FOLLOW UP REVIEW COMMENTS		PROJECT: Gambell DOCUMENT: Draft Proposed Plans LOCATION: St. Lawrence Island, Alaska		
DATE: 6/25/04		REVIEWER: Jeff Brownlee (ADEC)	PHONE: 269-3053	
Item No.	**Location**	**COMMENTS**	**Review Conference**	**Alaska District Response**
1.	Page 5	Please expand the discussion that the area around Gambell is not suitable for drinking water. Please briefly discuss the extent of permafrost and the location of the village water supply aquifer. It may be helpful if the footprint of the aquifer can be overlayed on figure 2 or reference Figure 4. Jim Munter's hydrology report on the aquifer may have an inferred boundary map.		Figure 4 was revised to more clearly indicate the estimated aquifer boundary, and a reference to this figure was added on Page 5. The text was also expanded as follows: Groundwater from the central gravel spit is not suitable as a source of drinking water. Groundwater in the gravels is often saline, difficult to recover in useable quantities, and located in an active lens over permafrost. Drinking water wells installed in the gravel have been abandoned in the past. Groundwater encountered at the site has been limited in quantity, and only intermittently detected. Permafrost in Gambell is commonly encountered at depths ranging from 3 to 15 feet below the ground surface. The village water supply is located at the base of Sevuokuk Mountain, on the far eastern edge of the gravel spit (see Figure 4). According to a State of Alaska hydrogeological investigation report (Ireland, 1994), the Gambell aquifer is canoe-shaped, originating along the front of the steep bluff of Sevuokuk Mountain, and continuing down the hydrological gradient across a highly permeable gravel bar to the ocean. The aquifer appears to be a thaw bulb in the permafrost, and as the permafrost expands or recedes, the aquifer dimensions vary. The influence of warm recharge water from Sevuokuk Mountain has produced the thaw bulb effect on the area permafrost. The majority of the water recharging the aquifer originates from two springs that flow from the steep bluffs of the mountain into the gravel. Shallow groundwater across the gravel spit does not appear to be continuous because of the presence of shallow permafrost (Munter and Williams, 1992).
2.	Page 9 Site 2	Please add "(See Figure 3)" at the end of the first sentence. Please expand the discussion about the UXO investigation and note that the area was included in an investigation targeted specifically for unexploded ordinance using geophysics and anomaly verification.		Reference to Figure 3 was added. Discussion of ordnance was expanded as follows: Earth Tech, Inc. conducted two geophysical surveys at Site 2 during July and September 2000, to determine the presence or absence of buried ordnance. First, the field team visually surveyed the area and removed metallic scrap and debris from the surface. Next, metal detectors were used map the location of subsurface anomalies over three site grids. Each target location was then further investigated, excavated and searched for the source of the metallic anomaly. No evidence of any ordnance was found during the investigation.

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3.	General, Site 2, 9, 13	These sites have been proposed for closure using the ingestion pathway; however there does not seem to be any contaminant concentration exceeding migration to groundwater levels. Please use the more conservative migration to groundwater pathway for those sites that meet the cleanup levels. Exceedences of arsenic and chrome in the majority of locations would be considered background and would not exclude the site from meeting the migration to groundwater pathway (see next comment).		The Cleanup objective subsections will remain ADEC Method 2 soil cleanup levels based on the Ingestion pathway, following the rationale presented on pages 4-5. However, a statement was added to the Preferred Alternative subsections for Sites 1A, 1B, 1C, 8, 9, 13, 16, 17, 24, 25A, 25B, 26, 27, and 28 which states: Site X also meets the more stringent ADEC cleanup levels based on the Migration to Groundwater pathway. Site 2 does not meet the soil cleanup levels based on the Migration to Groundwater pathway if you consider the disposal characterization samples collected from the excavated soils by OSCI to be equivalent to the potential concentration of DRO remaining in the gravels (which is unknown). Site 2 does meet the Ingestion cleanup levels, and the potential remaining DRO-contaminated soil may be attributable to non-DOD sources.
4.	Table 3, Arsenic, chromium levels throughout	Please change the table to 26 mg/kg for chromium and change the cleanup level mentioned in the text to 18 AAC 75.341 rather than the EPA Region 3 RBCs. Plotting the average of the results for chromium and arsenic and attributing the levels to background would be a reasonable approach. There was the one outlier at Site 2 and the detections at site 7 which are planned for removal. The one at site two can just be considered an outlier that couldn't be reproduced. This approach eliminates the need to try and qualitatively explain exceedences.		Table 3 was revised to show Screening Levels based on ADEC 18AAC75, Migration to Groundwater levels. Text was revised to state: Only one sample from 1994 exceeded the screening levels for chromium and lead. The 12 other soil samples contained low levels of chromium (ND to 21 mg/kg) and lead (1 to 70 mg/kg). Chromium was not considered a contaminant of concern following the 1994 investigation. During 1996, further soil sampling was conducted to determine the extent of lead contamination. Eight surface soil samples were collected and analyzed for lead only. Sampling results are shown in Table 3. The 1996 results were significantly lower, indicating the 1994 sample was an isolated occurrence. The average lead concentration at the site does not exceed the ADEC cleanup levels. The maximum chromium concentration is considered an outlier. See Table 3 for a summary of the Phase II results. Although the detected arsenic concentrations exceed the ADEC cleanup level, the levels are consistent across many sites in Gambell, and do not appear associated with past military activity.
5.	Site 3	Please add "See Fig. 3" in the site description. Please add "in 1994" after "Phase I investigation" in the Investigation summary.		See Figure 3 added to site description. In 1994 added to Investigation summary. Sentence added to paragraph which states: Both monitoring wells are

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		Investigative Summary - please mention in the paragraph about the lead exceedences in groundwater that the site is downgradient of the drinking water supply well.		located downgradient of the village drinking water supply well.
6.	Site 4A	In the "Preferred alternative" section - there were contaminant concentrations that exceeded cleanup levels. Please change the text from "there were no contaminants above..." to "cleanup up to the extent feasible, as there is minimal soil above bedrock.		Paragraph revised to state: No Further Action. All hazardous debris and contaminated soil were removed during the 1997 and 1999 field seasons. Site 4A has been cleaned up to the extent feasible, as there is minimal soil above bedrock.
7.	Site 4E	Preferred alternative - are there plans to remove the debris under NALEMP?		Yes. Sentence added to Preferred Alternative subsection which states: The debris is not eligible for further action under FUDS. However, NALEMP plans to address the remaining debris at this site.
8.	Site 5	Preferred alternative - are there plans to sample these monitoring wells two more times? After the detection of 1.9 mg/kg DRO in 1998 an investigation of the water supply well and the surrounding monitoring wells was done. Please mention this study here.		No further studies have been performed since the 1998 investigation., which recommended one additional season of groundwater monitoring. Text of Preferred Alternative subsection revised to state: No further action. However, one additional round of groundwater sampling will be conducted to confirm groundwater does not exceed ADEC Table C cleanup levels. Existing monitoring wells at Site 5 will be sampled at upgradient and downgradient locations to verify that diesel range organics are not impacting the Village water supply well.
9.	Figure 4	If this blue line is the inferred aquifer boundary, please note on the figure.		Figure 4 revised to more clearly indicate the inferred aquifer boundary.
10.	Site 6	Cleanup Action - Please delete the word "gross" in the last sentence and say that about 2 ½ tons of impacted soil were removed. Please reference the NALEMP report.		Text of Cleanup Actions to Date subsection revised to state: According to the final report (MWH, 2004), approximately 1,000 drums and other debris, and 2.5 tons of fuel-contaminated soils were excavated. There was no notable evidence of fuel contamination associated with the buried debris.
11.	Site 9	Site description - are there more drums remaining? Maybe we can just say all the drums were removed.		There are no drums remaining. Text of Site Description revised to state: This site is located on the east side of the local airport runway. Drums leaking tar were observed in two areas. A debris inventory prepared by Montgomery Watson in 1997 indicated drums containing asphalt (6,200 estimated pounds) and empty drums (900 pounds) were located within Site 8, which includes the area referred to as Site 9. The asphalt drums were initially attributed to non-military activities during the Phase I investigation and not investigated further.
12.	Site 15	Please expand the description on the UXO investigation and		Text of Investigation Summary subsection revised to state:

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		reference the EE/CA document.		During 2000 and 2001, Troutman Lake was investigated using geophysical surveying techniques. The entire lake bottom was mapped along a series of transect lines, to detect underwater anomalies representative of piles of steel ammunition boxes. Metallic anomalies detected by the equipment were then further investigated using ice augers, depth sounding equipment, poles, and an underwater video camera to determine the source of the metal signal. An open water investigation was also conducted to verify the anomaly source using dredging anchors, depth-sounding leads, and an underwater camera. Anomaly locations within 20 feet of the lakeshore were verified by visual inspection. The source of the magnetic anomalies ranged from runway matting and 55-gallon drums, to geologic features such as iron or other mineral deposits. No evidence of ordnance or large piles of ammunition boxes was discovered in Troutman Lake. Additional details regarding the ordnance investigation can be found in the report Final Engineering Evaluation/Cost Analysis (Earth Tech Inc., 2002).