UNITED STATES AIR FORCE
CAPE NEWENHAM LRRS, ALASKA

INSTALLATION RESTORATION PROGRAM

DECISION DOCUMENT FOR UPPER CAMP (SS07)

FINAL

NOVEMBER 15, 2000

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ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
Air Force	U.S. Air Force
AFB	Air Force Base
ARAR	applicable or relevant and appropriate requirements
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
EE/CA	Engineering Evaluation/Cost Analysis
IRP	Installation Restoration Program
LRRS	Long Range Radar Station
PCB	polychlorinated biphenyl
ppm	parts per million
RAO	remedial action objective
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
USAED	U.S. Army Engineer District
USC	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

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Part I
DECLARATION

SITE NAME AND LOCATION

Installation Restoration Program (IRP) Site SS07, which includes the Upper Camp area at Cape Newenham Long Range Radar Site (LRRS), Alaska. The term Upper Camp is used when referencing generalized topographic and climatic features of the site. When referring to the site specifically, the identification SS07 is used.

STATEMENT OF BASIS

This decision presents the selected remedial action for SS07 at Cape Newenham LRRS. This decision document was developed in accordance with the Defense Environmental Restoration Program, 10 United States Code (USC) 2701; consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) 42 USC 9604(a); Executive Order 12580, 52 Federal Register 2923; and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (40 Code of Federal Register Regulations 300), and 18 Alaska Administrative Code (AAC) 75 Article 3 "Discharge Reporting, Cleanup, and Disposal of Oil and Other Hazardous Substances."

This decision is based on information contained in the administrative record, including but not limited to the results of an *Engineering Evaluation/Cost Analysis (EE/CA)* [U.S. Air Force (Air Force), 1995]; 1996, 1997, 1998, and 1999 long-term monitoring reports (Air Force, 1996a, 1997a, 1999a, and 2000); *Remedial Investigation* (RI) (Air Force, 1996b)*; Remedial Action Report for PCB Cap Construction* (Air Force, 1996c); *Human Health and Ecological Risk Assessment* (Air Force, 1997b); and the *Revised Cape Newenham LRRS Management Action Plan* (Air Force, 1999b).

ASSESSMENT OF THE SITE

Polychlorinated biphenyl (PCB) contaminated soils are the environmental concern for SS07. Contamination of soils likely resulted from past historical PCB-containing waste oil spills, leakage from equipment, and waste disposal practices by facility personnel between 1954 and 1979. PCB-contaminated soils located on the steep mountainside areas of the site resulted from dumping of equipment containing PCB-waste oils down the slope.

In 1996, the Air Force constructed an earthen cap at SS07 to cover PCB-contaminated soils and debris from a demolished electrical substation building. PCB-contaminated soils at Upper Camp were left in place and covered by the cap. A summary of detected field screening and analytical results are summarized in Table I-1. A display of sample locations with sample identification and sample results are included in Figures 3 through 5, in Part II of this decision document. A more complete description of sample locations and PCB-concentrations remaining in soils is included in the 1995 EE/CA, 1996 RI, 1997 PCB Cap Construction Report, and the 1996 through 2000 Long-term Monitoring Reports.

TABLE I-1
SUMMARY OF FIELD SCREEN AND ANALYTICAL RESULTS FOR CAPE NEWENHAM LRRS

Sample Name	Sample Matrix	PCB Field Screen Results (mg/Kg)	Adjusted Field Screen Results (mg/Kg)	Total PCB Laboratory Results (mg/Kg)
Upper Camp Main Area				
95CN002SL	Surface Soil	1.2	4.1	3.5
95CN003SL	Surface Soil	>10	>10	NA
95CN004SL	Surface Soil	>10	>10	NA
95CN005SL	Surface Soil	>10	>10	NA
95CN007SL	Surface Soil	3.9	8.6	NA
95CN008SL	Surface Soil	7.7	14.8	NA
95CN009SL	Surface Soil	1.3	4.3	NA
95CN011SL	Surface Soil	0.6	3.1	NA
95CN012SL	Surface Soil	0.9	3.7	NA
95CN013SL	Surface Soil	1.8	5.2	NA
95CN015SL	Surface Soil	0.8	3.5	2.9
95CN016SL	Surface Soil	6.7	13.2	12
95CN017SL	Surface Soil	9.0	16.9	NA
95CN018SL	Surface Soil	2.5	6.2	NA
95CN019SL	Surface Soil	>10	>10	65
95CN020SL	Surface Soil	>10	>10	NA
95CN021SL	Surface Soil	>10	>10	NA
95CN022SL	Surface Soil	>10	>10	13,000
95CN023SL	Surface Soil	>10	>10	NA
95CN024SL	Surface Soil	>10	>10	NA
95CN025SL	Surface Soil	>10	>10	NA
95CN026SL	Surface Soil	5.2	10.7	11
95CN526SL*	Surface Soil	NA	NA	12
95CN026SL**	Surface Soil	NA	NA	11
95CN027SL	Surface Soil	0.9	3.7	NA
95CN031SL	Surface Soil	1.4	4.5	NA
95CN032SL	Surface Soil	1.8	5.1	NA
95CN033SL	Surface Soil	2.0	5.5	NA
95CN034SL	Surface Soil	4.4	9.3	6.6
95CN035SL	Surface Soil	>10	>10	NA
95CN036SL	Surface Soil	1.3	4.4	NA
95CN037SL	Surface Soil	>10	>10	NA
95CN038SL	Surface Soil	>10	>10	NA
95CN039SL	Surface Soil	>10	>10	NA
95CN040SL	Surface Soil	>10	>10	NA
95CN041SL	Surface Soil	>10	>10	NA
95CN042SL	Surface Soil	0.8	3.5	NA
95CN043SL	Surface Soil	2.4	6.1	NA
95CN044SL	Surface Soil	0.6	3.1	3.6
95CN047SL	Surface Soil	0.9	3.7	NA

TABLE I-1 (Continued)

Sample Name	Sample Matrix	PCB Field Screen Results (mg/Kg)	Adjusted Field Screen Results (mg/Kg)	Total PCB Laboratory Results (mg/Kg)
95CN048SL	Surface Soil	1.2	4.2	NA
95CN049SL	Surface Soil	6.5	12.9	NA
95CN050SL	Surface Soil	3.7	8.3	NA
95CN051SL	Surface Soil	5.3	10.8	NA
95CN052SL	Surface Soil	1.2	4.1	NA
95CN053SL	Surface Soil	9.6	17.9	NA
95CN054SL	Surface Soil	0.9	3.7	NA
95CN056SL	Surface Soil	5.0	10.3	NA
95CN057SL	Surface Soil	0.6	3.2	NA
95CN058SL	Surface Soil	1.6	4.8	18 CM
95CN059SL	Surface Soil	2.6	6.4	NA
95CN078SL	Surface Soil	>10	>10	39
95CN079SL	Surface Soil	1.9	5.3	NA
95CN080SL	Surface Soil	6.3	12.5	NA
95CN081SL	Surface Soil	0.9	3.7	NA
95CN082SL	Surface Soil	8.3	15.8	NA
95CN083SL	Surface Soil	2.8	6.8	9.3
95CN583SL*	Surface Soil	NA	NA	5.9
95CN083SL**	Surface Soil	NA	NA	8.4
95CN084SL	Surface Soil	0.7	3.4	NA
95CN085SL	Surface Soil	>10	>10	140 CM
95CN086SL	Surface Soil	0.7	3.4	0.4
95CN087SL	Surface Soil	1.0	3.8	NA
95CN088SL	Surface Soil	0.7	3.4	NA
95CN089SL	Surface Soil	4.2	9.0	27 CM
95CN110SL	Surface Soil	2.0	5.5	NA
95CN111SL	Surface Soil	0.5	3.0	NA
95CN112SL	Surface Soil	0.5	ND	1.7 CM
95CN113SL	Surface Soil	4.8	10.1	NA
95CN114SL	Surface Soil	3.3	7.6	NA
95CN116SL	Surface Soil	3.5	7.8	NA
95CN117SL	Surface Soil	1.1	3.9	NA
95CN118SL	Surface Soil	0.9	3.6	NA
95CN119SL	Surface Soil	>10	>10	NA
95CN121SL	Surface Soil	ND(0.5)	ND	1.0 CM
95CN223SL*	Surface Soil	NA	NA	0.4
95CN121SL**	Surface Soil	NA	NA	0.4
95CN124SL	Surface Soil	ND(0.5)	ND	1.3
95CN126SL	Surface Soil	1.3	4.3	NA
95CN130SL	Surface Soil	ND(0.5)	ND	0.3
95CN131SL	Surface Soil	2.1	5.7	NA

TABLE I-1 (Continued)

Sample Name	Sample Matrix	PCB Field Screen Results (mg/Kg)	Adjusted Field Screen Results (mg/Kg)	Total PCB Laboratory Results (mg/Kg)
95CN132SL	Surface Soil	1.3	4.4	1.7
95CN134SL	Surface Soil	ND(0.5)	ND	0.3
95CN135SL	Surface Soil	ND(0.5)	ND	0.2
95CN136SL	Surface Soil	ND(0.5)	ND	0.4
95CN137SL	Surface Soil	0.6	3.1	NA
95CN138SL	Surface Soil	>10	>10	0.3
95CN144SL	Surface Soil	1.2	4.1	NA
95CN145SL	Surface Soil	0.6	3.2	1.0
95CN146SL	Surface Soil	ND(0.5)	ND	1.7 J
95CN147SL	Surface Soil	ND(0.5)	ND	0.2
95CN148SL	Surface Soil	ND(0.5)	ND	0.1
95CN150SL	Surface Soil	0.9	3.6	7.7 CM
95CN151SL	Surface Soil	0.6	3.1	NA
95CN153SL	Surface Soil	2.4	6.2	NA
95CN154SL	Surface Soil	>10	>10	NA
95CN155SL	Surface Soil	2.3	5.9	NA
95CN157SL	Surface Soil	ND(0.5)	ND	0.2
95CN261SL	Surface Soil	>10	>10	NA
95CN262SL	Surface Soil	7.0	13.7	NA
95CN263SL	Surface Soil	1.5	4.7	NA
95CN264SL	Surface Soil	2.2	5.9	NA
95CN283SL	Surface Soil	2.2	5.8	NA
95CN284SL	Surface Soil	>10	>10	NA
95CN285SL	Surface Soil	1.7	4.9	NA
95CN286SL	Surface Soil	4.9	10.3	NA
95CN287SL	Surface Soil	7.6	14.6	NA
95CN289SL	Surface Soil	>10	>10	NA
95CN291SL	Surface Soil	0.8	3.4	NA
95CN348SL	Surface Soil	0.6	3.1	NA
95CN350SL	Surface Soil	1.3	4.3	NA
95CN354SL	Surface Soil	>10	>10	NA
95CN364SL	Surface Soil	3.3	7.6	NA
95CN374SL	Surface Soil	3.6	8.1	ND(0.2) CM
95CN383SL	Surface Soil	5.0	10.4	NA
95CN394SL	Surface Soil	1.3	4.3	NA
95CN397SL	Surface Soil	0.9	3.7	NA
Upper Camp Radar Dome				
95CN161SL	Surface Soil	1.9	5.4	3.3
95CN163SL	Surface Soil	0.6	3.1	NA
95CN164SL	Surface Soil	>10	>10	NA
95CN165SL	Surface Soil	5.9	11.9	NA

TABLE I-1 (Continued)

Sample Name	Sample Matrix	PCB Field Screen Results (mg/Kg)	Adjusted Field Screen Results (mg/Kg)	Total PCB Laboratory Results (mg/Kg)
95CN166SL	Surface Soil	1.3	4.4	2.6
95CN167SL	Surface Soil	4.2	9.1	9.1
95CN224SL*	Surface Soil	NA	NA	6.2
95CN167SL**	Surface Soil	NA	NA	10
95CN168SL	Surface Soil	1.2	4.2	NA
95CN169SL	Surface Soil	>10	>10	NA
95CN170SL	Surface Soil	0.6	3.2	NA
95CN171SL	Surface Soil	>10	>10	NA
95CN172SL	Surface Soil	6.8	13.3	NA
95CN173SL	Surface Soil	5.5	11.1	NA
95CN174SL	Surface Soil	5.7	11.4	NA
95CN175SL	Surface Soil	2.9	6.9	NA
95CN176SL	Surface Soil	1.1	4.0	NA
95CN177SL	Surface Soil	1.3	4.4	NA
95CN178SL	Surface Soil	1.2	4.1	NA
95CN179SL	Surface Soil	1.4	4.4	NA
95CN183SL	Surface Soil	2.1	5.7	NA
95CN185SL	Surface Soil	>10	>10	NA
95CN186SL	Surface Soil	6.4	12.6	5
95CN187SL	Surface Soil	4.8	10.1	NA
95CN188SL	Surface Soil	5.5	11.1	NA
95CN189SL	Surface Soil	>10	>10	NA
95CN190SL	Surface Soil	3.7	8.2	NA
95CN191SL	Surface Soil	2.1	5.6	NA
95CN192SL	Surface Soil	ND(0.5)	ND	4.7
95CN199SL	Surface Soil	0.8	3.6	NA
95CN200SL	Surface Soil	1.0	3.9	NA
95CN201SL	Surface Soil	0.8	3.4	NA
95CN202SL	Surface Soil	1.0	3.9	NA
95CN203SL	Surface Soil	0.7	3.3	NA
95CN204SL	Surface Soil	0.6	3.2	NA
95CN205SL	Surface Soil	0.7	3.3	NA
95CN206SL	Surface Soil	1.5	4.7	NA
95CN207SL	Surface Soil	1.0	3.9	NA
95CN208SL	Surface Soil	0.9	3.6	NA
95CN209SL	Surface Soil	2.5	6.2	NA
95CN210SL	Surface Soil	2.3	6.0	NA
95CN211SL	Surface Soil	0.9	3.7	NA
95CN212SL	Surface Soil	5.1	10.5	NA
95CN213SL	Surface Soil	1.1	4.0	2.0
95CN214SL	Surface Soil	1.8	5.2	7.6
95CN222SL*	Surface Soil	NA	NA	5.7

TABLE I-1 (Continued)

Sample Name	Sample Matrix	PCB Field Screen Results (mg/Kg)	Adjusted Field Screen Results (mg/Kg)	Total PCB Laboratory Results (mg/Kg)
95CN214SL**	Surface Soil	NA	NA	4.8
95CN215SL	Surface Soil	1.3	4.3	NA
95CN216SL	Surface Soil	0.9	3.7	NA
95CN217SL	Surface Soil	1.1	4.0	NA
95CN218SL	Surface Soil	0.7	3.3	NA
95CN219SL	Surface Soil	1.3	4.4	NA
95CN220SL	Surface Soil	2.0	5.5	1.0
95CN221SL	Surface Soil	3.0	7.1	NA
95CN236SL	Surface Soil	ND(0.5)	ND	0.2
95CN238SL	Surface Soil	ND(0.5)	ND	0.3
95CN240SL	Surface Soil	ND(0.5)	ND	0.3
95CN243SL	Surface Soil	3.5	8.0	NA
95CN244SL	Surface Soil	ND(0.5)	ND	0.6
95CN412SL*	Surface Soil	NA	NA	0.6
95CN244SL**	Surface Soil	NA	NA	1.3
95CN246SL	Surface Soil	ND(0.5)	ND	0.2
95CN248SL	Surface Soil	0.8	3.5	NA
Upper Camp Walkway				
95CN060SL	Surface Soil	1.0	3.9	10
95CN061SL	Surface Soil	>10	>10	NA
95CN062SL	Surface Soil	>10	>10	NA
95CN064SL	Surface Soil	1.9	5.3	NA
95CN065SL	Surface Soil	0.7	3.3	NA
95CN066SL	Surface Soil	3.3	7.5	NA
95CN067SL	Surface Soil	>10	>10	45
95CN068SL	Surface Soil	0.7	3.3	1.7
95CN069SL	Surface Soil	3.0	7.0	NA
95CN071SL	Surface Soil	0.5	3.1	NA
95CN072SL	Surface Soil	1.5	4.7	NA
95CN074SL	Surface Soil	1.0	3.8	NA
95CN075SL	Surface Soil	0.6	3.1	NA
95CN077SL	Surface Soil	ND(0.5)	ND	1.1
95CN090SL	Surface Soil	5.6	11.3	NA
95CN091SL	Surface Soil	1.0	3.8	2.1 CM
95CN591SL*	Surface Soil	NA	NA	2.1 CM
95CN091SL**	Surface Soil	NA	NA	1.8
95CN092SL	Surface Soil	9.6	17.9	NA
95CN093SL	Surface Soil	>10	>10	NA
95CN094SL	Surface Soil	0.6	3.2	NA
95CN095SL	Surface Soil	2.0	5.5	5
95CN096SL	Surface Soil	>10	>10	NA
95CN097SL	Surface Soil	1.1	4.0	NA

TABLE I-1 (Continued)

Sample Name	Sample Matrix	PCB Field Screen Results (mg/Kg)	Adjusted Field Screen Results (mg/Kg)	Total PCB Laboratory Results (mg/Kg)
95CN098SL	Surface Soil	0.9	3.7	0.5
95CN099SL	Surface Soil	1.7	5.0	NA
95CN100SL	Surface Soil	1.3	4.4	NA
95CN101SL	Surface Soil	1.9	5.3	NA
95CN102SL	Surface Soil	4.0	8.8	NA
95CN103SL	Surface Soil	2.1	5.7	NA
95CN104SL	Surface Soil	1.0	3.8	NA
95CN107SL	Surface Soil	ND(0.5)	ND	0.2
Upper Camp Electrical Substation				
95CN258SL	Surface Soil	>10	>10	500
95CN259SL	Surface Soil	>10	>10	NA
Pond Results				
95CN265SD	Sediment	ND(0.5)	ND	ND(0.8) CM
95CN265SD*	Sediment	NA	NA	ND(0.7)
95CN266SD	Sediment	ND(0.5)	ND	NA

* - Sample is a duplicate of the preceding sample number.
** - Sample is a triplicate of the preceding sample number.
CM – Reporting limit elevated due to low percent solids.
mg/Kg – milligrams per kilogram
NA – Not analyzed
ND ( ) – Not detected (detection limit)
NC – Not collected
PCB – Polychlorinated bipheyls

The cap was constructed with earthen material placed on top of a permeable geotextile liner and compacted. The cap covers the flat area around the radar dome, covers the former electrical substation foundation, and the adjacent parking area. The north side of Upper Camp consists of a 30° slope of loose rock debris for approximately one-quarter of a mile. Upper Camp area is underlain by poorly sorted coarse talus on steep slopes over bedrock. For these reasons, the cap was not extended down the steep mountain slope of Upper Camp. No remedial action was implemented to address the PCB-contaminated soils located down slope from the capped area due to the extreme terrain and climatic conditions which made use of machinery and work in that area unsafe. Further, the terrain and steep nature of the mountainside would promote erosion processes, and an earthen cap would be difficult or impossible to maintain. Though PCB-contaminated soils remain at Upper Camp, it has been determined that long-term monitoring for PCB-migration, inspection and cap maintenance, and institutional controls are adequate to address the contamination remaining beneath the existing cap. A detailed, comprehensive review of monitoring and inspection results from the long-term monitoring and inspection activities will also occur every five years. Table I-2 contains a summary of PCB sample results collected as part of the long-term monitoring program. Figures 6 through 9 in Part II of this decision document contain sample location information. A risk assessment conducted in 1997 and second qualitative assessment performed in conjunction with long-term monitoring results have indicated no unacceptable risk to human health or the environment is present at SS07.

Table I-2

Summary of PCB Sampling Results, 1996 – 1999 Long Term Monitoring Cape Newenham LRRS

Location	1996 Total PCBs (mg/Kg)	1997 Total PCBs (mg/Kg)	1998 Total PCBs (mg/Kg)	1998 611CES Total PCBs (mg/Kg)	1999 Total PCBs (mg/Kg)
Beach Site 2 Sampling					
Beach No. 2 – Sample 1	ND (0.035)	ND (0.034)	ND (0.038)	ND (0.033)	ND (0.0311)
Beach No. 2 – Sample 2	ND (0.034)	ND (0.035)	ND (0.039)	ND (0.034)	ND (0.0378)
Beach No. 2 – Sample 3	ND (0.035)	NC	NC	NC	ND (0.0313)
Beach Site 1 Sampling					
Beach No. 1 – Sample 4	ND (0.035)	ND (0.035)	ND (0.035)	NC	ND (0.0335)
Beach No. 1 – Sample 5	ND (0.035)	ND (0.034)	ND (0.035)	NC	ND (0.0325)
Beach No. 1 – Sample 6	ND (0.034)	ND (0.035)	ND (0.034)	NC	ND (0.0320)
Beach No. 1 – Sample 6 (dup.)	ND (0.034)	ND (0.035)	ND (0.034)	NC	NC
Pond Sediments Sampling					
Pond No. 1 – Sample 1	NC	ND (0.42)	ND (0.37)	ND (.527)	ND (0.0304)
Pond No. 1 – Sample 1 (dup)	NC	NC	NC	NC	ND (0.0416)
Pond No. 2 – Sample 2	NC	ND (0.37)	ND (0.13)	ND (.537)	ND (0.0473)
Pond No. 3 – Sample 3	NC	ND (0.28)	ND (0.42)	ND (.458)	ND (0.0492)
Pond No. 3 – Sample 3 (dup.)	NC	NC	ND (0.42)	ND (.422)	NC
Mountainside Sampling					
Mountainside – Sample 1	NC	4.6*	0.58	2.9	1.34
Mountainside – Sample 1 (dup)	NC	NC	NC	NC	0.839
Mountainside – Sample 2	NC	29	120	14.6	2.78
Mountainside – Sample 3	NC	4600	1.2	2040	300
Mountainside – Sample 4	NC	49	2.4	32.9	2.10
Mountainside – Sample 4 (dup.)	NC	29	NC	13.9	NC
Mountainside – Sample 5	NC	140	3.2	0.323	0.383
Mountainside – Sample 6	NC	1.5*	12.0*	32.9	0.571

PCB – Polychlorinated bipheyls
ND ( ) – Not detected (detection limit)
NC – Not collected
Total PCBs represents Arochlor 1260 unless noted (*)
* - Value represents Arochlors 1254 and 1260
Note: Beach and pond samples were collected in approximately the same locations in all years and are directly comparable. The 1998 611 CES mountainside samples were collected about 80 feet northwest (downgradient) of the 1997 samples.

DESCRIPTION OF THE SELECTED REMEDY

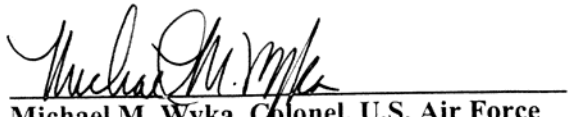
Based on the information generated from the investigations, the comparative analysis of alternatives, and the interim action performed, the selected remedy includes annual inspection and maintenance of the existing cap, long-term monitoring at established down-gradient locations, and implementation of institutional controls to prevent exposure to the remaining PCB-contamination. A detailed, comprehensive review of monitoring and inspection results from the long-term monitoring and inspection activities will occur every five years.

Under this alternative, the Air Force will maintain long-term ownership of the site and take responsibility for inspecting and maintaining the existing cap at SS07. Placement of warning and restricted access signs will limit human access. The site will be restricted from future uses that would affect the integrity of the cap (e.g., excavation, residential/commercial development). The site will be inspected annually to ensure the integrity of the cap and the condition of warning signs. Cap and sign maintenance will be performed as necessary based on the results of the visual inspection. Institutional controls will consist of notation on land records that will be reviewed during a title search of required land use restrictions and notation in the facility base master plan. These will include notification that the land has been used for PCB-waste disposal, and certain restrictions apply to the future use of the property. Further, the notification will include a comprehensive record of the capped area survey, the signage and cap maintenance requirements, applicable cleanup levels, and documentation of location and corresponding levels of PCBs present in the area.

DECLARATION AND STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with federal and state requirements that are legally applicable or relevant and appropriate, and is cost-effective. The statutory preference for treatment is not satisfied because treatment was not found to be practical. Contaminant levels at the site have been determined to not present an unacceptable threat to human health or the environment, provided the cap and institutional controls are maintained and long-term monitoring is continued; thus, no treatment is required.

This signature sheet documents the Air Force and the acceptance of the decision made for SS07, Cape Newenham LRRS, Alaska. The Alaska Department of Environmental Conservation (ADEC) agrees with the Air Force's selected remedy as the most technically feasible method of addressing PCB contamination at the Upper Camp (SS07) at this time; however, under section 18 AAC 75.380(d)(1) of the site cleanup rules, the decision may be reviewed and modified in the future if new information becomes available which indicates the presence of previously undiscovered contamination or exposure routes that may cause a risk to human health or the environment.



Michael M. Wyka, Colonel, U.S. Air Force
Commander, 611th Air Support Group

30 MAR 01
Date

Jennifer Roberts
Alaska Department of Environmental Conservation

March 6 2001
Date

Part II
DECISION SUMMARY

1.0 SITE NAME, LOCATION, AND DESCRIPTION

Cape Newenham LRRS is a small coastal peninsula located 460 miles southwest of Anchorage. Cape Newenham LRRS is located on 2,300 acres of Air Force property within the Togiak National Wildlife Refuge and is bordered by Bristol Bay to the south and Kuskokwim Bay to the north. The location is remote and accessible only by air or sea. The nearest community is Platinum (population, 55), located approximately 30 miles north of the LRRS on Goodnews Bay. Figure 1 presents the location and vicinity of the installation and Platinum, Alaska.

The Cape Newenham LRRS was one of the original Aircraft Control and Warning sites constructed as part of the establishment of a permanent air defense system to provide radar coverage over a segment of Alaska's west coast. The Cape Newenham LRRS installation was constructed in the early 1950s, with the Aircraft Control and Warning system at Upper Camp becoming operational in 1954.

Initially, the Cape Newenham LRRS installation provided living quarters for a permanent force of approximately 100 military personnel. In 1977, a contractor was hired to provide support services using civilians, eliminating many military positions. Installation of Joint Surveillance System equipment in 1982 enabled radar and beacon data to be transmitted directly via satellite to Elmendorf Air Force Base, eliminating the remaining military positions and permitted total operation by the independent contractors. Today, four people live at the site and reside at the Lower Camp in the composite building (Air Force, 1997c). The current military mission of the Cape Newenham LRRS is the continued operation of the Minimally Attended Radar as part of the SEEK IGLOO Program that performs aircraft control and warning missions in Alaska (Air Force, 1999b).

The facility is expected to remain a Minimally Attended Radar station under the control of the Air Force. Future residential use is highly unlikely due to its remote location. Subsistence activities are not known to occur on the property due to the installation's distance from local populations and inaccessibility to regional residents.

The LRRS is divided into two areas, Upper Camp and Lower Camp. Upper Camp contains the radar dome facility and is connected to the Lower Camp by a road and tramway. Upper Camp is situated on a mountaintop at an elevation of approximately 2,000 feet. The southern tip of the mountaintop consists of steep cliffs and rocky outcroppings. The north side of Upper Camp consists of a 30° slope of loose rock debris for approximately one-quarter of a mile. Upper Camp area is underlain by poorly sorted coarse talus on steep slopes over bedrock. Climate conditions are generally cold and windy, with wind gusts recorded as high as 140 miles per hour. The combinations of topographical and climatic conditions make Upper Camp area very inhospitable.

Several unnamed surface water drainages are located within the installation boundaries. Surface water from Upper Camp drains down slope into available receiving drainages including a small pond about 1.5 miles northwest of Upper Camp. The upper valley at the LRRS is the principal recharge zone of groundwater for the installation. Drinking water at the LRRS is obtained from a gallery water collection system installed at Lower Camp.

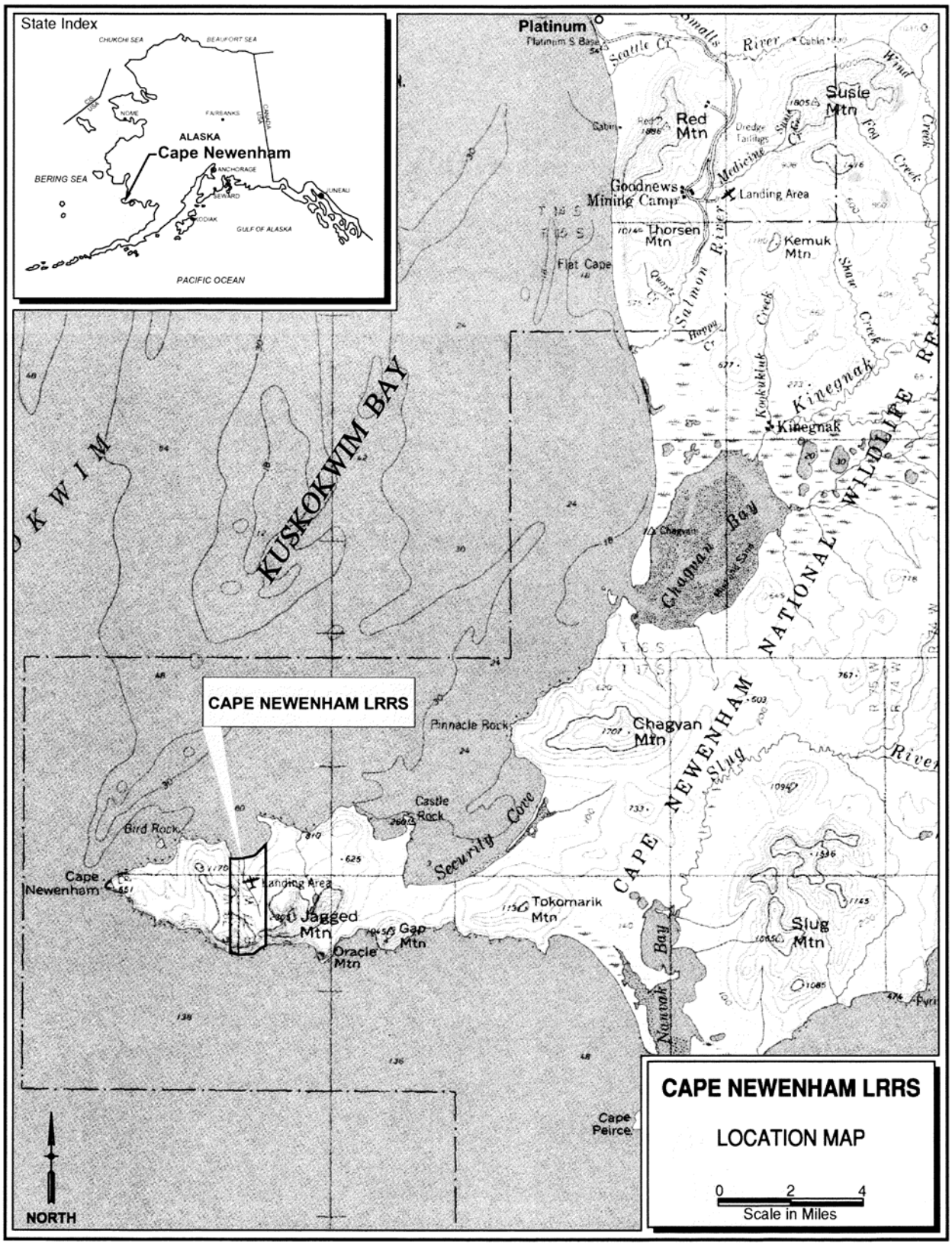


Figure 1. Regional Location Map for Cape Newenham LRRS, Alaska

PCBs at Upper Camp were historically used in transformers at the former electrical substation. PCBs were first detected in soil near the electrical substation in 1988. The mountainside area was reportedly used from the 1950s to the 1970s to dump debris related to Upper Camp activities including ethylene glycol (antifreeze) and water drained from radar units, waste oil in containers, and scrap metal. Based on PCB-contamination in the soil at SS07, the site was designated as IRP site SS07. SS07 encompasses all of the Upper Camp (see Figure 2).

2.0 SITE INVESTIGATION AND REGULATORY ENFORCEMENT ACTIVITIES

Prior to 1988, SS07 had not been inspected for possible contamination. During a site inspection in 1988 by the United States Fish and Wildlife Service (USFWS), high levels of PCBs were discovered in the soil. The PCB contamination resulted from historic dumping of PCB waste oils from the electrical substation onto the ground surface. Contaminated building materials in the electrical substation were thought to have resulted from waste management practices and small spills. Transformers and other equipment were disposed of by dumping them off the cliff at Upper Camp.

2.1 Site Investigations

2.1.1 Site Investigation, 1989

In 1988, the USFWS performed a soil investigation at SS07. The results revealed elevated levels of PCBs in the soil with a maximum concentration of 3,096 ppm in one sample collected adjacent to the entrance of the electrical substation building. The USFWS recommended the site undergo further evaluation (Air Force, 1999b).

2.1.2 Remedial Investigation/Feasibility Study and Final Technical Document to Support a Remedial Action Alternative, 1991

Based upon the USFWS 1989 recommendation, a Remedial Investigation/Feasibility Study (RI/FS) was conducted in 1990 at SS07. A sampling grid around the areas sampled previously by the USFWS was established, and 63 soil samples were collected from 19 grid areas for laboratory analysis. Samples were collected at two depth intervals, 8 inches and 14 to 16 inches below ground surface (bgs). Results from these samples indicated that PCBs were present in shallow soils to a depth of at least 14 to 16 inches at levels above 10 ppm. The volume of contaminated soils was estimated to be 13 cubic yards (Air Force, 1996b).

2.1.3 Engineering Evaluation/Cost Analysis for PCB-Contamination at the Upper Camp (SS07), 1995

In 1994, further testing was conducted at SS07. A total of 141 field screening samples and 26 laboratory samples were analyzed for PCBs. Based on this new data set, the area of contaminated soil was expanded to include approximately 46,500 square feet with a depth of four feet (depth to bedrock) in the area near the substation. Contamination decreased with distance from the substation. An Engineering Evaluation/Cost Analysis (EE/CA) examined four alternatives, including no action, barrier to restrict access to the site, capping of the area, and removal and disposal of PCB-contaminated soils. The EE/CA recommended capping of the contaminated soils with a permeable earthen cap in the flat area where heavy equipment could be operated safely (Air Force, 1995).

2.1.4 Remedial Investigation of PCBs at Upper Camp (SS07), 1996

The objective for this RI was to provide a more accurate delineation of the aerial extent of PCB-contamination in the surface soil, assess if subsurface or overland migration of PCBs had occurred, and determine the extent of contamination on the outer building surfaces. The investigation divided SS07 into five study areas: the main area, radar dome, electrical substation, walkway, and the pond. The main area included the flat area east of the radar dome and substation building and extended east-northeast down the mountain side. The radar dome is an active facility at the easternmost edge of SS07. Sampling at

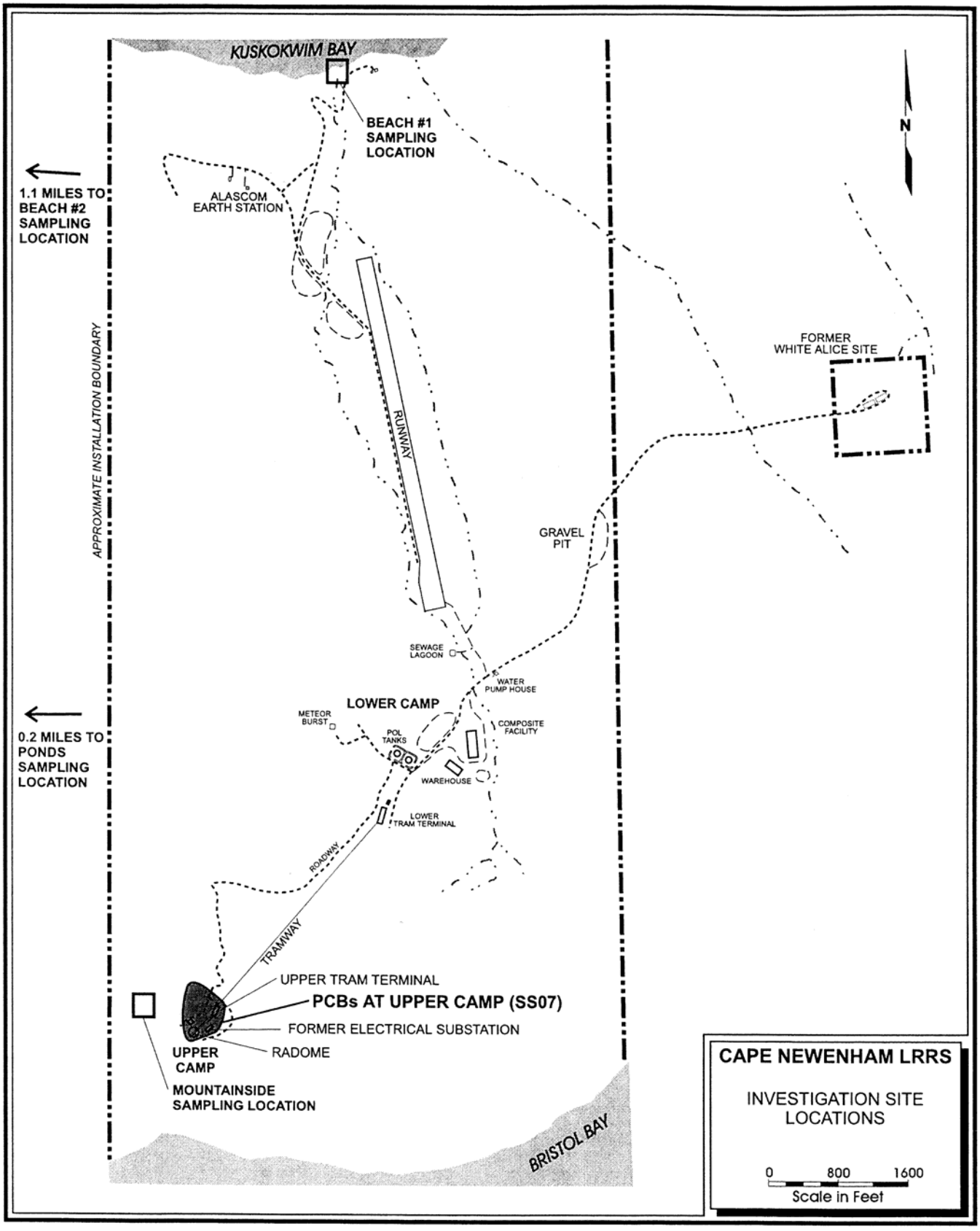


Figure 2. Location of Investigation Sites at Cape Newenham LRRS, Alaska

the radar dome focussed on determining the presence of PCBs on building surfaces and their immediate surroundings. The walkway connects the radar dome with the upper tramway building. Sampling in this area was also to confirm if PCBs were present in building materials and the structure foundation. The electrical substation had a dirt floor foundation, and samples were collected to determine if PCBs were present in the floor, in building materials, and its immediate vicinity. The pond is located approximately 1.5 miles down-gradient from SS07. Sampling at the pond was conducted to evaluate migration of contaminants off-site. No PCBs were detected in sediments at the pond (Air Force, 1996b).

Results from the investigation determined that 15,500 square feet contained PCBs greater than 10 ppm. The most contaminated area was in the topographically flat main area north of the radar dome. An isolated surface soil sample contained 13,000 ppm PCBs. The sample was collected near the break in slope northwest of the former substation in an area later covered by the cap. Smaller isolated areas on the steeper mountainside northwest of the radar dome also contained levels greater than 10 ppm. A diagram of PCB soil sampling locations and results is included in Figures 3 through 5. The RI concluded that some form of remedial action was necessary (Air Force, 1996b).

2.1.5 Remedial Action Report, Cap Construction (SS07), 1996

In response to the recommendation in the RI, an interim remedial action to cap the PCB-contaminated area was performed at SS07. In addition, the PCB-contaminated electrical substation building was demolished, and the radar tower piers were removed and replaced. Additional sampling was conducted to further delineate the extent of PCB-contamination in relation to the radar tower piers and footings. Debris from the radar dome containing PCB-concentrations greater than 50 ppm were manifested and shipped off-site for disposal. The cap covered soil containing PCB-concentrations greater than 10 ppm in the flat area around the radar dome, former substation and Upper Camp tramway building. The cap varied somewhat in thickness, with a minimum depth of two feet of cover material placed over a permeable geotextile fabric. The cap was not extended off the flat area onto the steep slope of the mountain side due to the inability of heavy equipment to operate safely in those areas (Air Force, 1996c). Further, the terrain and steep nature of the mountainside would promote erosion processes, and an earthen cap would be difficult or impossible to maintain.

2.1.6 Human Health and Ecological Risk Assessment at Upper Camp (SS07), 1997

A human health and ecological risk assessment was performed in conjunction with the 1995 RI. Sample results from the RI were used to determine risk levels. The excess lifetime cancer risk (i.e. the number of additional people who would get cancer) due to exposure to PCBs was calculated to be less than 1 in one million. Therefore, no unacceptable risk to human health is present at SS07.

The assumed exposure for the ecological risk assessment was performed for two selected receptors, the least weasel and Peales peregrine falcon. Risk to these selected receptors was below the acceptable hazard quotient of 1.0. This indicates the risk from Aroclor 1260 to populations of mammalian predators and raptors is highly unlikely (Air Force, 1997b). A more detailed description of findings from the human health and ecological risk assessments is included in Section 3.1.

2.1.7 Long-Term Monitoring, 1996 through 2000

Long-term monitoring was conducted to evaluate possible PCB-migration after the cap was placed. Sampling was conducted each year between 1996 and 2000. Soil sampling was conducted on the mountainside north of SS07, and sediment samples were collected from a group of shallow ponds downhill and northwest of SS07, a beach area near the north end of the runway, and a cove beach in the northwest coast of the cape. No PCBs were found at the ponds or at either beach. Care was taken each year to collect samples from the same location as the previous years. Two sets of analytical samples were collected in 1998. The second set of 1998 mountainside soil samples were collected downgradient from the first set of mountainside samples. The second set of results had significantly lower PCB levels. A diagram of sampling locations from 1996 through 1999 are included in Figures 6 through 9.

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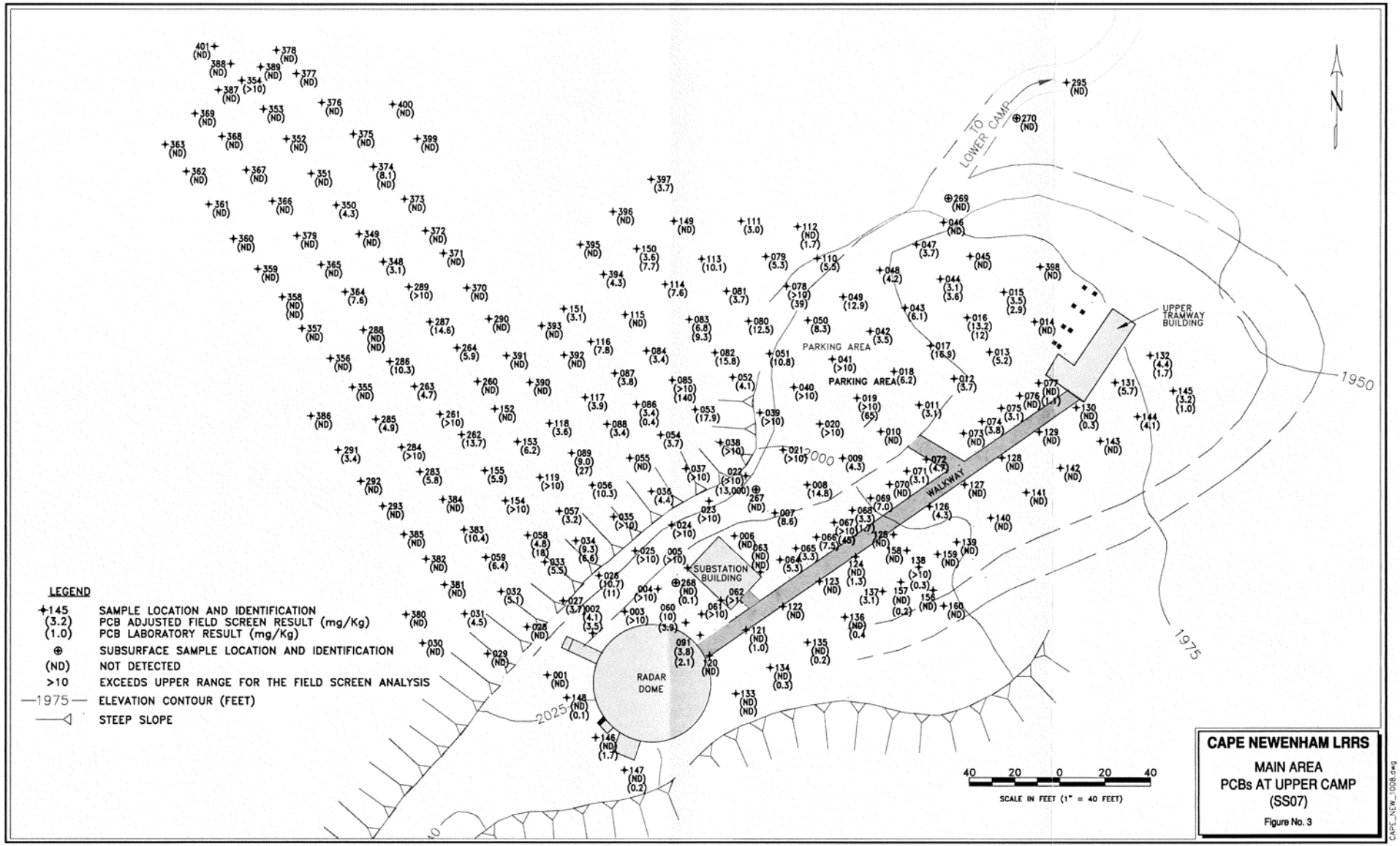
LEGEND
+145 SAMPLE LOCATION AND IDENTIFICATION
(3.2) PCB ADJUSTED FIELD SCREEN RESULT (mg/Kg)
(1.0) PCB LABORATORY RESULT (mg/Kg)
⊕ SUBSURFACE SAMPLE LOCATION AND IDENTIFICATION
(ND) NOT DETECTED
>10 EXCEEDS UPPER RANGE FOR THE FIELD SCREEN ANALYSIS
—1975— ELEVATION CONTOUR (FEET)
STEEP SLOPE
TO LOWER CAMP
UPPER TRAMWAY BUILDING
PARKING AREA
PARKING AREA
WALKWAY
SUBSTATION BUILDING
RADAR DOME
1950
2000
2025
1975
N
40 20 0 20 40
SCALE IN FEET (1" = 40 FEET)
CAPE NEWENHAM LRRS
MAIN AREA
PCBs AT UPPER CAMP
(SS07)
Figure No. 3
CAPE_NEW_1008.dwg

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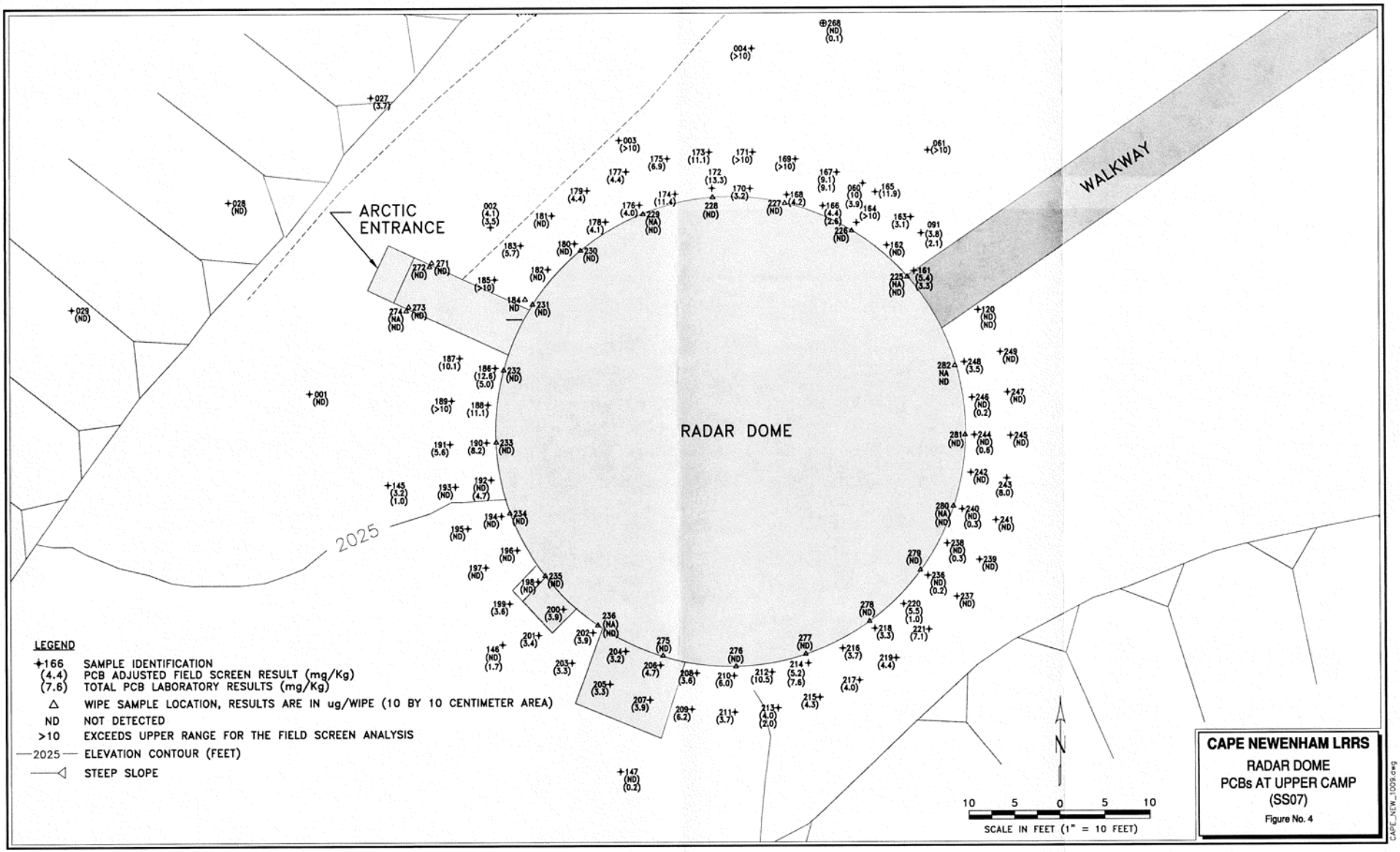
ARCTIC ENTRANCE
WALKWAY
RADAR DOME
2025
LEGEND
+166 SAMPLE IDENTIFICATION
(4.4) PCB ADJUSTED FIELD SCREEN RESULT (mg/Kg)
(7.6) TOTAL PCB LABORATORY RESULTS (mg/Kg)
△ WIPE SAMPLE LOCATION, RESULTS ARE IN ug/WIPE (10 BY 10 CENTIMETER AREA)
ND NOT DETECTED
>10 EXCEEDS UPPER RANGE FOR THE FIELD SCREEN ANALYSIS
—2025— ELEVATION CONTOUR (FEET)
STEEP SLOPE
N
10 5 0 5 10
SCALE IN FEET (1" = 10 FEET)
CAPE NEWENHAM LRRS
RADAR DOME
PCBs AT UPPER CAMP
(SS07)
Figure No. 4
CAPE_NEW_1009.dwg

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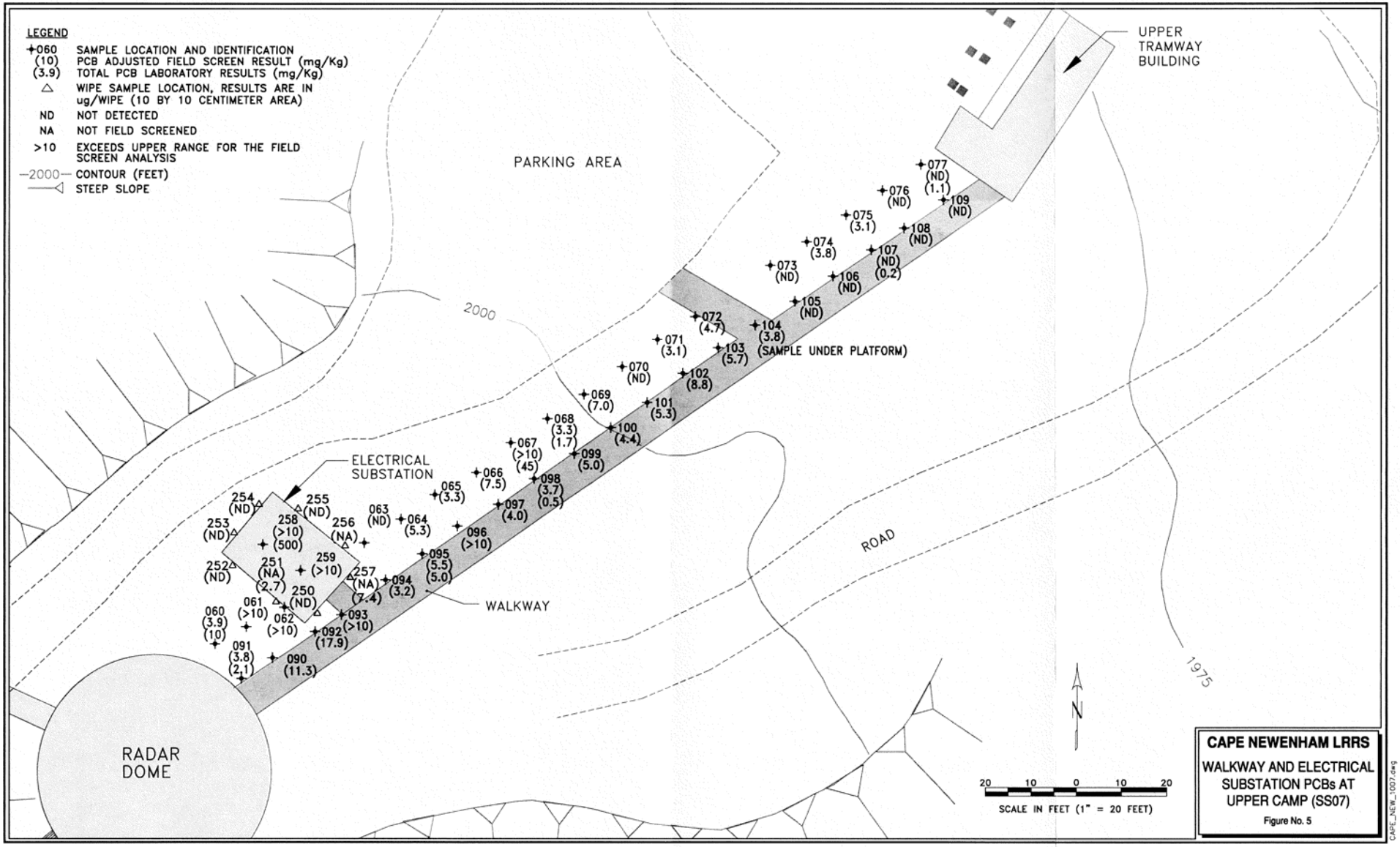
LEGEND
+060 SAMPLE LOCATION AND IDENTIFICATION
(10) PCB ADJUSTED FIELD SCREEN RESULT (mg/Kg)
(3.9) TOTAL PCB LABORATORY RESULTS (mg/Kg)
△ WIPE SAMPLE LOCATION, RESULTS ARE IN ug/WIPE (10 BY 10 CENTIMETER AREA)
ND NOT DETECTED
NA NOT FIELD SCREENED
>10 EXCEEDS UPPER RANGE FOR THE FIELD SCREEN ANALYSIS
—2000— CONTOUR (FEET)
STEEP SLOPE
UPPER TRAMWAY BUILDING
PARKING AREA
2000
ELECTRICAL SUBSTATION
WALKWAY
ROAD
1975
RADAR DOME
(SAMPLE UNDER PLATFORM)
N
20 10 0 10 20
SCALE IN FEET (1" = 20 FEET)
CAPE NEWENHAM LRRS
WALKWAY AND ELECTRICAL SUBSTATION PCBs AT UPPER CAMP (SS07)
Figure No. 5
CAPE_NEW_1007.dwg

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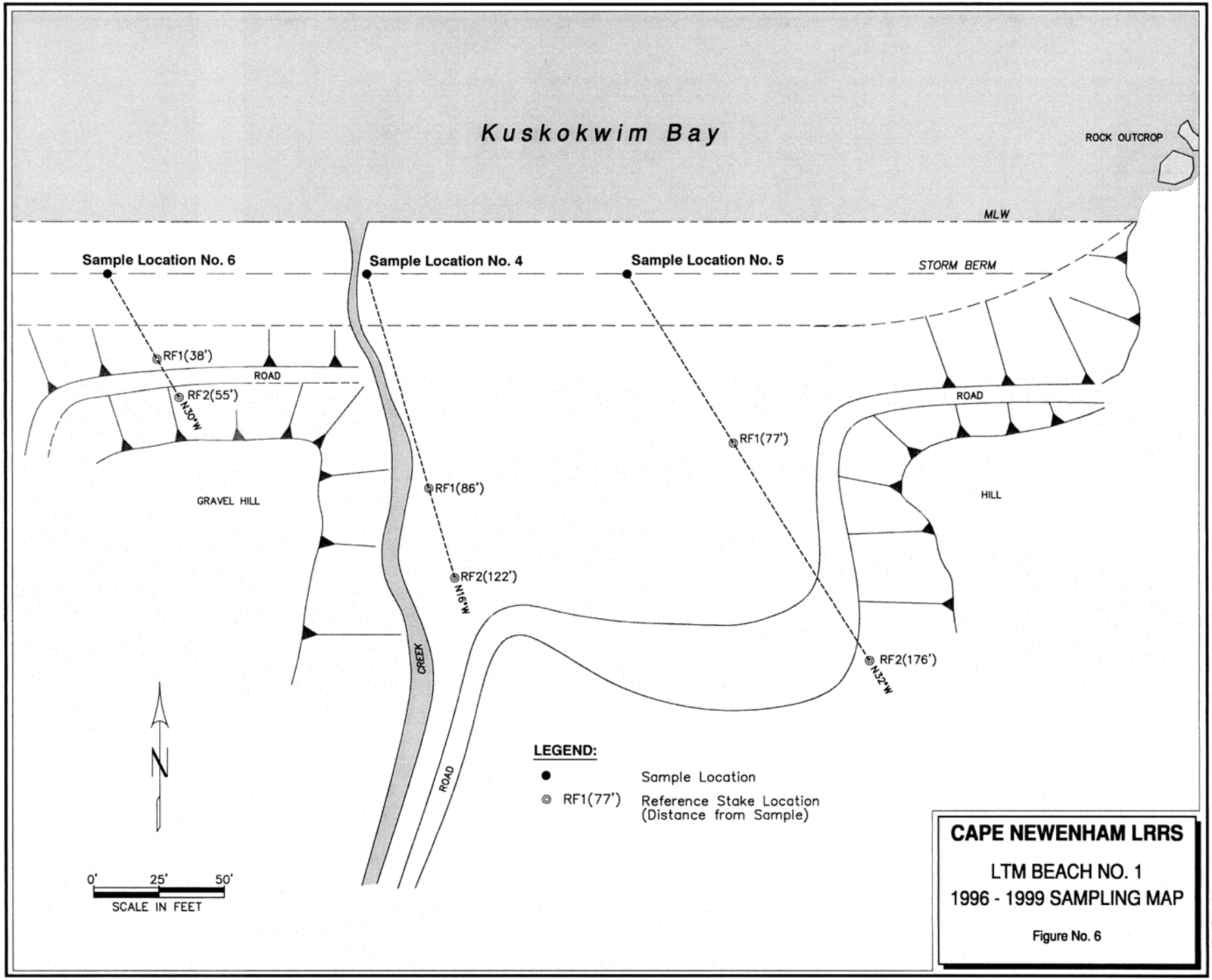
Kuskokwim Bay
ROCK OUTCROP
MLW
STORM BERM
Sample Location No. 6
Sample Location No. 4
Sample Location No. 5
RF1(38')
RF2(55')
N30°W
ROAD
GRAVEL HILL
RF1(86')
RF2(122')
N16°W
CREEK
ROAD
RF1(77')
ROAD
HILL
RF2(176')
N32°W
N
0' 25' 50'
SCALE IN FEET
LEGEND:
Sample Location
RF1(77') Reference Stake Location (Distance from Sample)
CAPE NEWENHAM LRRS
LTM BEACH NO. 1
1996 - 1999 SAMPLING MAP
Figure No. 6
CAPE_NEW_1011.dwg

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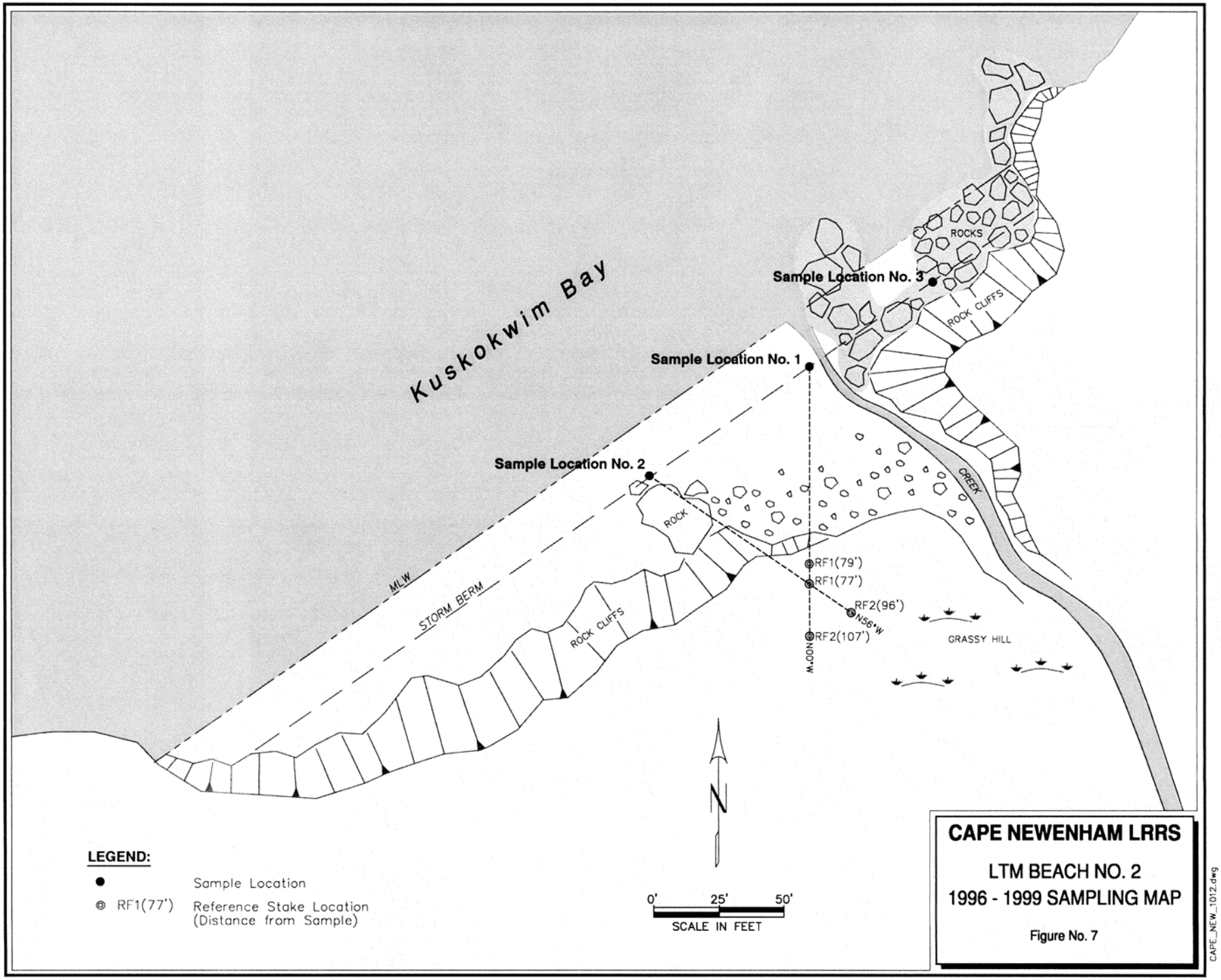
Kuskokwim Bay
Sample Location No. 3
Sample Location No. 1
Sample Location No. 2
ROCKS
ROCK CLIFFS
CREEK
ROCK
MLW
STORM BERM
ROCK CLIFFS
RF1(79')
RF1(77')
RF2(96')
N56°W
RF2(107')
N00°W
GRASSY HILL
N
0' 25' 50'
SCALE IN FEET
LEGEND:
Sample Location
RF1(77') Reference Stake Location (Distance from Sample)
CAPE NEWENHAM LRRS
LTM BEACH NO. 2
1996 - 1999 SAMPLING MAP
Figure No. 7
CAPE_NEW_1012.dwg

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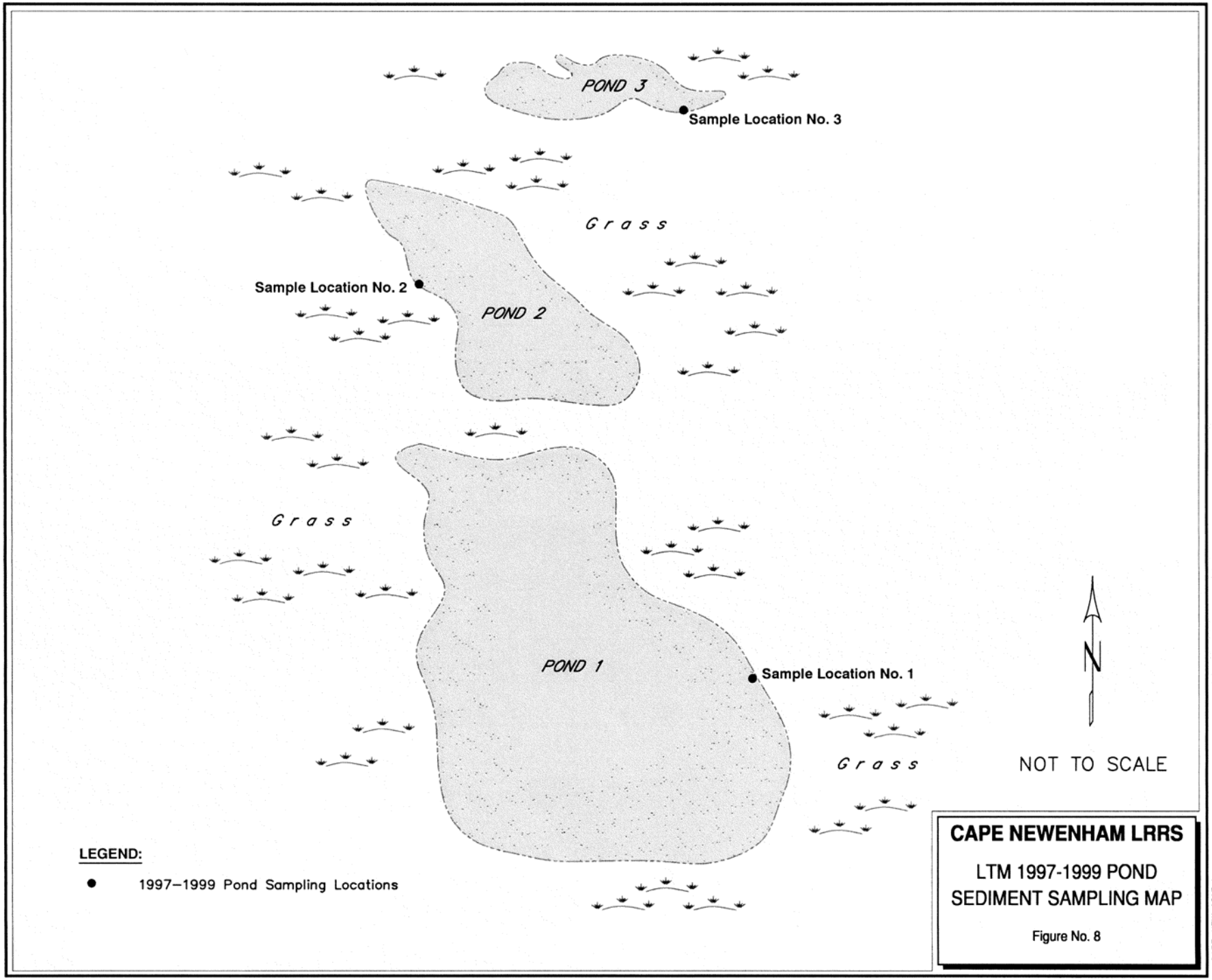
POND 3
Sample Location No. 3
Grass
Sample Location No. 2
POND 2
Grass
POND 1
Sample Location No. 1
Grass
N
NOT TO SCALE
LEGEND:
1997–1999 Pond Sampling Locations
CAPE NEWENHAM LRRS
LTM 1997-1999 POND SEDIMENT SAMPLING MAP
Figure No. 8
CAPE_NEW_1013.dwg

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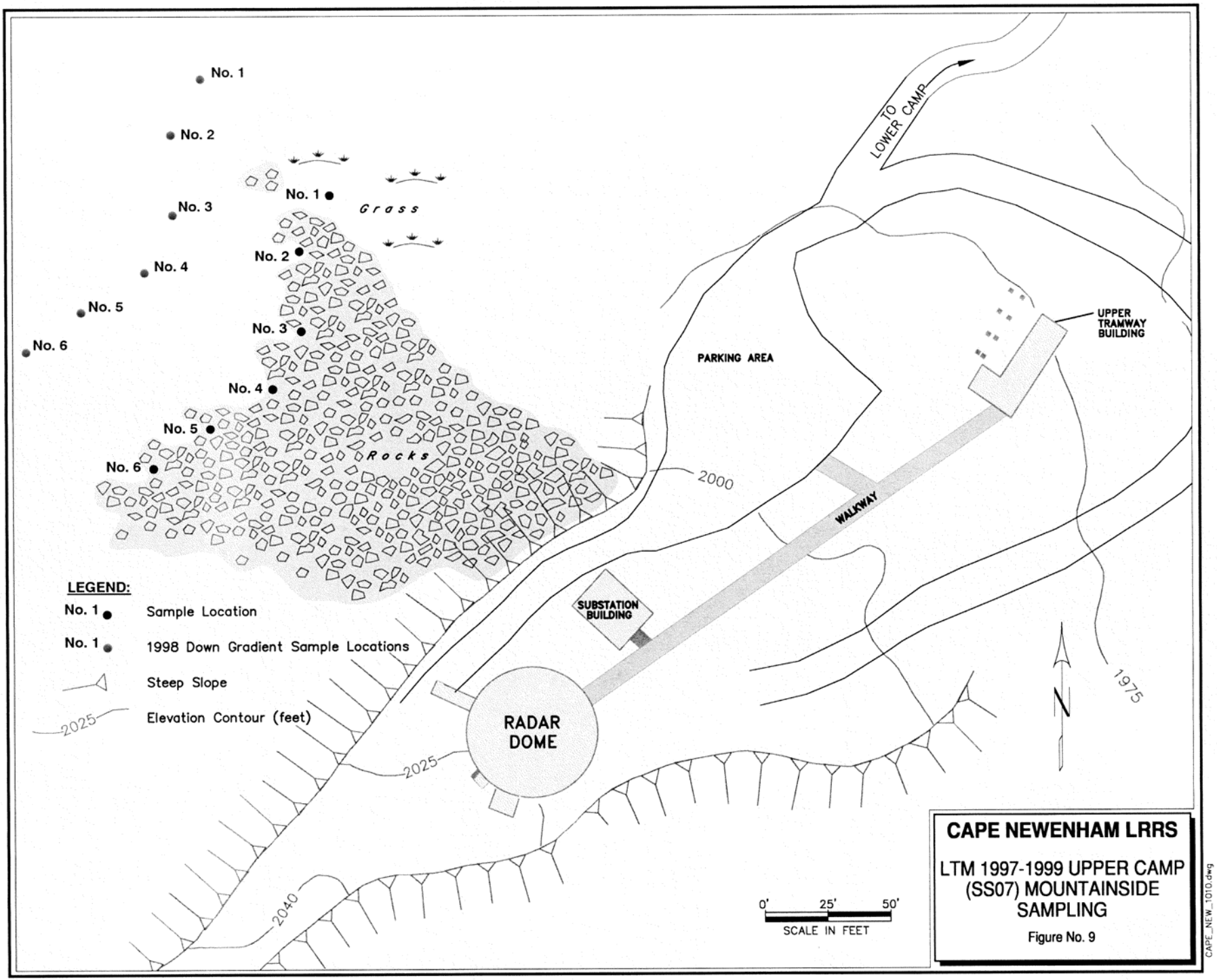

No. 1
No. 2
No. 3
No. 4
No. 5
No. 6
Grass
Rocks
TO LOWER CAMP
UPPER TRAMWAY BUILDING
PARKING AREA
WALKWAY
SUBSTATION BUILDING
RADAR DOME
2000
2025
2040
1975
LEGEND:
Sample Location
1998 Down Gradient Sample Locations
Steep Slope
Elevation Contour (feet)
0' 25' 50'
SCALE IN FEET
CAPE NEWENHAM LRRS
LTM 1997-1999 UPPER CAMP (SS07) MOUNTAINSIDE SAMPLING
Figure No. 9
CAPE_NEW_1010.dwg

Sampling was also performed in September 2000, however analytical results were unavailable at the time this document was published (Air Force, 1996a, 1997a, 1999a, 2000).

2.1.8 1998 Long-Term Monitoring Baseline Survey

In addition to sampling for long-term monitoring in relation to migration of PCBs off-site, survey data was collected to use in the future to determine the stability of the cap. From this data, an as-built contour map was developed of the capped area for future comparison. This diagram is presented in the *1998 Trip Report for Long-Term Monitoring* and is available in the administrative record. As part of the inspection that is completed each year, the cap is inspected for signs of erosion, and signs that may indicate the integrity of the cap has been compromised. Signs and sample location markers are also inspected to ensure none are missing or damaged. Monitoring results show that PCB-concentrations have decreased to non-detectable levels within 200 feet of the slope break (Air Force, 1999a).

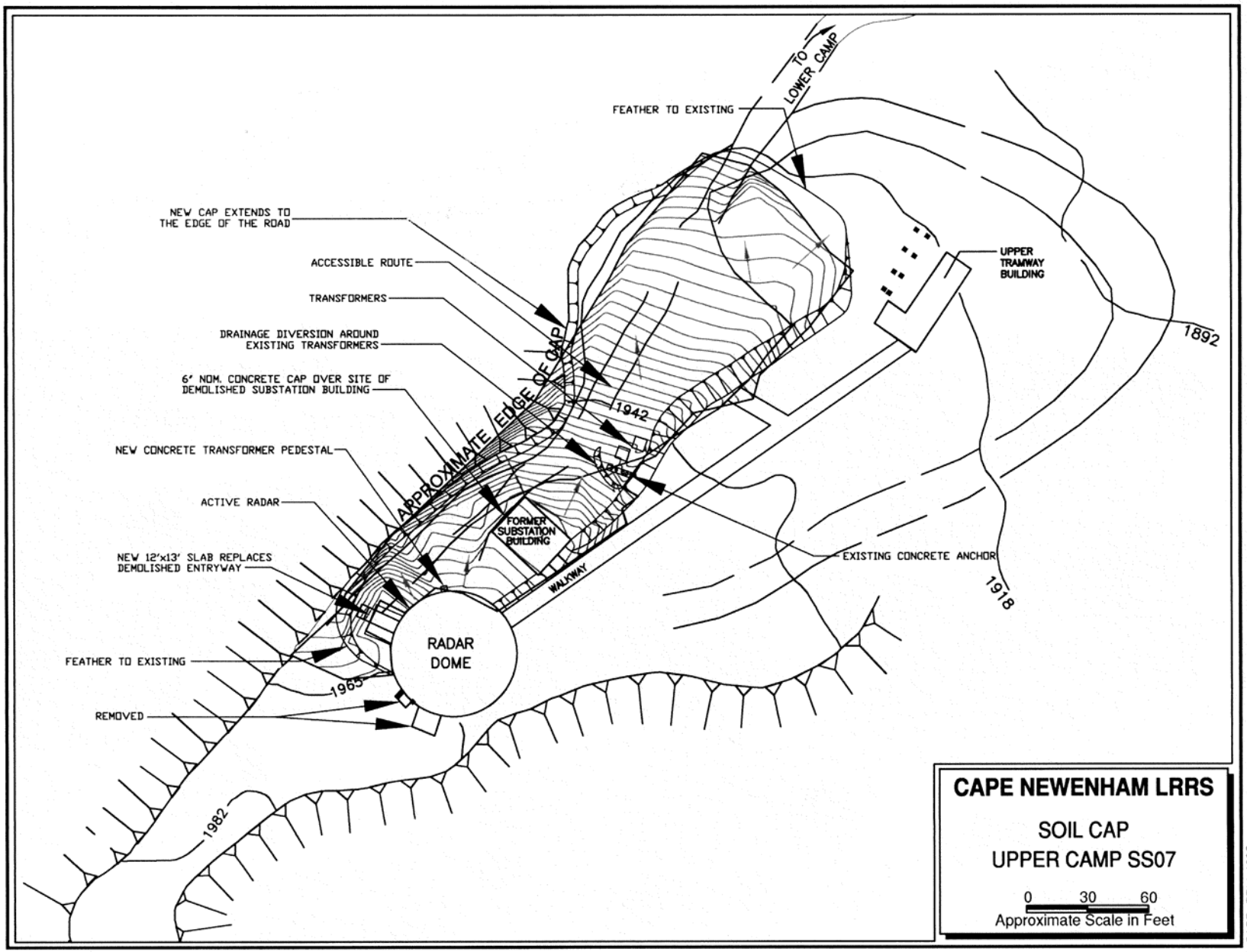
2.2 Regulatory Enforcement Activities

In 1996, the Air Force capped the level PCB-contaminated area at SS07. No interim action was recommended for the mountainside area of SS07 because the PCB-contaminated soil is not accessible by earth moving equipment. Because PCBs adhere to soil and rocks and do not dissolve in or flow with water, PCBs will most likely not move away from the site. The mountainside area with PCBs is on a rocky 30-foot slope that is not easy to access. The area consists of loose lichen-covered cobbles and rocks with very little soil. Any further PCB movement should be small and not affect surface water or groundwater. Figure 10 depicts the level capped area and the uncapped mountainside area. In addition to the cap construction, the PCB-contaminated electrical substation building was demolished, and the radar tower piers were removed and replaced. Additional sampling was performed to further delineate the extent of PCB-contamination in relation to the radar tower piers and footings. During cap construction, samples were collected from soils and building materials and analyzed for PCBs. Seven test pits were excavated, and samples were collected at surface and two-foot intervals below the ground surface. Analytical results for these samples are summarized in Table II-1. Test pit locations corresponded to building concrete footing locations and were dug to characterize any PCB lateral migration. A diagram of test pit locations is included in Figure 11 (Air Force, 1996c).

Only one test pit sample indicated PCB levels above 10 ppm at the surface. This pit was excavated within the boundaries of the capped area, and has since been covered by the protective cap. The remaining soil samples were below the regulatory action level of 10 ppm.

Long-term monitoring was conducted in an effort to evaluate whether, after placement of the cap, PCBs at SS07 were migrating to potentially sensitive areas of the installation. Soil and sediment sampling was conducted annually between 1996 and 2000 (Air Force, 1996a; 1997a; 1999a, and 2000). Soil samples were collected on the mountainside area down gradient of SS07 to the north, and sediment samples were collected from a group of shallow ponds hydraulically down-gradient to the north of SS07, a beach area near the north end of the runway, and a cove beach in the northwest coast of the cape.

No PCBs were detected at the group of ponds or at either beach sampled in any year. The 1997, 1998, and 1999 monitoring included soil samples collected from the mountainside. The samples confirmed PCB contamination in this area. The 1998 and 1999 soil samples were collected down-gradient from the group of samples collected in 1997 and had significantly lower PCB-concentrations. Monitoring results indicated that PCB-concentrations decreased to non-detectable levels within 200 feet of the slope break and concluded that, given the relatively immobile nature of PCBs, it is unlikely that there has been any significant PCB-migration beyond the immediate vicinity of SS07. Any further PCB-migration should be minimal and not affect environmentally sensitive areas such as surface water or drinking water supplies.


TO LOWER CAMP
FEATHER TO EXISTING
NEW CAP EXTENDS TO THE EDGE OF THE ROAD
ACCESSIBLE ROUTE
TRANSFORMERS
DRAINAGE DIVERSION AROUND EXISTING TRANSFORMERS
6' NOM. CONCRETE CAP OVER SITE OF DEMOLISHED SUBSTATION BUILDING
NEW CONCRETE TRANSFORMER PEDESTAL
ACTIVE RADAR
NEW 12'x13' SLAB REPLACES DEMOLISHED ENTRYWAY
FEATHER TO EXISTING
REMOVED
APPROXIMATE EDGE OF CAP
FORMER SUBSTATION BUILDING
WALKWAY
RADAR DOME
EXISTING CONCRETE ANCHOR
UPPER TRAMWAY BUILDING
1892
1942
1965
1982
1918
CAPE NEWENHAM LRRS
SOIL CAP
UPPER CAMP SS07
0 30 60
Approximate Scale in Feet
CAPE_NEW_UC03.DWG

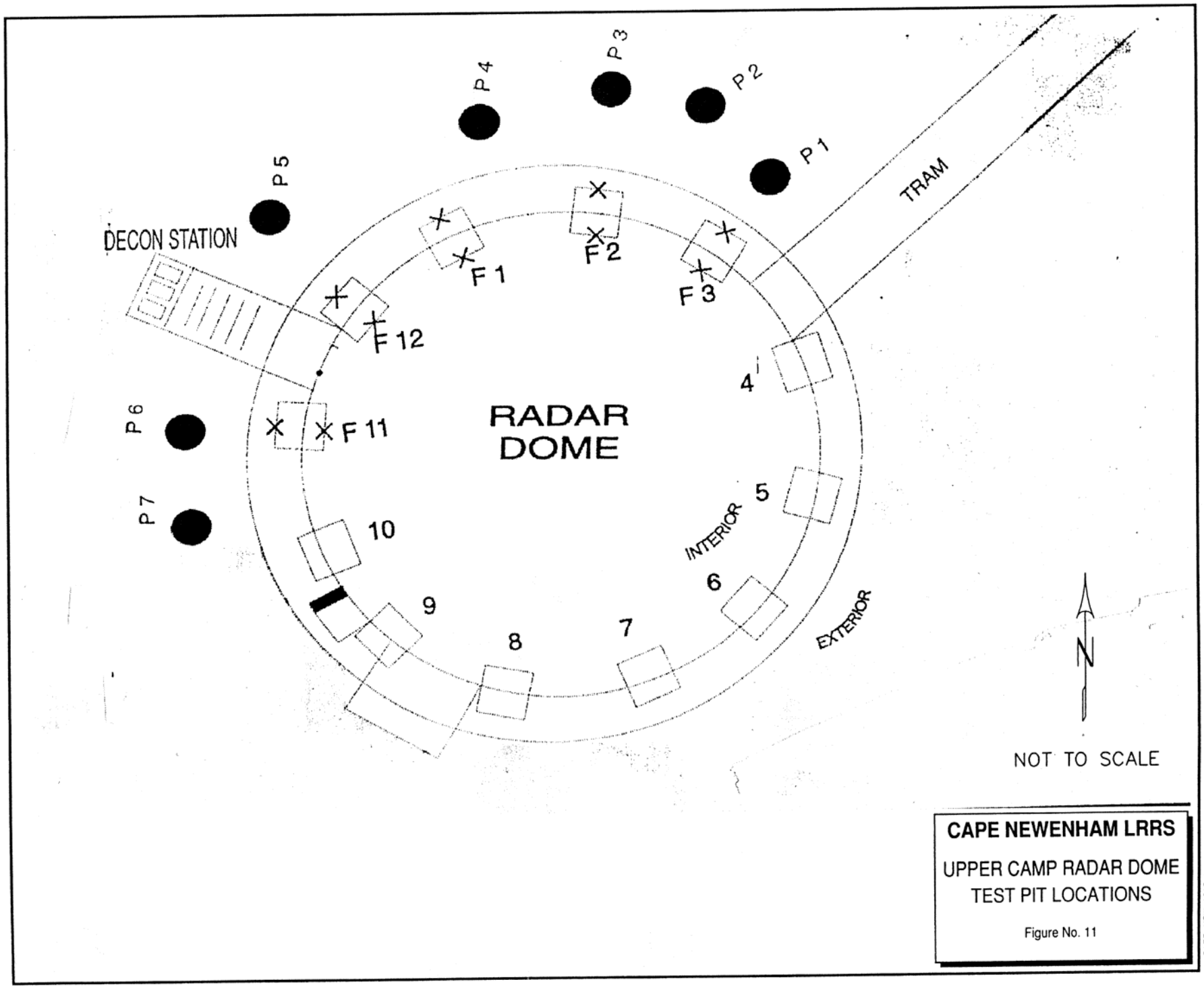

P 1
P 2
P 3
P 4
P 5
P 6
P 7
TRAM
DECON STATION
F 1
F 2
F 3
F 11
F 12
RADAR
DOME
INTERIOR
EXTERIOR
4
5
6
7
8
9
10
N
NOT TO SCALE
CAPE NEWENHAM LRRS
UPPER CAMP RADAR DOME
TEST PIT LOCATIONS
Figure No. 11
CAPE_NEW_1013.dwg

Table II-1

Summary of Test Pit Sampling, 1996 Cap Installation

Pit No.	Location	Description of Excavation	PCB Result (ppm)
Pit 1, Surface	Adjacent to the transformer building and the radar dome	Approximately 18" – 24" deep	0.6
Pit 1, At Depth			0.2
Pit 2, Surface	Between footings 2 and 3	Approximately 18" – 24" deep	4.6
Pit 2, Surface			5.4
Pit 2, At Depth			1.2
Pit 3, Surface	In front of footing 2	Approximately 18" – 24" deep	25
Pit 3, At Depth			5.3
Pit 4, Surface	Between footings 1 and 2	Approximately 18" – 24" deep	4.9
Pit 4, at Depth			0.1
Pit 4 at Depth			0.2
Pit 5, Surface	Between footings 1 and 12	Unable to excavate further than nine inches down due to rock and concrete	2.4
Pit 5, At Depth			0.1
Pit 6, Surface	Between the side exit and footing 11	Approximately 24" deep	3.4
Pit 6, At Depth			0.10
Pit 7, Surface	Between footings 10 and 11	Approximately 22" deep. Unable to excavate further due to rocks.	2.5
Pit 7, At Depth			0.3

ppm - parts per million

2.3 Community Relations Activities

Past hazardous waste investigations and cleanup activities have been documented in Air Force reports for work conducted at SS07. These reports are included in the administrative record located at Elmendorf Air Force Base and the information repository at Platinum, Alaska. These libraries are currently being updated by the Air Force to include recently produced documents. All decisions made for SS07 were based on information contained in the administrative record.

An EE/CA was completed in 1995, and a draft version was submitted for public review with copies also distributed to the USFWS in May 1995. The Air Force received comments from USFWS and ADEC which were addressed prior to submittal of the final version. No public comments were received. Comments and responses are included in the *EE/CA for PCBs Contamination at the Upper Camp (SS07), Cape Newenham Long Range Radar Site, Alaska, Final.* This document is available for review in the administrative record (Air Force, 1995).

The Air Force developed a Community Relations Plan for Cape Newenham LRRS in April 1996 as part of the CERCLA requirements. This plan provides a description of historical activities at Cape Newenham, a description of the IRP process, and an overview of the community relations program. This plan is available in the administrative record and information repository (Air Force, 1996d).

The Air Force distributed a fact sheet to members of the public through the U.S. Postal Service in winter 1996. This fact sheet reiterated past activities at SS07 and included a brief summary of future actions at SS07. The public was encouraged to send comments and questions to the Air Force by mail or a toll free telephone number.

A proposed plan was submitted to the public and USFWS on 8 May 2000. The Air Force placed notices in the *Anchorage Daily News* and the *Tundra Drums Newspaper* that the proposed plan was available for comment. The plan contained the proposed remedial action for SS07. The public comment period was 8 May 2000 through 8 June 2000. The public was encouraged to provide input through mail or via a toll free telephone number. Only one public comment was received. This comment is included in Part III of this decision document.

3.0 SITE CONTAMINATION AND RISKS

A human health and ecological risk assessment was conducted for SS07 (Air Force, 1997b). Results of the risk assessment were used to evaluate the remedial action objectives developed as part of the 1995 EE/CA. Long-term monitoring has been conducted annually between 1996 and 2000 to document any migration of PCBs off-site and ensure compliance with established applicable or relevant and appropriate requirements.

3.1 Human Health and Ecological Risk Assessment

Data from SS07 were evaluated to determine the risk to human health. This evaluation is based on the location and amount of contaminated media present, toxicity of the contaminant, current and potential future use of the site, and pathways by which people could be exposed. A baseline human health risk assessment was performed to evaluate potential health effects associated with exposure of contract workers to PCBs in soil at SS07 through ingestion and skin contact. Due to access restrictions, the risk assessment assumed that the only possible receptors are contract employees and occasional visitors such as USFWS researchers. Of these two, the most likely receptor are workers at the LRRS. Only two primary exposure pathways were considered complete for these receptors. These are ingestion of surface soil and dermal contact with surface soil. Contact would only occur during months of no snow cover on the ground. Also, LRRS staff spend as little time as possible at Upper Camp (less than one hour per day). Other possible exposure routes, such as inhalation and transport of PCBs to downgradient ponds or drinking water, were shown to be insignificant or lacking completed exposure pathways due to the nature of PCBs, climatic conditions, and the topographical setting of Upper Camp.

Data from the 1995 RI (Air Force, 1996b), specifically laboratory results from surface soil samples collected in areas of the Upper Camp that were not capped, were used in the risk assessment.

Laboratory analyses identified Aroclor 1260 in 50 of the 55 surface soil samples that were analyzed by USEPA Method 8080. Only one other type of PCB, Aroclor 1254, was detected in one surface soil sample at low levels relative to Aroclor 1260 presence. As a result, Aroclor 1260 was identified as the target chemical of concern for the risk assessment.

The average and reasonable maximum exposure excess cancer risk estimates were each less than 1 in one million. These levels are at or below the U.S. Environmental Protection Agency's (USEPA) target cancer risk range of 1 in one million and ADEC action risk level of 1 in one hundred thousand. This indicates that the excess cancer risk at SS07 is negligible. The risk assessment was performed prior to 1997 and did not incorporate elevated PCB results from soils collected from the slope areas between 1997 through 2000. A second qualitative risk assessment using the elevated PCB data, confirmed that the risk was still within acceptable levels. Further, exposure scenarios show that, due to the steep slope and harsh environmental conditions, receptors are not likely to come in contact with the contaminated soils. The level of risk to human life and health to remediate the site greatly out-weighs the negligible risk to human health from contaminant exposure.

An ecological risk assessment was also performed for Aroclor 1260 at SS07. Limited exposure to ecological receptors is expected because areas of highest Aroclor 1260 concentrations have been capped, and the barren habitat at the Upper Camp is unlikely to support many ecological receptors or their prey.

Two assessment endpoints were selected for evaluation: the potential for reductions in populations of 1) mammalian predators and 2) bird predators. Assessment was at the population level rather than at the individual level because there are no known protected species at SS07.

The least weasel and Peales peregrine falcon were selected as representative site receptors because they were determined to be indicators of environmental conditions. Assumed exposure was primarily through movement of Aroclor 1260 from soil to vegetation to small mammalian and bird prey for the predators. Based on concentrations of Aroclor 1260 in soils and prey organisms and on literature-based ecotoxicological chronic thresholds, risks to the least weasel and peregrine falcon, as quantified in hazard quotient values, were significantly lower than the threshold hazard quotient value of 1.0. These low hazard quotient values indicate risks from Aroclor 1260 to populations of mammalian and bird predators are highly unlikely.

Long-term monitoring of soils and surface waters have been conducted at SS07 and down-gradient locations to ensure PCBs are not migrating off-site. Annual sampling was conducted from 1996 through 2000. PCB-concentrations decrease significantly to below detection limits within 200 feet below the slope break. A range of results from long-term monitoring are listed in Table II-2. Further, it can be concluded that, given the nature of PCBs, the topographic setting, and climatic conditions of the site, PCB-migration beyond SS07 boundaries is unlikely.

Table II-2

1996-1999 Long-Term Monitoring Range of PCB Results (ppm)

Sample Location	1996 Results	1997 Results	1998 Results	1999 Results
Beach #1	ND	ND	ND	ND
Beach #2	ND	ND	ND	ND
Ponds	--	ND	ND	ND
Mountainside	--	1.5 – 4600	0.58 – 120	0.38 – 300

Note: Soil sampling on the mountainside was difficult because of the lack of soil. The samples were collected by scraping small amounts from around the rocks until there was enough to fill the sample jar. The sample results should only be considered to represent the PCB concentration of the relatively small amount of soil found in the pockets around the rocks.
ND Not detected (less than 0.2 ppm)
-- Sample not collected
ppm - parts per million

3.2 Applicable or Relevant and Appropriate Requirements

An EE/CA was performed at SS07 in 1995. As part of this evaluation, remedial action objectives (RAOs) were developed and presented in the *Engineering Evaluation/Cost Analysis for PCB Contamination at the Upper Camp (SS07) Cape Newenham LRRS, October, 1995* report. These objectives were developed in conjunction with applicable or relevant and appropriate requirements (ARARs) for the site. Table II-3 includes a list of ARARs used to develop a regulatory action level reducing risk to human health and the environment to below 1 in one million and a hazard quotient to less than 1.

3.3 Compliance with Remedial Action Objectives

Currently, the risk to human health is less than 1 in one million. The hazard quotient for ecological risk is below 1. Because there is no unacceptable risk to human health or the environment, remedial action goals have been met. All soils containing PCBs greater than 10 ppm located in the area of Upper Camp that were accessible by equipment were capped in 1996. The cap effectively eliminates potential exposures for both human health and ecological receptors and eliminates the possibility of

Table II-3

Established ARARs for SS07 from 1995 EE/CA

Citation	Description	Rationale
Toxic Substance Control Act (TSCA) 40 CFR 761	Regulates the manufacture, use and disposal of chemical substances and specifies criteria of disposal, storage and cleanup of PCBs	Because contamination at the site was pre-1987, there are no established cleanup levels for the site under TSCA subpart G. Cleanup goals are based on risk assessment results and are established on a site by site basis.
ADEC 18 AAC Chapter 75, Oil and Hazardous Substances Pollution Control Regulations	As applicable to SS07, this regulation provides guidance for discharge, reporting, cleanup, and disposal of hazardous substances including PCBs.	Applicable regarding the cleanup and disposal of contaminated materials including PCBs. Any contaminated material removed from the site or in contact with the site is subject to this regulation.
ADEC 18 AAC Chapter 70, Water Quality Standards	As applicable to SS07, this regulation provides guidance for allowable contaminant levels in sediments associated with fresh and marine water bodies down gradient of SS07.	Applicable regarding the status of fresh water and marine water use and cleanup in relation to contaminants in sediments.
Endangered Species Act	This act protects critical habitat upon which endangered species or threatened species depend.	Section 7 requires consultation with the USFWS and/or the National Marine Fisheries Service. SS07 is adjacent to the habitat of several endangered species (American peregrine falcon, Steller's eider, spectacled eider, and bristle-thighed curlew).

exposure due to soil erosion. The conditions at Upper Camp are very inhospitable due to steep, bouldry slopes and adverse weather conditions. These conditions greatly reduce the potential of human and ecological exposure to contaminants not contained beneath the cap. Long-term monitoring and inspection has indicated that PCBs are not migrating off-site and the integrity of the cap remains sound. The cap meets the long-term cleanup goals of the risk reduction/elimination with regular site inspections and maintenance.

4.0 SELECTED REMEDY

Based on the information generated from the investigations, the comparative analysis of alternatives, and the interim action performed, the selected remedy includes annual inspection and maintenance of the existing cap, long-term monitoring at established down-gradient locations, and implementation of institutional controls to prevent exposure to the remaining PCB-contamination. A detailed, comprehensive review of monitoring and inspection results from the long-term monitoring and inspection activities will occur every five years.

Under this alternative, the Air Force will maintain long-term ownership of the site and take responsibility for inspecting and maintaining the existing cap at SS07. Placement of warning and restricted access signs will limit human access. The site will be restricted from future uses that would affect the integrity of the cap (e.g., excavation, residential/commercial development). The site will be inspected annually to ensure the integrity of the cap and the condition of warning signs. Cap and sign maintenance will be performed as necessary based on the results of the visual inspection. Institutional controls will consist of notation on land records that will be reviewed during a title search of required land use restrictions and notation in the facility base master plan. These will include notification that the land

has been used for PCB waste disposal, and certain restrictions apply to future use of the property. Further, the notification will include a comprehensive record of the capped area survey, the signage and cap maintenance requirements, applicable cleanup levels, and documentation of location and corresponding levels of PCBs present in the area.

The ADEC agrees with the Air Force's selected remedy as the most technically feasible method of addressing PCB contamination at the Upper Camp (SS07) at this time; however, under section 18 AAC 75.380(d)(1) of the site cleanup rules, the decision may be reviewed and modified in the future if new information becomes available which indicates the presence of previously undiscovered contamination or exposure routes that may cause a risk to human health or the environment.

5.0 REFERENCES

Alaska Department of Environmental Conservation (ADEC). *Water Quality Standards.* May 1999a.

Alaska Department of Environmental Conservation (ADEC). *Oil and Hazardous Substances Pollution Control Regulations, Discharge Reporting, Cleanup, and Disposal of Oil and Hazardous Substances and General Provisions.* January 1999b.

Alaska Department of Environmental Conservation (ADEC). *Guidance on Decision Documentation Under the Site Cleanup Rules (18 AAC 75.325 - 18 AAC 75.390).* July 1999c.

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United States Air Force (Air Force). *1996 Long-Term Monitoring Letter Report, PCB Beach Sampling, Cape Newenham LRRS, Alaska.* December 1996a.

United States Air Force (Air Force). *Remedial Investigation of PCBs at Upper Camp (SS07), Cape Newenham LRRS, Alaska.* March 1996b.

United States Air Force (Air Force). *Remedial Action Report PCB Cap Construction IRP Site Code SS07, Cape Newenham LRRS, Alaska.* November 1996c.

United States Air Force (Air Force). *Community Relations Plan, Cape Newenham LRRS, Final.* 1996d.

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United States Air Force (Air Force). *Human Health and Ecological Risk Assessment for PCBs at Upper Camp (SS07), Cape Newenham LRRS, Alaska.* February 1997b.

United States Air Force (Air Force). *1998 PCB Sampling Long-Term Monitoring, Cape Newenham LRRS, Alaska.* January 1999a.

United States Air Force (Air Force). *Revised Management Action Plan, Cape Newenham LRRS, Alaska.* February 1999b.

United States Air Force (Air Force). 1999 *PCB Monitoring and Maintenance Technical Memorandum at Cape Newenham LRRS, Alaska.* Final. 2000.

United States Environmental Protection Agency (USEPA). *A Guide to Developing Superfund Records of Decision.* May 1990.

Part III
RESPONSIVENESS SUMMARY

1.0 OVERVIEW

The Air Force and the ADEC distributed a proposed plan for public review for SS07 in May 2000. The proposed action for SS07 includes annual inspection and maintenance of the existing cap, long-term monitoring at established down gradient locations, and implementation of institutional controls to prevent exposure to the remaining PCB contamination.

The proposed plan includes a summary of findings from previous investigations and remedial actions conducted at SS07. Only one public comment was received. The comment with the Air Force's response is included below. Comments submitted by the USFWS and corresponding Air Force responses are included in Table III-1.

2.0 BACKGROUND AND COMMUNITY INVOLVEMENT

The EE/CA was released and available for comment by the public and distributed to other interested parties such as the USFWS in May 1995. Comments received and corresponding Air Force comments are included in the Final EE/CA (Air Force, 1995).

The ADEC notified the Air Force of their concurrence with the chosen remedial action presented in the EE/CA (capping of the PCB-contaminated soils at Upper Camp SS07) in a letter dated 29 August 1995 (Air Force, 1995).

A fact sheet was distributed via U.S. Postal Service in the winter of 1996 which reiterated the proposed action for SS07 and encouraged further public involvement.

The public was encouraged to participate in the proposed remedial actions for SS07 during the public comment period between 8 May and 8 June 2000. The proposed plan was released to the public and delivered via U.S. Postal Service mail delivery. Copies were also distributed to other interested parties such as the USFWS. An updated mailing list of interested parties is maintained by the Community Relations Coordinator. Only one public comment was received from the Village of Qvinhagak regarding SS07. This comment and the Air Force response are provided below.

Comment: "Alternative 2 (from the Proposed Plan) is the better choice considering doing nothing. Wildlife needs to be monitored and biosampling should be done on the local wildlife and marine mammals and spawning beds of the herring to detect if any levels of PCBs are present. If PCBs adhere to soil and rocks, high winds on the side of the mountain will encourage migration of PCBs to other areas, thus spreading by more receptors."

Response: The Air Force has considered the potential migration of PCBs from Upper Camp. The Air Force will perform annual long-term monitoring of soils, sediments, and surface water as described in this decision document. This sampling will show if any PCBs migrate from the site. An ecological risk assessment for indicator species was performed in 1997 and indicated there is no unacceptable risk to wildlife. Sampling of animal or fish tissue is not deemed necessary at this time nor is it proposed in this decision document.

Table III-1

U.S. FISH AND WILDLIFE SERVICE COMMENTS ON MAY 2000 PROPOSED PLAN FOR SS07 CAPE NEWENHAM LRRS, ALASKA

USFWS COMMENTS				
NO	**PAGE**	**SECTION**	**COMMENT**	**RESPONSE**
1	General	General	"…it is the Service's understanding that the cap at SS07 was originally constructed as an emergency remedial action to protect workers at Cape Newenham from PCB exposure. Therefore, the installation of the cap was never subject to the public review process. The alternatives presented in this document assume that capping and leaving PCBs in place at Cape Newenham are the only feasible options. The Service recommends a third alternative. We contend that PCBs at Cape Newenham should be removed from areas accessible by large equipment (e.g., the relatively flat area under the cap) and either incinerated on site or removed completely".	The PCB cap was not installed in response to an emergency situation such as exposure to workers at the site. The cap was initially viewed as an interim action until regular monitoring and inspection demonstrated that the cap could be a permanent solution (Air Force, 1995). Monitoring and inspection has occurred at the site since its installation. These long-term monitoring programs have supported the initial assumption that PCBs will not migrate off site nor will the cap erode away. The Air Force conducted an Engineering Evaluation/Cost Analysis (EE/CA) at SS07 in 1994/95 in which five remedial alternatives were analyzed. One of these alternatives was excavation and removal of contaminated soils from the site. The recommended option from this study was capping the area of contamination. The public review policy is outlined in the Community Relations Plan for Cape Newenham (Air Force, 1996d). Comments were solicited from the public on both the EE/CA and proposed plan for SS07 under the guidelines established in the National Contingency Plan (NCP).
2	General	General	"…no alternatives were presented in the proposed plan regarding the mountain-side area of SS07…If they exist, the Service requests documentation describing alternative clean-up methods previously submitted to the Alaska Department of Environmental Conservation (ADEC) for the mountain-side area of Upper Camp. If remediation/restoration techniques for this area have not previously been documents, the Service recommends alternatives be discussed in the current proposed Plan".	The alternatives discussed in the proposed plan address the entire SS07 site, which includes the contaminated areas on the mountainside. According to the 1995 Risk Assessment, and calculations done again in 1999, the risk to human health remains below 1 in 100,000, which is the ADEC action level. Therefore, no further action is necessary at this site (Air Force, 1995).
3	General	General	The Service requests copies of documentation regarding the deactivation, demolition, and replacement of the White Alice site adjacent to the LRRS.	Prior to demolition, an environmental assessment was conducted (Air Force, 1985). The Air Force will provide this document and other reports pertaining to this demolition which may exist to the Service.

Table III-1 (Continued)

USFWS COMMENTS				
NO	**PAGE**	**SECTION**	**COMMENT**	**RESPONSE**
4	General	General	The Proposed Plan should identify current and formerly used landfills on Figure 2 (and/or Fig. 4, as appropriate) and describe any hazardous materials contained within these landfills.	The proposed plan is limited to addressing only LF03 and SS07 and was written as a summary document, focusing primarily on cleanup alternatives. Reports pertaining to former landfills are available in the administrative record.
5	2	Paragraph 1	The location of Platinum, Alaska should be identified on Figure 1.	As the proposed plan is a final document, the location of Platinum, Alaska will not be included. However, the location is denoted in the decision documents.
6	2	Paragraph 2	Has there been a remedial investigation at the White Alice site that was deactivated in 1979? If so, what documents are associated with this investigation and where are they located? We wish to review any available reports or similar documents pertaining to this site, particularly if they address disposition of debris and wastes.	The proposed plan is limited to addressing only LF03 and SS07 and is written as a summary document, focusing primarily on cleanup alternatives. Documents pertaining to investigations and remedial actions at the White Alice Site are part of the administrative record and are available for review by the USFWS.
7	2	Paragraph 3	A composite building was constructed in 1980, which "replace the old industrial and housing structures." Since they were built in the 1950s, we assume that the original structures contained asbestos and lead-based paints. Please describe the location of the debris generated from the destruction of these facilities and identify the landfills and associated asbestos cell/s on Figure 2 (and/or Figure 4, as appropriate).	The proposed plan is limited to addressing only LF03 and SS07 and is written as a summary document, focusing primarily on cleanup alternatives. Documents pertaining to all work conducted at Cape Newenham are available for review by the USFWS in the administrative record.
8	5		The cap constructed in 1996 should be described more completely. Describe the type or kind of cap that was installed (e.g., composition of cap and cap depth). Discuss why capping the site was a better alternative than removing the contaminated soil. Describe the public process for determining the best alternative for the site. If there was no public process discuss why it was not used.	A complete description of the cap installed in 1996 is included in the Remedial Action Report (Air Force, 1996b). A thorough analysis was conducted in the 1994/1995 EE/CA and included public comment solicitation as discussed under the response for Comment 1.
9	5		Discuss the fate of the debris left from demolishing the PCB contaminated buildings. Presumably, this debris is buried nearby. Was this landfill approved by ADEC, and is it lined and monitored? Is this another location which should be tested for PCB contamination? Was asbestos or lead-based paints an issue? The location of the debris should be identified on Figure 2 or 4.	PCB waste below 10 ppm was placed into the landfill. PCB waste above 50 ppm was shipped off-site for disposal according to regulatory criteria at the time. Waste between 10 and 50 ppm, present in the foundation materials of the structure, was left in place and covered by the soil cap with concurrence from ADEC (Air Force, 1996c) Asbestos debris from the demolition of the electrical substation was disposed of in the on-site permitted landfill. ADEC regulations regarding landfills regulated to accept asbestos can

Table III-1 (Continued)

USFWS COMMENTS				
NO	**PAGE**	**SECTION**	**COMMENT**	**RESPONSE**
				be found under 18 ACC 60.450. Any PCB contaminated debris and decontamination water generated during the demolition above regulatory criteria was shipped off site for disposal (Air Force, 1996c).
10	6		The statement, "Low levels of PCBs were detected in the surface soil…." Is misleading. Concentrations of PCBs exceeding 10 ppm were detected under the cap, and in areas left uncapped, concentrations of PCBs have ranged from 300 ppm to 4,600 ppm since monitoring began in 1996.	The level of PCBs found in samples from 7 test pits during the capping activities in 1996 were all below 25 ppm. The text pit locations were covered by the soil cap. The reference to low levels of contamination refers to results of the investigation documented by the Remedial Action Report (Air Force, 1996c).
11	8	Paragraph 2	It is conceivable that erosion from high winds and rain could cause transport of PCB-contaminated soil off SS07, especially down a steep (30 degree) slope. Therefore, PCB movement may not be limited to only that which moves with flowing water. Somehow PCBs have moved downslope into areas below the Air Force facilities, and there is no evidence presented that would suggest further movement will not occur.	Long-term monitoring has been conducted at SS07 since the construction of the cap in 1996. The purpose of this monitoring was to support the conclusion that PCBs have not migrated off site and are not found on the beach below the site, in surface waters, nor in soil around the site. These investigations to date have concluded that no migration of PCBs has occurred (Air Force 1996a, 1997a, 1999a, and 2000). The presence of PCBs in random locations down the slope of the mountainside are the result of historical site operations. During full operation of the site, transformers were thrown from the Upper Camp area down the slope. As these transformers or other PCB-containing equipment rolled down the slope, PCB oils would have spilled from the equipment at random locations.
12	9	Paragraph 5	Inhalation was negated as being an incomplete exposure route. With high winds and blowing dust in the area, inhalation seems to be a reasonable route by which humans and wildlife could be exposed.	Inhalation was not considered a complete pathway because 1) the scanty amount of soil available for erosion, 2) frequent fog and drizzle minimizes the generation of airborne dust, 3) snow cover is present at least 6 months of the year, and 4) wipe samples taken from the exterior of the buildings located at Upper Camp were non-detect for PCBs, suggesting that PCBs are not being deposited in significant amounts or transported by wind currents (Air Force, 1997b).
13	10	Paragraph 1	The results of the ecological risk assessment should be described more completely. How were the least weasel and Peale's peregrine falcon chosen as raptors? Kittiwakes and other sea birds use the ponds in the area, and thousands of bird's nest on the cliffs below the site. The migration of PCBs through fractured bedrock to the cliffs below has not been determined; therefore it cannot be ruled out as an exposure pathway. The formula for calculation hazard quotients should be included and the values for making the	The least weasel was chosen because 1) it may be found in the vicinity of Upper Camp, 2) it may be exposed to PCBs through ingestion of prey organisms that have bioaccumulated PCBs through incidental ingestion of soils containing PCBs, and 3) toxicological data are available describing the effects of PCBs on small mammals. Peal's falcon was chosen because 1) it may be found in the area of Upper Camp, 2) it may be exposed to PCBs through ingestion of prey organisms that have bioaccumulated PCBs, and 3) toxicological data are available

Table III-1 (Continued)

USFWS COMMENTS				
NO	**PAGE**	**SECTION**	**COMMENT**	**RESPONSE**
			risk determination should be reported (i.e., was the 4,600 ppm value used when evaluating risk).	describing the effects of PCBs on birds (Air Force, 1997b).
14	10	Paragraph 2	Despite its name, Cleanup Levels are not discussed in this section. According to 18 AAC 75, Article 3, the soil cleanup level for PCBs in this area is 10 ppm. It should be explained how leaving exposed areas with up to 4,600 ppm PCBs complies with this regulation.	No cleanup goals or levels are discussed because, under current and projected future uses of SS07, the risk to human health or the environment is below the ADEC cleanup requirement of 1 person in 100,000. If no risk is present at the site, there is no regulatory requirement for further cleanup. This site meets the ADEC approved applicable or relevant and appropriate requirements (ARARs) as discussed in a meeting with the Air Force and ADEC on 1 March 2000.
15	11	Paragraph 5	Explain which federal and state regulations apply and describe how the proposed alternatives meet the objectives and requirements of these laws.	All applicable state and federal regulations pertaining to site SS07 are listed in the proposed plan, page 1, paragraph 3. An evaluation of each alternative can be found on page 11. These criteria follow ADEC guidance.

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