there is a need for consideration of <u>seasonal</u> substance usage (human consumption) of the identified flora. For example: <u>Entire-Leaf Roseroot</u>: this plant (nunivak) is picked at early stages, in late June and is preserved in water for fermentation and later consumed throughout the year. <u>Entire Leaf Roseroot</u>: (saqlak) the roots of this plant are harvested in late spring and is eaten raw, with seal blubber. <u>Black Crowberry</u>: picked in late July and August, mixed with other berries in fish eggs/fish meat and other greens. <u>Chamisso's & Diamond Willow</u>: harvested in late spring, consumed with variety of fish and seal blubber and stored in freezer for future consumption. <u>Salmonberries</u>: (do not know scientific name) harvested in late July and August, abundant around the Suqi River.</p>		<p>Concur. We appreciate this information. Please note that information on seasonal plant and animal harvesting and consumption was collected from residents of NEC and Savoonga via personal interviews and surveys (Appendix B of the RAWP). This information will be used to evaluate exposures and risks associated with human consumption of locally harvested subsistence foods, including plants.</p>	
2.		<p>Discharge Data--Tapisaghak River; Will there be any future discharge data on this river and Suqi? There is a need to look into the currents flowing out of and into these sites. A suggestion would be injecting an environmentally safe dye substance at the drainage of these sites to look into the flow of the currents, how fast, how slow and in what direction into the sea or into the sites (migration of fish and marine mammals and aquatic plants). (long range contamination?)</p>		<p>When contaminants enter a water body, they often accumulate in the sediments. We have not detected concentrations of PCBs in the water column of the drainage basin or Suqi River. In addition, preliminary results from the most recent sediment sampling of the farthest downstream reach of the Suqi River, the lagoon/estuary area, indicate non-detectable levels of PCBs. The lagoon/estuary is the most likely location for contaminants to accumulate as sediments are deposited in this slower-moving portion of the system. Unless significant amounts of chemicals are detected in the lower reaches of the Suqi River, there is little reason to look at discharge data on currents/flow.</p>	
3.		<p>Will there be any sampling of anadromous Dolly Varden in Suqi River at peak seasonal runs?</p>		<p>Representatives of the Corps of Engineers harvested Dolly Varden during the 2001 seasonal runs, however according to local observations, the field crew may have missed the peak numbers returning by ~2 weeks. No further fish sampling is currently planned.</p>	
4.		<p>Are we concerned that bioavailable contaminants may be flushing into the ocean and possibly settling in sediments, marine plants and shellfish where they will be accessible to marine mammals/animals. Are there any reports from local hunters of</p>		<p>No unusual lesions in harvested seals, walrus, or fish have been reported by local hunters during personal interviews conducted by USACE or MWH, or during RAB meetings; however, Jesse Gologergen notes in his</p>	

Item No.	Location	COMMENTS	Review Conference	MWH / Alaska District Response	USAED Response
----------	----------	----------	-------------------	--------------------------------	----------------

		any unusual lesions from harvested seals, walrus and fish?		<p>comments that "more and more, we are finding lesions in the fatty areas of walrus and seals".</p> <p>Please note that potential impacts of chemicals derived from NEC on marine mammals are anticipated to be minimal, as described in the RAWP. Contaminant concentrations in anadromous fish tissues and potential impacts to shellfish will be evaluated as first "lines of evidence" to determine if it is appropriate to exclude marine mammals from further consideration. During the 2001 field season, sediment samples were gathered from the estuary/lagoon of the Suqi River and the preliminary results indicate that PCBs are not present.</p>	
5.		Ingestion and dermal soil pathways; potential inhalation of COPCs in indoor dust inhalation pathway for dust derived from soil/sediment. Is there a quantitative evaluation completed on this, for current/future receptors?		Yes, exposures and risks associated with incidental ingestion, dermal contact, and inhalation of indoor dust derived from soil/sediment will be quantitatively evaluated in the human health risk assessment.	
6.		Field rodents (indicator receptors); since there are field rodents existing around the Suqi River, will there be samples taken from these rodents?		Our approach focuses on modeling known levels of contaminants that are found in surface soils to amounts that may be found in the tundra vole. This approach is a more efficient use of limited resources for sampling/analysis.	
7.		There needs to be samplings done of air and water and rodents to assess levels of contaminants from FUDS sites.		Extensive sampling of water, sediments, and soils has been performed at NE Cape. Based on these findings, there is no justification to sample the air. No reason to sample rodents unless risk assessment shows potential for effects.	
8.		What is the budget allocated/projected (next phase) for the type of remediation, site characterization, which is limited?		<p>Interim removal actions are either underway or will be initiated through a new contract slated for 2002 or 2003 (dependent on funding). These actions include removal of building debris and containerized waste items such as tanks and drums from the Main Operations Complex, and the White Alice Sites.</p> <p>Remediation resulting from the remedial investigation, risk assessment, and subsequent feasibility study (FS) will be performed in addition to the interim actions mentioned above. The final remedies developed during</p>	

REVIEW COMMENTS PROJECT: Northeast Cape DOCUMENT: Draft Risk Assessment Workplan LOCATION: St. Lawrence Island, Alaska					
DATE: 12/10/01		REVIEWER: June G. Martin, ACAT PHONE: (907) 222-7714			
Item No.	Location	COMMENTS	Review Conference	MWH / Alaska District Response	USAED Response

				<p>the FS will be presented in a proposed plan and selected through a record of decision (ROD) for the site. Following approval of the ROD, remedial action is implemented through design actions and field work. We anticipate completion of the ROD in FY2004, which would probably mean implementation of remedial actions (following design activities) during the 2005 field season.</p> <p>Some additional investigation work is also anticipated for FY2003, which could be used to address any data gaps identified during the RI/FS process. If data gaps are identified from the Phase III investigation, sampling may also be possible during the 2002 field season. <u>Timing of work is always subject to funding availability.</u></p>	
9.		Under the current and next phase of remediation, what is being considered for restoration and how much contaminants and military debris will be left behind?		Unable to answer until Risk Assessment and Phase III RI is completed, and the Feasibility Study is underway. At this point, everything that has not been eliminated through the phased site investigation process will be considered if it poses a significant risk to human health or the environment. All buildings are planned for demolition and all exposed military debris will be removed. Buried debris cannot be addressed by the FUDS program unless migration of hazardous waste is identified.	
10.		What percentage (if any) of the clean up will be completed for North East Cape and Gambell? Will long-term health effects be taken into consideration in the next phase?		Clean up actions will continue at NE Cape and Gambell until the sites are fully addressed under the FUDS program and meet all applicable and relevant standards (i.e. ADEC standards). Yes, long-term (e.g. chronic) health effects will be taken into consideration during the risk assessment.	
11.		Must evaluate whether people could have been exposed through building materials and other materials salvaged from the North East Cape or Gambell sites?		The FUDS program cannot address beneficially used materials/buildings.	
12.		I would like to recommend that a "local expert(s)" be appointed and designated to identify sites where there is abundance of edible plants, roots and berries for human consumption in the		"Local experts" were utilized during the collection of plant samples in 2001. Two community members were brought to NEC and identified plants used for	

REVIEW COMMENTS PROJECT: Northeast Cape DOCUMENT: Draft Risk Assessment Workplan LOCATION: St. Lawrence Island, Alaska

DATE: 12/10/01 REVIEWER: June G. Martin, ACAT PHONE: (907) 222-7714

Item No.	Location	COMMENTS	Review Conference	MWH / Alaska District Response	USAED Response
----------	----------	----------	-------------------	--------------------------------	----------------

		<p>vicinity of FUDs (the corps has selection of identified flora and fauna).</p> <p>Also there needs to be more defined explanations of inert debris as buried "securely". Define "securely", and please elaborate on "broad-based" samplings of surface sediments.</p>		<p>subsistence.</p> <p>Debris which is buried securely does not meet the requirements for an eligible FUDS project. To be eligible for cleanup as a Building Demolition and Debris Removal (BD/DR) Project, the conditions must have been hazardous as a result of DoD usage and must have been inherently hazardous when the property was transferred. Inherently hazardous BD/DR must present a clear danger, likely to cause or having already caused death or serious injury to a person exercising ordinary and reasonable care. Examples of hazardous structures and debris include: structural hazards (excluding structures or debris six feet or less in height above the surrounding grade), cave-in or engulfment hazards, falling hazards, climbing hazards, and drowning hazards. In addition, to be eligible for cleanup as a Hazardous, Toxic, and Radioactive Waste (HTRW) Project, the buried debris must pose a significant risk to human health or the environment due to migration of chemical contamination (e.g. leaching). The ADEC also regulates the closure of landfills, and their criteria include no migration of contamination and adequate landfill cover.</p> <p>Please provide additional clarification for your request to elaborate on "broad-based" samplings of surface sediments.</p>	
--	--	---	--	---	--

REVIEW COMMENTS PROJECT: Northeast Cape DOCUMENT: Draft Risk Assessment Workplan LOCATION: St. Lawrence Island, Alaska					
DATE: 12/11/01 REVIEWER: Kendra Zamzow, ACAT PHONE: (907) 222-7714					
Item No.	Location	COMMENTS	Review Conference	MWH / Alaska District Response	USAED Response

1.	General	I enjoyed the thoroughness with which this next phase is being approached, and believe the proposed sampling locations for fish and plants are good ones.		Noted. Thank you.	
2.		In particular, you proposed to calculate human risk through eating fish based on 287 mg/kg-day (about 9.6 ounces) over a 90-day period. While this appears to be a good estimate from the surveys that the Corps of Engineers conducted, it may be unwise to extrapolate "x" amount of fish caught to mg/kg-day of consumption, with consumption averaged throughout the entire year. More reasonably, a great deal of fish is likely to be eaten in a short time while at subsistence camp, with the remainder being dried and frozen and eaten in smaller amounts throughout the year. To most accurately assess human health impacts, it would be better to look at what risk a level of contaminant would pose for several pounds of fish over several weeks. The way the body reacts to an intense contaminant load, followed by low level exposure, will likely be much different than a body reacting to a low level exposure throughout the year. Please take this into account.		Please clarify the assumptions that were used in the calculation of a daily fish consumption rate of 287 mg/kg-day. The subsistence level fish consumption rate that was presented in Table 4-1 of the RAWP (i.e., 273 grams per day) equates to a daily intake level adjusted for body weight equal to 3,900 milligrams per kilogram per day (mg/kg-day). As indicated in 'Footnote g' of Table 4-1, the source of the assumed subsistence level fish consumption rate for local residents of 273 grams per day was obtained from an updated report prepared by the Alaska Department of Fish and Game (ADFG) entitled, <i>Subsistence in Alaska: A Year 2000 Update</i> (ADFG, 2000). Please note that the protective, upper-end (i.e., 95 th percentile) daily fish consumption rate for the 'Native American Subsistence Population' published in USEPA's <i>Exposure Factors Handbook</i> (USEPA, 1997) is equal to 170 grams per day. The ADFG (2000) report takes regional differences in fish consumption patterns for Alaskan subsistence populations into account. Please also note that local NEC residents who were surveyed during Spring 2001 indicated maximal consumption rates of 2-3 fish meals per week during the summer, and less than 25% of their diet consists of fish harvested from the NEC site (Appendix B of the RAWP). Thus, the assumption by ADFG (2000) that 60% of the total subsistence diet is comprised of locally harvested fish most likely overestimates subsistence level fish consumption rates for NEC residents. Finally, it is important to note that ADEC and USEPA exposure and risk assessment methods are generally based on averaged daily intakes and chronic exposures. Assessment of human health risks over a period of days or weeks requires the availability of acute or subacute toxicity values, which are not	

REVIEW COMMENTS PROJECT: Northeast Cape DOCUMENT: Draft Risk Assessment Workplan LOCATION: St. Lawrence Island, Alaska					
DATE: 12/11/01 REVIEWER: Kendra Zamzow, ACAT PHONE: (907) 222-7714					
Item No.	Location	COMMENTS	Review Conference	MWH / Alaska District Response	USAED Response

				generally available for most chemicals.	
3.		In looking forward to potential future use, you considered, in the beginning of the document, the possibility that this could become a residential area in the future. Undoubtedly, if Savoonga residents believed the Northeast Cape area to be "clean" again, families would return, and would likely spend extended periods of time in the area and gather a wider variety of subsistence foods than is currently being gathered (due to fears of contamination). For instance, in a 1981 study, it was found that 24 families camped between Seeponpak Lagoon and Camp Kilowiye (just east of the Tapishak) and collected seal, birds, bird eggs, fish, ducks, and both land and marine plants. Therefore, in looking to future use, it should be determined what residents <u>use to</u> gather and consume, and in what quantities, in the past, in order to more accurately evaluate the future. People who may only spend 4-5 days in the area gathering a few marine fish or seals now, might, after the area cleanup, spend a greater amount of time and gather a greater variety of foods. This must be taken into consideration so that "safe" contaminant levels are not underestimated.		We acknowledge that the survey information obtained from local residents could potentially underestimate <i>historical</i> levels of harvesting of subsistence foods from the NEC site. However, please note in our response to Comment No 2, above, that consumption rates for subsistence foods were obtained from <i>Subsistence in Alaska: A Year 2000 Update</i> (ADFG, 2000), and compared with survey information obtained from local residents. Subsistence food consumption rates included in the ADFG (2000) report are based on consumption rates for rural subsistence populations <i>throughout</i> Alaska and, therefore, are perhaps more representative of areas considered to be non-impacted by contamination. We would welcome any additional site-specific information on historical harvesting of subsistence foods for the NEC site.	
4.		No concern seems to be given to sampling the marine environment. Since marine mammals are an extremely important food source, sediment and water column at the mouth of the Suqi, where it empties into the ocean, should be sampled for persistent pollutants, metals, and PAHs. If contaminants are making it in to the marine environment, they could be picked up by mammals or fish that travel widely, and thus contaminate people nowhere near Northeast Cape.		When contaminants enter a water body, they often accumulate in the sediments. We have not detected significant concentrations of PCBs in the water column of the drainage basin or Suqi River. In addition, preliminary results from the 2001 sediment sampling in the most downstream reach of the Suqi River, the lagoon/estuary area, indicate non-detect levels of PCBs. The lagoon/estuary is the most likely location for contaminants to accumulate as sediments are deposited into this slower-moving portion of the system, and periodically swept out to sea during breaching of the lagoon berm. Unless significant chemicals are detected in the lower reaches of the Suqi River, sampling of the marine environment is not justified	
5.		I am worried that some areas have never been tested, or have been tested minimally, and will be scheduled for "no further		(a) During a July 1992 site visit (E&E 1992), the field team investigated this site based on reports from the	

Item No.	Location	COMMENTS	Review Conference	MWH / Alaska District Response	USAED Response
----------	----------	----------	-------------------	--------------------------------	----------------

		<p>action" without really knowing whether the areas are contaminated. In particular:</p> <p>(a) No samples were ever taken at Site 1, although residents reported that absorbent oil pads had been burned in that area, and "stress tests" by ENRI showed that the Suqi in that area is definitely showing signs of stress.</p> <p>(b) Site 2 had minimal testing for PCBs, lead, and zinc, and no tests at all for arsenic.</p>		<p>community that it was formerly used for the burning of fuel oil collected in absorbent materials. The field team found several slight depressions in the tundra between 100 and 300 feet east of the runway near its southern end. These depressions contained no debris, burn marks, soil staining, odor, sheen, or ash. Only a minor amount of debris was found scattered adjacent to and along the length of the airstrip. The field team concluded no further investigation was required. Furthermore, during the Phase I Remedial Investigation conducted by Montgomery Watson in 1994, these findings were confirmed by their field team. There were no physical indications, such as distressed vegetation or charred debris, which might indicate a previously burned area. Accordingly, Site 1 was not investigated.</p> <p>The area investigated by ENRI is located due east of the airport terminal, from 50 meters below to 200 meters above the airport road bridge crossing and appears to be approximately 2000 feet north of the general Site 1 location.</p> <p>(b) Three samples were collected from Site 2 based on the chemical data acquisition plan developed by E&E (1993). The site inventory completed in 1992 by E&E recommended samples be analyzed for petroleum/oil/lubricants (POLs), PCBs, and metals associated with spent engine lubricating oil spills, accordingly. Therefore, arsenic, mercury and selenium were not analyzed at various sites because these metals are not expected in lubricating oils. The plan based its recommended analytical tests on the most probable chemicals used at the site, and potential sources of contamination observed. At Site 2, fuel tanks, transformers, and the stained slab of the garage and adjacent soils were noted as having the potential for POL, PCBs, and/or metals contamination.</p>	
--	--	--	--	--	--

Item No.	Location	COMMENTS	Review Conference	MWH / Alaska District Response	USAED Response
----------	----------	----------	-------------------	--------------------------------	----------------

		<p>(c) Site 3 had no water samples tested, nor were any samples tested for arsenic.</p> <p>(d) Concerning Site 4, no one ever identified the sources of drinking water for subsistence camp residents so that such sources could be tested. In addition, no sampling was done in the vicinity of the camp buildings, only on the outskirts near the Cargo Beach Road. No testing was done for dioxins, zinc, or arsenic. In particular, there is some concern (noted by URS in 1985) that residents may have used dielectric oil for starting heating stoves, and that the ash should be tested to see if residents have been exposed to TCDD or dioxins.</p>		<p>(c) See objectives for Site 3 in CDAP (E&E 1993) and above response. During the Phase I Remedial Investigation, soil samples were collected from Site 3 and areas of DRO contamination were identified. Surface and groundwater samples were not recommended to be collected during the Phase I investigation. However, based on the soil sampling results, during the Phase II investigation potential groundwater contamination was investigated, and a well point was installed and sampled at Site 3. Those results indicated DRO contamination (14 mg/l) in the groundwater. During the Phase III remedial investigation conducted in 2001, 3 additional well points were installed surrounding the former fuel pumphouse to further delineate the extent of groundwater contamination. The preliminary results show detectable levels of diesel and residual range organics (DRO/RRO) which are above generic ADEC groundwater cleanup levels.</p> <p>(d) According to Phase II Remedial Investigation report (MW, 1999), there is no source of potable water at Site 4. However, two above ground storage tanks (ASTs) were located near the Cargo Beach Road and were reported to have held drinking water for the Camp. These tanks were removed as part of Nugget's scope of work. In addition, a well point was installed during the Phase II remedial investigation (1998), and the groundwater sampling results indicated DRO contamination (3.7 mg/l). Site 4 was further investigated during the Phase III remedial investigation and 3 additional well points were installed downgradient of the former ASTs and abandoned vehicles. The preliminary groundwater sampling results indicate DRO and RRO contamination. Regarding sampling in the vicinity of the camp buildings, we cannot investigate beneficially used</p>	
--	--	---	--	--	--

Item No.	Location	COMMENTS	Review Conference	MWH / Alaska District Response	USAED Response
----------	----------	----------	-------------------	--------------------------------	----------------

		<p>(e) Site 5 had one test, far to the western end of the beach. Considering the close proximity of this site to subsistence camp residents, this area should be tested extensively for PCB, POL, and metal, and all drums removed.</p> <p>(f) Sites 7, 9, and 10 should be considered for total removal.</p> <p>(g) The drainfield for Site 19 needs to be found and removed.</p>		<p>structures under the FUDS program. The objective of the risk assessment is to evaluate potential current and future risks based on the status of the site today. The risk assessment does not look at past exposures; it is in contrast, a prospective analysis.</p> <p>(e) Drums were removed by Nugget Construction under their contract's scope of work. According to the scope of work, stained soils associated with the empty drums were also to be removed by Nugget (estimated 1.3 tons).</p> <p>(f) These sites are still under investigation. However, inert buried debris cannot be addressed under the FUDS program, unless a hazardous or toxic waste problem is identified. The landfills will be addressed according to ADEC criteria, including adequate cover and no leaching of contaminants.</p> <p>(g) Site 19 consists of Buildings #108 and #109, the Vehicle Storage and Auto Maintenance Facilities. The original Site Inventory conducted by E&E (1992) does identify a grease pit in the northern section of building 109 and notes that these types of pits commonly drain to an open drain field. This former grease pit was cleaned out by Nugget Construction as part of their work during the 2000/2001 field seasons. Based on site knowledge, building layouts, and construction of the gravel pad, the most likely area for discharge from this grease pit is the 24" culvert which is located immediately downgradient of the diesel fuel pump stand (Site 27) on the northern edge of the gravel pad. Alternatively, there was a smaller drainpipe located just west of the culvert that may have connected to Building 109. There is a slight possibility the grease pit may have been connected to the utilidor system. Either way, the site has been investigated such that numerous samples have been collected from the</p>	
--	--	--	--	---	--

REVIEW COMMENTS PROJECT: Northeast Cape DOCUMENT: Draft Risk Assessment Workplan LOCATION: St. Lawrence Island, Alaska					
DATE: 12/11/01 REVIEWER: Kendra Zamzow, ACAT PHONE: (907) 222-7714					
Item No.	Location	COMMENTS	Review Conference	MWH / Alaska District Response	USAED Response

		<p>(h) The area that the Site 21 waste pipe empties into needs to be considered for removal of soil/tundra due to extremely high arsenic levels.</p>		<p>Drainage Basin (now identified as Site 28), as well as additional samples from the outlet of the Wastewater Treatment Tank (Site 21). The gravel pad is constructed such that the "high point" is the southeast corner of the pad, and based on topographic drawings of the site, water flows in a northerly direction from the pad.</p> <p>(h) Site 21 was investigated during the Phase I Remedial Investigation (MW, 1994). Three boreholes were completed and converted into groundwater monitoring wells. Arsenic was detected in all of the surface and subsurface soil sample locations. Arsenic was also detected in two of the three monitoring wells. Two surface water samples and one sediment sample were collected from Site 21. Arsenic was detected in two surface soil samples collected near the sewer line outfall at 170 and 39 mg/kg. Arsenic was also detected in a nearby sediment sample at 21 mg/kg. Two samples collected adjacent to the concrete wastewater structure also contained arsenic at 7.9 mg/kg (MW21-1), and 9.6/18/13.5 mg/kg (triplicate sample). The monitoring well MW21-1 also contained total arsenic in the groundwater sample at 0.072 mg/L, and MW21-3 contained arsenic at 0.041 mg/L. The ADEC groundwater cleanup standard for arsenic is 0.05 mg/L. However, the dissolved arsenic concentrations for MW21-1 and MW21-3 were all below the standards. This suggests that the metals associated with soils entrained in the water are the source of the metals, therefore, they were excluded as contaminants of concern in the subsurface water. The ADEC Method 2 soil cleanup level for arsenic (migration to groundwater pathway) is 2.0 mg/kg.</p> <p>Due to community concerns regarding the presence of PCBs, Site 21 was further investigated during the 2001 Phase III remedial investigation. Surface and</p>	
--	--	--	--	---	--

REVIEW COMMENTS PROJECT: Northeast Cape DOCUMENT: Draft Risk Assessment Workplan LOCATION: St. Lawrence Island, Alaska

DATE: 12/11/01 REVIEWER: Kendra Zamzow, ACAT PHONE: (907) 222-7714

Item No.	Location	COMMENTS	Review Conference	MWH / Alaska District Response	USAED Response
				<p>subsurface soil samples were collected from 3 locations surrounding the concrete wastewater tank. In addition, two surface soil samples were collected from near the outfall of the sewer drainpipe, and two co-located surface water/sediment samples were collected from the wetlands area downgradient of the drainpipe. The samples were analyzed for metals, PCBs, BTEX, and petroleum (DRO/GRO/RRO). The preliminary sampling results indicate some areas of DRO contamination, but are currently inconclusive for arsenic.</p>	
6.		<p>In addition, I believe it would be a good idea to sample higher trophic animals, rather than only sampling soil, water, and fish and extrapolating. In particular, I would like to see sampling of some birds (glaucous wing gull, murre, and cormorants, or the species most used for subsistence as identified by residents) and their eggs; sampling of some shellfish near the mouth of the Suqi which could pass contaminants on to walrus; and analysis of some marine mammal tissue already held in archives. To minimize cost, sampling could focus on the most bioaccumulative contaminant in the area, PCBs, and to identify whether the military site is indeed the source, the analysis should be congener specific. At that point, the originating source of PCBs, likely in the gravel of the main complex, needs to be removed completely.</p>		<p>It is not practical, with limited resources, to sample additional animals such as birds, shellfish and marine mammals. In addition, focusing sampling on PCBs (even using congener-specific analyses) cannot link contamination exclusively to the former military site. It is well documented throughout the arctic that persistent organic pollutants such as PCBs are atmospherically deposited, accumulated in the ecosystem, and distributed throughout the food chain at varying levels. During the 1999 field season, ENRI and the Corps of Engineers conducted an ecological assessment of the Suqi River. The workplan anticipated collecting mollusks from the estuary, near the mouth of the stream in order to evaluate the potential for ecological effects in this area. However, on page 10 of the ENRI report (see Appendix D of the 1999 Report Addendum), it states "ENRI also proposed to collect and analyze mollusk tissues, but no mollusks were found in the Suqitughneq River outflow areas."</p>	
7.		<p>Also concerning the main complex, was the location of the drainfield for the mechanic's bay ever located and tested?</p>		<p>See response for Comment 5(g).</p>	

REVIEW COMMENTS PROJECT: Northeast Cape DOCUMENT: Draft Risk Assessment Workplan LOCATION: St. Lawrence Island, Alaska					
DATE: 12/11/01 REVIEWER: Kendra Zamzow, ACAT PHONE: (907) 222-7714					
Item No.	Location	COMMENTS	Review Conference	MWH / Alaska District Response	USAED Response

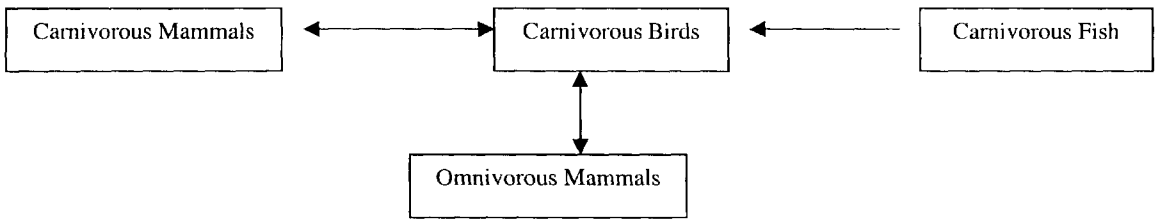
8.		I would like to mention two issues that are somewhat connected. My review of sampling results in the Northeast Cape area shows high, sometimes very high, arsenic levels throughout the military installation. In particular, I am concerned with the amounts of dissolved arsenic in water bodies. While I first thought that this was a natural mineral to the area, I have reviewed USGS documents, as well as Montgomery Watson background samples, and have concluded that arsenic is not found in high amounts naturally in that particular area. Montgomery Watson did find high arsenic levels in two "background" areas: location SS901 (gravel borrow pit), and MW00 (between the road to the direction finder building and the borrow pit road). I really don't think these are true representations of background areas. If we remove these two, and look at the rest of the background samples, we find low or no arsenic in soil and water samples. Yet, every single soil sample that was tested in the military installation had levels of arsenic that exceeded cleanup standards. No metals, neither total nor dissolved, were tested for in the Suqi; and arsenic was not tested for in the drainage (except one water sample, where it was found), even though lead and zinc had been found. In all samples where arsenic was tested for, it was found, and in addition, lead and zinc were found with it (although at low levels).		Much of the contamination found at NEC was in the gravel fill material that was hauled and placed during the construction and operation of the installation. This includes the pads under and around the structures and tanks, storage areas, roadways, and landfill cover material. This gravel differs significantly from the tundra soils in regards to background concentrations of organic and inorganic chemicals. Therefore, background samples were collected from both the tundra soils and the source of the gravel fill. Great care was taken to collect the gravel background samples from locations where the presence of contamination was improbable.	
9.		At the spot where the wastewater treatment pipe empties into a wetland (which drains into the Suqi), arsenic ranged as high as 170 ppm (cleanup standards are 2.0 ppm). In light of this, I would like to see continued analysis, in the environment (especially drinking water) and in biological samples, for arsenic, and consideration of the health risks.		Noted.	
10.		Relatedly, I would prefer to see "background samples" taken far off the road system to make sure we have a true reading. "Background" samples of gravel is really sort of a waste of time, as gravel that has been driven over for 20 years cannot possibly be uncontaminated. Rather, testing should be conducted on the fine silt layer beneath the gravels, where contaminants would likely stay.		See response to Comment 8.	

REVIEW COMMENTS PROJECT: Northeast Cape DOCUMENT: Draft Risk Assessment Workplan LOCATION: St. Lawrence Island, Alaska					
DATE: 12/11/01 REVIEWER: Kendra Zamzow, ACAT PHONE: (907) 222-7714					
Item No.	Location	COMMENTS	Review Conference	MWH / Alaska District Response	USAED Response

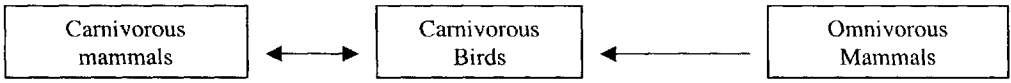
11.		Lastly, and this is pretty nitpicky, I have a suggestion for the Wetlands Food Web and Marine Food Web charts. (see below)		We agree that cross-consumption by upper trophic level (i.e., Trophic Level 4) receptors may occur, and Figures 5-5 and 5-6 will be revised accordingly. Please note, however, that consumption of carnivorous mammals by piscivorous/carnivorous birds is generally limited to scavenging. Therefore, this pathway will not be <i>quantitatively</i> evaluated in the ecological risk assessment for birds. Please clarify the circumstances under which omnivorous mammals (e.g., the tundra shrew) would consume piscivorous/carnivorous birds.	
-----	--	--	--	--	--

REVIEW COMMENTS PROJECT: Northeast Cape DOCUMENT: Draft Risk Assessment Workplan LOCATION: St. Lawrence Island, Alaska					
DATE: 12/11/01		REVIEWER: Kendra Zamzow, ACAT		PHONE: (907) 222-7714	
Item No.	Location	COMMENTS	Review Conference	MWH / Alaska District Response	USAED Response

Lastly, and this is pretty nitpicky, I have a suggestion for the Wetlands Food Web chart:



And for the Marine Food Web chart:



Item No.	Location	COMMENTS	Review Conference	MWH / Alaska District Response	USAED Response
----------	----------	----------	-------------------	--------------------------------	----------------

1.		<p>(Overview) Concern with process phasing, incomplete site characterization; contaminant remobilization, additional characterization needed subsequent to completion of all building demolition work, therefore feasibility study timeline is compromised.</p> <p>(a) Process Phasing. This document combines three phases of a site remedial process including : 1. Phase III remedial investigation, 2. development of a feasibility study and 3. risk assessment for the Northeast Cape, St. Lawrence Island, AK sites. These phases are sequentially dependent in that the feasibility study is based on the data developed during the remedial investigation phase and the risk assessment is also dependent on the data and interpretation developed during the remedial investigation phase (s). The risk assessment is grounded on the quality and completeness of the data developed during the remedial investigation. In my view, it is premature begin to develop the Feasibility Study until site characterization has been completed.</p> <p>(b) This document indicates 11 sites were removed from further study. It is assumed the removed sites include the 10 sites that will involve removal of the containerized structure that are being demolished. The one NFA site includes Site 1, where there has been no visual evidence of waste material disposal. It would be helpful to have the 10 sites that were removed from the study listed in this document and also note whether Site 1 is the NFA site.</p>		<p>(Overview) The reviewer comments that it is premature to begin to develop the Feasibility Study until site characterization has been completed. In addition, the reviewer feels that remedial activities conducted subsequent to the Suqi River characterization are likely to be altered by the mobilization of contaminants resulting from the Main Operations complex demolition, excavation and removal activities.</p> <p>The Corps of Engineers follows the CERCLA process in dealing with hazardous and toxic waste issues at FUDS sites. The removal of buildings, tanks, incidental contaminated soils and other miscellaneous debris is conducted based on project-eligibility and is considered an interim removal action. However, in the CERCLA process, it is very common for interim remedial/removal actions to occur prior to considering final remedial actions for a site. Source areas are defined through the site characterization and remedial investigation process; therefore, it becomes impractical to remove all sources of contaminants before downstream assessments are conducted, as suggested by the reviewer. Any impacts from remobilization of contaminants or altered site conditions can be addressed during implementation of a final remedy, long term monitoring, or field tests used to develop the feasibility study recommendations. Contingencies are built into any final remedy, and can be used to help address any changed site conditions, as implied by the reviewer.</p> <p>(a) The Feasibility Study will be initiated after the Phase III Remedial Investigation and Risk Assessment is completed.</p> <p>(b) Noted.</p>	
----	--	---	--	---	--

Item No.	Location	COMMENTS	Review Conference	MWH / Alaska District Response	USAED Response
----------	----------	----------	-------------------	--------------------------------	----------------

2.		<p>(Overview) Feasibility studies are normally conducted after the completion of the Remedial investigation. ...Based on reviews of previous reports on the NEC contaminated sites, it is evident additional information if needed to effectively conduct and develop the appropriate remedial alternatives for many of the NEC sites.</p> <p>(a) Contaminant Remobilization. A significant amount of remedial work (IRMs) is being conducted at the NEC to remove sources of contamination. Building demolition and removal, and soils excavation and disposal remove significant quantities of the contaminants impacting NEC sites. A considerable amount of work remains, however, including removal of the White Alice site structures and further characterization of the White Alice site soils and waters. Because the White Alice facility was recently integrated into the eligible sites, there has not been adequate time for effective site characterization.</p> <p>(b) It is well documented that the sites located within the Main Operations complex are contaminated by a host of organic and inorganic chemicals. This complex is directly connected to the Suqi River drainage. Construction, demolition, soil removal and other remedial actions currently being conducted and planned for future field seasons will have a direct impact on the remobilization of contaminants. The contaminant remobilization will have an effect on the sampling conducted in earlier field seasons.</p> <p>(c) The 2001 and earlier field season data will be the basis for conducting the risk assessment evaluation for the Suqi River</p>		<p>(Overview) The Feasibility Study will be initiated after the Phase III Remedial Investigation is completed. Installation of the proposed monitoring wells and soil borings on the Main Operations Complex was postponed until the 2002 field season. The NEC site has been extensively studied and site characterization is not incomplete. Additional data gaps that may be revealed by the 2001 field investigation results can still be addressed during the 2002 field season, or alternatively, during development of the Feasibility Study. We disagree that additional information is necessary to effectively evaluate remedial alternatives at NEC.</p> <p>(a) The White Alice sites were thoroughly investigated as part of the 2001 field season, and additional sampling was conducted based on comments raised during review of the Phase III remedial investigation workplan. If data gaps are identified based on the sampling results, they will be addressed. Demolition of structures at the White Alice site is currently under design, and depending on funding, a contract will be solicited in either Spring 2002, or during the 2003 fiscal year.</p> <p>(b) Significant contaminant remobilization is unlikely, given the nature of removal activities on the Main Operations Complex. Building demolition, tank removals, and limited soil excavation are interim removal actions intended to remove source areas.</p> <p>(c,d) See response to #1 overview (above).</p>	
----	--	--	--	--	--

Item No.	Location	COMMENTS	Review Conference	MWH / Alaska District Response	USAED Response
----------	----------	----------	-------------------	--------------------------------	----------------

		<p>exposure and associated ecological assessments. The remobilization of contaminants, however, can have a profound effect on the ecology, contaminant accumulation and therefore human exposure to contaminants as well on the aquatic resources of a body of water. Yet, the risk assessment will be based on data developed from sampling conducted prior to the completion of construction activities within the drainage basin.</p> <p>(d) Similarly, demolition and removal of the White Alice structures and remediation of any soils that are determined to be contaminated, including PCBs that have been identified on site, will potentially impact the downgradient regions of the Suqi River.</p> <p>(e) It is important to remove the bulk of the contaminants impacting the resources of an area as quickly as possible. However, the Main Complex area is one of the primary sources of contamination at the NEC. The Main Complex is a primary source of contamination impacting one of the most valued resources at the NEC, the Suqi River. Remedial activities conducted subsequent to the Suqi River characterization are likely to be altered by the mobilization of contaminants resulting from the Main Complex demolition, excavation and removal activities. The results of the river transect sediment sampling and fish collection and analysis will be compromised by the subsequent remedial activities conducted in the upstream regions of the river.</p>		<p>(e) We are conducting ongoing interim remedial actions to address known sources and remove buildings and other miscellaneous debris at Northeast Cape. Any impacts from remobilization of contaminants or altered site conditions can be addressed during implementation of a final remedy, long term monitoring, or field tests used to develop the feasibility study recommendations. Contingencies are built into any final remedy, and can be used to help address any changed site conditions, as implied by the reviewer. See also response to #1 (overview) above.</p>	
3.		<p>(a) Site Characterization. As indicated in the NORTHEAST CAPE FUDS, ST. LAWRENCE ISLAND, ALASKA, Project Summary, December, 2001 Update, the timeframe outlined in this document indicates the draft Feasibility Study for the NEC will be produced by late February 2003. This would indicate the 2002 field season will be the last opportunity to conduct site assessments before the Feasibility Study draft is produced. It is recognized that if needed, there can be additional field sampling conducted, although the feasibility study will be conducted on the site characterization developed primarily from the data and information accumulated and synthesized</p>		<p>(a,b,c) See response to comment #2 (overview) above.</p>	

REVIEW COMMENTS PROJECT: Northeast Cape DOCUMENT: Draft Risk Assessment Workplan LOCATION: St. Lawrence Island, Alaska					
DATE: 12/13/01 REVIEWER: Ronald J. Scrudato PHONE: (315) 312-2883					
Item No.	Location	COMMENTS	Review Conference	MWH / Alaska District Response	USAED Response

		<p>after the 2002 field season. The demolition and removal of Main Complex sites and White Alice Site, as well as removal and disposal of contaminated soils will not be completed by the end of the 2002 field season. Additionally, there will not be an opportunity to assess the effects of the remedial actions conducted in the upstream regions of the Suqi River drainage on the downstream regions of the river.</p> <p>(b) It is suggested that the source(s) of the contaminants be removed before downstream assessments are conducted and used in conducting feasibility studies and/or risk assessments. It has been known that the Main Complex was at least partially responsible for a significant amount of the inorganic and organic contaminants, including persistent organochlorines and trace metals, impacting the Suqi River.</p> <p>(c) Feasibility studies are normally conducted after the completion of the Remedial Investigation. Because the feasibility study reviews the various remedial alternatives that might be used at a site, it is crucial that the site characterization be accurate and as detailed as possible. Based on reviews of previous reports on the NEC contaminated sites, it is evident additional information is needed to effectively conduct and develop the appropriate remedial alternatives for many of the NEC sites.</p> <p>(d) For example, in a report filed by Scrudato and Chiarenzelli on the NEC on April 30, 2001, it was noted that PCB and lead were found at Site 3. In the 2002 field season draft plan, there is no plan to sample for lead or PCBs in the Phase III work plan (see Table 1-1). PCBs and mercury were detected in landfill samples (sites 6, detection levels; site 7), yet are not included in the 2002 proposed field season sampling. Other sampling suggestions were ignored and are not included in the proposed 2002 field season sampling.</p>			
					<p>(d) Regarding PCBs and lead at Site 3, in the Response to Comments document for the Phase III Workplan, this issue was discussed. Areas of most likely contamination were sampled for PCBs and lead during previous phases of investigation. The detected levels were below ADEC Method 2 cleanup levels; therefore they are no longer considered contaminants of concern. Regarding PCBs at Site 6, the high detection levels noted were due to sample preparation at the laboratory. High concentrations of petroleum hydrocarbons made it necessary for these samples to be diluted for analysis, this dilution affected the PCB detection limits.</p>

REVIEW COMMENTS PROJECT: Northeast Cape DOCUMENT: Draft Risk Assessment Workplan LOCATION: St. Lawrence Island, Alaska					
DATE: 12/13/01		REVIEWER: Ronald J. Scrudato PHONE: (315) 312-2883			
Item No.	Location	COMMENTS	Review Conference	MWH / Alaska District Response	USAED Response

		<p>(e) Additionally, since NEC is a FUDS, it would be advisable to sample and analyze for explosive chemicals to ensure these range of chemicals are not present in NEC soils and waters.</p> <p>(f) In summary, it is premature to initiate the feasibility study phase of the NEC remedial process. Additional site characterization is needed to ensure there is adequate understanding of the lateral and vertical distribution of the contaminants. Without adequate site characterization, it is not possible to determine the most appropriate form of remediation or assess risks to exposed humans and potential biotic receptors.</p> <p>(g) Please share these comments with RAB members.</p>		<p>Regarding PCBs and mercury at Site 7, mercury was detected in one surface water sample location at a concentration below ADEC Table C cleanup levels. PCBs were detected at one surface water sampling location at a concentration above the ADEC Table C cleanup level. A well point was installed, and a surface water/sediment sample collected during the 2001 field season to assess any groundwater/surface water impacts. The preliminary data results indicate non-detect levels of PCBs</p> <p>(e) Explosive chemicals are normally suspected at active military ranges or impact areas, but not throughout any former military installation. A reasonable expectation of the presence of fused or fired items or knowledge of their use is required before explosive chemical sampling activities would be recommended. There is no record of NEC being used for target practice, range exercises, or bombing exercises. Only small arms, self defense type protection materials were typically present at sites like NEC.</p> <p>(f) The feasibility study will not be initiated until the Phase III remedial investigation and risk assessment is completed. Additional work will occur during the 2002 field season, including the postponed monitoring wells and soil borings planned for the Main Operations Complex. We disagree that adequate site characterization has not yet been completed.</p>	
--	--	--	--	---	--

REVIEW COMMENTS PROJECT: Northeast Cape DOCUMENT: Draft Risk Assessment Workplan LOCATION: St. Lawrence Island, Alaska					
DATE: 1/3/02		REVIEWER: Morgan Apatiki, Gambell Community Liaison		PHONE: (907) 985-5826	
Item No.	Location	COMMENTS	Review Conference	Alaska District Response	USAED Response

1.	Sec. 1.1 1.2 Ref 1.2.1 1.2.2 Sec 1.3 Page 1	<p>This page covers the whole situation of the Conceptual Geophysical Survey and Remedial Actions at Northeast Cape. The Local Issues and Concerns, apparently have not been met as Required. The local issues and concerns of the Geophysical Works and Remedial Actions of the Project at Northeast Cape are indicated in the ACRONYMS and ABBREVIATIONS. Pages III, IV and V. The Chemical Data Acquisition Plan contained the consistency of Remedial Investigation/Feasibility Study; reporting limit; asbestos-containing materials; diesel range organics; gasoline range organics; petroleum, oil, lubricants, benzene, toluene, ethylbenzene, xylenes, polychlorinated biphenyls, volatile organic compounds and residual range organics; National Center for Environmental Assessment; human health risk assessment; Preliminary Assessment; Assessment Work Plan; Ecology and Environment; ecological risk assessment; Ecological Risk-Based Soil Criteria; chemical of potential ecological concern; exposure point concentration; ecological effects assessment; ecological habitats and receptors; substance of potential concern; chemical of potential concern; cancer slope factor; site utilization factor; modifying factor; conceptual site model; data quality objective; Biological Sampling Plan; applicable or relevant and appropriate requirements; hazard index; hazard quotient; total organic content; total petroleum hydrocarbons; toxicity reference value; upper confidence level; soil adherence factor; uncertain factor; Quality Assurance Project Plan; quality assurance/quality control and Removal Action. The Recommendation from the Community Concern was that the Project of the cleanup action at Northeast Cape does not meet the Requirements of remedial and removal actions based on the RI/FS Survey that began on the year 1985. From that year on, the Repository Mandatory Office was over loaded with the document. Intent to find the Results of the Nature and Extent of Contamination, with very little progress of remediation.</p>		Noted. The Alaska District will attempt to provide a short summary of the final risk assessment work plan in easier to understand terms.	
2.	4.2.1.5.1 page 4-6	<p>The word volatile is described as readily vaporizable, difficult to capture or hold. The concern for volatilization and inhalation are being recognized as Human Health Risk Factors. Also, the Biological Chemical Agents are pretty well understood. The</p>		Noted. The inhalation exposure pathway is being addressed for volatile organic compounds derived from surface water or groundwater while bathing. In addition, inhalation of indoor dust will be quantitatively	

REVIEW COMMENTS PROJECT: Northeast Cape DOCUMENT: Draft Risk Assessment Workplan LOCATION: St. Lawrence Island, Alaska					
DATE: 1/3/02		REVIEWER: Morgan Apatiki, Gambell Community Liaison		PHONE: (907) 985-5826	
Item No.	Location	COMMENTS	Review Conference	Alaska District Response	USAED Response

		chemical radiates from the surface on nice, calm days, and subsided when the cold air arrives during the winter. We reason that the odor of accumulated DRO, GRO, etc. might be the strongest at Northeast Cape. And the presence of FUDS/HTRW is hazardous to our health. Thus, we (the people of the Island) conclude that some of our illnesses may have been caused by exposure to these hazards, by way of inhaling and smelling.		addressed. However, the inhalation of windblown contaminants was deemed an insignificant pathway relative to other potential exposure pathways, due to the environmental conditions that exist on St. Lawrence Island.	
3.	Sec 4.4 Page 4-16	The Cancer slope factor is characterized by the identity of alarming deaths from cancer on the Island. Further interview of locals indicate that, people were very healthy, strong and active, without any form of sickness. Today, there are all sorts of sicknesses. Supposedly, associated with the FUDS/HTRW. LOCAL CONCERNS: -Level of cancer rate has become very high after the FUDS demobilization. -Potential concern for the CONTAMINANTS. Presence of FUDS/HTRW in Gambell and Northeast Cape are suspected to be the major cause of illnesses and expediting the cancer rate level.		Noted.	
4.	Sec 4.3.2.1 Page 4-13 Sec 4.2.1.5.2 4.2.1.5.3 page 4-6 Sec 4.1 para 3 page 4-1	Ground Water / Surface Water Exposure Pathways. According to the EPA/ADEC public water system (PWS) rules, indicated by Arsenic, Ground Water and Radon Rule, the standard for arsenic in drinking water rule is 10 ug/L (ppb), currently proposed level published in January 2001. The federal rule requirement of the maximum level of arsenic rule/The maximum contaminant level (MCL) was reduced from 50 ug/L (ppb) to 10 ug/L (ppb), January 22, 2001 for all Class A PWS. The above statement of measurement was just an example. What ever the consequences of those Free Products sampling figures at Northeast Cape. The RI/FS could not promulgate the results of the contaminant levels, effectively.		Noted.	
5.	Sec 4.1 Para 2 Page 4-1 Para 6	The Sites that are proposed for site closure. Does that mean to leave the sites as they were left by the FUDS? I thought the intention of proposed cleanup action was to containerized all of the Military Debris and Contaminants. It seems that the		Cleanup is ongoing to remove buildings/miscellaneous debris and determine long term remediation of contamination. Sites will be proposed for closure according to ADEC guidance, which allows for several	

Item No.	Location	COMMENTS	Review Conference	Alaska District Response	USAED Response
----------	----------	----------	-------------------	--------------------------	----------------

	Page 4-2	operation of removal action has been reverted to ADEC cleanup level method. Can you tell me why this happened? And yet, the project of RI/F/S contemplated the process of removal action.		methods of determining safe levels based on site-specific conditions. Final remedial actions have not yet been proposed for Northeast Cape.	
6.	Sec 1.2.2 Page 1-4 Para 5	The domestic water source for subsistence hunters and campers should be tested periodically for compatibility. Please, note the whole Island is wetland (Item 5.0 sec 5.2.1.3.2). The water or streams run down to the ponds, lakes, rivers, non-stop year round and the rivers run out to the sea.		Noted. Surface water sampling has been performed in the Suqitughneq River and Drainage Basin.	
7.	Sec 5.2.1.1.3 5.2.1.1.4 5.2.1.1.5 5.2.1.1.7	These sections that are listed on the left are the migratory animals. St. Lawrence Island is the only one of three channels in Alaska for water/land fowls seasonal migration routes. Some stay for breeding and foraging the land. Some may have become receptor species to COPEC when they migrate back to their Terrestrial Habitats.		Noted.	
8.	Sec 5.2.1.1.2	There are three types of arctic foxes. White, blue and red foxes. Blue foxes are rarely caught. Also, the red foxes are rarely caught and seen. White foxes are long-range predators. They can travel from point to point. Some insects are migratory. They also can travel from point to point. There reports of wolves on the Island. Two have been previously caught since late 1990's. Polar bears are most likely, marine mammal predators. Unlike grizzly bears, when they are hungry, they can prey on rodents and ground squirrels and graze edible plants.		Noted. Thank you for this additional information. See also response to USACHPPM comment #12. The document refers to both cross fox and red fox, which are indeed the same species (<i>Vulpes vulpes</i>). To minimize confusion, red fox references in the document have been changed to cross fox. The only fox species in Alaska that is different is the Arctic Fox (<i>Alopex lagopus</i>).	
9.	Sec 4.2.1.5.5 Page 4-7 Sec 5.2.1.4 Page 5-8 Sec 5.2.2.1 Page 5-10	I believe the human exposure to COPCs in the food chain, as well as in the marine mammals, water and land fowls food chain, has been entered into the ecosystem. Most of the species will become receptors of the chemical compounds. If you are to work with the PCB analysis to restore or separate the biological contaminants from the migratory animals, as well as from the human exposure, the only way would be to eliminate the entire presence of the Military Debris and Biological Chemical Contamination. Actually, would terminate existence or circuit of the exposure pathways.		Noted. One of the objectives of the risk assessment is to identify potential risks to human health from consumption of subsistence foods that may be contaminated from the Northeast Cape site. Once the risk assessment is completed, we will then evaluate methods for reducing any identified risks associated with NEC through additional remedial actions.	
10.	General	If the FUDS/HTRW is performed and handled properly and removed from the vicinity of Northeast Cape and Gambell, St. Lawrence Island, Alaska. Things that are affecting the communities of Savoonga and Gambell, will come to normal.		Noted. The goal of the FUDS program is to reduce risk to human health, safety, and the environment, and have final remedies in place.	

REVIEW COMMENTS PROJECT: Northeast Cape DOCUMENT: Draft Risk Assessment Workplan LOCATION: St. Lawrence Island, Alaska					
DATE: 1/3/02 REVIEWER: Morgan Apatiki, Gambell Community Liaison PHONE: (907) 985-5826					
Item No.	Location	COMMENTS	Review Conference	Alaska District Response	USAED Response

		Community Concern for the sites that are proposed for site closure. Any landfill, buried debris, when cumulated for longer period of time/years, can produce arsenic and radon toxicant. And be threat for a life-time generations.		No individual sites have been proposed for closure yet. Landfills will be evaluated according to ADEC criteria, which includes no migration of contamination and adequate cover. Inert buried debris cannot be addressed by the FUDS program.	
--	--	---	--	---	--

**FOLLOW UP
REVIEW COMMENTS**

PROJECT: Northeast Cape **DOCUMENT:** Draft Risk Assessment Workplan
LOCATION: St. Lawrence Island, Alaska

DATE: 1/16/02 **REVIEWER:** Kendra Zamzow, ACAT **PHONE:** (907) 222-7714

Item No.	Location	COMMENTS	Review Conference	Alaska District Response
1.	General	I agree with Dr. Scrudato that testing of analytes for site characterization has been spotty and inconsistent. Until last year, when circumferential wells were installed around some sites, there did not seem to be any focus or concern on identifying the sources of contaminants. For instance, why was Site 19, where vehicles were worked on, never tested for PCBs? It is my understanding that PCBs were commonly in lube oils. At the meeting of January 14 th , it was mentioned that the nature and extent of contamination will be determined after the final work plan is in place, while cleanup is ongoing. Would you specifically address the issue of when and how the nature and extent of contamination will be determined? It is extremely important to the people who use the Northeast Cape area that all sources of contamination be removed.		We believe the nature and extent of contamination is adequately defined to begin the risk assessment process, which may also be iterative in nature. However, additional data gaps may be identified through evaluation of the 2001 data and completion of the draft Phase III remedial investigation report. The feasibility study may be used to collect more information for particular sites at Northeast Cape.
2.	General	Relating to this, to ensure that contamination is not continuing after the final cleanup, some testing downstream needs to be conducted the summer <u>after</u> the cleanup is complete. While this may not be a usual method of operation, testing will ensure that contaminants have not been redistributed downstream (contaminating areas that heretofore have been considered relatively "clean"), and that all sources have indeed been removed.		Long term remedial actions, including possible monitoring, will be evaluated during preparation of a Feasibility Study (remedial alternatives analysis) and Proposed Plans (selection of preferred alternatives).
3.	General	In addition, I am still not entirely convinced that the arsenic found in tundra is natural to the area. I reviewed all the background samples that I had information on and came up with the following: Tundra and sediment samples: 30SS902 As low 94 MW00 As 2.5 mg/kg (slightly high) 94 SS00 As 2.0 98 SS00 could not find data 01SS103 not detected (detection limit 1.0, reporting limit 30) 94 SW/SD00 As 1.0 98 SW/SD00 could not find data 98 SW/SD801 not looked for 98 SW/SD802 not looked for 99SD902 not detected 99SD903 not detected		Please note that background samples were collected during the Phase II investigation (1998) to identify and eliminate the contribution of background or site-specific interference from biogenic (natural) organics with total recoverable petroleum hydrocarbons, residual range organics, and diesel range organic sampling results obtained during the Phase I study. The 2001 background sediment samples were re-analyzed for arsenic as follows: 30SD101 19.9 mg/kg 29SD126 ND (2) 29SD127 ND (2)

**FOLLOW UP
REVIEW COMMENTS**

PROJECT: Northeast Cape **DOCUMENT:** Draft Risk Assessment Workplan
LOCATION: St. Lawrence Island, Alaska

DATE: 1/16/02 **REVIEWER:** Kendra Zamzow, ACAT **PHONE:** (907) 222-7714

Item No.	Location	COMMENTS	Review Conference	Alaska District Response																					
		<p>SD101,126,127 – 2001 data. Need to see revised detection limit/reporting limit numbers.</p> <p>I think that SW/SD 801 and 802 were <u>great</u> background sites, but they were not tested for metals. Samples from 94MW00 and from 01SSS103 were very close to the direction finder road, and I would rather see background samples taken further away. In any case, this shows “natural As” at levels of 2.0 (or 2.5) and lower.</p>		<p>The locations for background samples were carefully selected, based on their distance from known or suspected contaminated areas, lack of historical or visual evidence of military use, characteristics of the matrix (tundra, gravel), and the improbable presence of contamination.</p>																					
4.	General	<p>Gravel samples were as follows: 99SS901 As 3.6 98SS801 not looked for SS101,102, 201—2001 data. Need to see revised detection limit/reporting limit numbers.</p> <p>Perhaps you folks have data that I do not have. From what I have, I just am not seeing anything that convinces me that levels above, say 4 mg/kg, are normal. If you could quote geological reports that show high arsenic in similar areas, that would certainly help. I was only able to find one USGS study of the Northeast Cape area (Jones and Forber 1976), and while they did not find arsenic, their detection limits were pretty high (around 50 ppm I think). They did find Pb, Zn, Cu, Mo, Ag, and Cr natural to the area.</p>		<p>Note that sample 98SS801 was a tundra sample, used to determine natural interference from biogenic organics.</p> <p>The 2001 gravel samples were reanalyzed as follows: 30SS101 5.3 mg/kg 30SS102 4.4 mg/kg 30SS103 2.0 mg/kg 30SS201 3.6 mg/kg (duplicate of 30SS101)</p> <p>The U.S. Geological Survey (USGS 1988) report on “Element Concentration in Soils and Other Surficial Materials of Alaska” calculates an average concentration of arsenic in surface soils (9.6 ppm) and sediments (17.3 ppm), with typical concentrations in the range of 10 – 20 parts per million (or mg/kg).</p>																					
5.	General	<p>Tests of military areas showed high arsenic in every single soil (gravel?), tundra, and sediment sample. A quick summary of all the areas where arsenic was tested for shows:</p> <table border="0" data-bbox="420 1185 924 1404"> <tr> <td>Site 5</td> <td>SS100</td> <td>4.8 mg/kg</td> </tr> <tr> <td>Site 7</td> <td>BH, MW,SS, SW/SD</td> <td>2.7 – 14 mg/kg</td> </tr> <tr> <td>Site 9</td> <td>MW, SS, SW/SD</td> <td>3.6 - 30</td> </tr> <tr> <td>Site 16</td> <td>MW, SS</td> <td>3.1 – 5.6</td> </tr> <tr> <td>Site 19</td> <td>MW</td> <td>4.4</td> </tr> <tr> <td>Site 21</td> <td>MW, SS, SW/SD</td> <td>2.8 – 170</td> </tr> <tr> <td>Site 27</td> <td>MW</td> <td>2.5 – 5.7</td> </tr> </table> <p>We don't know if it is high in the drainage or the Suqi, because it was never looked for.</p>	Site 5	SS100	4.8 mg/kg	Site 7	BH, MW,SS, SW/SD	2.7 – 14 mg/kg	Site 9	MW, SS, SW/SD	3.6 - 30	Site 16	MW, SS	3.1 – 5.6	Site 19	MW	4.4	Site 21	MW, SS, SW/SD	2.8 – 170	Site 27	MW	2.5 – 5.7		<p>Site 5: SS100 sample was adjacent to drums, which have since been removed from the site.</p> <p>Site 7: As+ results have historically ranged from 2.7 – 6.3 mg/kg in soil and from 4 – 10 mg/kg in sediment. In 2001, arsenic was detected in sediment samples at 3.3 - 4.1 mg/kg and in soil at 17.3 – 50 mg/kg. This site will be further evaluated in the risk assessment.</p> <p>Site 9: 2001 arsenic results for sediment samples ranged from 5.9 – 25.7 mg/kg</p> <p>Site 16: Samples collected in 1994 ranged from 3.4 – 12 mg/kg for arsenic. However, high concentrations of lead appeared to be more of a concern at this site, and additional samples were collected in 2001 (analyzed</p>
Site 5	SS100	4.8 mg/kg																							
Site 7	BH, MW,SS, SW/SD	2.7 – 14 mg/kg																							
Site 9	MW, SS, SW/SD	3.6 - 30																							
Site 16	MW, SS	3.1 – 5.6																							
Site 19	MW	4.4																							
Site 21	MW, SS, SW/SD	2.8 – 170																							
Site 27	MW	2.5 – 5.7																							

FOLLOW UP PROJECT: Northeast Cape DOCUMENT: Draft Risk Assessment Workplan
REVIEW COMMENTS LOCATION: St. Lawrence Island, Alaska

DATE: 1/16/02 REVIEWER: Kendra Zamzow, ACAT PHONE: (907) 222-7714

Item No.	Location	COMMENTS	Review Conference	Alaska District Response
----------	----------	----------	-------------------	--------------------------

				<p>for Pb+ and PCBs). Site 19: Samples collected in 1994 for arsenic ranged from 3.9 - 4.4 mg/kg Site 21: Samples collected in 1994 for arsenic in soil ranged from 2.8 – 170, sediment 21 mg/kg, surface water ND (0.005 mg/L), and groundwater ND (0.005) - 0.072 mg/L. The 2001 data shows arsenic detected in soil borings was ND (2), in sediment ND (3-4), and in surface soil ND (2-7) mg/kg. Site 27: no data For the Suqi River, during 2001, sediment samples were collected upstream of the drainage basin, and in the lagoon/estuary and analyzed for arsenic. The sampling results show ND levels with detection limits of 1-2 mg/kg.</p>
--	--	--	--	--

6.	General	<p>My focus is on the health of the people of the area, and I need to pursue anything that may pertain to their health and well being. Right now that looks like oil residues, PCBs, PAHs, and arsenic.</p> <p>Concerning the risk assessments for human health, I encourage Montgomery Watson to err far on the side of safety. The people of the area have a diet high in marine mammals, which already puts them at some risk. Risks, such as eating plants from Northeast Cape, will add to this. In addition, I come from a fishing community, and what I see is that people, when at summer camp, eat a large amount of fish for a few months, and then less in the winter. The body likely deals with getting a large exposure quickly, followed by less exposure, differently than spacing out 287 grams of fish per day. I know the science is not there to evaluate this, but it is a reason to again err on the side of safety when making risk assessments.</p> <p>I thank the Army Corps of Engineers for taking the time to hear community comments. I look forward to the continued cleanup of the area.</p>		<p>The risk assessment is intended to be conservative, however the it cannot evaluate possible impacts from sources not associated with Northeast Cape. However, a subsistence diet and any adverse impacts will be evaluated.</p> <p>Thank you for your thoughtful comments and input.</p>
----	---------	---	--	---

**FOLLOW UP
REVIEW COMMENTS**

PROJECT: Northeast Cape **DOCUMENT:** Draft Risk Assessment Workplan

LOCATION: St. Lawrence Island, Alaska

DATE: 1/15/02

REVIEWER: Ron Scudato

PHONE: (305) 312-2883

Item No.	Location	COMMENTS	Review Conference	Alaska District Response
1.	General	<p>I want to reemphasize my concerns about the initiation of the risk assessment process at the Northeast Cape FUDS on effective site characterization and contaminant redistribution. I recognize that additional site specific data can, and will likely be gathered once the risk assessment process begins, but I believe there are large data gaps that require far more information to effectively assess risks to humans and wildlife. What is needed is a site by site assessment that not only defines the contaminants of concern, but also characterizes and graphically depicts the lateral and vertical distribution of the contaminants in the impacted media including the surface water and groundwater, soils, sediments and biota.</p>		<p>Thank you for sharing your concerns. The remedial investigation process at Northeast Cape has been ongoing for nearly 10 years, and the District feels it is appropriate to begin a risk assessment at this time. The ADEC also agrees with our approach, and will continue to oversee the site cleanup process as we proceed. It is important to initiate the risk assessment evaluation now, so that future steps can be taken regarding gathering additional data, conducting interim cleanup actions, implementing long term cleanup or monitoring, and attaining eventual site closeout. Like the remedial investigation, a risk assessment is also iterative, and as new information becomes available, it will be considered and used to make risk management decisions.</p>
2.	General	<p>During the recent teleconference (1/14/02), the RAB discussed the Draft Risk Assessment Workplan (12/13/01) including a limited discussion on the contaminant distribution in site vegetation collected and analyzed during the 2001 field season. As I noted, the plants collected and analyzed from PT5, located on the southeast section of Site 28, may be effected by contaminant redistribution. At PT 5, PCB and lead concentrations in the collected vegetation ranged from 0.08 to 9.3 mg/Kg and from 0.29 to 11.3 mg/Kg, respectively (see figure 2-19). The source of these contaminants is currently not known and could derive from uptake by the plants from the soils and waters or from some other source(s).</p> <p>Review of the soils data from the same location as depicted in figure 2-12 of the report, indicate the soil concentrations of PCBs and lead at PT5 were non-detect and non-detect to 42 mg/Kg, respectively. The vegetation samples collected from PT 4 contained a lower range of PCBs and lead concentrations although the soils contained PCB and lead concentrations that ranged from non-detect to 5.4 mg/Kg and 18 to 219 mg/Kg, respectively. The PT 4 sampling location is immediately downgradient of the Main Complex and the soils are impacted by PCBs and lead; PT 5 is east of the Main Complex and the soils are not as impacted by contaminants of concern.</p>		<p>The data collected during the 2001 field season is currently under review by Montgomery Watson and the Corps. The objective of collecting the plant tissue data was two-fold: determine amount of any uptake from a "worst case" location at the site, and utilize the data collected to evaluate human health implications from consuming plant materials. There will always be room for interpretation regarding the exact source of contaminants in the soils/vegetation at the site, since it is well known that atmospheric contributions of contaminants and natural background levels of metals do occur.</p> <p>It will be important to look at the exact locations plants were collected, and which plant species exhibited the most uptake. Other confounding factors may also have influenced the laboratory results, such as residual soils on the plant roots, or cross contamination with other samples. Please note that the 2001 sampling entailed sediment sampling of transects (CS11 and CS12) and does not necessarily reflect surface soil concentrations within the generalized PT5 plant sampling area. In 1998, 2 surface soil samples were collected from this vicinity (SS808 and SS809). These samples were only</p>

**FOLLOW UP
REVIEW COMMENTS**

PROJECT: Northeast Cape **DOCUMENT:** Draft Risk Assessment Workplan

LOCATION: St. Lawrence Island, Alaska

DATE: 1/15/02

REVIEWER: Ron Scrudato

PHONE: (305) 312-2883

Item No.	Location	COMMENTS	Review Conference	Alaska District Response
----------	----------	----------	-------------------	--------------------------

According to the soils data, PT5 soils are free of PCBs, yet the vegetation contains elevated PCBs. The question, therefore, is what is the source of the PCBs and lead for the PT 5 vegetation? Contractor representatives assured the RAB that they were confident the PCBs found in the PT 5 vegetation derived from the soils yet the soils don't contain very much of this COC.

Site 28, therefore, has not been adequately characterized since we haven't any idea of the source(s) of contamination or whether the soils have been adequately characterized. Either the source is in fact the soils, since we were definitively told this as a part of the teleconference discussion on the 14th, or the PCBs in the soils were missed by the contractor. If the source of the PCB is redistribution of contaminated soils as dust, the source to the vegetation is atmospheric, not the soils, and in order to assess risk, we need to have an understanding of the source(s).

In my opinion, because the PCBs characterized in the vegetation at site PT 5 consists primarily of Aroclors 1254 and 1260, the more chlorinated forms of the compound, it is more likely the PCBs are dust derived and are being transported and redistributed atmospherically. This is a prime example of how congener specific PCB analysis would have been very helpful in deriving source.

If the COC concentrations in the vegetation in PT 5 derived from redistribution of contaminants from offsite, is redistribution from other sites impacting the downgradient regions of the NEC? Portions of the Main Complex and White Alice site are known to be contaminated by COCs. As these sites are remediated, including excavation of contaminated soils, what is the potential for redistributing contaminants to the downgradient sites as the disturbed soils are redistributed atmospherically or transported downstream as dissolved, suspended and/or bottom sediments? In order to guard against this potential, contaminant redistribution needs to be monitored and effective engineering barriers erected and

analyzed for DRO and RRO (including aromatic and aliphatic fractions).

Historically, only PCB-1254 and PCB-1260 have been detected in environmental media samples at Northeast Cape. The limited congener-specific testing conducted during 2001 was only intended to help determine the source of PCBs in anadromous fish, since fish tissue contamination cannot be directly linked to the Northeast Cape site due to the migratory nature of the Dolly Varden species and global sources of persistent organic pollutants such as PCBs throughout the arctic region. Fish tissue samples were collected from resident and anadromous Dolly Varden for comparison. In addition, a limited number of sediment samples were tested for PCB congeners, to evaluate possible sources. The Army Corps of Engineers has conducted a preliminary review of the PCB congener data, and determined it does not meet quality control guidelines for usability. Several laboratory problems were identified, including exceeded holding times and high/low surrogate recoveries.

FOLLOW UP		PROJECT: Northeast Cape		DOCUMENT: Draft Risk Assessment Workplan	
REVIEW COMMENTS		LOCATION: St. Lawrence Island, Alaska			
DATE: 1/15/02		REVIEWER: Ron Scrudato		PHONE: (305) 312-2883	
Item No.	Location	COMMENTS	Review Conference	Alaska District Response	

		maintained to prevent offsite migration of the COCs to the downgradient reaches of the Suqi River and floodplain regions. This is particularly needed immediately downgradient of active construction/demolition and soil removal activities.		Regarding the potential for future downgradient impacts, it is unlikely that a significant amount of redistribution of contaminants is occurring due to building demolition and limited soil excavations. However, construction practices are routinely implemented to prevent runoff from remediation areas. The concern raised about contaminant migration can be addressed during development of future removal action workplans for demolition of structures and additional soil removals.	
3.	General	<p>Incomplete Site Characterization. An example where site characterization is incomplete includes Site 7, the Cargo Beach Road Landfill. It is evident from the earlier and more current groundwater data that this area is impacted by trace metals including lead, mercury, copper and others. Trace metals in the groundwater were detected in all of the landfill perimeter well points sampled during the 2001 field season. PCBs, mercury and lead were identified in soils sampled from 07SD105 and sampling and analysis of soils and groundwater conducted in previous years indicate this landfill contains PCBs, elevated lead, mercury and other contaminants of concern. Samples collected from adjacent, offsite ephemeral ponds indicate contaminants have migrated offsite as evidenced by the presence of PCBs, dioxins, petroleum compounds and trace metals in ephemeral pond sediments. Data from SW/SD101 (see Figure 2-5) indicate PCBs were detected in the groundwater samples. The detection limits for the PCBs in soils were 5.3 mg/Kg; the PCB concentration for this sample is, therefore, less than 5.3 mg/Kg. It is unlikely that the groundwater would be impacted and the associated soils free of PCBs.</p> <p>The basic question for this site is what is the distribution of the contaminants of concern (COCs)? There is little to no data within the central regions of the landfill mass and there is limited information on the lateral and vertical distribution of the COCs. Elevated PCBs, lead and mercury were found in the surface soil samples collected and analyzed from 0S7125, 126, 127 (check PCB Aroclor 1260 data for 127). Historical</p>		<p>We will continue to evaluate the 2001 and earlier data collected at Site 7. If data gaps are identified in the draft Phase III remedial investigation report and risk assessment, additional investigation may be considered during the feasibility study.</p> <p>Landfills are evaluated for contaminant migration under the FUDS program, therefore, our approach has focused on investigating perimeter areas of Site 7.</p>	

**FOLLOW UP
REVIEW COMMENTS**

PROJECT: Northeast Cape **DOCUMENT:** Draft Risk Assessment Workplan
LOCATION: St. Lawrence Island, Alaska

DATE: 1/15/02 **REVIEWER:** Ron Scrudato **PHONE:** (305) 312-2883

Item No.	Location	COMMENTS	Review Conference	Alaska District Response
----------	----------	----------	-------------------	--------------------------

		<p>data suggests this site is also contributing to offsite contamination as indicated by the presence of contaminants in the adjacent pond waters and sediments.</p>		
4.	General	<p>Analytes, COCs. There is also a lack of consistency for the suite of COCs characterized. It is evident from the data collected during the 2001 field season that PCBs, mercury and lead are contained in the soils and site groundwater. PCBs have been found at concentrations in excess of 1.0 mg/Kg, lead at concentrations in excess of 450 mg/Kg and mercury in excess of 0.5 mg/Kg. In the pre-2001 field season sampling, lead and mercury were evidently not included in all of the sampled media. Although dioxins were detected in an earlier sampling (see SW/SD 103, Figure 2-5) this compound was not included in the list of analytes for the 2001 field season assessments. Dioxins were not included in other site assessments even though these COCs are known to be present at select sites.</p> <p>Based on the site characterization conducted to date, the lateral and vertical distribution of contaminants of concern at the Site 7 landfill cannot be determined. A risk assessment of the potential impacts related to the exposure to the range of COCs identified at this site can only be guessed since there is little understanding of the vertical and lateral distribution of the COCs in site soils and groundwater. Basic questions such as the concentrations and distributions of mercury, dioxins, PCBs, lead and other COCs in soils, sediments and waters need to be more effectively defined and graphically depicted before risk assessments are possible.</p>		<p>The remedial investigation at Northeast Cape has followed standard processes. The phase I investigation focused on the most reasonably expected suite of chemicals at individual sites. Therefore, the same set of analytes were not looked for at every location, based on knowledge of historical use of a building or site. Consequently, some chemicals were eliminated from further analysis at certain sites based on the results of the Phase I investigation and comparison with existing screening benchmarks or cleanup levels. However, in recent years, based on input from stakeholders or new information, the suite of chemicals has been expanded at certain sites and may now include analysis for compounds not previously looked for. Chemicals such as dioxin were screened out during phase I based on the low levels detected. It is necessary to focus remedial efforts on reasonable assumptions about site usage and potential compounds of concern, so that our limited resources can be used efficiently during the investigative process.</p>
5.	General	<p>COC Consistency. Although Site 7 has been used as an example, there is a basic underlying lack of adequate information on site characterization at the Northeast Cape FUDS. For example, in previous surveys of Site 3, PCBs (0.75-0.29mg/Kg) and elevated lead (119 mg/Kg) were detected in soils samples. These analytes were not included in the 2001 sampling protocols.</p> <p>And although there is no historical indications that explosive</p>		<p>If chemicals are detected at levels lower than existing ADEC cleanup levels, they are routinely dropped from further consideration as a potential compound of concern. The cleanup level for PCBs is 1 mg/kg, and for lead is 400 mg/kg. Therefore, these concentrations were not considered elevated at Site 3.</p> <p>Military use of a site in and of itself is not justification</p>

FOLLOW UP		PROJECT: Northeast Cape		DOCUMENT: Draft Risk Assessment Workplan	
REVIEW COMMENTS		LOCATION: St. Lawrence Island, Alaska			
DATE: 1/15/02		REVIEWER: Ron Scrudato		PHONE: (305) 312-2883	
Item No.	Location	COMMENTS	Review Conference	Alaska District Response	

		<p>chemicals were used at the NEC, because this site was used by the military, the list of analytes should have included explosive chemicals to ensure these COCs do not pose a risk to humans and the environment. It is also suspected that the NEC maintained a store of anti-chemical warfare agents. If these chemicals were present at the NEC, they should have been included in the list of analytes, particularly in areas where these compounds would likely be found if ever used on-site such as the area immediately downgradient of the Main Complex or the landfill areas.</p> <p>The same is true for explosive chemicals related to the on-site use, storage or disposal of munitions. It is not acceptable to conclude that explosive chemicals do not exist at the NEC based on the assumption that these compounds were not used or were not disposed when the military abandoned the site. Select sampling at specific locations are needed to verify the assumptions that specific contaminants do not pose a risk to at the NEC.</p>		<p>for including explosives analysis during a remedial investigation. Explosive chemicals are normally suspected at active military ranges or impact areas, but not throughout any former military installation. A reasonable expectation of the presence of fused or fired items or knowledge of their use is required before explosive chemical sampling activities would be recommended. There is no record of NEC being used for target practice, range exercises, or bombing exercises. Only small arms, self defense type protection materials were typically present at sites like NEC. We are not aware of information that suggests Northeast Cape maintained a store of anti-chemical warfare agents.</p>	
--	--	---	--	---	--