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SECTION 2.3

OPERABLE UNIT 3
EXPLOSIVE ORDNANCE DISPOSAL RANGE
OUTDOOR FIRING RANGE

2.3.1 SCOPE AND NATURE OF FIVE-YEAR REVIEW

The USAF, in coordination with USEPA, Region I and the MEDEP, conducted this review of the Explosive Ordnance Disposal (EOD) Range and Outdoor Firing Range (OFR) remedies pursuant to CERCLA section 121(c), NCP section 300.400 (f) (4) (ii), and OSWER Directives 9355.7-02 (May 23, 1991) and 93557-02A (Jun 26, 1994). It is a statutory review. The purpose of the review is to ensure that a remedial action remains protective of public health and the environment. This document has been prepared within the scope of a level I review which is applicable for this site.

2.3.2 SUMMARY OF SITE CONDITIONS

2.3.2.1 Site Location and Description

EOD Range

The EOD Range site has been managed as a "source control" site for the purposes of remediating soil media for the protection of human health and the environment and elimination of sources of groundwater contamination. The EOD Range consists of two portions which total approximately 65 acres (see Figure 2.3-1). The southern portion of the range (approximately 35 acres) is generally grass covered or barren. The remainder of the site, about 30 acres, is peripheral to the north and west of the open grassy area. This portion of the site is wooded and appeared to be an abandoned EOD Range based on the presence of warning signs and debris consistent with EOD operations observed during the Site Investigations (SI).

OFR

The OFR site has been managed as a "source control" site for the purposes of remediating soil media for the protection of human health and the environment and elimination of sources of groundwater contamination. The OFR site is located in the east-central portion of the base (Figure 2.3-1). The range consisted of a small arms firing line, a skeet range, and a grenade range. The firing line faces east and is surrounded on three sides by an earthen berm and backstop. The area between the firing line and backstop is relatively flat and primarily grass covered.

2.3.2.2 Site History

EOD Range

The site was previously used for disposal of ammunition by detonation and burning, and for burial of munitions residue, spent cartridges, and construction debris. Ordnance disposal activities began in the southern area in the late 1960s. Activities were interrupted during the mid-1970s and resumed in the early 1980s until closure of the EOD range in 1988. Following closure, the site was used for mostly specialized training until closure of LAFB in September 1994. There are no records of use for the northern area of the site and it is believed to be an abandoned EOD range.

Sampling performed at the EOD Range site during the Remedial Investigation/Additional Site Investigation (RI/ASI) indicated the presence of low concentrations of volatile and semi-volatile organic contaminants as well as metals and other explosive-related compounds in site soil. The Supplemental RI/ASI Technical Report (URS Consultants, Inc. [URS], 1998) recommended No Further CERCLA Action for soil in the EOD Range site based on the human health and ecological RA determination of no unacceptable risk under CERCLA. To prepare the site for reuse as a conservation area, the report recommended that the range be cleared of any potentially unsafe EOD-related residuals. Clearing of ordnance from this site began in the fall of 1997 and was completed in 1999. Clearance in accordance with Department of Defense Explosive Safety Board procedures was provided in January 2000.

OFR

In 1995, as part of a base compliance project, approximately 600 cy of soil contaminated with lead bullets were removed from the backstop at the site (Law, 1996). The soil was stabilized and disposed at an appropriate, permitted, off-base landfill. During the isolated removal, background soil samples were found to contain lead at concentrations above the Site background levels. The OU-3 ROD determined that further investigation of the OFR site was necessary.

Supplemental Site Investigations identified lead-contaminated surface soil in front of and behind the small arms firing line. The affected area was determined to be approximately one-third acre in size. A RA indicated that lead concentrations observed in soil do not pose an unacceptable level of risk to future human receptors and the small size of the affected area limits the impact of contamination on ecological receptors to acceptable levels (URS, 1998). The future use of the property as a firing range is assumed.

2.3.3 SUMMARY OF RESPONSE ACTION SELECTED

2.3.3.1 Remedial Action Objectives

RAOs were not established under CERCLA for the EOD Range or the OFR since no unacceptable risk to human health or the environment was identified. The Air Force evaluated the potential risks to human health and the environment at the EOD Range and the OFR based on the future land use determinations made in the April 1996 Record of Decision for the Disposal of Loring Air Force Base, Maine (hereinafter Disposal ROD) (AFBCA 1996). Since these land use determinations do not allow for unlimited use and unrestricted exposure, the Air Force is conducting five-year reviews at the EOD Range and OFR in accordance with CERCLA Section 121 and the NCP. In addition, a safety-related objective to prepare the EOD Range for reuse as a conservation area by identifying and removing potentially unsafe EOD-related residuals was developed.

2.3.3.2 Selected Remedial Action

EOD Range

No further CERCLA action was required because contaminants at the site do not pose an unacceptable risk to human health and ecological receptors (Harding Lawson Associates, Inc. [HLA] 1998). This conclusion was based on the projected future use of the site as a conservation area. Clearance approval under Department of Defense Explosive Safety Board requirements has been accomplished.

OFR

A removal of approximately 600 cy of contaminated soil from the firing range backstop was completed in 1995. No further action (NFA) was required for the OFR because the remaining soil at the site does not pose an unacceptable risk to human health and ecological receptors (HLA, 1998). This conclusion was based on the projected future use of the site as a military training area.

2.3.3.3 Standards Assessment

Since NFA was warranted by the ROD based on projected future uses of the sites, no ARARs were evaluated. None of the conditions evaluated in the RAs for these sites have changed.

2.3.4 SUMMARY OF RESPONSE ACTION(S) TAKEN

2.3.4.1 Description of Actions

EOD Range

No remedial action was deemed necessary to respond to risks under CERCLA. Field screening and disposal of potentially dangerous EOD-related residuals was completed in 1999.

OFR

Removal and disposal of the backstop (approximately 600 cy) was accomplished in accordance with RCRA requirements in 1995. NFA was deemed necessary.

2.3.4.2 Areas of Non-Compliance

There are no known areas of non-compliance for the EOD Range or the OFR.

2.3.4.3 Residual Risk

The No Further CERCLA Action decisions for these sites is based on the assumptions that future use of the EOD Range and OFR will be as a wildlife management area and military training area. Based on residual chromium concentrations at the EOD Range and residual lead concentrations at the OFR, these sites are not acceptable for unlimited use and unrestricted exposure.

2.3.5 RESULTS AND RECOMMENDATIONS

2.3.5.1 Results

The land use assumptions supporting the No Further CERCLA Action decisions for these sites remain valid. The EOD Range has been transferred to the USFWS and is now part of the Aroostook National Wildlife Refuge. The OFR has been transferred to the Army National Guard to be used for small arms training.

2.3.5.2 Recommendations

- Air Force continue to review land use at these sites to assure consistency with assumptions made in the NFA decision.

2.3.5.3 Statement of Protectiveness

The No Further CERCLA Action decisions selected for the EOD Range and Outdoor Firing Range site remain protective of human health and the environment.

2.3.5.4 Five Year Reviews

The next five-year review for the EOD Range and Outdoor Firing Range will be conducted in 2005.

2.3.6 REFERENCES

HLA, 1998. *No Further CERCLA Action for Sites Within Operable Units 3, 5, 10, and 11, Record of Decision,* July.

LAW, 1996. *Debris Disposal Areas, Operable Units 3 (OU3) RI/ASI Technical Report,* March.

URS, 1998. *Supplemental RI/ASI Technical Report, Explosive Ordnance Disposal (EOD) Range and Outdoor Firing Range,* January.

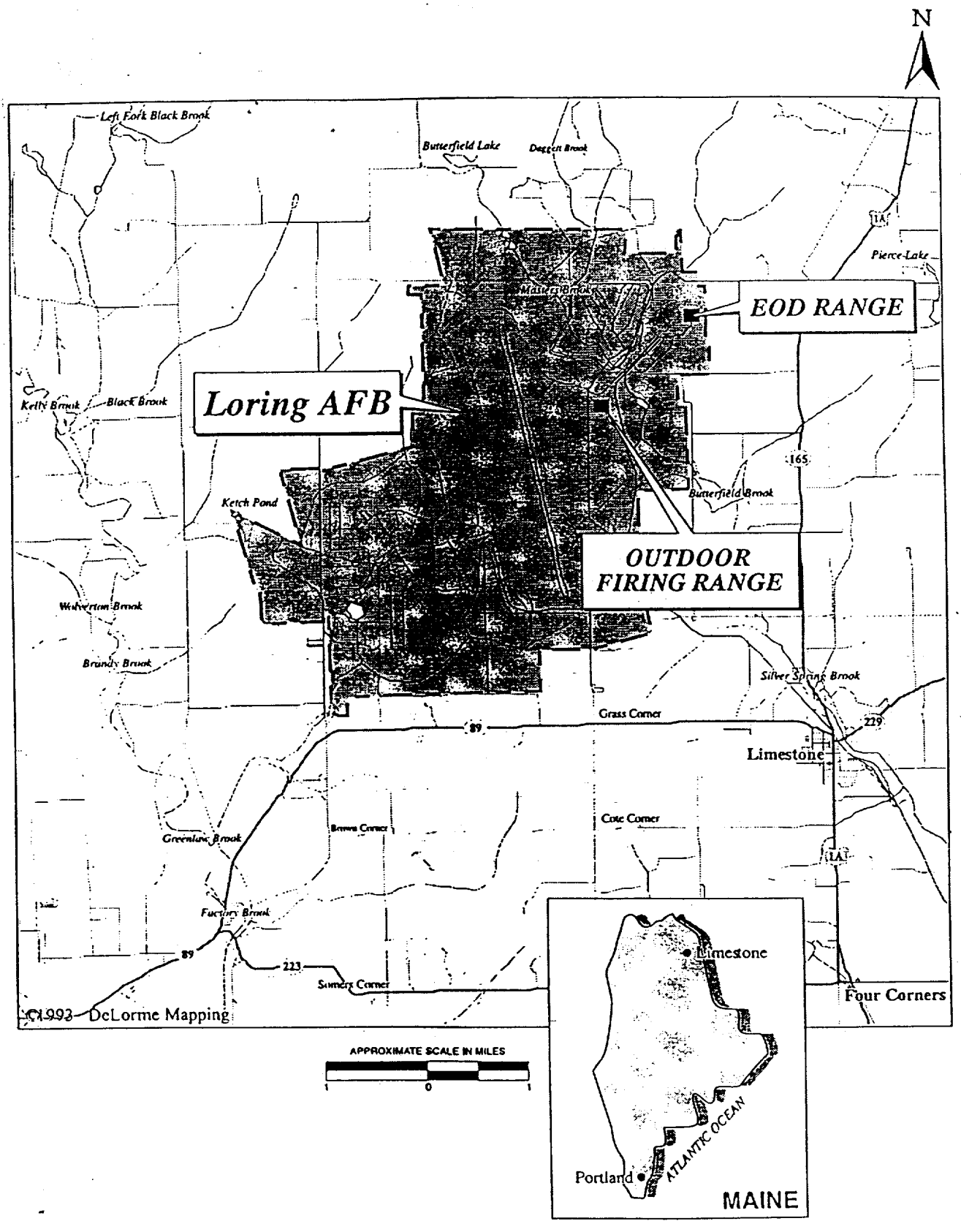
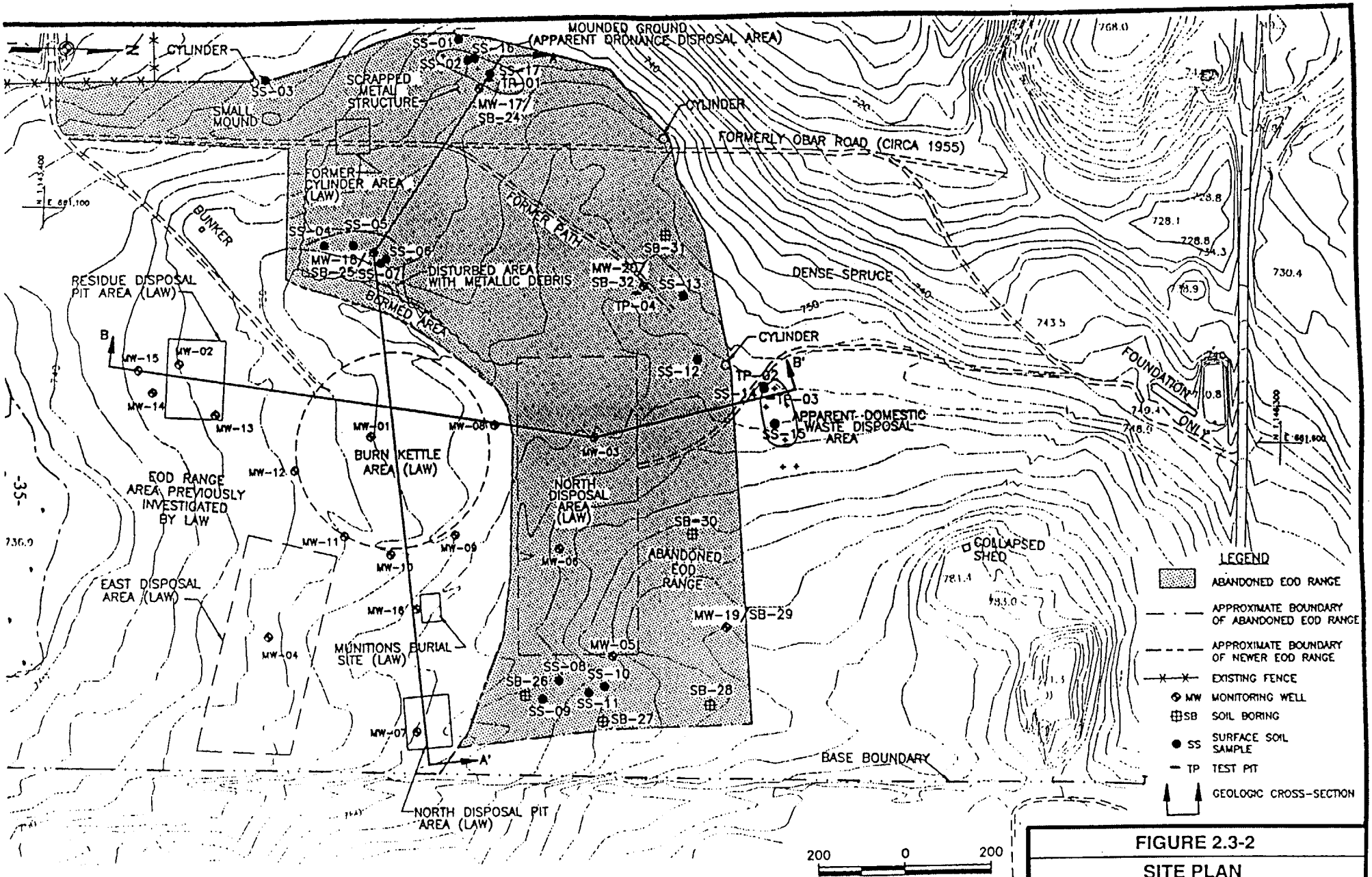


FIGURE 2.3-1	OU3 EOD RANGE AND OUTDOOR FIRING RANGE SITE LOCATION MAP	LORING AIR FORCE BASE



NOTE:
1. HORIZONTAL CONTROL IS BASED UPON THE MAINE STATE PLANE COORDINATE SYSTEM, ZONE 1801, NORTH AMERICAN DATUM 1927.
2. ELEVATIONS IN FEET NGVD, 1929.

FIGURE 2.3-2

SITE PLAN

LORING AIR FORCE BASE

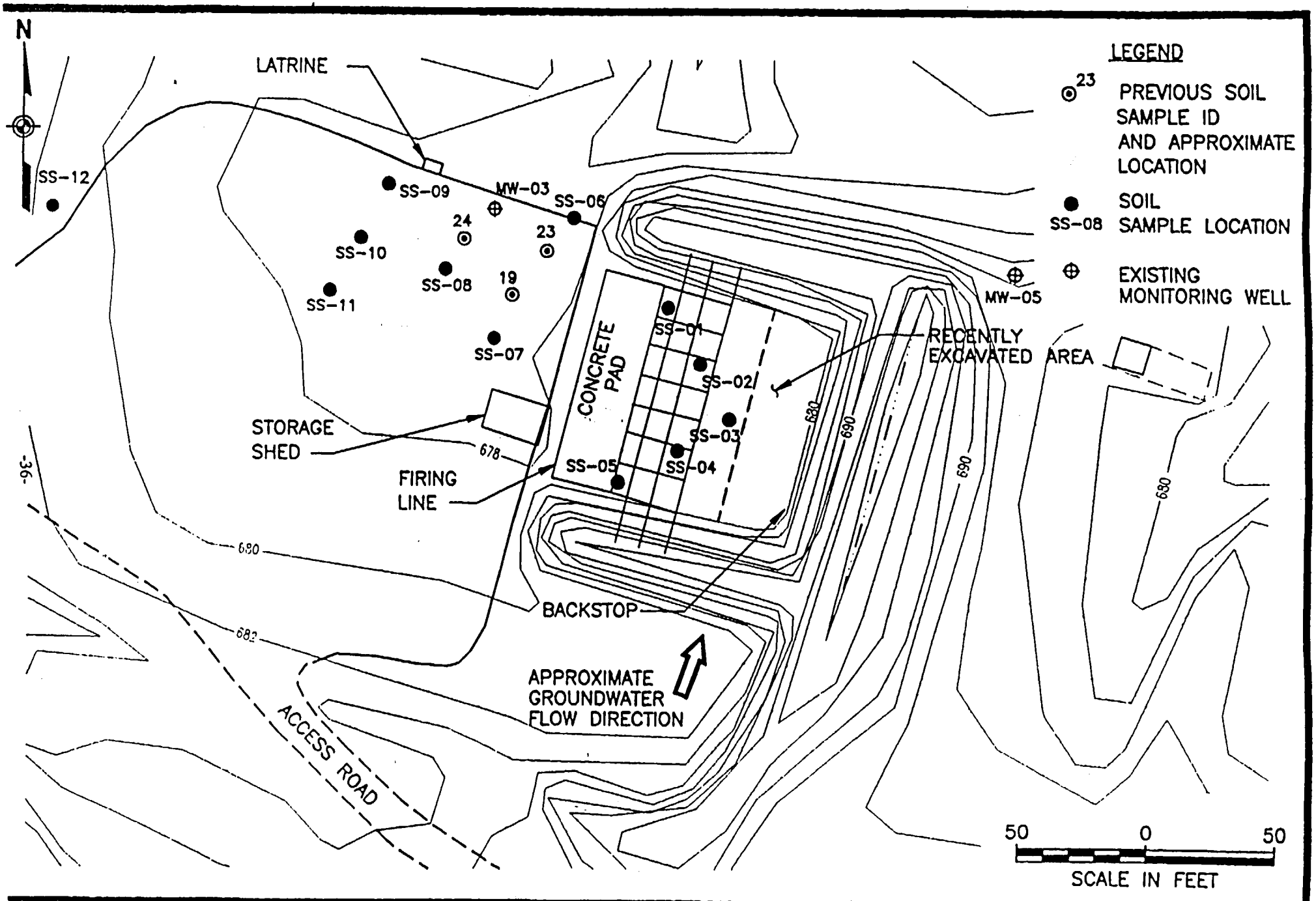


FIGURE 2.3-3	SITE PLAN OUTDOOR FIRING RANGE - FIRING LINE AREA	LORING AIR FORCE BASE

SECTION 2.4

OPERABLE UNIT 7
QUARRY SITE

2.4.1 SCOPE AND NATURE OF FIVE-YEAR REVIEW

The USAF, in coordination with USEPA, Region I and the MEDEP, conducted this review of the Quarry Site remedy pursuant to CERCLA section 121(c), NCP section 300.400 (f) (4) (ii), and OSWER Directives 9355.7-02 (May 23, 1991) and 93557-02A (Jun 26, 1994). It is a statutory review. The purpose of the review is to ensure that a remedial action remains protective of public health and the environment. This document has been prepared within the scope of a level I review which is applicable for this site.

2.4.2 SUMMARY OF SITE CONDITIONS

2.4.2.1 Site Location and Description

The Quarry Site has been managed as a "source control" site for the purposes of remediating soil media for the protection of human health and the environment and elimination of sources of groundwater contamination. The Quarry Site encompasses approximately seven acres and served as a source of limestone rock for LAFB from 1947 to 1985. The site is located along the northwestern boundary of the Nose Dock Area (NDA), approximately 800 feet east of the western base boundary (Figure 2.4-1). Site topography reflects past quarrying activities.

The Quarry consists of two levels, the upper and lower tiers. The circular shaped lower tier of the Quarry, approximately two acres in size, is flooded seasonally and drains through an excavated ditch into the Greenlaw Brook wetland, part of the west branch of Greenlaw Brook (see Figure 2.4-2). The Greenlaw Brook wetland is a 40- to 50-acre emergent marsh/forested wetland located approximately 600 feet west of the Quarry Site at its closest point. Approximately 95 percent of the lower tier (i.e., approximately 1.9 acres) consists of an emergent marsh wetland area.

The upper tier of the Quarry, approximately 2.5 acres in size, is crescent-shaped, bordered on the north and east by debris (i.e., rock and construction debris), with slopes and bedrock escarpments rising approximately 30 feet toward the NDA. To the west, the upper tier of the Quarry drops approximately 30 feet to the lower tier. The upper and lower tiers each have independent access roads from the south (see Figure 2.4-2).

2.4.2.2 Site History

The Quarry Site served as a source of limestone rock for LAFB from 1947 to 1985. Historically, waste materials from construction projects, industrial and maintenance shops, and other base activities were stored at the Quarry Site. Approximately 100 55-gallon drums were observed in the upper tier of the Quarry in 1983 (ABB-ES, 1993). The original contents

of the drums were unknown. Base personnel reported that the drums were empty in the early 1980s and that they were removed from the site, crushed, and disposed of in 1983 or 1984. Five-to-ten additional drums were again observed at the site in 1985. Overall, there have been miscellaneous reports of drums at the site throughout the 1980s. These drums have since been removed. Documentation of where the drums were located is limited, although reports consistently note their presence at the eastern and northern portions of the upper tier of the Quarry Site.

In October 1994, remedial action to remove and dispose of contaminated soils from the upper and lower tiers of the Quarry was initiated. The removal was completed that season and remedial goals were met.

An electromagnetic survey of the quarry vicinity was conducted in May 1998 by HLA to evaluate subsurface conditions for groundwater remediation planning. Several magnetic anomalies (MAs) were detected. In one significant MA area, a test pit was excavated. Debris and drums containing liquid were found, and liquid and soil samples were collected. Analysis of one soil sample from the drum test pit excavation showed contamination with benzene, toluene, ethylbenzene, and xylene (BTEX), PCBs, and PAHs. Samples from two drums -- one containing free product, the other, water -- were analyzed. Analysis showed the free product (oil) to contain BTEX, styrene, and PAHs; the water sample contained trace levels of BTEX, acetone, and PCE. The Air Force determined that the MA Area 1 should be excavated and that test pits should be dug at all other MA areas, possibly followed by excavation, depending on what was found.

In July 1998, the Air Force initiated removal and disposal of the drums as well as removal and disposal of associated contaminated soil in a manner consistent with the OU-7 ROD (see Figure 2.4-3). Approximately 300 drums were removed. This work was completed that season.

2.4.3 SUMMARY OF RESPONSE ACTION SELECTED

2.4.3.1 Remedial Action Objectives

RAOs are developed to serve as a framework for the identification of remedial action alternatives. According to the Federal and State guidance, RAOs should be designed to protect human health and the environment by identifying COCs, receptor groups of greatest concern, exposure routes associated with the highest risk estimates, and a target risk level of the individual contaminants based on site-specific exposure scenarios (i.e., RGs).

The RAOs for the Quarry Site for the protection of human health and the environment are:

- To prevent ingestion of, or dermal contact with soil by human and ecological receptors.

- To minimize migration of soil contaminants to groundwater.

- To minimize migration of soil contaminants to adjacent surface waters and sediment.

2.4.3.2 Selected Remedial Action

The selected remedy for OU-7 consisted of excavating the Quarry Site and using the excavated material as subgrade fill for on-base landfill cap construction. The remedial action is a final source control remedy for the contaminated soils and sediments at OU-7. Site groundwater has been addressed in the Basewide Groundwater Operable Unit (OU-12) and Quarry Site wetlands and the adjacent Greenlaw Brook wetlands were addressed in the basewide surface water and sediment operable unit (OU-13).

Components of the remedy included:

- Site preparation;
- Excavation of lower and upper tier soil and drainage ditch sediment;
- Use as subgrade material for on-base landfill cap construction;
- Wetlands restoration of the lower tier;
- Environmental monitoring, and;
- Five-year site reviews.

Approximately 15,000 cy of construction debris and 28,000 cy of soil were to be excavated for use as subgrade material at the OU-2 landfills. Wetlands lost through remedial actions were to be replaced with wetlands equal to or greater than the size and value of the affected wetlands. Monitoring of groundwater and surface drainage systems was to be conducted under OUs 12 and 13, respectively.

2.4.3.3 Standards Assessment

The cleanup levels at the Quarry Site were established to reduce hazard indices and carcinogenic risk to benchmark values as well as to protect groundwater. None of the conditions evaluated in the RAs for this site have changed. Chemical, Location, and Action Specific ARARs were complied with during the remedial action.

2.4.4 SUMMARY OF RESPONSE ACTION(S) TAKEN

2.4.4.1 Description of Actions

A 12-inch earthen obstruction was removed from the drainage way of the lower tier of the Quarry to drain the site and facilitate excavation of contaminated sediment. Removal of approximately 30,000 cy of soil was initiated in August 1994 and completed in October 1994. An unseasonably dry period during the excavation facilitated the excavation of contaminated sediment.

Contaminated soils were placed at LFs 2 and 3 in accordance with the OU-2 ROD. These landfills have since been closed in accordance with the ROD.

Compensation for wetland impacts has been accomplished in accordance with the Loring Wetland Mitigation Process Plan developed under OU-13 as required by the OU-7 ROD, signed in September 1994. A wetland restoration and enhancement project has been initiated at East Loring Lake which will meet the requirements for mitigation associated with the Quarry Site.

Environmental monitoring under OU-12 and OU-13 has been conducted and RODs signed identifying required remedial actions. Long-term monitoring plans (LTMP) have been developed for groundwater and surface water systems.

As part of the OU-12 groundwater investigations, a surface geophysical investigation identified a series of MAs. A number of the anomalies turned out to be buried drums. Excavation and disposal of these drums was initiated in early August 1998. Work elements included:

- Clean overburden was excavated and segregated based on visual observations and field instrumentation (photoionization detector [PID] readings). Both clean and contaminated soil were segregated by excavation area.

- Field screening was accomplished on drum contents for disposal purposes.

- Empty waste drums were crushed and trucked to LF-3 for disposal. Drums with liquid contents were emptied into Maine Department of Transportation- (DOT) approved containers, wiped clean of excess liquids, crushed, and sent to LF-3 for disposal.

- Liquid waste was disposed off-site.

- Contaminated soil was characterized and disposed at LF-3 as subgrade fill in accordance with the OU-2 ROD. Excavations were completed to bedrock when contaminated soil was encountered. In three cases, soil characterization samples directly beneath drums had slight exceedances of preliminary remediation goal (PRG) for selenium. Subsequent statistical analysis of the exceedances concluded the selenium did not pose an unacceptable risk (BEI, 1999).

A total of 348 drums were removed during this phase of the project. 12,160 pounds of liquid wastes were disposed off-site. 204 cy of contaminated soil were disposed at LF-3.

The RAOs of the OU-7 ROD have been achieved.

2.4.4.2 Areas of Non-Compliance

The RGs for the Quarry source removal under the OU-7 ROD have been met. There are no known areas of non-compliance.

2.4.4.3 Residual Risk

In order to determine whether the remedial action taken at the Quarry Site have attained cleanup levels which would allow unrestricted land use, residual risk analyses has been conducted consistent with the methodology in the *Unrestricted Land Use Determination for OU-9, Snow Barn*, (HAZWRAP, 2000). Remedial Goals in the OU7 ROD were developed to support unrestricted use for the Quarry.

During the 1994 remedial action, soil was removed to bedrock in the area of the lower tier and, therefore, confirmatory soil samples were not required. In the upper tier, and in the drainage ditch for the lower tier, 154 confirmatory soil samples were collected. Results from confirmation samples collected at the upper tier excavation showed concentrations above established PRGs for PAHs and pesticides/PCBs. A residual RA was conducted following the Loring General Risk Assessment Methodology (RAM) (Hensel Phelps, 1995).

Total risk to a residential child exposed to residual contaminants in soils at OU-7 is 5.4E-06. The total non-cancer hazard index for the residential child is 0.068. These estimates are within the USEPA target risk range of 1X 10^{-4} to 1 x 10^{-6}, below the MEDEP target risk of 1 x 10^{-5}, and below the target hazard index of 1. Tables 2.4-1 to 2.4-7 show the parameters and human health residual risk estimates for the 1994 residuals. One confirmation sample exceeded the Worst-Case RBSC for barium, however, this sample concentration was under the background concentration established for Loring and as such does not merit a use restriction.

The most conservative of OU-7 ROD PRGs or Worst-Case RBSCs were adopted as PRGs for the drum removal portion of the OU-7 remedial action. Excavations were either completed to bedrock or samples taken immediately below drums within excavations.

Characterization samples below drums met all PRGs with the exception of selenium. The highest concentration of selenium was 1.9 mg/kg, which is well below the worst-case RBSC for human health of 725 mg/kg.

Based on the results of this evaluation, this site should be considered acceptable for unlimited use and unrestricted exposure.

2.4.5 RESULTS AND RECOMMENDATIONS

2.4.5.1 Results

The remedy selected for the Quarry Site under OU 7 (source control) remains protective of human health and the environment.

2.4.5.2 Recommendations

No further five-year reviews be conducted for the Quarry site outside the scope of OU-12, Basewide Groundwater, since the source area cleanup has achieved unlimited use and unrestricted exposure.

2.4.5.3 Statement of Protectiveness

The remedy selected for the Quarry site under OU 7 (source control) remains protective of human health and the environment.

2.4.5.4 Five Year Reviews

Because the Quarry site source area is available for unlimited use and unrestricted exposure, no further five-year reviews of the remedy selected under OU-7 (source control) are necessary. The remedy is protective of human health and the environment and is likely to remain so.

2.4.6 REFERENCES

ABB-ES, 1994. *Quarry Site Operable Unit 7 (OU-7) Record of Decision,* September.

BEI, 1999. *Removal Action Report for 1998 Construction Season, Excavation and Waste Removal from the Quarry Vicinity,* July.

HAZWRAP, 2000. *Technical Memorandum, Unrestricted Land Use Determination for Operable Unit 9, Snow Barn Site, Loring, Maine,* January.

Hensel Phelps, 1995. *Remedial Action Report, OU-2, OU-2A, OU-6, OU-7, and Other Sites,* January.

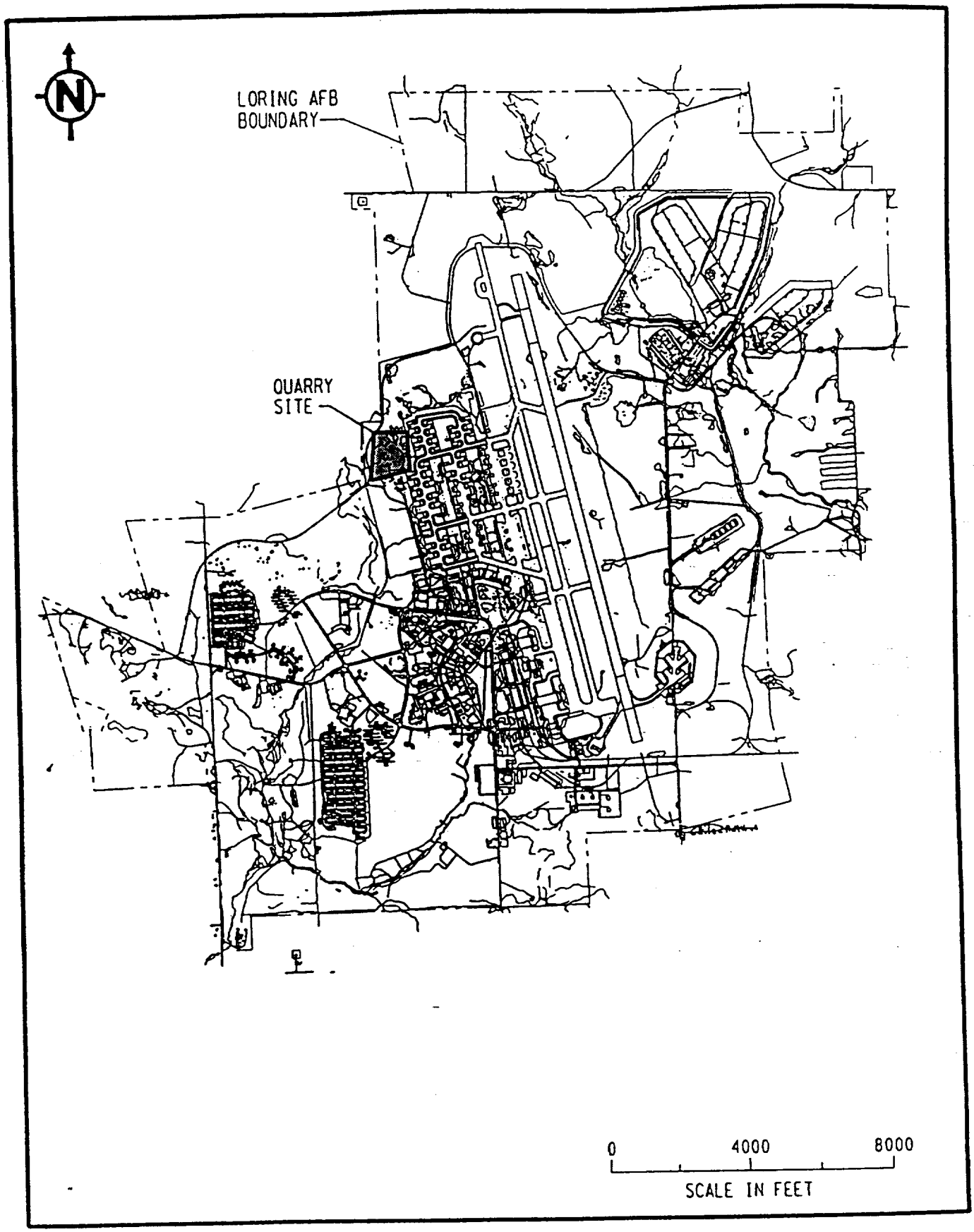
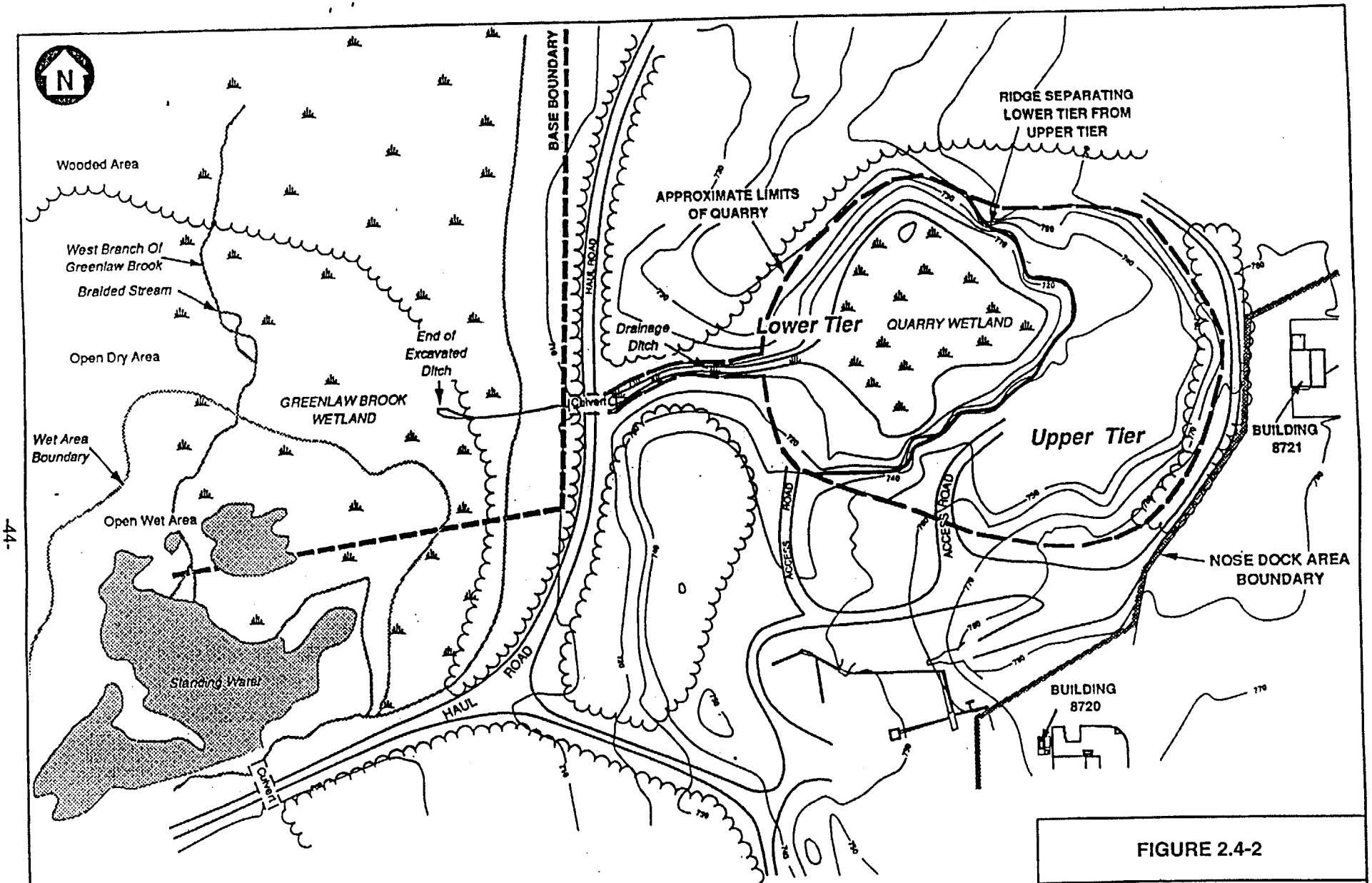


Figure 2.4-1
OU7
Quarry Site Location Map
Loring Air Force Base



NOTE:
THE BOUNDARY OF THE GREENLAW BROOK WETLAND IS APPROXIMATE AND HAS BEEN INFERRED FROM USGS TOPOGRAPHIC MAPS, FIELD SURVEY DATA AND AERIAL PHOTOGRAMMETRY.

FIGURE 2.4-2

SITE PLAN
QUARRY SITE

LORING AIR FORCE BASE

Figure 2.4-3
Quarry Vicinity Magnetic Anomalies and 1998 Excavated Areas
Loring Air Force Base

Table 2.4-1
Residential Child - Soil Ingestion Carcinogenic Risk

Compound	CS mg/kg	IR mg/d	RAF unitless	EF d/yr	ED yr	CF kg/mg	BW kg	AT days	SF $(mg/kg\text{-}d)^{-1}$	Intake Ingestion mg/kg-d	Ingestion Risk
Benzo(a)pyrene	0.560	200	1	182	6	1.0E-06	15	25550	7.3E+00	3.2E-07	2.3E-06
Benzo(a)anthracene	0.650	200	1	182	6	1.0E-06	15	25550	7.3E-01	3.7E-07	2.7E-07
Benzo(b)fluoranthene	1.1	200	1	182	6	1.0E-06	15	25550	7.3E-01	6.3E-07	4.6E-07
Chrysene	0.610	200	1	182	6	1.0E-06	15	25550	7.3E-03	3.5E-07	2.5E-09
Indeno(1,2,3-cd)pyrene	0.150	200	1	182	6	1.0E-06	15	25550	7.3E-01	8.5E-08	6.2E-08
Aroclor 1248	0.180	200	0.3	182	6	1.0E-06	15	25550	7.7E+00	3.0E-08	2.4E-07
Aroclor 1254	0.180	200	0.3	182	6	1.0E-06	15	25550	7.7E+00	3.0E-08	2.4E-07
4,4-DDJ	0.420	200	0.3	182	6	1.0E-06	15	25550	3.40E-01	7.1E-08	2.4E-08

Table 2.4-2
Residential Child - Soil Dermal Contact Carcinogenic Risk

Compound	CS mg/kg	SA cm^2/d	SAF mg/cm^2	RAF unitless	EF d/yr	ED yr	CF kg/mg	BW kg	AT days	SF $(mg/kg\text{-}d)^{-1}$	Intake Dermal mg/kg-d	Dermal Risk
Benzo(a)pyrene	0.560	3720	1		182	6	1.0E-06	15	25550	7.3E+00	NA	NA
Benzo(a)anthracene	0.650	3720	1		182	6	1.0E-06	15	25550	7.3E-01	NA	NA
Benzo(b)fluoranthene	1.1	3720	1		182	6	1.0E-06	15	25550	7.3E-01	NA	NA
Chrysene	0.610	3720	1		182	6	1.0E-06	15	25550	7.3E-03	NA	NA
Indeno(1,23-cd)pyrene	0.150	3720	1		182	6	1.0E-06	15	25550	7.3E-01	NA	NA
Aroclor 1248	0.180	3720	1	0.06	182	6	1.0E-06	15	25550	7.7E+00	1.1E-07	8.8E-07
Aroclor 1254	0.180	3720	1	0.06	182	6	1.0E-06	15	25550	7.7E+00	1.1E-07	8.8E-07
4,4-DDT	0.420	3720	1		182	6	1.0E-06	15	25550	3.4E-01	NA	NA

Table 2.4-3
Residential Child - Soil Inhalation of Particulates Carcinogenic Risk

Compound	CS mg/kg	IhR m^3/hr	PM_{10} ug/m^3	ET hr/d	EF d/yr	ED yr	CF kg/ug	BW kg	AT days	SF $(mg/kg\text{-}d)^{-1}$	Intake Inhalation mg/kg-d	Inhalation Risk
Benzo(a)pyrene	0.560	0.8	40	16	182	6	1.0E-09	15	25550	6.1E+00	8.2E-10	5.0E-09
Benzo(a)anthracene	0.650	0.8	40	16	182	6	1.0E-09	15	25550	6.1E+00	9.5E-10	5.8E-09
Benzo(b)fluoranthene	1.1	0.8	40	16	182	6	1.0E-09	15	25550	6.1E+00	1.6E-09	9.8E-09
Chrysene	0.610	0.8	40	16	182	6	1.0E-09	15	25550	6.1E+00	8.9E-10	5.4E-09
Indeno(1,2,3-cd)pyrene	0.150	0.8	40	16	182	6	1.0E-09	15	25550	6.1E+00	2.2E-10	1.3E-09
Aroclor 1248	0.180	0.8	40	16	182	6	1.0E-09	15	25550		NA	NA
Aroclor 1254	0.180	0.8	40	16	182	6	1.0E-09	15	25550		NA	NA
4.4-DDT	0.420	0.8	40	16	182	6	1.0E-09	15	25550	3.4E-01	6.1E-10	2.1E-10

Table 2.4-4
Residential Child - Soil Ingestion Noncarcinogenic Hazard

Compound	CS mg/kg	IR mg/d	RAF unitless	EF d/yr	ED yr	CF kg/mg	BW kg	AT days	RfD mg/kg-d	Ingestion Dose mg/kg-d	Ingestion Hazard Quotient
Benzo(a)pyrene	0.560	200	1	182	6	1.0E-06	15	2190		NA	NA
Benzo(a)anthracene	0.650	200	1	182	6	1.0E-06	15	2190		NA	NA
Benzo(b)fluoranthene	1.1	200	1	182	6	1.0E-06	15	2190		NA	NA
Chrysene	0.610	200	1	182	6	1.0E-06	15	2190		NA	NA
Indeno(1,2,3-cd)pyrene	0.150	200	1	182	6	1.0E-06	15	2190			
Aroclor 1248	0.180	200	0.3	182	6	1.0E-06	15	2190	5.0E-05	3.6E-07	0.007
Aroclor 1254	0.180	200	0.3	182	6	1.0E-06	15	2190	5.0E-05	3.6E-07	0.007
4.4-DDT	0.420	200	0.3	182	6	1.0E-06	15	2190	5.0E-04	8.4E-07	0.002

Table 2.4-5

Residential Child - Soil Dermal Contact Noncarcinogenic Hazard

Compound	CS (mg/kg)	SA Cm^2/d	SAF mg/cm^2	RAF unitless	EF d/yr	ED yr	CF kg/mg	BW kg	AT days	RfD mg/kg-d	Dermal Dose mg/kg-d	Dermal Hazard Quotient
Benzo(a)pyrene	0.560	3720	1		182	6	1.0E-06	15	2190		NA	NA
Benzo(a)anthracene	0.650	3720	1		182	6	1.0E-06	15	2190		NA	NA
Benzo(b)fluoranthene	1.1	3720	1		182	6	1.0E-06	15	2190		NA	NA
Chrysene	0.610	3720	1		182	6	1.0E-06	15	2190		NA	NA
Indeno(1,2~cd)pyrene	0.150	3720	1		182	6	1.0E-06	15	2190		NA	NA
Aroclor 1248	0.180	3720	1	0.06	182	6	1.0E-06	15	2190	5.0E-05	1.3E-06	0.026
Aroclor l254	0.180	3720	1	0.06	182	6	1.0E-06	15	2190	5.0E-05	1.3E-06	0.026
4.4-DDT	0.420	3720	1		182	6	1.0E-06	15	2190		NA	NA

Table 2.4-6

Residential Child - Soil Inhalation of Particulates Noncarcinogenic Hazard

Compound	CS mg/kg	IhR m^3/hr	PM_{10} ug/m^3	ET hr/d	EF d/yr	ED yr	CF kg/ug	BW kg	AT days	RD mg/kg-d	Inhalation Dose mg/kg-d	Inhalation Hazard Quotient
Benzo(a)pyrene	0.560	0.8	40	16	182	6	1.0E-09	15	2190	6.1E+00	9.5E-09	1.6E-09
Benzo(a)anthracene	0.650	0.8	40	16	182	6	1.0E-09	15	2190	6.1E+00	1.1E-08	1.8E-09
Benzo(b)fluoranthene	1.1	0.8	40	16	182	6	1.0E-09	15	2190	6.1E+00	1.9E-08	3.1E-09
Chrysene	0.610	0.8	40	16	182	6	1.0E-09	15	2190	6.1E+00	1.0E-08	1.7E-09
Indeno(1,2,3-cd)pyrene	0.150	0.8	40	16	182	6	1.0E-09	15	2190	6.1E+00	2.6E-09	4.2E-10
Aroclor l248	0.180	0.8	40	16	182	6	1.0E-09	15	2190		NA	NA
Aroclor 1254	0.180	0.8	40	16	182	6	1.0E-09	15	2190		NA	NA
4.4-DDT	0.420	0.8	40	16	182	6	1.0E-09	15	2190	3.4E+00	7.1E-09	2.1E-08

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Table 2.4-7
Total Carcinogenic Risks

Ingestion Risk	Dermal Risk	Inhalation Risk	Total Risk From Soil Exposure
3.6E-06	1.8E-06	2.7E-08	5.4E-06

Total Noncarcinogenic Hazard Index

Ingestion Hazard	Dermal Hazard	Inhalation Hazard	Total Hazard Index for Soil Exposure
0.016	0.052	2.9E-08	0.068