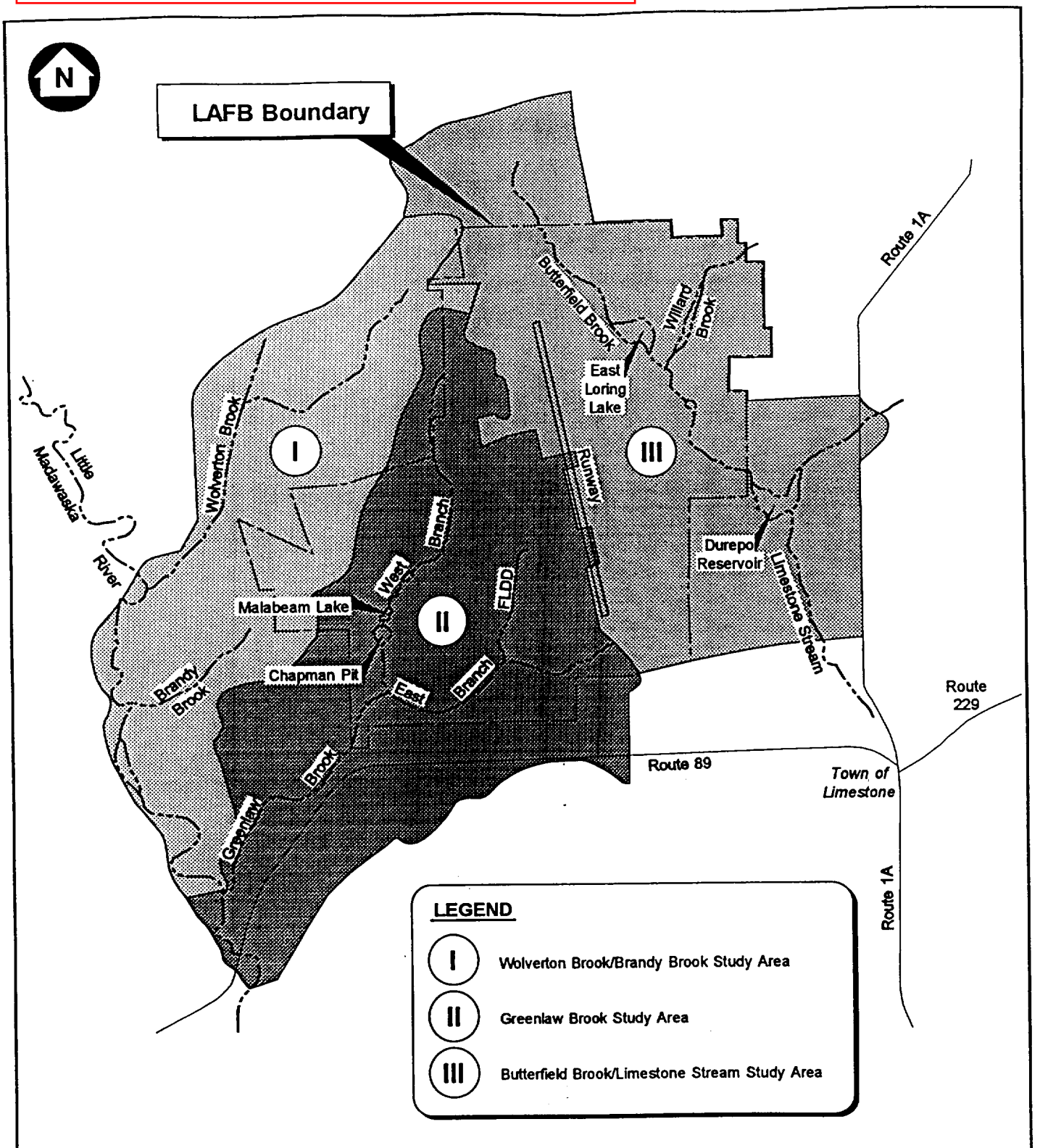
Click here to return to main document and Bookmarks



Map Location

SCALE IN MILES

0 1 2

FIGURE 3.7-1

LOCATION OF OU 13 STUDY AREAS

LORING AIR FORCE BASE
LIMESTONE, MAINE

W9912007

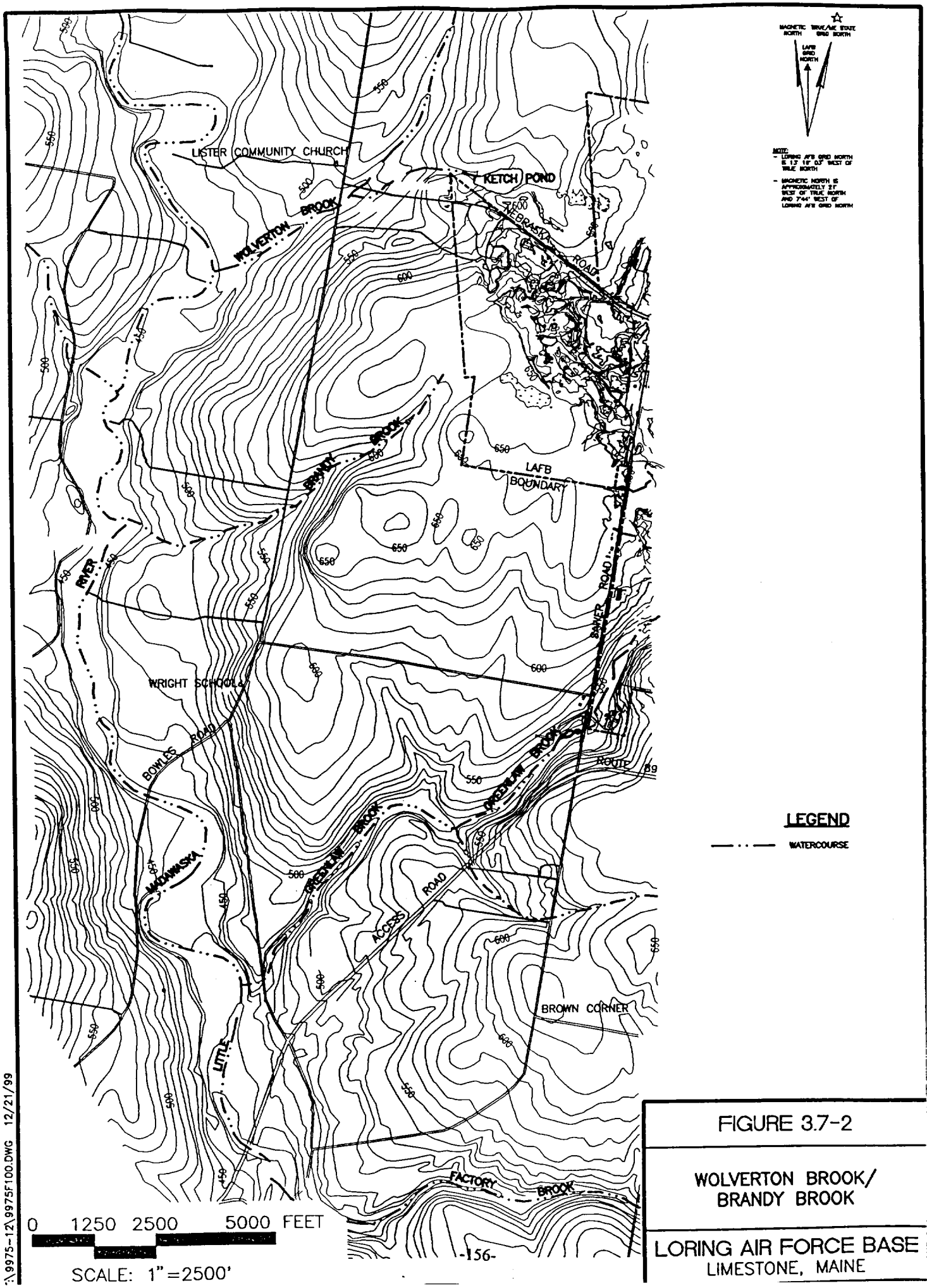


FIGURE 3.7-2

WOLVERTON BROOK/
BRANDY BROOK

LORING AIR FORCE BASE
LIMESTONE, MAINE

:\9975-12\9975F100.DWG 12/21/99

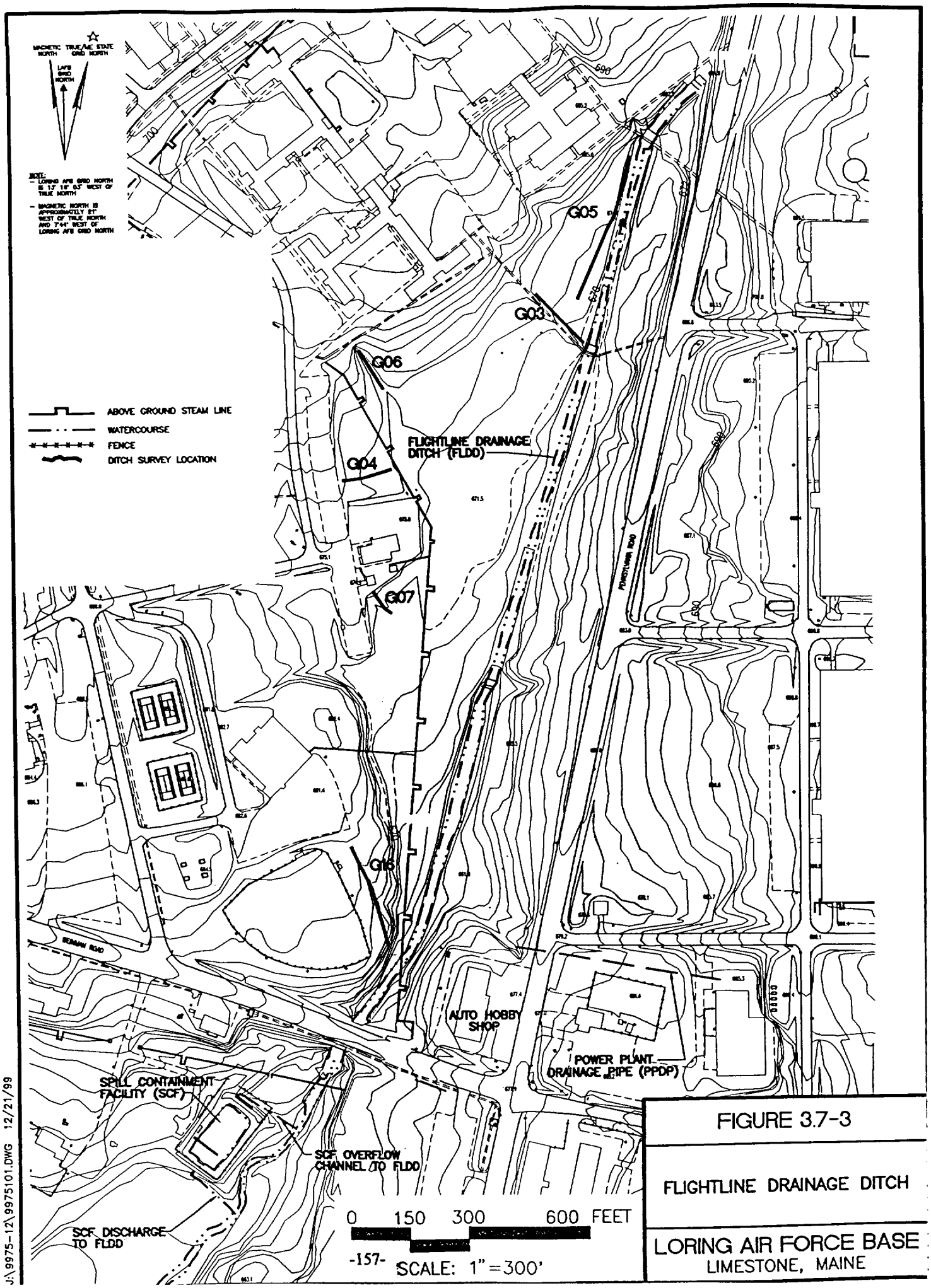


FIGURE 3.7-3

FLIGHTLINE DRAINAGE DITCH

LORING AIR FORCE BASE
LIMESTONE, MAINE

J:\9975-12\9975101.DWG 12/21/99

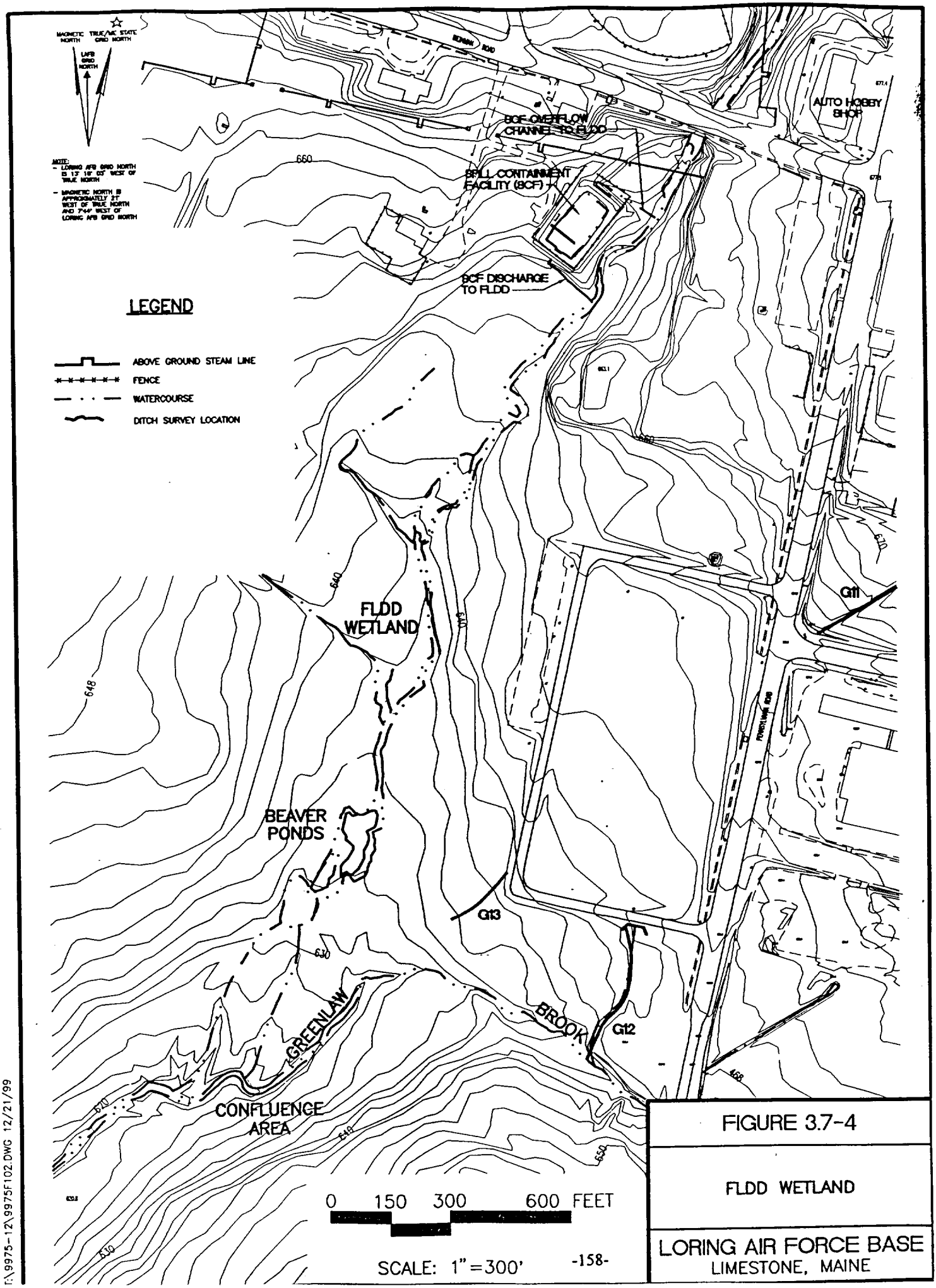


FIGURE 3.7-4

FLDD WETLAND

LORING AIR FORCE BASE
LIMESTONE, MAINE

I:\9975-12\9975F102.DWG 12/21/99

T:\9975-12\9975F103.DWG 12/21/99

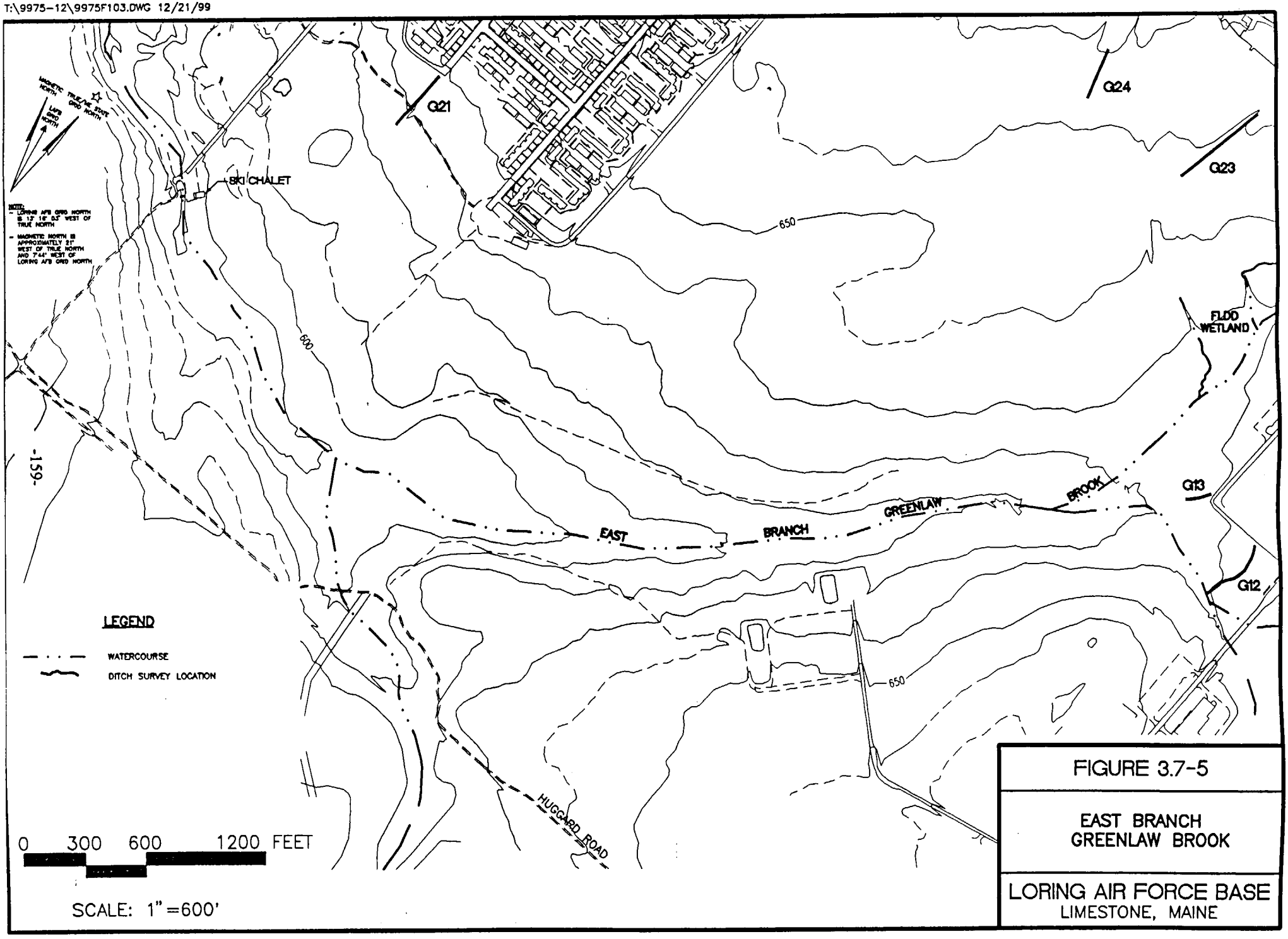


FIGURE 3.7-5

EAST BRANCH
GREENLAW BROOK

LORING AIR FORCE BASE
LIMESTONE, MAINE

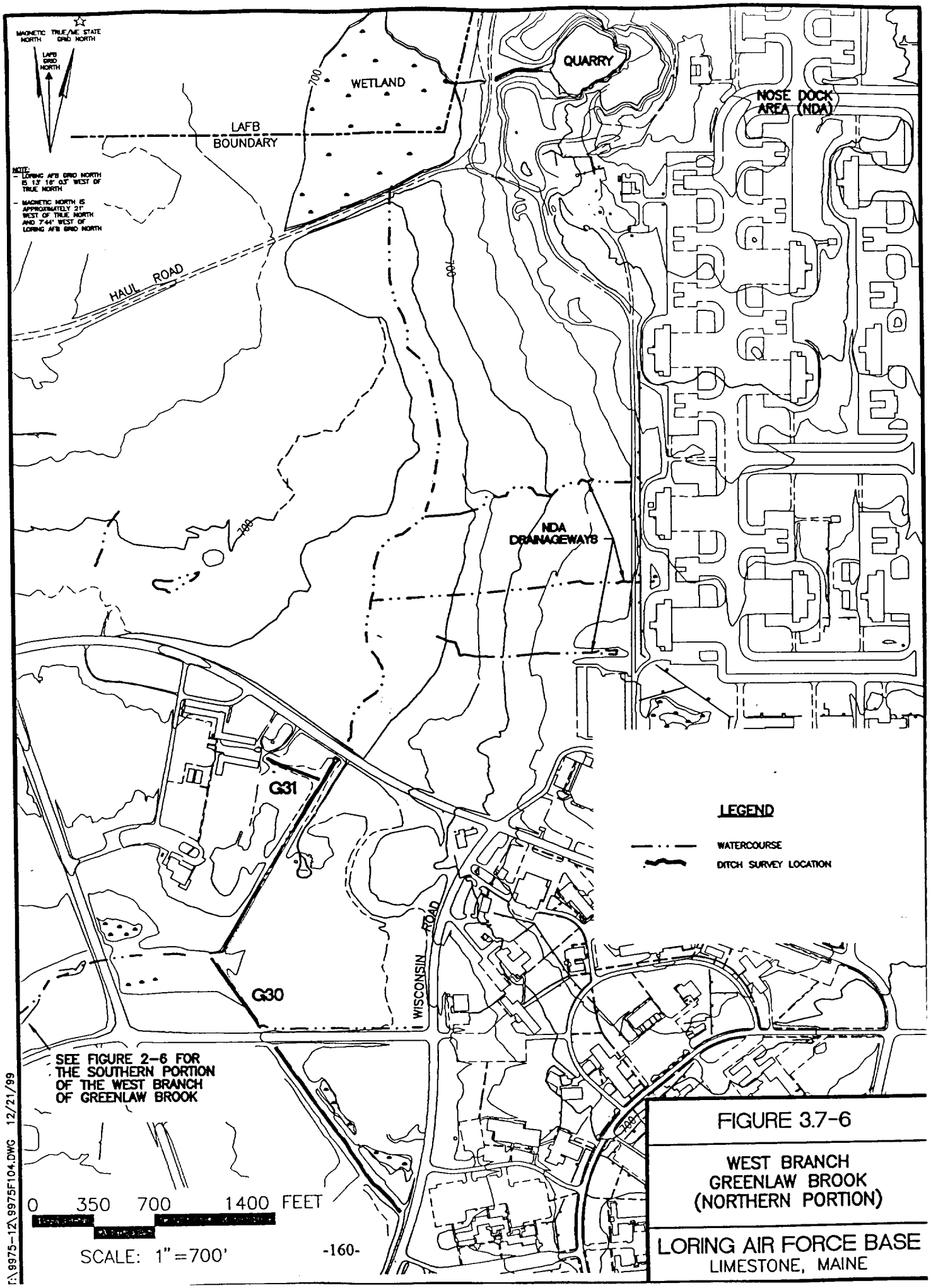


FIGURE 3.7-6

WEST BRANCH GREENLAW BROOK (NORTHERN PORTION)

LORING AIR FORCE BASE
LIMESTONE, MAINE

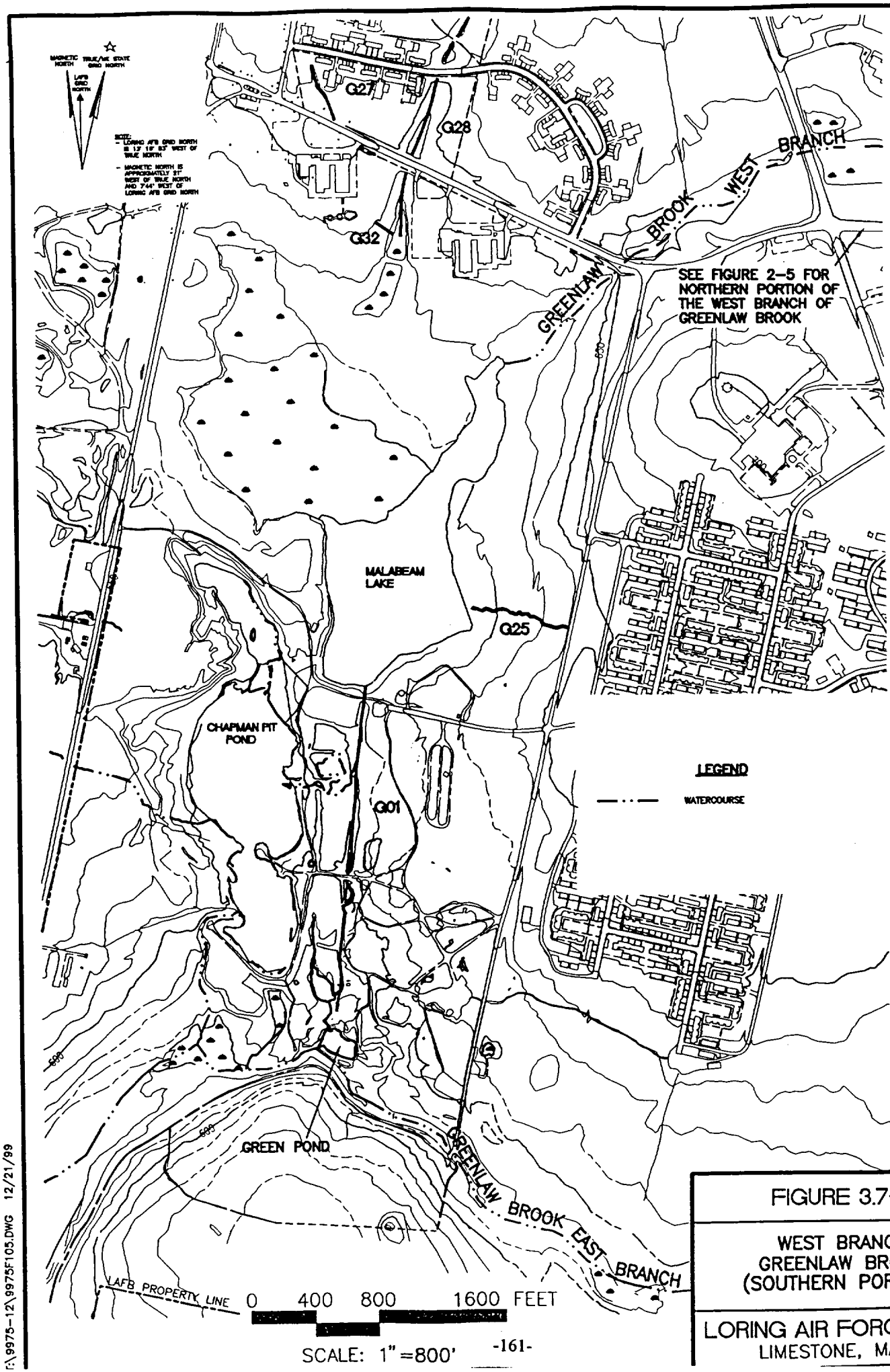


FIGURE 3.7-7

WEST BRANCH
GREENLAW BROOK
(SOUTHERN PORTION)

LORING AIR FORCE BASE
LIMESTONE, MAINE

I:\9975-12\9975F105.DWG 12/21/99

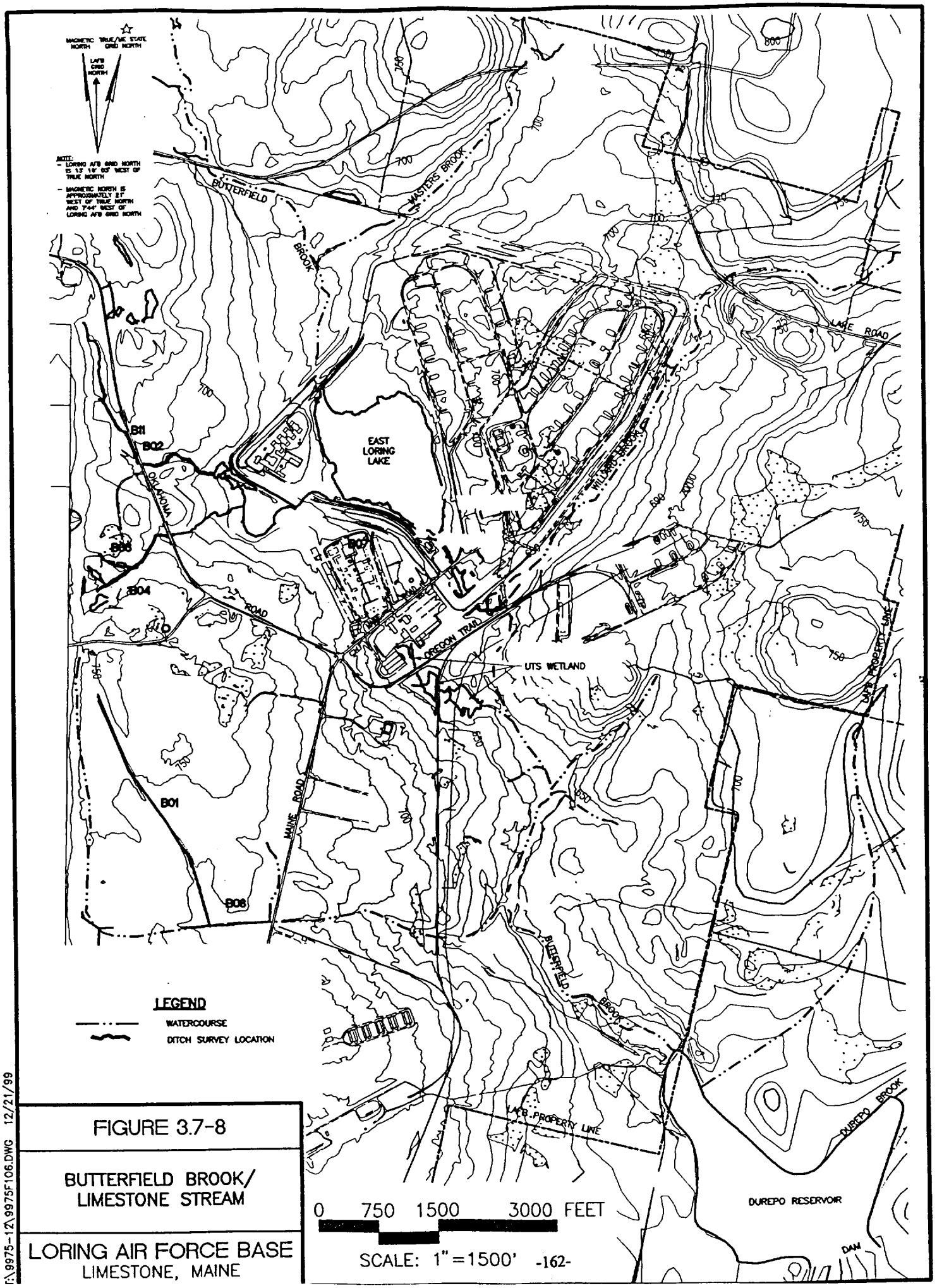


FIGURE 3.7-8

BUTTERFIELD BROOK/
LIMESTONE STREAM

LORING AIR FORCE BASE
LIMESTONE, MAINE

r:\9975-12\9975F106.DWG 12/21/99

Table 3.7-1

Analytical Parameters of Concern (Remediation Goals)[1] for Sites (mg/kg)

Compound	FLDD		FLDD Wetland		Ditch G06		NDA Drainageways		UTS Wetlands		BXSS Wetland	EBGB	
	Stream Sediment	Floodplain Soil	Stream Sediment	Floodplain Soil	Sediment	Soil	Sediment	Soil	Sediment	Soil	Sediment/ Soil	Stream Sediment	Palustrin Soil
Lead	218	155	218	155	--	--	218	320	155	155	155	218	155
Zinc	--	--	--	--	--	--	410	900	370	370	--	--	--
Endrin	--	--	--	--	--	--	--	--	0.21	0.21	--	--	--
PCBs(Aroclor-1260)	1.0	5.0	1.0	5.0	--	--	--	--	1.0	5.0	--	1.0	5.0
Total 4,4 DDT/DDD/DDE	0.49	0.372	0.350	0.372	--	--	--	--	0.12	0.12	--	0.28	0.37
Total Chlordanes	0.6	0.315	0.6	0.315	--	--	--	--	0.32	0.32	--	0.48	0.32
Benzo(a)anthracene	51.4	51.4	51.4	51.4	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	5.14	5.14	5.14	5.14	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	51.4	51.4	51.4	51.4	--	--	--	--	--	--	--	--	--
Benzo(k)flouranthene	514	514	514	514	--	--	--	--	--	--	--	--	--
Chrysene	5,140	5,140	5,140	5,140	--	--	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	5.14	5.14	5.14	5.14	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-c,d)pyrene	51.4	51.4	51.4	51.4	--	--	--	--	--	--	--	--	--
Total PAH	87	597	35	597	35	597	35/87[2]	2,900	--	--	--	35	230
TPH	--	--	--	--	--	--	--	--	--	--	1,000	--	--

[1]RGs obtained from the OU 13 Record of Decision (HAZWRAP/ABB-ES 1997b) and the Removal Action Memorandum, Base Exchange Service Station Drainage Ditch Soils (HAZWRAP 1997). The OU 13 Record of Decision includes the definitions of sediment and soil.
[2]A RG of 35 mg/kg applies to sediment within the ditch, whereas 87 mg/kg applies to the soils in the overbank area out to 20 ft from the existing ditch bank.

-- Not applicable.

Table 3-7-2

1997 Construction Quantities

Site	Actual Volume Excavated (yd^3)[1]	Estimated Volume (yd^3)[2]	Clear and Grub (Acres)	Wetland Impact (Acres)[3]	Actual Backfill (yd^3)[4]	Estimated Backfill (yd^3)[6]	Comments
UTS Wetland	3,170	5,250	1.10	0.94	233	5,250	
NDA North and South Drainageways	1,663	2,625	0.76	0.69	75	2,625	
SCF	1,320	2,220	–	–	0	0[7]	
FLDD	8,310	21,250	1.00	0.55	8,310	21,250	The streambed is not considered a wetland therefore it is not included in the wetland impact acreage.
FLDD Wetland	44,940	54,690	12.40	12.30	8,365	54,690	
EBGB	22,380[5]	99,890	4.10	4.05	945	99,890	Estimated volume includes areas that will be excavated during 1998 remedial action.
Ditch G06	0	250	–	–	0	250	Screening analytical results were below Remediation Goals, therefore excavation was not required.
BXSS Wetland	1,534	8,750	0.26	0.25	215	8,750	Minimal restoration was performed as directed by AFCEE/AFBCA

Notes:
[1]Actual excavated volumes based on truck load volumes verified each day.
[2]Estimated in-situ volumes taken from AFCEE 1997a (revised based on initial screening) and multiplied by 1.25 to give an accurate comparison to excavated volumes.
[3]Wetland impact areas taken from GPS survey information.
[4]Actual backfill volumes based on truck load vollumes verified each day.
[5]This is the volume excavated in 1997. The remainder of the EBGB excavation is planned for 1998.
[6]Estimated backfill volumes were the same as estimated excavation volumes (replace in like and kind).
[7]Backfill was not required for the SCF because of its function.
Dash = not applicable.

loring\L-1673

Table 3.7-3

1997 and 1998 Construction Quantities

Site	Actual Volume Excavated (yd^3)[1]	Estimated Volume (yd^3)[2]	Clear and Grub (Acres)	Wetland Impact (Acres)[3]	Actual Backfill (yd^3)[4]	Estimated Backfill (yd^3)[5]	Comments
SCF	1,320	2,220	NA	NA	0	0[6]	
FLDD Wetland	44,940	54,690	12.40	12.17	8,365	54,690	Actual background was less than estimated due to AFBCA direction not to fill floodplain areas to original grade.
EBGB	85,600	81,480	19.20	18.29	26,750	81,480	Same as above
Greenlaw Brook	20,450	18,410	4.40	3.99	15,245	18,400	Same as above
Chapman Pit Manganese Removal Area	18	20	NA	NA	0	0[7]	Clearing and grubbing were not required, nor was there any wetland impact.

Notes:
[1]Actual excavated volumes based on truck load volumes verified each day.
[2]Estimated in-situ volumes taken from AFCEE 1997a (revised based on initial screening) and multiplied by 1.25 to give an accurate comparison to excavated volumes.
[3]Wetland impact areas taken from GPS survey information.
[4]Actual backfill volumes based on truck load volumes verified each day.
[5]Estimated backfill volumes were the same as estimated excavation volumes (replace in like and kind).
[6]Backfill was not required for the SCF because of its function.
[7]Backfill was not required at Chapman Pit, since only 6 in. of material was removed.
NA = not applicable.

Appendix A
Summary of CERCLA Risk Based Cleanup Goals

The attached Table A summarizes the risk-based goals selected for the sites included in the first Five-Year Review Report for Loring Air Force Base, Maine. Site-specific risk-based cleanup goals were established for every cleanup (removal or remedial) action at Loring AFB. Risk goals were typically developed for up to three categories (human health land-use, ecological, and groundwater protection) for both human and ecological receptors. The lowest of the three values, where applicable (ecological risk was considered for soil contamination to a depth of 2 feet), was selected for use as the cleanup goal. Therefore, the cleanup actions were protective of both human health and the environment. Subsequent to the remedial/removal action decision, human health worst-case risk-based screening concentrations (RBSCs) were developed to evaluate the site for unrestricted land use. It is not necessary to revise ecological or groundwater protection goals since they are not dependent on future land use assumptions.

Human Health Land-Use Risk-Based Goals

The human health land-use risk-based goals were calculated for two human health exposure scenarios: the commercial/industrial worker and the construction worker for both noncarcinogenic and carcinogenic risk. These land-use scenarios are consistent with the projected future land-use described in the *ROD for the Disposal of Loring AFB, ME* (AFBCA, 1996). The results for each receptor were compared and the lowest value was selected as the human health land-use risk goal. The values presented in the table were developed in accordance with the most current risk assessment guidance at the time and were used as Loring-specific risk-based human health land-use screening concentrations. A detailed discussion on the development of these human health risk goals can be found in the following documents:

- *Final Operable Units 8 through 11 Initial Screening of Alternatives*, Loring Air Force Base, September 1994;
- *Engineering Evaluation/Cost Analysis for Operable Units 5, 8, 9, 10 and 11*, Loring Air Force Base, March 1995;
- *Engineering Evaluation/Cost Analysis for Operable Unit 8*, Loring Air Force Base, March 1995;
- *Operable Units 5 and 9 Corrective Action Plan*, Loring Air Force Base, April 1996;
- *Removal Action Report for the 1998 Construction Season*, Loring Air Force Base, March 1999; and
- *Record of Decision for Sites within Operable Units 5, 8, 9, 10, and 11*, Loring Air Force Base September 1999.

Ecological Risk-Based Goals

The ecological risks were calculated for eight receptors using No-Observed-Adverse-Effects-Level reference toxicity values. The results for each receptor were compared and the lowest value was selected as the ecological risk goal for soil from 0 to 2 feet below ground surface (this exposure scenario does not apply below 2 feet). The values presented in Table A were developed in accordance with the appropriate ecological risk assessment guidance for the initial screening of alternatives for Operable Units 8 through 11 and are being used as Loring-specific ecological risk goals. A detailed discussion on the development of the ecological risk goals can

be found in the *Final Operable Units 8 through 11 Initial Screening of Alternatives*, Loring Air Force Base, September 1994.

Groundwater Protection Based Goals

The groundwater protection risk goals were calculated, when appropriate, using the Organic Leaching Model and site-specific hydrogeologic data. Groundwater protection risk goals were only calculated for specific constituents at sites with soil concentrations that had impacted or could potentially impact groundwater above Federal and state criteria. Groundwater protection risk goals are based on the Federal Maximum Concentration Levels (MCLs) and the Maine Maximum Exposure Guidelines (MEGs). The lower of the two standards was used to develop the groundwater protective concentration for each constituent. A detailed discussion on the development of the groundwater protective risk goals can be found in the following documents:

- *Engineering Evaluation/Cost Analysis for Operable Units 5, 8, 9, 10 and 11,* Loring Air Force Base, March 1995;
- *Engineering Evaluation/Cost Analysis for Operable Unit 8,* Loring Air Force Base, March 1995;
- *Operable Unit (OU) 3 Record of Decision* Loring Air Force Base September 1996;
- *Removal Action Report for the 1998 Construction Season,* Loring Air Force Base, March 1999; and
- *Record of Decision for Sites within Operable Units 5, 8, 9, 10, and 11,* Loring Air Force Base September 1999.

Worst-Case Risk Based Screening Concentrations

Subsequent to the human health land-use risk-based goal development, human health worst-case RBSCs were calculated. Four health exposure scenarios were considered: commercial/industrial worker, construction worker, residential adult, and residential child, for both noncarcinogenic and carcinogenic risks. The results for each receptor were compared and the lowest value was selected as the worst-case RBSC. The values presented in Table A were developed in accordance with current risk assessment guidance for the unrestricted land-use evaluation conducted for the Snow Barn site and are being used as Loring-specific RBSCs. A detailed discussion on the development of the worst-case RBSCs can be found in the *Unrestricted Land-use Determination for Operable Unit 9 Snow Barn Site*, (HAZWRAP, 2000).

Table A: Summary of CERCLA Remediation Goals for Sites Within the Loring Five-Year Review Report - 2000

COC	HH Land-use RBG (mg/kg)	ECO RG (mg/kg)[a]	Groundwater Protective RG (mg/kg)	ROD, EECA, or RAM Goal (mg/kg)	HH Worst Case RBG (mg/kg)[b]	Maximum Confirmation Sample Results (mg/kg)	Does Result Exceed Clean-up Goal	Does Result Exceed Worst-Case RBG
Landfills 2 and 3	Remedial action objectives (RAOs) for soil source were not established.							
Contractor Storage Shed Area (Five year Review to Continue)								
Semi-volatile organic compounds								
Benzo(a)anthracene	0.47[c]	NA	3.6[c]	0.47[c]	2.5	0.21	No	No
Benzo(a)pyrene	0.4[c]	NA	37[c]	0.4[c]	0.25	0.19	No	No
Benzo(b) fluoranthene	1.1[c]	NA	8.9[c]	1.1[c]	2.5	0.24	No	No
Chrysene	3[c]	NA	310[c]	3[c]	250	0.16	No	No
Dibenz(a,h)anthracene	0.4[c]	NA	1.8[c]	0.4[c]	0.25	0.36[n]	No	Yes
Indeno(1,2,3-cd)pyrene	0.4[c]	NA	44[c]	0.4[c]	2.5	0.36	No	No
Pyrene	71[c]	NA	1400[c]	71[c]	4350	0.36	No	No
Pesticides/PCBs								
Chlordane alpha	NA	NA	NA	NA[p]	5.2	NA	No	Yes[p]
Chlordane gamma	NA	NA	NA	NA[p]	5.2	NA	No	Yes[p]
4,4'-DDD	0.5[c]	NA	1.7[c]	0.5[c]	7.6	0.25	No	No
4,4'-DDE	0.3[c]	NA	1.7[c]	0.3[c]	5.37	0.25	No	No
4,4'-DDT	0.9[c]	NA	4.7[c]	0.9[c]	5.37	0.25	No	No
Aroclor 1260	1[c]	NA	26[c]	1[c]	0.181	0.27	No	Yes
Inorganics								
Barium	100[c]	NA	32[c]	100[c]	51.2	NA[o]	No	No
Cadmium	16[c]	NA	6[c]	16[c]	8.4	ND	No	No
Lead	880[c]	NA	NA	880[c]	400	NA[o]	No	No
Manganese	1400[c]	NA	NA	1400[c]	5.2	NA[o]	No	No
EOD Range (Five Year Review to Continue)	RAOs were not established Under CERCLA for the EOD Range since no unacceptable risk to human health or the environment was identified.							
Outdoor Firing Range (Five Year Review to Continue)	RAOs were not established Under CERCLA for the EOD Range since no unacceptable risk to human health or the environment was identified.							
Former Solvent Storage Building (No Further Five Year Review)								
Volatile organic compounds								
1,1,1 Trichloroethane	1655	NA	1655	1655	1460	120	No	No
Semi-volatile organic compounds								
Benzo(a)anthracene	8.5[d]	34	NA	8.5[d]	2.5	0.075	No	No
Benzo(a)pyrene	1.8[d]	34	NA	1.8[d]	0.25	0.067	No	No
Benzo(b)fluoranthene	8.5[d]	34	NA	8.5[d]	2.5	0.097	No	No
Chrysene	8.5[d]	34	NA	1.8[d]	250	0.081	No	No
Inorganics								
Lead	400[d]	50	400[d]	400[d]	400	0.015	No	No

Table A: Summary of CERCLA Remediation Goals for Sites Within the Loring Five-Year Review Report - 2000

COC	HH Land-use RBG (mg/kg)	ECO RG (mg/kg)[a]	Groundwater Protective RG (mg/kg)	ROD, EECA, or RAM Goal (mg/kg)	HH Worst Case RBG (mg/kg)[b]	Maximum Confirmation Sample Results (mg/kg)	Does Result Exceed Clean-up Goal	Does Result Exceed Worst-Case RBG
PH 8210 (No Further Five Year Review)								
Volatile organic compounds								
Benzene	101[d]	20	0.08[d]	0.08[d]	1.13	0.031	No	No
Semi-volatile organic compounds								
Benzo(a)anthracene	8.5[d]	34	0.38[d]	0.38[d]	2.5	5.64	Yes[s]	Yes[q]
Benzo(a)pyrene	1.8[d]	34	NA	1.8[d]	0.25	5.59	Yes[r]	Yes[r]
Benzo(b)fluoranthene	8.5[d]	34	NA	8.5[d]	2.5	ND	No	No
Chrysene	8.5[d]	34	NA	8.5[d]	250	5.84	No	No
Indeno(1,2,3-c,d)pyrene	8.5[d]	34	NA	8.5[d]	2.5	1.33	No	No
Pesticides/PCBs								
Aroclor-1260	0.19[d]	6.6	NA	0.2[d]	0.181	ND	No	No
PH 8270 (No Further Five Year Review)								
Semi-volatile organic compounds								
Benzo(a)anthracene	8.5[d]	34	0.36[d]	0.36[d]	2.5	1.54	Yes[s]	No
Benzo(a)pyrene	1.8[d]	34	NA	1.8[d]	0.25	1.68	No	Yes[r]
Benzo(b)fluoranthene	8.5[d]	34	NA	8.5[d]	2.5	1.55	No	No
Chrysene	8.5[d]	34	NA	8.5[d]	250	3.84	No	No
Indeno(1,2,3-c,d)pyrene	8.5[d]	34	NA	8.5[d]	2.5	0.71	No	No
Refueler Maintenance Shop Area (No Further Five Year Review)								
Semi-volatile organic compounds								
Benzo(a)pyrene	1.8[d]	34	NA	1.8[d]	0.25	0.41	No	Yes[q]
Pesticides/PCBs								
Aroclor-1254	0.2[d]	6.6	NA	0.2[d]	0.18	ND	No	No
Aroclor-1260	0.2[d]	6.6	NA	0.2[d]	0.18	0.11	No	No
Vehicle Maintenance Building (No Further Five Year Review)								
Volatile organic compounds								
Benzene	101[d]	20	1.65[d]	1.65[d]	1.13	0.14U	No	No
Tetrachloroethene					12.7	4.2	No	No
Trichloroethene					9	0.053	No	No
Semi-volatile organic compounds								
2,6-Dinitrotoluene	19[d]			19[d]	3	ND	No	No
Benzo(a)pyrene	1.8[d]	34	NA	1.8[d]	0.25	0.2	No	No
Pesticides/PCBs								
Aroclor-1254	0.2[d]	6.6	NA	0.2[d]	0.18	0.019U	No	No
Aroclor-1260	0.2[d]	6.6	NA	0.2[d]	0.18	0.019U	No	No

Table A: Summary of CERCLA Remediation Goals for Sites Within the Loring Five-Year Review Report - 2000

COC	HH Land-use RBG (mg/kg)	ECO RG (mg/kg)[a]	Groundwater Protective RG (mg/kg)	ROD, EECA, or RAM Goal (mg/kg)	HH Worst Case RBG (mg/kg)[b]	Maximum Confirmation Sample Results (mg/kg)	Does Result Exceed Clean-up Goal	Does Result Exceed Worst-Case RBG
Former Jet Engine Test Cell (Active Treatment Ongoing)								
Volatile organic compounds								
Benzene	101[d]	NA	0.01[d]	1.1[e]	1.13	8.8	Yes	Yes
1,2-Dichloroethane	NA	NA	0.133[d]	0.13[e]	0.38	0.34J	Yes	Yes
Methylene Chloride	918[d]	NA	NA	1.2[e]	1.17	7.2J	Yes	Yes
Trichloroethene	470[d]	NA	NA	5.3[e]	5.3	0.47J	No	No
Toluene	7460[j]	NA	26.6[d]	27[e]	798	120	Yes	Yes
Xylene	579600[j]	NA	21.3[d]	21[e]	290000	3,900	Yes	Yes
Semi-volatile organic compounds								
Naphthalene	5796[j]	NA	0.537[d]	0.54[e]	5220	12	Yes	Yes
Fire Training Area (Active Treatment Ongoing)								
Volatile organic compounds								
Benzene	101[f]	20	0.56[f]	0.56[g]	1.13	0.095	No	No
1,2-Dichloroethane	NA	150	NA	0.133[g]	0.38	0.66U	No[l]	No
Ethylbenzene	14490[i]	20	NA	20[g]	2340	4.0	No	No
Methylene chloride	918[f]	150	NA	918[g]	1.17	0.65U	No	No
Toluene	7457[i]	20	NA	20[g]	798	8.1J	No	No
Trichloroethene	470[f]	150	NA	470[g]	5.3	0.56	No	No
Xylene	579606[i]	20	NA	20[g]	290000	23.7	No[m]	No
Semi-volatile organic compounds								
Benzo(a)anthracene	8.5[f]	34	NA	8.5[g]	2.5	0.36U	No	No
Benzo(a)pyrene	1.8[f]	34	NA	1.8[g]	0.25	0.36U	No	No[q]
Benzo(b)fluoranthene	8.5[f]	34	NA	8.5[g]	2.5	0.36U	No	No
Chrysene	8.5[f]	34	NA	8.5[g]	250	0.36U	No	No
2-Methylnaphthtalene	5796[f]	34	NA	34[g]	NA	0.36U	No	No
Naphthalene	5796[f]	34	5.3[f]	20[g]	5220	0.12	No	No
Pesticides/PCBs								
Aroclor	0.2[f]	6.6	0.097[f]	0.097[g]	1.8	0.08	No	No
Auto Hobby Shop (Active Treatment Ongoing)								
Semi-volatile organic compounds								
Benzo(a)anthracene	8.5[k]	34	NA	2.5[e]	2.5	NA	NA	NA
Benzo(a)pyrene	1.8[k]	34	NA	0.25[e]	0.25	NA	NA	NA
Benzo(b)fluoranthene	8.5[k]	34	NA	2.5[e]	2.5	NA	NA	NA
Chrysene	8.5[k]	34	NA	250[e]	250	NA	NA	NA
Indeno(1,2,3-c,d)pyrene	8.5[k]	34	NA	2.5[e]	2.5	NA	NA	NA

Table A: Summary of CERCLA Remediation Goals for Sites Within the Loring Five-Year Review Report - 2000

COC	HH Land-use RBG (mg/kg)	ECO RG (mg/kg)[a]	Groundwater Protective RG (mg/kg)	ROD, EECA, or RAM Goal (mg/kg)	HH Worst Case RBG (mg/kg)[b]	Maximum Confirmation Sample Results (mg/kg)	Does Result Exceed Clean-up Goal	Does Result Exceed Worst-Case RBG
Entomology Shop (Active Treatment Ongoing)								
Volatile organic compounds								
Tetrachloroethene	250[d]	150	2.33	2.33[e]	17	5.3	Yes	Yes
Trichloroethene	470[d]	150	0.43	0.45[e]	5.3	140	Yes	Yes
Semi-volatile organic compounds								
Benzo(a)anthracene	8.5[d]	34	NA	8.5[d]	2.5	1.8	No	No
Benzo(b) fluoranthene	8.5[d]	34	NA	8.5[d]	2.5	1.7	No	No
Chrysene	8.5[d]	34	NA	8.5[d]	250	1.2	No	No
Pesticides/PCBs								
Chlordane alpha	8.7[d]	1.2	NA	8.7[d]	5.2	0.19U	No	No
Chlordane gamma	8.7[d]	1.2	NA	8.7[d]	5.2	0.19U	No	No
Heptachlor	2.9[d]	1.3	NA	2.9[d]	0.15	0.19U	No[f]	No
Heptachlor epoxide	1.4[d]	1.3	NA	1.4[d]	0.08	0.19U	No[f]	No
Jet Engine Buildup Shop -North (Active Treatment Ongoing)								
Volatile organic compounds								
Tetrachlorothene	17[e]	NA	1.35	1.35[e]	17	15J	Yes	Yes
Trichloroethene	5.3[e]	NA	0.95	0.95[e]	5.3	570	Yes	Yes
Jet Engine Buildup Shop -South (Active Treatment Ongoing)								
Volatile organic compounds								
Tetrachlorothene	17[e]	NA	0.75	0.75[e]	17	0.26 J	No	No
Trichloroethene	5.3[e]	NA	0.5	0.5[e]	5.3	130	Yes	Yes
Semi-volatile organic compounds								
Benzo(a)anthracene	2.5[e]	NA	0.17	0.17[e]	2.5	0.84	Yes	Yes
Benzo-(a)pyrene	0.25[e]	NA	0.5	0.5[e]	0.25	0.78	Yes	Yes
Chrysene	250[e]	NA	0.45	0.45[e]	250	0.91	Yes	Yes
Jet Engine Buildup Shop -Southwest (Active Treatment Ongoing)								
Volatile organic compounds								
Trichloroethene	5.3[e]	NA	0.53	0.53[e]	5.3	2.8	Yes	Yes
Base Laundry (Active Treatment Ongoing)								
Volatile organic compounds								
Tetrachloroethene	17[e]	NA	5.64	5.64[e]	17	6,500	Yes	Yes
Quarry Site (No Further Five Year Review)								
Semi-volatile organic compounds								
Benzo(a)anthracene	2.5[h]	15	0.23[h]	0.33	2.5	0.65	Yes[q]	No
Benzo(a)pyrene	0.25[h]	34	0.55[h]	0.33	0.25	0.56	Yes[q]	Yes[q]
Benzo(b)fluoranthene	2.5[h]	34	0.14[h]	0.33	2.5	1.1	Yes[q]	No
Benzo(k)fluoranthene	25[h]	34	0.27[h]	0.33	25	0.002	No	No
Chrysene	250[h]	34	0.44[h]	0.33	250	0.61	Yes[q]	No
Dibenz(a,h)anthracene	0.25[h]	34	0.89[h]	0.33	0.25	ND	No	No
Indeno(1,2,3-cd)pyrene	2.5[h]	34	0.86[h]	0.33	2.5	0.15	No	No

Table A: Summary of CERCLA Remediation Goals fo. ..es Within the Loring Five-Year Review Report - 2000

COC	HH Land-use RBG (mg/kg)	ECO RG (mg/kg)[a]	Groundwater Protective RG (mg/kg)	ROD, EECA, or RAM Goal (mg/kg)	HH Worst Case RBG (mg/kg)[b]	Maximum Confirmation Sample Results (mg/kg)	Does Result Exceed Clean-up Goal	Does Result Exceed Worst-Case RBG
Pesticides/PCBs								
4,4'-DDD	7.6[h]	0.75	NA	0.064[t]	7.6	0.06	No	No
4,4'-DDT	5.37[h]	3.6	33[h]	0.089[t]	5.37	0.42	No	No
Aroclor-1016/1242/1248	0.181[h]	6.6'	0.14[h]	0.033	0.181	0.18	Yes[q]	No
Aroclor-1254/1260	0.181[h]	6.6	0.33[h]	0.033	0.181	0.18	Yes[q]	No
alpha-Chlordane	5.2[h]	1.2	0.48[h]	0.032	5.2	ND	No	No
gamma-Chlordane	5.2[h]	1.2	0.48[h]	0.032	5.2	ND	No	No
Inorganics								
Antimony	58[h]	5	NA	12	58	8.2	No	No
Barium	51.5[h]	500	NA	130[t]	51.5	85	No	Yes[t]
Chromium	1.26[h]	2	NA	60[t]	1.26	25	No	Yes[t]
Lead	400[h]	50	NA	35[t]	400	20	No	No
Selenium	725[h]	1	NA	1	725	1.9	No	No

a Ecological Preliminary Remediation Goals from *Operable Unit (OUs) 8-11 Initial Screening of Alternatives,* Loring Air Force Base September 1994.

b Worst-case Risk-based Soil Concentrations from *Unrestricted Land-use Determination for Operable Unit 9 Snow Barn Site*, Loring Air Force Base January 2000

c Soil Remediation Goals from *Operable Unit (OU) 3 Record of Decision* Loring Air Force Base September 1996.

d Preliminary Remediaton Goals and Target Compounds for Surface and Subsurface Soils from the *Engineering Evaluation/Cost Analysis for Operable Units 5, 8, 9, 10 and 11*. Loring Air Force Base March 1995.

e Remediation Goals from the *Record of Decision for Sites Within Operable Units 5, 8, 9, 10, and 11* Loring Air Force Base September 1999.

f Human Health Preliminary Remediation Goals and Target Compounds for Surface and Subsurface Soils from the *Engineering Evaluation/Cost Analysis for Operable Unit 8*. Loring Air Force Base March 1995.

g Summary of Soil Contamination from the *Proposed Plan for Site within Operable Units 5, 8, 9, 10, and 11* Loring Air Force Base April 1999.

h Quarry Drum Removal PRGs from *"Removal Action Report for the 1998 Construction Season"* Loring Air Force Base, March 99.

i Human Health Preliminary Remediation Goals for the *Initial Screening of Alternatives for Operable Units 8, 9, 10, and 11* Loring Air Force Base September 1994

j Human Health Preliminary Remediation Goals for the *Initial Screening of Alternatives for Operable Unit 5* Loring Air Force Base March 1995

k Human Health Preliminary Remediation Goals for the *Operable Units 5 and 9 Corrective Action Plan* Loring Air Force Base April 1996.

l Compound is believed to be not present, because it was not detected and MDL < RG < SQL

m ECO RG is not applicable, confirmation sample was collected from subsurface soil.

n Field duplicate is non detect (ND).

o Contaminants co-located with cadmium (ND) and were excavated and disposed. No risk to groundwater is identified.

p ROD did not require removal. Soils remain above worst-case RBG.

q Residual risk analyses indicated risks acceptable for unrestricted reuse. Risk level did not exceed the State of Maine requirement of $1X10^{-5}$ and is within the EPA acceptable range of $1X10^{-4}$ to $1X10^{-6}$ and compound does not pose a risk to groundwater.

r Remaining soils above the cleanup goal or worst case RBG are greater than 10 feet below ground surface and do not pose a risk to groundwater.

s The removal actions remediation goal (RG) for benzo(a)anthracene was based on the groundwater protective RG. All results were below the human health and ecological RGs. Benzo(a)anthracene does not readily leach through the soils to groundwater and has not been found in any on-site monitoring wells.

t PRG in ROD based on background concentrations.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
1 CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

September 29, 2000

Dave Belya, Site Manager
AFBCA/DA Loring
RR #1, Box 1719
Limestone, Maine 04750-9743

Re: Five-Year Review Report, Loring Air Force Base, Limestone, Maine

Dear Mr. Belya:

Thank you for the opportunity to review *Five-Year Review Report for the Loring Air Force Base, Limestone, Maine* dated September 2000. Upon review, the EPA concurs with the finding that all remedies as implemented, or in the process of being implemented, by the Air Force are protective of human health and the environment.

The Report includes reviews for 19 sites distributed throughout 14 Operable Units (OU) identified during the base closure process including the base wide groundwater, surface water, and landfill OUs and is consistent with EPA's *Five Year Review Guidance, Office of Solid Waste and Emergency Response (OSWER) Directive 9355.7-02* (May 1991 and *Supplemental Five-Year Review Guidance, (OSWER) Directive 9355-02A* (August 1994). The selection of a Statutory and Policy Reviews for various sites is consistent with the above guidance. For those sites which that are still in the remedy operation phases, EPA is pleased that the Air Force has reiterated it's commitment to continuing the CERCLA cleanup process to a successful conclusion. All of these sites have institutional controls in place, or are in the process of having them placed on the property, as a component to the remedy in order to minimize potential threats to human health.

EPA fully concurs with the findings and recommendations for further action in the review. Specifically, obtaining institutional controls for the two off-base properties that are required due to the expansion of the groundwater management zones and continuation of the bioventing and SVE systems. Once these recommendations are carried out, they will ensure full protectiveness of the remedies implemented.

EPA also concurs that future Five Year Reviews will not be required for: OU 7 - Quarry Site; OU 10- Former Solvent Storage Building, Pumphouses 8210 and 8270; and OU 11 - Refueler Maintenance Shop Area and Vehicle Maintenance Building.

As indicated in EPA's letter of March 31, 1999, this five-year review was triggered by the Railroad Maintenance Site which is Operable Unit 6 (OU6) Remedial Action start of February 10, 1995 and was therefore due February 10, 2000. Due to additional work which the Air Force conducted in order to document unrestricted use at several areas the due date for finalizing this Five-Year Review was extended to September 30, 2000. Consistent with Section 121(c) of CERCLA and *(OSWER) Directive 9355-02A*, the next statutory required five-year review must be finalized prior to September 30, 2005.

Sincerely,

Patricia L. Meaney, Director
Office of Site Remediation and Restoration

cc.	Michael Nalipinski,	EPA
	Betsy Mason,	EPA
	Mary Sanderson,	EPA
	Naji Akladiss,	Maine DEP