



US Army Corps
of Engineers
Rock Island District

Defense Environmental Restoration Program
for
Formerly Used Defense Sites
Ordnance and Explosives



Archives Search Report

CONCLUSIONS AND RECOMMENDATIONS
for the former

Port Angeles Combat Range

Port Angeles, Washington
Project Number F10WA003301

September 1996



200.1f

F10WA003301_01.02_0001_p

DEFENSE ENVIRONMENTAL RESTORATION PROGRAM
for
FORMERLY USED DEFENSE SITES

CONCLUSIONS AND RECOMMENDATIONS

ORDNANCE AND EXPLOSIVES
ARCHIVES SEARCH REPORT
FOR THE FORMER
PORT ANGELES COMBAT RANGE
PORT ANGELES, WASHINGTON
PROJECT NUMBER F10WA003301

September 1996

Prepared for

U.S. Army Corps of Engineers
Engineering and Support Center,
Huntsville
ATTN: CEHNC-OE
P.O. Box 1600
Huntsville, Alabama 35807-4301

Prepared by

U.S. Army Corps of Engineers
Rock Island District
ATTN: CENCR-ED-DO
P.O. Box 2004
Rock Island, Illinois 61202-2004

and

Defense Ammunition Center
ATTN: SIOAC-ES
Savanna, Illinois 61074-9639

ORDNANCE AND EXPLOSIVES
 ARCHIVES SEARCH REPORT
 FOR THE FORMER
 PORT ANGELES COMBAT RANGE
 PORT ANGELES, WASHINGTON
 PROJECT NUMBER F10WA003301

ACKNOWLEDGMENTS

The following persons provided support as indicated.

Function	Name	Title	Organization	Telephone
On-Site Assessment	Mary Jo Civis*	Q.A. Spec., Ammunition (QASAS)	CENCR-ED-DO	(309) 794-6010
	Karen Beachler	Chemist	CENCR-ED-DO	(309) 794-5773
Engineering Support	Daniel J. Holmes	Professional Engineer	CENCR-ED-DO	(309) 794-6080
Historical Research	Tom Meekma	QASAS	SIOAC-ESL	(815) 273-8739
Geographic District	Jonathan Maas	Environmental Engineer	CENPS-EN-GT-HW	(206) 764-6745
Industrial Hygiene	Robert Platt	Industrial Hygienist	MCXM-PMA	(309) 782-0806
CADD Support	Jim Turner	Technician	CENCR-ED-DO	(309) 794-6028

*Team Leader

ORDNANCE AND EXPLOSIVES
ARCHIVES SEARCH REPORT
FOR THE FORMER
PORT ANGELES COMBAT RANGE
PORT ANGELES, WASHINGTON
PROJECT NUMBER F10WA003301

CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations are provided by the Archives Search Report Team. These recommendations may not be the actions taken to remediate this site.

TABLE OF CONTENTS

Section	Page
1. INTRODUCTION	1
a. Subject and Purpose	
b. Scope	
2. CONCLUSIONS	2
a. Summary of Conclusions	
b. Historical Site Summary	
c. Site Eligibility	
d. Visual Site Inspection	
e. Confirmed Ordnance Areas	
f. Potential Ordnance Areas	
g. Uncontaminated Ordnance Areas	
h. Other Environmental Hazards	
3. RECOMMENDATIONS	7
a. Summary of Recommendations	
b. Preliminary Assessment Actions	
c. Ordnance and Explosive Waste Actions	
d. Other Environmental Remediation Actions	

TABLES

- 2-1 SUMMARY OF CONCLUSIONS
- 3-1 SUMMARY OF RECOMMENDATIONS
- 3-2 RECOMMENDED INTERIM REMOVAL ACTIONS
- 3-3 EE/CA ISSUES AND CONCERNS

ATTACHMENTS

- A. RISK ASSESSMENT (Entire Site)
- B. RISK ASSESSMENT (Areas A-1, B, C-1 and F)
- C. RISK ASSESSMENT (Areas A-2 and C-2)
- D. RISK ASSESSMENT (Area D)
- E. RISK ASSESSMENT (Area E)

REPORT PLATES

- 1. Site Map
- 2. Proposed Range Layout (1943)
- 3. Contamination/Clearance History
- 4. Current Land Ownership (1994)
- 5. Project Areas
- 6. OE Evaluation
- 7. Aerial Photo (1939)

ORDNANCE AND EXPLOSIVES
ARCHIVES SEARCH REPORT
FOR THE FORMER
PORT ANGELES COMBAT RANGE
PORT ANGELES, WASHINGTON
PROJECT NUMBER F10WA003301

1. INTRODUCTION

a. **Subject and Purpose**

(1) This report presents the conclusions and recommendations of an historical records search and site inspection for ordnance and explosives (OE) presence located at the former Port Angeles Combat Range, Port Angeles, Washington.

(2) The investigation focused on 1,600 acres(+/-) that were used as a ground-to-ground firing range by the 115th Cavalry during 1942 and 1943 (see plate 1).

(3) The purpose of this investigation was to characterize the site for potential OE contamination, to include conventional ammunition and chemical warfare material (CWM). The investigation was conducted by experienced ordnance experts through thorough evaluation of historical records, interviews, and on-site visual inspection results.

b. **Scope**

(1) The conclusions and recommendations presented in this report were drawn from available records and the visual site inspection. The conclusions, including ordnance risk assessments, were based on confirmed/documented evidence and potential/reasonably inferred evidence from the investigation. The recommendations were based on present DERP FUDS program goals and policies, with implementation subject to approval and appropriate funding actions.

(2) For the purpose of this report, OE consists of live ammunition, ammunition components, CWM or explosives which have been lost, abandoned, discarded, buried, fired, or thrown from demolition pits or burning pads. These items were either manufactured, purchased, stored, used, and/or disposed of by the War Department/Department of Defense. Such ammunition/components are no longer under accountable record control of any DOD organization or activity.

(3) **Expended** small arms ammunition (caliber .50 or smaller) is **not** considered OE contamination. OE further includes "explosive soil" which refers to any mixture in soil, sands, clays, etc., such that the mixture itself is explosive. Generally, 10 percent or more by weight of secondary explosives in a soil mixture is considered explosive soil.

2. CONCLUSIONS

a. **Summary of Conclusions**

Table 2-1 on the following page has been provided to summarize conclusions made on confirmed and potential OE on/within the Port Angeles Combat Range. See Plate 5 for project areas.

**TABLE 2-1
SUMMARY OF CONCLUSIONS**

Area	Former Usage	Present Usage	Probable End Usage	Size Acres	FUDS ELIGIBILITY		ORDNANCE PRESENCE			Risk Assessment Code	
					Confirmed FUDS	Potential FUDS	Confirmed Ordnance Presence	Potential Ordnance Presence	Uncontaminated		
A-1	Direct Fire Impact Area	Water Shed, (Wooded)	Same	85	yes	-	yes	-	-	2	
A-2	Direct Fire & Combat Trng Area	Water Shed, Grazing	Same	40	yes	-	yes	-	-	3	
B	Indirect Fire Impact Area	Water Shed, (Wooded)	Same	370	yes	-	-	yes	-	2	
C-1	Buffer Zone	Water Shed, Hunting	Same	850	yes	-	-	yes	-	2	
C-2	Buffer Zone & Combat Trng Area	Water Shed, Grazing	Same	20	yes	-	-	yes	-	3	
D	Combat Trng Area	Water Shed, Grazing	Same	40	yes	-	-	yes	-	4	
E	All Remaining Land(FDE)	Water Shed, Undeveloped (Wooded)	Possible residence (1 or 2)	222.87	yes	-	-	-	yes	5	
F	Impact/ Buffer Area (add. ac.)	Water Shed, Undeveloped (Wooded)	Same	960	-	yes	-	yes	-	2	
TOTAL				2587.87	(1627.87-FDE, 960-additional acreage)			ENTIRE SITE			2

b. Historical Site Summary

(1) In early 1943, the 115th Cavalry Squadron (mechanized) obtained 1600 acres (+/-) in sections 5, 8, and 17 of T29N, R5W, through leases and use permits, for use as a combat range. It was intended that the Class A range be used for tactical firing problems and short range known distance firing (200-300 yds) (see plate 2).

(2) The range was cited for use of 37mm and 75mm ammunition and small arms, however, there are indications that mortars and land mines were also employed at the site.

(3) No buildings or improvements to the site were made other than a simple spotting tower. Troops that were encamped at the Port Angeles Fair Grounds/Conservation Corps Camp would travel to and from the combat range each day for training.

(4) In April and May of 1944, the range was declared excess, and all leases and permits were canceled. No attempt was made by the Army at the time of closing to clear the range area prior to its return to private ownership, nor was the public informed of the potential hazards that could remain.

(5) In August of 1948, two boys were killed when sawing some downed timber within the former range area. A live 37mm shell that was embedded in the log they were sawing exploded. This incident prompted the Army to take immediate action to dedud the area.

(6) A quick determination (guess) at the area expected to be contaminated was made, and on 7 May 1949 a Certificate of Clearance was issued noting that approximately 775 acres had been cleared of dangerous/explosive material. Subsequent clearances occurred in 1952, 1955, 1956 and 1957, with dedudding actions culminating in the reacquisition of 652 acres in the early 1960's determined to be the probable area of contamination (see plate 3). This acreage was retained until 1967 when it was transferred to the City of Port Angeles and Mr. Raymond Diehl with a restriction to "surface use only" and an indemnity clause.

c. Site Eligibility

(1) The 1627.87 acre site (1600+/-) comprising the former Port Angeles Combat Range was investigated under a Preliminary Assessment in 1993 by CENPS. The Findings and Determination of Eligibility (FDE) concluded that the entire acreage had been formerly leased and used by the War Department/DOD and was eligible for the Defense Environmental Restoration Program - Formerly Used Defense Sites (DERP-FUDS).

(2) Additional acreage outside the boundary of the site was found to be associated with the Port Angeles Combat Range. The 960 acres cited (area F) should be considered potential FUDS as it lies within the theorized firing fan associated with this site, indicating that the land was potentially used/contaminated (see Plates 5 and 6).

d. Visual Site Inspection

(1) The site inspection for the Former Port Angeles Combat Range was conducted 25-29 July 1994. During this visit the team concentrated on those areas where ordnance contamination would most likely have occurred. The only sign of ordnance usage noted during the SI was the existence of possible ordnance entry holes found in the open field within area A-2.

(2) Interviews were conducted with former site related personnel, current land owners, and local authorities responsible for OE removal within the area. These interviews confirmed the usage of small arms, 37mm, and 75mm ammunition at the site. They further confirmed the presence of small arms and shrapnel remaining in the trees in the area (and a possible inert round or two), but found that no OE has been confirmed within the site since the last documented clearance report (1957).

e. Confirmed Ordnance Subsites

Confirmed ordnance contamination is based on verifiable historical evidence or direct witness of ordnance items since site closure. OE contamination since site closure was confirmed for Area A based on documentation verifying the death of two boys from an unexploded round after site closure, and the subsequent OE clearances (See Plate 3).

f. Potential Ordnance Subsites

Potential ordnance contamination is based on the likely existence of OE due to its verified use or location in relation to ordnance related activities. Areas B, C and F are potential subsites due their location within the firing fan. Area D is potential due to the speculated use of the area as a combat training area.

g. Uncontaminated Ordnance Subsites

Uncontaminated ordnance subsites are based on a lack of confirmed or potential ordnance contamination. Area E is currently considered uncontaminated based on a lack of confirmed/potential evidence that any type of ordnance was used, stored, buried, etc., in this area (see Plate 5).

h. Other Environmental Hazards

(1) There is no indication of potential Hazardous, Toxic, and Radiological Waste (HTRW) associated with this site.

(2) No original structures associated with this site were located. There are no potential Building Demolition/Debris Removal (BD/DR) projects.

3. RECOMMENDATIONS

a. Summary of Recommendations

(1) Table 3-1 on the following page includes an overall summary of the site recommendations. Explanations are included in subsequent paragraphs.

**TABLE 3-1
Summary of Recommendations**

Area	Former Usage	Size Acres	PA	OEW Actions			HTRW	BD/DR	
			Actions ----- Prepare INPR	No Further Action	Perform ASR	Implement Interim Removal	Perform EE/CA	Actions ----- Perform SI	Actions ----- Perform SI
A-1	Direct Fire Impact Area	85	-	-	-	yes	yes	-	-
A-2	Direct Fire/ Combat Trng Area	40	-	-	-	yes	yes	-	-
B	Indirect Fire Impact Area	370	-	-	-	yes	yes	-	-
C-1	Buffer Zone	850	-	-	-	yes	yes	-	-
C-2	Buffer Zone/ Combat Trng Area	20	-	-	-	yes	yes	-	-
D	Combat Trng Area	40	-	-	-	yes	yes	-	-
E	All Remaining Land(FDE)	222.87	-	yes	-	-	-	-	-
F	Buffer/Impact Area (add ac)	960	**	-	-	yes	yes	-	-
TOTAL		2587.87	(1627.87-FDE, 960-additional acreage)						
** Amend INPR to include area acreage									

b. Preliminary Assessment Actions

The Preliminary Assessment of the Port Angeles Combat Range and the Findings and Determination of Eligibility (FDE) accurately describe the 1627.87 acre site (1600+/-) used by the War Department. However, it is recommended that the FDE be amended to include the 960 acres that exists outside the original site boundary, but has been determined to have been utilized as a portion of the site firing fan. As this acreage has already been addressed in this ASR (area F), no further preliminary action nor ASR would be required.

c. Ordnance and Explosives Actions

(1) Interim Removal Action (IRA)

(a) The need for an Interim Removal Action at any site is based on the concept of imminent hazard. In terms of OE, this typically equates to a scenario where live rounds are confirmed to be on the surface, or continually resurfacing due to erosion, etc., in an area where public access is heavy. This type of scenario should then ultimately equate to a RAC 1.

(b) Because the site RAC for Port Angeles Combat Range is a 2, and there is no current confirmation of surface OE, one would not expect a need for an IRA. However, it is believed that there are several unique factors associated with this site that are not taken into consideration within the RAC form that would support the need for an interim removal.

(c) There is no confirmed surface OE. Yet, due to the fact that live 37mm, 75mm and mortars were fired into the densely wooded areas, there is little doubt that at least some live rounds would be present on the surface, taking into account the simple dud ratios associated with the ordnance. But, because the area is not heavily traversed, nothing has been reported/discovered for over 35 years.

(d) The fact that there is not a great deal of public access and that there is little reason to suspect any change to the current conditions acts as a factor to keep the RAC score lower. But the reality is, every piece

of live ordnance lying within these wooded areas is a time bomb waiting for that first unsuspecting hunter or adventurous hiker to stumble upon. It appears to be a game of chance, with the odds mounting each day.

(e) Because Olympic Park is a national attraction, visiting hikers in the area are not likely to be aware of the history/existence of the Port Angeles Combat Range. Consequently, they are more likely to pick up any discovered round assuming it to be a harmless souvenir. But experience has shown that even the locals tend to lose sight of a real hazard as years pass without an incident.

(f) Therefore, because it is felt that there truly is an imminent hazard here, it is recommended that an IRA be considered that would reduce risk. Because a clearance of all this acreage is not a feasible consideration for an IRA, the reposting of signs throughout areas A, B, C, D, and F is recommended. And while areas D, A-2 and C-2 are open fields and are not suspected as having surface contamination, because they exist at clear entry points into the other areas and entail limited amounts of acreage, posting signs around these areas too seems logical.

(g) While some signs do exist in the area, they are inconsistent, well weathered, and do not adequately cite the potential hazards that exist. It is believed that signs should be thoughtfully developed to insure the public will understand and heed the warnings, rather than those observed during the SI, or the proposed sign found in historical records stating "Bombs" could be present.

(h) Because access is gained through Deer Park Road and by means of the jeep trails and on foot, simple posting of signs along the road and trails, especially at points where common entry by foot is noted, would greatly reduce the chances of another accident resulting in death from UXO until such time as an EE/CA can be accomplished.

(2) Engineering Evaluation/Cost Analysis (EE/CA)

Upon completion of the IRA, it is recommended that an EE/CA be initiated for areas A, B, C, D and F to determine the actual degree of contamination and need for remediation. In so doing, the following issues should be

taken into consideration (see table 3-2). It should be noted that some of the issues cited tend to be used in a fashion contradictory to their application to the recommendation for an IRA. This is because once the IRA has effectively reduced the risk, some issues now take on a new light when being considered.

(a) Although somewhat open to public access, the barbed wire fence along the main road, along with the general terrain, do act as physical barriers to limit this access.

(b) There is almost no chance that use of this area will change or increase. The city maintains a fair portion of the site as a water shed. And while they do allow grazing within the open field (areas A-2, C-2 and D), they indicate they do not foresee any other use, to include use of the timber which has been forbidden.

(c) Portions of the site (areas C-1 and F) lie within the Olympic National Park and on a few private parcels. The Park is absolutely not likely to change its use of the area, and it appears the private owners, which includes a lumber company, are not either.

(d) Because there is no perceived change in site usage, any remaining contamination existing at a sub-surface level should remain undetected, as there is no activity occurring that would cause soil intrusion. Further, there is no obvious sign of erosion that would allow for UXO to resurface. Therefore, any sub-surface clearance would appear unnecessary.

(e) The greatest potential for UXO exists with rounds embedded in trees. But, because the timber in the area is restricted from use because of possible metal scrap/UXO, this hazard too is greatly reduced. Unfortunately, the scope of this ASR could not clearly find definitive boundaries of the areas restricted to tree harvest other than within the city property and the National Park. But it can be conjectured that in any area previously not restricted, subsequent use of the timber has already occurred. An EE/CA could more clearly define this boundary and ensure that any restrictions in pertinent areas are retained.

(f) The possibility of surface contamination remaining within the open field owned by the city (areas A-2, C-2 and D) is believed to be unrealistic. This is the limited amount of acreage which has been used for grazing since site closure with no OE found. Also, during previous clearance sweeps, this was the only area that could have actually received any thorough search, due to the ground cover and terrain on the remaining portions of the site. So, to some extent, it most likely did.

(g) As for the wooded portions of the site supposedly cleared (areas A-1, B, C-1, and F) it is impractical to believe that 1600 acres of this nature were CLEARED, not to mention the additional 960 acres within area F. This point is even cited on clearance reports by the EOD teams themselves. Therefore, there is a real possibility that UXO could remain on the surface, yet to be discovered. But the reality of conducting a surface clearance today within this area would not only be financially exhaustive, but would also expose site workers to unsafe conditions due to the dense ground cover and terrain, all of which will still not guarantee the area to be "free and clear" of any OE. Consequently, the posting of signs accomplished as an IRA may prove to be the only realistic solution to mediating the potential OE hazard at this site.

(3) No Further Action (NOFA)

Area E presents no information that ordnance was employed or disposed of within this area. No further action is required for area E.

d. Other Environmental Remediation Actions

- (1) There are no HTRW projects recommended.
- (2) There are no BD/DR projects recommended.

**TABLE 3-2
ISSUES AND CONCERNS**

Area	Size	Design Item	Issues and Concerns
IRA:			
C-1	850	Field Investigation	Portions of these areas are privately owned; owners may be adverse to the posting of signs on their property (see plates 4 & 5).
F	960		
EE/CA:			
A	85/40	Field Investigation	Access partially limited to public by barbed wire fence and also by ground cover and terrain.
B	370		
C	850/20		Possible artifacts or endangered species present.
D	40	Current Use	Maintained as undeveloped, predominantly wooded area. Small portion of city property used for grazing. Little public access and no surface intrusion or erosion.
F	960		
		Site End Use	No change anticipated; no reason for sub-surface clearance.
A-1	85	Field Investigation	Potential UXO embedded in trees, but most timber in area restricted from use. Actual perimeter of restricted use undetermined.
B	370		
C-1	850		Surface contamination likely, but at huge cost due to tree growth and terrain, with no hope of ensuring all acreage "free and clear". Safety risk to site works due to terrain.
F	960		
		Current/End Use	SAB
A-2	40	Field Investigation	Surface contamination unlikely; relatively small area easily cleared during past clearances, also used for grazing since site closure with no OE found.
C-2	20		
D	40		
		Current/End Use	SAB
C-1	850	Field Investigation	Some portions of these areas will require dealing with private land owners.
F	960		
		Current/End Use	SAB
A-2	40	Field Investigation	Confirmed wetland on site.

ATTACHMENT A

17 Mar 95

Previous editions obsolete

RISK ASSESSMENT PROCEDURES FOR
ORDNANCE AND EXPLOSIVES (OE) SITES

Site Name	<u>Port Angeles Combat Rge</u>	Rater's Name	<u>Mary Jo Civis</u>
Site Location	<u>Port Angeles, WA</u>	Phone No.	<u>(309) 794-6010</u>
DERP Project #	<u>F1OWA003301</u>	Organization	<u>CENCR-ED-DO</u>
Date Completed	<u>September, 1996</u>	RAC Score	<u>2</u>

OE RISK ASSESSMENT: Entire Site

This risk assessment procedure was developed in accordance with MIL-STD 882C and AR 385-10. The RAC score will be used by CEHND to prioritize the remedial action at Formerly Used Defense Sites. The OE risk assessment should be based upon best available information resulting from records searches, reports of Explosive Ordnance Disposal (EOD) detachment actions, and field observations, interviews, and measurements. This information is used to assess the risk involved based upon the potential OE hazards identified at the site. The risk assessment is composed of two factors, **hazard severity and hazard probability**. Personnel involved in visits to potential OE sites should view the CEHND videotape entitled "A Life Threatening Encounter: OE."

Part 1. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible mishap resulting from personnel exposure to various types and quantities of unexploded ordnance items.

TYPES OF ORDNANCE
(Circle all values that apply)

A. Conventional Ordnance and Ammunition	VALUE
Medium/Large Caliber (20 mm and larger)	10
Bombs, Explosive	10
Grenades, Hand and Rifle, Explosive	10
Landmines, Explosive	10
Rockets, Guided Missiles, Explosive	10
Detonators, Blasting Caps, Fuzes, Boosters, Bursters	6
Bombs, Practice (w/spotting charges)	6
Grenades, Practice (w/spotting charges)	6
Landmines, Practice (w/spotting charges)	4
Small Arms, Complete round (.22 cal-.50 cal)	1
Small Arms, Expended	0
Conventional Ordnance and Ammunition	10

(Select the largest single value)

What evidence do you have regarding conventional OE? Confirmed
37mm, 75mm, 81mm mortars (EOD Rpt) for area A. Land mines & SA confirmed on site. 2.36" rocket & rifle grenades theorized.

B. Pyrotechnics. (For munitions not described above)

VALUE

Munition (Container) Containing
White Phosphorous or other
Pyrophoric Material (i.e.,
Spontaneously Flammable) 10

Munition Containing a Flame
or Incendiary Material (i.e. Napalm,
Triethylaluminum Metal Incendiaries) 6

Flares, Signals, Simulators, Screening
Smoke (other than WP) 4

Pyrotechnics (Select the largest single value) 0

What evidence do you have regarding pyrotechnics? 75mm WP indicated
per interview, however, considered included/rated in Part I, A.

C. Bulk High Explosives (Not an integral part of convention ordnance;
uncontainerized.)

VALUE

Primary or Initiating Explosive
(Lead Styphnate, Lead Azide,
Nitroglycerin, Mercury Azide,
Mercury Fulminate, Tetracene, etc.) 10

Demolition Charges 10

Secondary Explosives 8
(PETN, Composition A, B, C,
Tetryl, TNT, RDX, HMX, HBX,
Black Powder, etc).

Military Dynamite 6

Less Sensitive Explosives 3
(Ammonium Nitrate, Explosive D, etc).

High Explosives (Select the largest single value) 0

What evidence do you have regarding bulk explosives? None

D. Bulk Propellants (Not an integral part of rockets, guided missiles, or
other conventional ordnance; uncontainerized)

VALUE

Solid or Liquid Propellants 6

Propellants 0

What evidence do you have regarding propellants? None

E. Chemical Warfare Material and Radiological Weapons

	VALUE
Toxic Chemical Agents (Choking, Nerve, Blood, Blister)	25
War Gas Identification Sets	20
Radiological	15
Riot Control and Miscellaneous (Vomiting, Tear)	5
Chemical and Radiological (Select the largest single value)	<u>0</u>
What evidence do you have of chemical/radiological OE?	<u>None</u>

TOTAL HAZARD SEVERITY VALUE 10
 (Sum of Largest Values for A through E--Maximum of 61).
Apply this value to Table 1 to determine Hazard Severity Category.

TABLE 1

HAZARD SEVERITY*

Description	Category	Hazard Severity Value
CATASTROPHIC	I	21 and greater
CRITICAL	II	10 to 20
MARGINAL	III	5 to 9
NEGLIGIBLE	(IV)	1 to 4
**NONE		0

* **Apply Hazard Severity Category to Table 3.**

** If Hazard Severity Value is 0, you do not need to complete Part II. Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

Part II. Hazard Probability. The probability that a hazard has been or will be created due to the presence and other related factors of unexploded ordnance or explosive materials on a formerly used DOD site.

AREA, EXTENT, ACCESSIBILITY OF CONTAMINATION
(Circle all values that apply)

A. Locations of OE Hazards

	VALUE
On the surface	(5)
Within Tanks, Pipes, Vessels or Other confined locations	4
Inside walls, ceilings, or other parts of Buildings or Structures	3
Subsurface	(2)
Location (<u>Select the single largest value</u>)	<u>5</u>

What evidence do you have regarding location of OE? Potential
to remain on surface yet due to dense forests and mountainous terrain
that would prevent previous sweeps from being thorough. Embedded in
trees as confirmed by documented accident. Potential sub-surface.

B. Distance to nearest inhabited locations or structures likely to be at risk from OE hazard (roads, parks, playgrounds, and buildings).

	VALUE
Less than 1250 feet	(5)
1250 feet to 0.5 miles	4
0.5 miles to 1.0 miles	3
1.0 miles to 2.0 miles	2
Over 2 miles	1
Distance (<u>Select the single largest value</u>)	<u>5</u>

What are the nearest inhabited structures? One residence
within SW ¼ of Section 4. Several residences
along Deer Park Rd (north) between .5 and 2 mi.

C. Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary.

	VALUE
26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0
Number of Buildings (<u>Select the single largest value</u>)	<u>3</u>
Narrative <u>Several residences along Deer Park Road, north of northern edge of site boundary.</u>	

D. Types of Buildings (within a 2 mile radius)

	VALUE
Educational, Child Care, Residential, Hospitals, Hotels, Commercial, Shopping Centers	5
Industrial, Warehouse, etc.	4
Agricultural, Forestry, etc.	3
Detention, Correctional	2
No Buildings	0
Types of Buildings (<u>Select the largest single value</u>)	<u>5</u>
Describe types of buildings in the area. <u>SAB - Residences only</u>	

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance:

BARRIER	VALUE
No barrier or security system	5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site). Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	4
A barrier, (of any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security guard, but no barrier	2
Isolated Site	1
a 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel) which continuously monitors and controls entry onto the facility, or An artificial or natural barrier (e.g., a fence combined with a cliff), which completely surrounds the facility; and a means to control entry, at all times, through the gates or other entrances to the facility (e.g., an attendant, television monitor, locked entrance, or controlled roadway access to the facility).	0
Accessibility (<u>Select the single largest value</u>)	<u>4</u>

Describe the site accessibility. Barbed wire fence precludes entry from some portions of areas, particularly main access road. Natural barriers limit access to other portions of site(canyon, mts., trees).

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Example would be excessive soil erosion by beaches or streams, increasing land development that could reduce distance from the site to inhabited areas or otherwise increase accessibility.

	VALUE
Expected	5
None Anticipated	0
Site Dynamics (<u>Select largest value</u>)	<u>0</u>

Describe the site dynamics. Mostly owned by city or part of Olympic Park with no chance for change. Small areas under private owners not used/developed. If 1 or 2 residences built, RAC would not be affected.

Total Hazard Probability Value
(Sum of Largest Values for A through F--Maximum of 30) 22

Apply this value to Hazard Probability Table 2 to determine
Hazard Probability Level.

TABLE 2

HAZARD PROBABILITY*

Description	Level	Hazard Probability Value
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASIONAL	C	15 to 20
REMOTE	D	8 to 14
IMPROBABLE	E	less than 8

* Apply Hazard Probability Level to Table 3.

Part III. Risk Assessment. The risk assessment value for this site is determined using the following Table 3. Enter with the results of the hazard probability and hazard severity values.

TABLE 3

Probability Level		FREQUENT A	PROBABLE B	OCCASIONAL C	REMOTE D	IMPROBABLE E
Severity Category:						
CATASTROPHIC	I	1	1	2	3	4
CRITICAL	II	1	2	3	4	5
MARGINAL	III	2	3	4	4	5
NEGLIGIBLE	IV	3	4	4	5	5

RISK ASSESSMENT CODE (RAC)

RAC 1 Expedite INPR, recommending further action by CEHND - Immediately call CEHND-OE-ES - commercial (205) 895-1582 or DSN 645-1582.

RAC 2 High priority on completion of INPR - Recommend further action by CEHND.

RAC 3 Complete INPR - Recommend further action by CEHND.

RAC 4 Complete INPR - Recommend further action by CEHND.

RAC 5 Usually indicates that no further action (NOFA) is necessary. Submit NOFA and RAC to CEHND.

=====
 Part IV. Narrative. Summarize the documented evidence that support this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

The site has confirmed OE presence based on a historical EOD clearance report after site closure citing recovered 37mm HE, 75mm fuzes & 81mm mortar fins. Also, because it is theorized that infantry used this site (despite no conclusive documentation), it is considered possible that 2.36" rockets and rifle grenades could have been used because the site layout would have been well suited for this. Expended small arms also confirmed. No indication of burial/disposal.

This RAC also includes potential buried practice land mines. Historical documents cite their presence on site but do not specifically say where they were found/used. Based on interview information that notes combat type maneuvers in areas A-2, C-2 and D, it follows that the practice mines could exist here, unintentionally buried from training. It should also be noted that because practice mines are reusable, with the explosive components being separate items of issue, they too could remain separate from the mines.

ATTACHMENT B

17 Mar 95

Previous editions obsolete

RISK ASSESSMENT PROCEDURES FOR
ORDNANCE AND EXPLOSIVES (OE) SITES

Site Name	<u>Port Angeles Combat Rge</u>	Rater's Name	<u>Mary Jo Civis</u>
Site Location	<u>Port Angeles, WA</u>	Phone No.	<u>(309) 794-6010</u>
DERP Project #	<u>F10WA003301</u>	Organization	<u>CENCR-ED-DO</u>
Date Completed	<u>September, 1996</u>	RAC Score	<u>2</u>

OE RISK ASSESSMENT: Areas A-1, B, C-1 and F

This risk assessment procedure was developed in accordance with MIL-STD 882C and AR 385-10. The RAC score will be used by CEHND to prioritize the remedial action at Formerly Used Defense Sites. The OE risk assessment should be based upon best available information resulting from records searches, reports of Explosive Ordnance Disposal (EOD) detachment actions, and field observations, interviews, and measurements. This information is used to assess the risk involved based upon the potential OE hazards identified at the site. The risk assessment is composed of two factors, **hazard severity and hazard probability**. Personnel involved in visits to potential OE sites should view the CEHND videotape entitled "A Life Threatening Encounter: OE."

Part 1. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible mishap resulting from personnel exposure to various types and quantities of unexploded ordnance items.

TYPES OF ORDNANCE
(Circle all values that apply)

A. Conventional Ordnance and Ammunition	VALUE
Medium/Large Caliber (20 mm and larger)	<u>10</u>
Bombs, Explosive	10
Grenades, Hand and Rifle, Explosive	<u>10</u>
Landmines, Explosive	10
Rockets, Guided Missiles, Explosive	<u>10</u>
Detonators, Blasting Caps, Fuzes, Boosters, Bursters	6
Bombs, Practice (w/spotting charges)	6
Grenades, Practice (w/spotting charges)	6
Landmines, Practice (w/spotting charges)	4
Small Arms, Complete round (.22 cal-.50 cal)	1
Small Arms, Expended	<u>0</u>
Conventional Ordnance and Ammunition	<u>10</u>
(Select the largest single value)	
What evidence do you have regarding conventional OE?	<u>Confirmed</u>
<u>37mm, 75mm, 81mm mortars (EOD Rpt) for A-1, potential for others.</u>	
<u>2.36" rocket & rifle grenades theorized for A-1 only.</u>	

B. Pyrotechnics. (For munitions not described above)

VALUE

Munition (Container) Containing
White Phosphorous or other
Pyrophoric Material (i.e.,
Spontaneously Flammable) 10

Munition Containing a Flame
or Incendiary Material (i.e. Napalm,
Triethylaluminum Metal Incendiaries) 6

Flares, Signals, Simulators, Screening
Smoke (other than WP) 4

Pyrotechnics (Select the largest single value) 0

What evidence do you have regarding pyrotechnics? 75mm WP indicated
per interview, however, considered included/rated in A.

C. Bulk High Explosives (Not an integral part of convention ordnance;
uncontainerized.)

VALUE

Primary or Initiating Explosive
(Lead Styphnate, Lead Azide,
Nitroglycerin, Mercury Azide,
Mercury Fulminate, Tetracene, etc.) 10

Demolition Charges 10

Secondary Explosives 8
(PETN, Composition A, B, C,
Tetryl, TNT, RDX, HMX, HBX,
Black Powder, etc).

Military Dynamite 6

Less Sensitive Explosives 3
(Ammonium Nitrate, Explosive D, etc).

High Explosives (Select the largest single value) 0

What evidence do you have regarding bulk explosives? None

D. Bulk Propellants (Not an integral part of rockets, guided missiles, or
other conventional ordnance; uncontainerized)

VALUE

Solid or Liquid Propellants 6

Propellants 0

What evidence do you have regarding propellants? None

E. Chemical Warfare Material and Radiological Weapons

	VALUE
Toxic Chemical Agents (Choking, Nerve, Blood, Blister)	25
War Gas Identification Sets	20
Radiological	15
Riot Control and Miscellaneous (Vomiting, Tear)	5
Chemical and Radiological (Select the largest single value)	<u>0</u>
What evidence do you have of chemical/radiological OE?	<u>None</u>

TOTAL HAZARD SEVERITY VALUE 10
 (Sum of Largest Values for A through E--Maximum of 61).
Apply this value to Table 1 to determine Hazard Severity Category.

TABLE 1

HAZARD SEVERITY*

Description	Category	Hazard Severity Value
CATASTROPHIC	I	21 and greater
CRITICAL	II	10 to 20
MARGINAL	III	5 to 9
NEGLIGIBLE	(IV)	1 to 4
**NONE		0

* Apply Hazard Severity Category to Table 3.

** If Hazard Severity Value is 0, you do not need to complete Part II. Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

Part II. Hazard Probability. The probability that a hazard has been or will be created due to the presence and other related factors of unexploded ordnance or explosive materials on a formerly used DOD site.

AREA, EXTENT, ACCESSIBILITY OF CONTAMINATION
(Circle all values that apply)

A. Locations of OE Hazards

	VALUE
On the surface	5
Within Tanks, Pipes, Vessels or Other confined locations	4
Inside walls, ceilings, or other parts of Buildings or Structures	3
Subsurface	2
Location (Select the single largest value)	<u>5</u>

What evidence do you have regarding location of OE? Potential
to remain on surface yet due to dense forests and mountainous terrain
that would prevent previous sweeps from being thorough. Embedded in
trees as confirmed by documented accident. Potential sub-surface.

B. Distance to nearest inhabited locations or structures likely to be at risk from OE hazard (roads, parks, playgrounds, and buildings).

	VALUE
Less than 1250 feet	5
1250 feet to 0.5 miles	4
0.5 miles to 1.0 miles	3
1.0 miles to 2.0 miles	2
Over 2 miles	1
Distance (Select the single largest value)	<u>5</u>

What are the nearest inhabited structures? One residence
within SW ¼ of Section 4. Several residences
along Deer Park Rd (north) between .5 and 2 mi.

C. Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary.

	VALUE
26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0
Number of Buildings (<u>Select the single largest value</u>)	<u>3</u>

Narrative Several residences along Deer Park Road, north of areas.

D. Types of Buildings (within a 2 mile radius)

	VALUE
Educational, Child Care, Residential, Hospitals, Hotels, Commercial, Shopping Centers	5
Industrial, Warehouse, etc.	4
Agricultural, Forestry, etc.	3
Detention, Correctional	2
No Buildings	0
Types of Buildings (<u>Select the largest single value</u>)	<u>5</u>

Describe types of buildings in the area. SAB - Residences only

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance:

BARRIER	VALUE
No barrier or security system	5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site). Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	4
A barrier, (of any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security guard, but no barrier	2
Isolated Site	1
a 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel) which continuously monitors and controls entry onto the facility, or An artificial or natural barrier (e.g., a fence combined with a cliff), which completely surrounds the facility; and a means to control entry, at all times, through the gates or other entrances to the facility (e.g., an attendant, television monitor, locked entrance, or controlled roadway access to the facility).	0

Accessibility (Select the single largest value) 4

Describe the site accessibility. Barbed wire fence precludes entry from some portions of areas, particularly main access road. Natural barriers limit access to other portions of site(canyon, mts., trees).

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Example would be excessive soil erosion by beaches or streams, increasing land development that could reduce distance from the site to inhabited areas or otherwise increase accessibility.

	VALUE
Expected	5
None Anticipated	0
Site Dynamics (<u>Select largest value</u>)	<u>0</u>

Describe the site dynamics. Mostly owned by city or part of Olympic Park with no chance for change. Portions of area F private owners but unused/undeveloped. If new residence of 2 built, would not affect RAC.

=====
Total Hazard Probability Value
(Sum of Largest Values for A through F--Maximum of 30) 22

Apply this value to Hazard Probability Table 2 to determine
Hazard Probability Level.

TABLE 2

HAZARD PROBABILITY*

Description	Level	Hazard Probability Value
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASIONAL	C	15 to 20
REMOTE	D	8 to 14
IMPROBABLE	E	less than 8

* Apply Hazard Probability Level to Table 3.

Part III. Risk Assessment. The risk assessment value for this site is determined using the following Table 3. Enter with the results of the hazard probability and hazard severity values.

TABLE 3

Probability Level		FREQUENT A	PROBABLE B	OCCASIONAL C	REMOTE D	IMPROBABLE E
Severity Category:						
CATASTROPHIC	I	1	1	2	3	4
CRITICAL	II	1	2	3	4	5
MARGINAL	III	2	3	4	4	5
NEGLIGIBLE	IV	3	4	4	5	5

RISK ASSESSMENT CODE (RAC)

RAC 1 Expedite INPR, recommending further action by CEHND - Immediately call CEHND-OE-ES - commercial (205) 895-1582 or DSN 645-1582.

RAC 2 High priority on completion of INPR - Recommend further action by CEHND.

RAC 3 Complete INPR - Recommend further action by CEHND.

RAC 4 Complete INPR - Recommend further action by CEHND.

RAC 5 Usually indicates that no further action (NOFA) is necessary. Submit NOFA and RAC to CEHND.

Part IV. Narrative. Summarize the documented evidence that support this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

Confirmed OE presence is based on a historical EOD clearance report after site closure citing recovered 37mm HE, 75mm fuzes and 81mm mortar fins within A. Because of the confirmed use of 75mm and 37mm for indirect fire into area B, there is a high probability that they exist there also. Due to the unconfirmed nature of the indirect fire target and range of the items, there is the potential that OE could remain in areas C and F also.

Because it is theorized that infantry used the site (despite no conclusive documentation), it is considered possible that 2.36" rockets and rifle grenades could have been used because the site layout would have been well suited for this. However, their range limits their potential to area A-1.

ATTACHMENT C

17 Mar 95

Previous editions obsolete

RISK ASSESSMENT PROCEDURES FOR
ORDNANCE AND EXPLOSIVES (OE) SITES

Site Name	<u>Port Angeles Combat Rge</u>	Rater's Name	<u>Mary Jo Civis</u>
Site Location	<u>Port Angeles, WA</u>	Phone No.	<u>(309) 794-6010</u>
DERP Project #	<u>F1OWA003301</u>	Organization	<u>CENCR-ED-DO</u>
Date Completed	<u>September, 1996</u>	RAC Score	<u>3</u>

OE RISK ASSESSMENT: Areas A-2 and C-2

This risk assessment procedure was developed in accordance with MIL-STD 882C and AR 385-10. The RAC score will be used by CEHND to prioritize the remedial action at Formerly Used Defense Sites. The OE risk assessment should be based upon best available information resulting from records searches, reports of Explosive Ordnance Disposal (EOD) detachment actions, and field observations, interviews, and measurements. This information is used to assess the risk involved based upon the potential OE hazards identified at the site. The risk assessment is composed of two factors, **hazard severity and hazard probability**. Personnel involved in visits to potential OE sites should view the CEHND videotape entitled "A Life Threatening Encounter: OE."

Part 1. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible mishap resulting from personnel exposure to various types and quantities of unexploded ordnance items.

TYPES OF ORDNANCE
(Circle all values that apply)

A. Conventional Ordnance and Ammunition	VALUE
Medium/Large Caliber (20 mm and larger)	10
Bombs, Explosive	10
Grenades, Hand and Rifle, Explosive	10
Landmines, Explosive	10
Rockets, Guided Missiles, Explosive	10
Detonators, Blasting Caps, Fuzes, Boosters, Bursters	6
Bombs, Practice (w/spotting charges)	6
Grenades, Practice (w/spotting charges)	6
Landmines, Practice (w/spotting charges)	4
Small Arms, Complete round (.22 cal-.50 cal)	1
Small Arms, Expended	0
Conventional Ordnance and Ammunition	<u>10</u>
(Select the largest single value)	

What evidence do you have regarding conventional OE? Potential to exist based on historical document noting practice land mines. Confirmed 37mm, 75mm, 81mm mortars (EOD Rpt). 2.36" rkt & rifle grenades theorized.

B. Pyrotechnics. (For munitions not described above)

VALUE

Munition (Container) Containing White Phosphorous or other Pyrophoric Material (i.e., Spontaneously Flammable)	10
Munition Containing a Flame or Incendiary Material (i.e. Napalm, Triethylaluminum Metal Incendiaries)	6
Flares, Signals, Simulators, Screening Smoke (other than WP)	4
Pyrotechnics (<u>Select the largest single value</u>)	<u>0</u>

What evidence do you have regarding pyrotechnics? 75mm WP indicated
per interview, however, considered included/rated in A.

C. Bulk High Explosives (Not an integral part of convention ordnance;
uncontainerized.)

VALUE

Primary or Initiating Explosive (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10
Demolition Charges	10
Secondary Explosives (PETN, Composition A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc).	8
Military Dynamite	6
Less Sensitive Explosives (Ammonium Nitrate, Explosive D, etc).	3
High Explosives (<u>Select the largest single value</u>)	<u>0</u>

What evidence do you have regarding bulk explosives? None

D. Bulk Propellants (Not an integral part of rockets, guided missiles, or
other conventional ordnance; uncontainerized)

VALUE

Solid or Liquid Propellants	6
Propellants	<u>0</u>
What evidence do you have regarding propellants?	<u>None</u>

E. Chemical Warfare Material and Radiological Weapons

	VALUE
Toxic Chemical Agents (Choking, Nerve, Blood, Blister)	25
War Gas Identification Sets	20
Radiological	15
Riot Control and Miscellaneous (Vomiting, Tear)	5
Chemical and Radiological (Select the largest single value)	0
What evidence do you have of chemical/radiological OE?	None

TOTAL HAZARD SEVERITY VALUE 10
 (Sum of Largest Values for A through E--Maximum of 61).
Apply this value to Table 1 to determine Hazard Severity Category.

TABLE 1

HAZARD SEVERITY*

Description	Category	Hazard Severity Value
CATASTROPHIC	I	21 and greater
CRITICAL	II	10 to 20
MARGINAL	III	5 to 9
NEGLIGIBLE	(IV)	1 to 4
**NONE		0

* Apply Hazard Severity Category to Table 3.

** If Hazard Severity Value is 0, you do not need to complete Part II. Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

Part II. Hazard Probability. The probability that a hazard has been or will be created due to the presence and other related factors of unexploded ordnance or explosive materials on a formerly used DOD site.

AREA, EXTENT, ACCESSIBILITY OF CONTAMINATION
(Circle all values that apply)

A. Locations of OE Hazards

	VALUE
On the surface	5
Within Tanks, Pipes, Vessels or Other confined locations	4
Inside walls, ceilings, or other parts of Buildings or Structures	3
Subsurface	(2)
Location (<u>Select the single largest value</u>)	<u>2</u>

What evidence do you have regarding location of OE? Due to limited amount of acreage, past surface sweeps, SI, & use of area for grazing since site closure without any OE noted, any still remaining would be at sub-surface levels.

B. Distance to nearest inhabited locations or structures likely to be at risk from OE hazard (roads, parks, playgrounds, and buildings).

	VALUE
Less than 1250 feet	(5)
1250 feet to 0.5 miles	4
0.5 miles to 1.0 miles	3
1.0 miles to 2.0 miles	2
Over 2 miles	1
Distance (<u>Select the single largest value</u>)	<u>5</u>

What are the nearest inhabited structures? One residence near edge of area C-2 (in SW ¼ of Section 4). Several residences along Deer Park Rd (north) between .6 and 2 mi.

C. Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary.

	VALUE
26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0
Number of Buildings (Select the single largest value)	<u>3</u>

Narrative Several residences north along Deer Park Road.

D. Types of Buildings (within a 2 mile radius)

	VALUE
Educational, Child Care, Residential, Hospitals, Hotels, Commercial, Shopping Centers	5
Industrial, Warehouse, etc.	4
Agricultural, Forestry, etc.	3
Detention, Correctional	2
No Buildings	0
Types of Buildings (Select the largest single value)	<u>5</u>

Describe types of buildings in the area. SAB - Residences only

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance:

BARRIER	VALUE
No barrier or security system	5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site). Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	4
A barrier, (of any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security guard, but no barrier	2
Isolated Site	1
a 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel) which continuously monitors and controls entry onto the facility, or An artificial or natural barrier (e.g., a fence combined with a cliff), which completely surrounds the facility; and a means to control entry, at all times, through the gates or other entrances to the facility (e.g., an attendant, television monitor, locked entrance, or controlled roadway access to the facility).	0
Accessibility (<u>Select the single largest value</u>)	<u>3</u>

Describe the site accessibility. While the barbed wire fence is for grazing, it is in good repair and also intended to deny access. It is aided by the natural barrier to the west - deep canyon.

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Example would be excessive soil erosion by beaches or streams, increasing land development that could reduce distance from the site to inhabited areas or otherwise increase accessibility.

	VALUE
Expected	5
None Anticipated	0
Site Dynamics (<u>Select largest value</u>)	<u>0</u>

Describe the site dynamics. Owned by city and maintained as water shed with leased grazing. Absolutely no probable chance in use.

Total Hazard Probability Value
(Sum of Largest Values for A through F--Maximum of 30)

18

Apply this value to Hazard Probability Table 2 to determine
Hazard Probability Level.

TABLE 2

HAZARD PROBABILITY*

Description	Level	Hazard Probability Value
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASIONAL	C	15 to 20
REMOTE	D	8 to 14
IMPROBABLE	E	less than 8

* Apply Hazard Probability Level to Table 3.

Part III. Risk Assessment. The risk assessment value for this site is determined using the following Table 3. Enter with the results of the hazard probability and hazard severity values.

TABLE 3

Probability Level		FREQUENT A	PROBABLE B	OCCASIONAL C	REMOTE D	IMPROBABLE E
Severity Category:						
CATASTROPHIC	I	1	1	2	3	4
CRITICAL	II	1	2	3	4	5
MARGINAL	III	2	3	4	4	5
NEGLIGIBLE	IV	3	4	4	5	5

RISK ASSESSMENT CODE (RAC)

- RAC 1 Expedite INPR, recommending further action by CEHND - Immediately call CEHND-OE-ES - commercial (205) 895-1582 or DSN 645-1582.
- RAC 2 High priority on completion of INPR - Recommend further action by CEHND.
- RAC 3 Complete INPR - Recommend further action by CEHND.
- RAC 4 Complete INPR - Recommend further action by CEHND.
- RAC 5 Usually indicates that no further action (NOFA) is necessary. Submit NOFA and RAC to CEHND.

Part IV. Narrative. Summarize the documented evidence that support this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

This RAC is based on potential buried practice land mines. Historical documents cite their presence on site but do not specifically say where they were found/used. Based on interview information that notes combat type maneuvers in this area, it follows that the practice mines would exist in this area if any remain. It should also be noted that because practice mines are reusable, explosive component parts could also be present.

This area has confirmed OE presence based on a historical EOD clearance report after site closure citing recovered 37mm HE, 75mm fuzes & 81mm mortar fins within A-2. Also, because it is theorized that infantry used this site (despite no conclusive documentation), it is considered possible that 2.36" rockets and rifle grenades could have been used because the site layout would have been well suited for this. Expended small arms is also confirmed. No indication of burial/disposal.

ATTACHMENT D

RISK ASSESSMENT PROCEDURES FOR
ORDNANCE AND EXPLOSIVES (OE) SITES

Site Name	<u>Port Angeles Combat Rge</u>	Rater's Name	<u>Mary Jo Civis</u>
Site Location	<u>Port Angeles, WA</u>	Phone No.	<u>(309) 794-6010</u>
DERP Project #	<u>F1OWA003301</u>	Organization	<u>CENCR-ED-DO</u>
Date Completed	<u>September, 1996</u>	RAC Score	<u>4</u>

OE RISK ASSESSMENT: Area D

This risk assessment procedure was developed in accordance with MIL-STD 882C and AR 385-10. The RAC score will be used by CEHND to prioritize the remedial action at Formerly Used Defense Sites. The OE risk assessment should be based upon best available information resulting from records searches, reports of Explosive Ordnance Disposal (EOD) detachment actions, and field observations, interviews, and measurements. This information is used to assess the risk involved based upon the potential OE hazards identified at the site. The risk assessment is composed of two factors, **hazard severity and hazard probability**. Personnel involved in visits to potential OE sites should view the CEHND videotape entitled "A Life Threatening Encounter: OE."

Part 1. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible mishap resulting from personnel exposure to various types and quantities of unexploded ordnance items.

TYPES OF ORDNANCE
(Circle all values that apply)

A. Conventional Ordnance and Ammunition	VALUE
Medium/Large Caliber (20 mm and larger)	10
Bombs, Explosive	10
Grenades, Hand and Rifle, Explosive	10
Landmines, Explosive	10
Rockets, Guided Missiles, Explosive	10
Detonators, Blasting Caps, Fuzes, Boosters, Bursters	6
Bombs, Practice (w/spotting charges)	6
Grenades, Practice (w/spotting charges)	6
Landmines, Practice (w/spotting charges)	4
Small Arms, Complete round (.22 cal-.50 cal)	1
Small Arms, Expended	0

Conventional Ordnance and Ammunition

4

(Select the largest single value)

What evidence do you have regarding conventional OE? Potential
existence based on historical document noting practice land mines found
on site and interview info noting combat training in this area.

B. Pyrotechnics. (For munitions not described above)

VALUE

Munition (Container) Containing
White Phosphorous or other
Pyrophoric Material (i.e.,
Spontaneously Flammable)

10

Munition Containing a Flame
or Incendiary Material (i.e. Napalm,
Triethylaluminum Metal Incendiaries)

6

Flares, Signals, Simulators, Screening
Smoke (other than WP)

4

Pyrotechnics (Select the largest single value)

0

What evidence do you have regarding pyrotechnics?

None

C. Bulk High Explosives (Not an integral part of convention ordnance;
uncontainerized.)

VALUE

Primary or Initiating Explosive
(Lead Styphnate, Lead Azide,
Nitroglycerin, Mercury Azide,
Mercury Fulminate, Tetracene, etc.)

10

Demolition Charges

10

Secondary Explosives
(PETN, Composition A, B, C,
Tetryl, TNT, RDX, HMX, HBX,
Black Powder, etc).

8

Military Dynamite

6

Less Sensitive Explosives
(Ammonium Nitrate, Explosive D, etc).

3

High Explosives (Select the largest single value)

0

What evidence do you have regarding bulk explosives?

None

D. Bulk Propellants (Not an integral part of rockets, guided missiles, or
other conventional ordnance; uncontainerized)

VALUE

Solid or Liquid Propellants

6

Propellants

0

What evidence do you have regarding propellants?

None

E. Chemical Warfare Material and Radiological Weapons

	VALUE
Toxic Chemical Agents (Choking, Nerve, Blood, Blister)	25
War Gas Identification Sets	20
Radiological	15
Riot Control and Miscellaneous (Vomiting, Tear)	5
Chemical and Radiological (Select the largest single value)	<u>0</u>
What evidence do you have of chemical/radiological OE?	<u>None</u>

TOTAL HAZARD SEVERITY VALUE _____
 (Sum of Largest Values for A through E--Maximum of 61).
Apply this value to Table 1 to determine Hazard Severity Category.

TABLE 1

HAZARD SEVERITY*

Description	Category	Hazard Severity Value
CATASTROPHIC	I	21 and greater
CRITICAL	II	10 to 20
MARGINAL	III	5 to 9
NEGLIGIBLE	(IV)	1 to 4
**NONE		0

* Apply Hazard Severity Category to Table 3.

** If Hazard Severity Value is 0, you do not need to complete Part II. Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

Part II. Hazard Probability. The probability that a hazard has been or will be created due to the presence and other related factors of unexploded ordnance or explosive materials on a formerly used DOD site.

AREA, EXTENT, ACCESSIBILITY OF CONTAMINATION
(Circle all values that apply)

A. Locations of OE Hazards

	VALUE
On the surface	5
Within Tanks, Pipes, Vessels or Other confined locations	4
Inside walls, ceilings, or other parts of Buildings or Structures	3
Subsurface	2
Location (<u>Select the single largest value</u>)	<u>2</u>

What evidence do you have regarding location of OE? Due to limited amount of acreage, past surface sweeps, SI, & use of area for grazing since site closure without any OE noted, any still remaining would be at sub-surface levels.

B. Distance to nearest inhabited locations or structures likely to be at risk from OE hazard (roads, parks, playgrounds, and buildings).

	VALUE
Less than 1250 feet	5
1250 feet to 0.5 miles	4
0.5 miles to 1.0 miles	3
1.0 miles to 2.0 miles	2
Over 2 miles	1
Distance (<u>Select the single largest value</u>)	<u>4</u>

What are the nearest inhabited structures? One residence approximately .2 mi away in SW ¼ of Section 4. Several residences along Deer Park Rd (north) between .5 and 2 mi.

C. Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary.

	VALUE
26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0
Number of Buildings (<u>Select the single largest value</u>)	<u>3</u>
Narrative <u>Several residences along Deer Park Road.</u>	

D. Types of Buildings (within a 2 mile radius)

	VALUE
Educational, Child Care, Residential, Hospitals, Hotels, Commercial, Shopping Centers	5
Industrial, Warehouse, etc.	4
Agricultural, Forestry, etc.	3
Detention, Correctional	2
No Buildings	0
Types of Buildings (<u>Select the largest single value</u>)	<u>5</u>
Describe types of buildings in the area. <u>SAB - Residences only</u>	

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance:

BARRIER	VALUE
No barrier or security system	5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site). Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	4
A barrier, (of any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security guard, but no barrier	2
Isolated Site	1
a 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel) which continuously monitors and controls entry onto the facility, or An artificial or natural barrier (e.g., a fence combined with a cliff), which completely surrounds the facility; and a means to control entry, at all times, through the gates or other entrances to the facility (e.g., an attendant, television monitor, locked entrance, or controlled roadway access to the facility).	0
Accessibility (<u>Select the single largest value</u>)	<u>3</u>

Describe the site accessibility. While the barbed wire fence is for grazing, it is in good repair and also intended to deny access. It is aided by the natural barrier to the west - deep canyon.

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Example would be excessive soil erosion by beaches or streams, increasing land development that could reduce distance from the site to inhabited areas or otherwise increase accessibility.

	VALUE
Expected	5
None Anticipated	0
Site Dynamics (<u>Select largest value</u>)	<u>0</u>

Describe the site dynamics. Owned by city and maintained as water shed with leased grazing. No probable change in use.

=====
Total Hazard Probability Value
(Sum of Largest Values for A through F--Maximum of 30)

17

Apply this value to Hazard Probability Table 2 to determine
Hazard Probability Level.

TABLE 2

HAZARD PROBABILITY*

Description	Level	Hazard Probability Value
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASIONAL	C	15 to 20
REMOTE	D	8 to 14
IMPROBABLE	E	less than 8

* Apply Hazard Probability Level to Table 3.

Part III. Risk Assessment. The risk assessment value for this site is determined using the following Table 3. Enter with the results of the hazard probability and hazard severity values.

TABLE 3

Probability Level		FREQUENT A	PROBABLE B	OCCASIONAL C	REMOTE D	IMPROBABLE E
Severity Category:						
CATASTROPHIC	I	1	1	2	3	4
CRITICAL	II	1	2	3	4	5
MARGINAL	III	2	3	4	4	5
NEGLIGIBLE	IV	3	4	4	5	5

RISK ASSESSMENT CODE (RAC)

- RAC 1 Expedite INPR, recommending further action by CEHND - Immediately call CEHND-OE-ES - commercial (205) 895-1582 or DSN 645-1582.
- RAC 2 High priority on completion of INPR - Recommend further action by CEHND.
- RAC 3 Complete INPR - Recommend further action by CEHND.
- RAC 4 Complete INPR - Recommend further action by CEHND.
- RAC 5 Usually indicates that no further action (NOFA) is necessary. Submit NOFA and RAC to CEHND.

Part IV. Narrative. Summarize the documented evidence that support this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

This RAC is based on potential buried practice land mines. Historical documents cite their presence on site but do not specifically say where they were found/used. Based on interview information that notes combat type maneuvers in this area, it follows that the practice mines would exist in this area if any remain. It should also be noted that because practice mines are reusable, explosive component parts could also be present.

ATTACHMENT E

RISK ASSESSMENT PROCEDURES FOR
ORDNANCE AND EXPLOSIVES (OE) SITES

Site Name	<u>Port Angeles Combat Rge</u>	Rater's Name	<u>Mary Jo Civis</u>
Site Location	<u>Port Angeles, WA</u>	Phone No.	<u>(309) 794-6010</u>
DERP Project #	<u>F1OWA003301</u>	Organization	<u>CENCR-ED-DO</u>
Date Completed	<u>September, 1996</u>	RAC Score	<u>5</u>

OE RISK ASSESSMENT: Area E

This risk assessment procedure was developed in accordance with MIL-STD 882C and AR 385-10. The RAC score will be used by CEHND to prioritize the remedial action at Formerly Used Defense Sites. The OE risk assessment should be based upon best available information resulting from records searches, reports of Explosive Ordnance Disposal (EOD) detachment actions, and field observations, interviews, and measurements. This information is used to assess the risk involved based upon the potential OE hazards identified at the site. The risk assessment is composed of two factors, **hazard severity and hazard probability**. Personnel involved in visits to potential OE sites should view the CEHND videotape entitled "A Life Threatening Encounter: OE."

Part 1. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible mishap resulting from personnel exposure to various types and quantities of unexploded ordnance items.

TYPES OF ORDNANCE
(Circle all values that apply)

A. Conventional Ordnance and Ammunition	VALUE
Medium/Large Caliber (20 mm and larger)	10
Bombs, Explosive	10
Grenades, Hand and Rifle, Explosive	10
Landmines, Explosive	10
Rockets, Guided Missiles, Explosive	10
Detonators, Blasting Caps, Fuzes, Boosters, Bursters	6
Bombs, Practice (w/spotting charges)	6
Grenades, Practice (w/spotting charges)	6
Landmines, Practice (w/spotting charges)	4
Small Arms, Complete round (.22 cal-.50 cal)	1
Small Arms, Expended	0
Conventional Ordnance and Ammunition (Select the largest single value)	<u>0</u>
What evidence do you have regarding conventional OE? historical records of ordnance usage within this area of the site.	<u>No signs or</u>

B. Pyrotechnics. (For munitions not described above)

VALUE

Munition (Container) Containing White Phosphorous or other Pyrophoric Material (i.e., Spontaneously Flammable)	10
Munition Containing a Flame or Incendiary Material (i.e. Napalm, Triethylaluminum Metal Incendiaries)	6
Flares, Signals, Simulators, Screening Smoke (other than WP)	4
Pyrotechnics (<u>Select the largest single value</u>)	<u>0</u>
What evidence do you have regarding pyrotechnics?	<u>None</u>

C. Bulk High Explosives (Not an integral part of convention ordnance;
uncontainerized.)

VALUE

Primary or Initiating Explosive (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10
Demolition Charges	10
Secondary Explosives (PETN, Composition A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc).	8
Military Dynamite	6
Less Sensitive Explosives (Ammonium Nitrate, Explosive D, etc).	3
High Explosives (<u>Select the largest single value</u>)	<u>0</u>
What evidence do you have regarding bulk explosives?	<u>None</u>

D. Bulk Propellants (Not an integral part of rockets, guided missiles, or
other conventional ordnance; uncontainerized)

VALUE

Solid or Liquid Propellants	6
Propellants	<u>0</u>
What evidence do you have regarding propellants?	<u>None</u>

E. Chemical Warfare Material and Radiological Weapons

	VALUE
Toxic Chemical Agents (Choking, Nerve, Blood, Blister)	25
War Gas Identification Sets	20
Radiological	15
Riot Control and Miscellaneous (Vomiting, Tear)	5
Chemical and Radiological (Select the largest single value)	<u>0</u>
What evidence do you have of chemical/radiological OE?	<u>None</u>

TOTAL HAZARD SEVERITY VALUE 0
 (Sum of Largest Values for A through E--Maximum of 61).
Apply this value to Table 1 to determine Hazard Severity Category.

TABLE 1

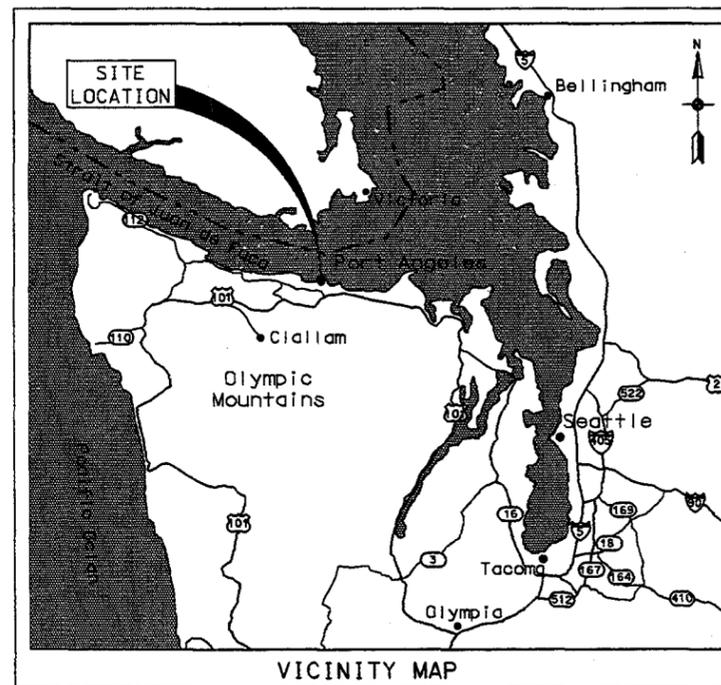
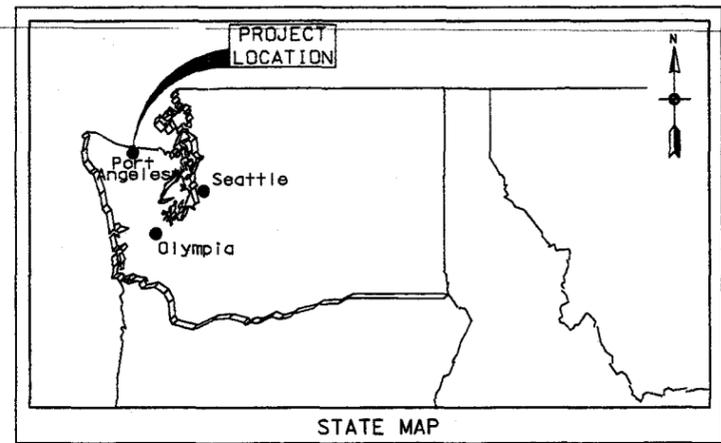
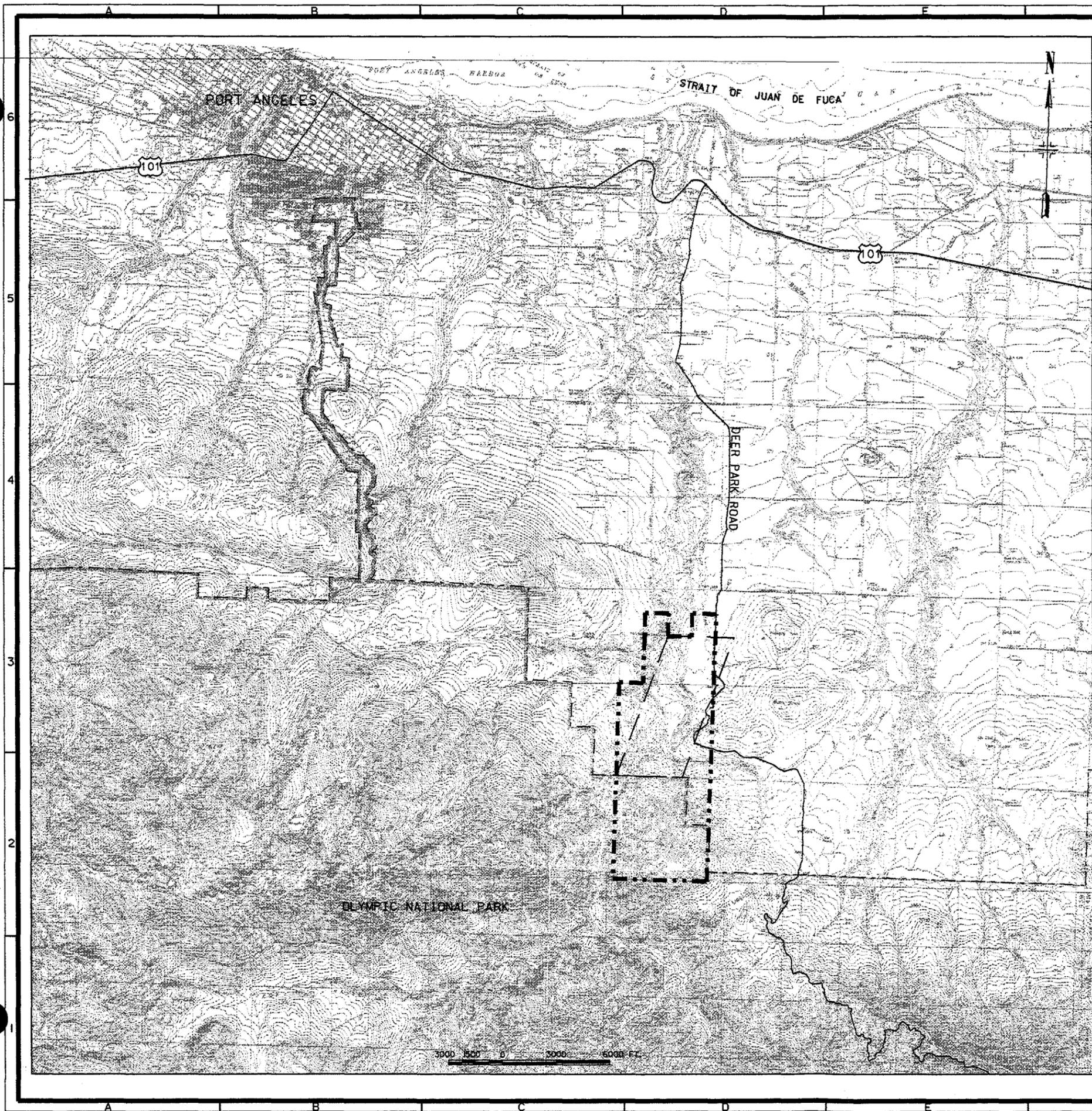
HAZARD SEVERITY*

Description	Category	Hazard Severity Value
CATASTROPHIC	I	21 and greater
CRITICAL	II	10 to 20
MARGINAL	III	5 to 9
NEGLIGIBLE	(IV)	1 to 4
**NONE		<u>0</u>

* Apply Hazard Severity Category to Table 3.

** If Hazard Severity Value is 0, you do not need to complete Part II. Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

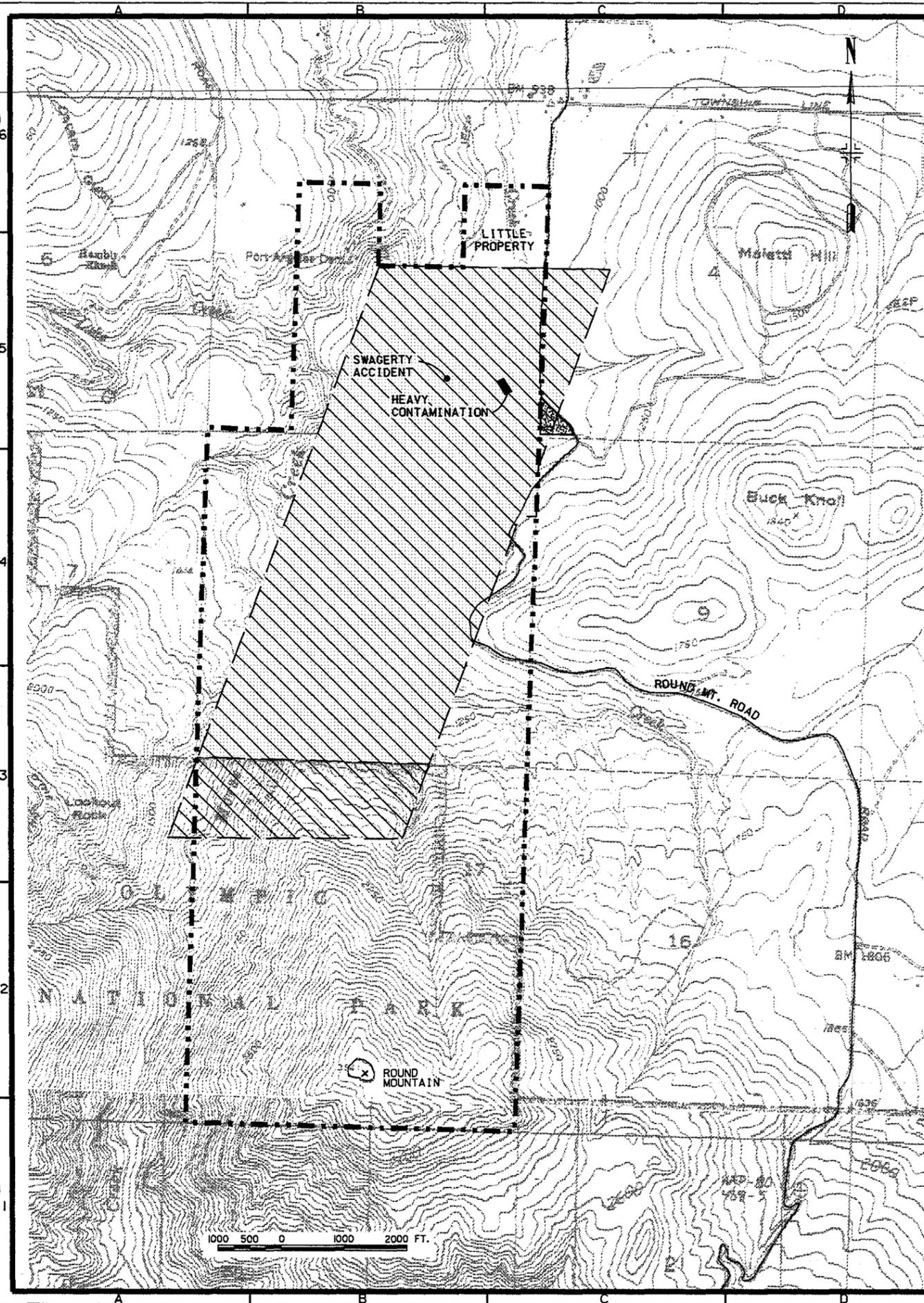
REPORT PLATES



LEGEND:

- FORMER COMBAT RANGE BOUNDARY 1943
- - - FORMER COMBAT RANGE BOUNDARY 1958
- - - OLYMPIC NATIONAL PARK BOUNDARY
- ☰ INTERSTATE HIGHWAYS
- ⬡ U.S. HIGHWAYS
- STATE HIGHWAYS

	US Army Corps of Engineers Rock Island District	Designed By: M. J. CIVIS	Date:
		Drawn By: J. D. TURNER	Scale: AS SHOWN
		Checked By: G. C. OFSLAGER	Drawing Code:
		Reviewed By: D. J. HOLMES	Project Number: F10WA003301
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS ROCK ISLAND, ILLINOIS		Sheet Reference Number: PLATE 1	
FORMER PORT ANGELES COMBAT RANGE PORT ANGELES, WASHINGTON		Sheet 1 of	



O.E. CLEARANCE HISTORY			
AREA	CLEARANCE DATE	ACREAGE	REFERENCE DOCUMENT
	1949	775.0	E-5 & L-3
	1952	10.0*	E-6 & F-6
	1955	1600	E-7
	1956, 1957	0.71	E-8, E-9

* PRECISE LOCATION NOT VERIFIED.

LEGEND:

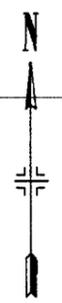
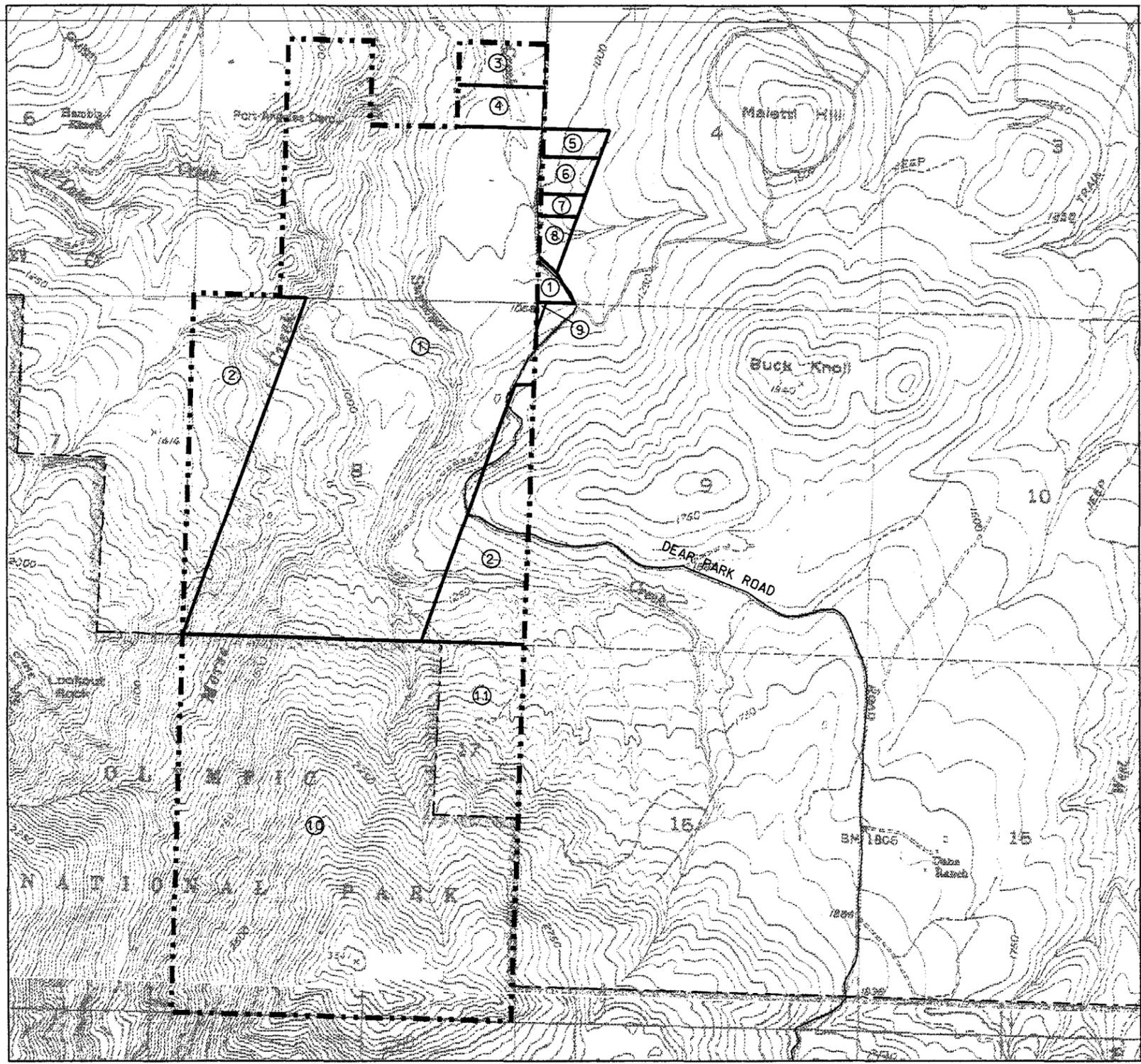
-  FORMER PORT ANGELES COMBAT RANGE 1943 SITE BOUNDARY
-  REVISED "PROBABLE LIMITS OF CONTAMINATION" - 1958, 652 ACRES REPURCHASED BY GOVERNMENT. (SEE DOCUMENT L-4)
-  SWAGERTY ACCIDENT 1948 (SEE DOCUMENTS E-4 & L-3)
-  AREA OF HEAVY CONTAMINATION AND PREVIOUS CLEARANCES (SEE DOCUMENT L-3)

	Designed By: M. J. CIVIS	Date:
	Drawn By: J. D. TURNER	Scale: AS SHOWN
	Checked By: G. C. OFSLAGER	Drawing Code:
	Reviewed By: D. J. HOLMES	Project Number: F10WA003301

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
ROCK ISLAND, ILLINOIS
FORMER PORT ANGELES COMBAT RANGE
PORT ANGELES, WASHINGTON

**CONTAMINATION/
CLEARANCE HISTORY**

Sheet
Reference
Number:
PLATE 3
Sheet 3 of 8



TRACT	OWNERSHIP	ACREAGE
①	CITY OF PORT ANGELES	718.24
②	MANKE LUMBER CO.	191.03
③	MST OF 1980	20.83
④	BARON	19.79
⑤	QUARTO - REED	14.10
⑥	DIEHL	10.78
⑦	RGC/DEER PARK L.P.	5.05
⑧	SCHREINER	7.12
⑨	STEINECKER	0.93
⑩	OLYMPIC STATE FOREST	560.00
⑪	GREEN CROW PARTNERSHIP	80.00
TOTAL:		1627.87

LEGEND:

- 1943 SITE BOUNDARY
- REAL ESTATE BOUNDARY
- · - NATIONAL PARK BOUNDARY

NOTES:

1. INFORMATION ABSTRACTED FROM REFERENCE B-29.

US Army Corps of Engineers Rock Island District	Designed By: M. J. CIVIS	Date:
	Drawn By: J. D. TURNER	Scale: AS SHOWN
	Checked By: G. C. DFSLAGER	Drawing Code:
	Reviewed By: D. J. HOLMES	Project Number: F10WA003301
U.S. ARMY ENGINEER DISTRICT ROCK ISLAND, ILLINOIS FORMER PORT ANGELES COMBAT RANGE PORT ANGELES, WASHINGTON CURRENT LAND OWNERSHIP (1994)		Sheet Reference Number: PLATE 4 Sheet 4 of 8

25-OCT-1986 12:19
etproj\etangel\mapsp04.dgn

