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19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Environmental Impact Statement	Fort Benning	Richardson	Wastewater	Noise	Demography
Seventeenth	Campbell	Wainwright	Biological	Health	Land Use
Infantry Division	Drum	Schools	Troops	Population	
Light	Ord	Housing	Income	Mitigation	
	Lewis	Water	Traffic	Energy	
			Cultural		

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

The U. S. Army will activate a new light infantry division consisting of about 10,500 military personnel. The purpose of this environmental impact statement is to discuss the potential environmental and socioeconomic effects that could occur if the division is stationed at one or a combination of the following Army forts: Benning, Campbell, Drum, Lewis, Ord, Richardson and Wainwright. Potential effects vary from fort to fort, but the issues of most general concern are noise and socioeconomic concerns such as availability and affordability of off-post housing and overcrowding of schools. The large increase in regional

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population that would occur at Fort Drum, New York (Watertown) and Fort Wainwright, Alaska (Fairbanks) would result in large short-term changes in regional economic patterns. Several other installation-specific issues are also discussed.

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DEPARTMENT OF THE ARMY
MOBILE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 2288
MOBILE, ALABAMA 36628-0001

REPLY TO
ATTENTION OF:

September 18, 1984

Environmental Quality
Section

TO ALL INTERESTED PARTIES:

This package contains two (2) separate documents which are being provided to you pursuant to Public Law 91-190, "National Environmental Policy Act of 1969":

a. The Final Environmental Impact Statement concerning the stationing of a seventeenth Active Component division designed as a Light Infantry Division. This seventeenth division has been designated as the 10th Infantry Division.

b. Notification of Adoption of Final Environmental Impact Statement; Proposed Stationing of an Eighteenth Active Component Division. The new eighteenth division also is designed as a Light Infantry Division and has been designated as the 6th Infantry Division.

Sincerely,

Lawrence R. Green

Lawrence R. Green
Chief, Planning Division

Enclosures

FOR PUBLIC DISTRIBUTION AND PUBLICATION IN THE
28 SEPTEMBER 1984 FEDERAL REGISTER

DEPARTMENT OF DEFENSE
DEPARTMENT OF THE ARMY

Title: Adoption of Final Environmental Impact Statement; Proposed Stationing of an Eighteenth Active Component Division

AGENCY: Department of the Army, DOD

Action: Adoption of Final Environmental Impact Statement

Summary: Notice is given that the Department of the Army adopts the Final Environmental Impact Statement (FEIS) prepared for stationing of a seventeenth Active Component division as the FEIS for stationing of an eighteenth Active Component division.

Supplementary Information: The Department of the Army proposes the stationing of an eighteenth Active Component division (designated as the 6th Infantry Division). The proposed 6th Infantry Division would be designed as a Light Infantry Division consisting of three (3) infantry brigades, one (1) artillery brigade, one (1) combat aviation brigade, and associated support units. Total troop strength of the division would be approximately 10,000 military personnel. This new division would be "rounded out" with one of its infantry brigades and some associated support units drawn from the Army Reserve Component which will train and participate in division exercises. The remainder of the 6th Infantry Division would be built incrementally from the Active Component, as spaces become available from other force structure actions. The division's light design is intended to permit its use quickly as threats arise, and it may also be employed on a sustained basis when augmented and employed as part of a larger force. The 6th Infantry Division would be considerably smaller than traditional divisions, which range in size from 14,000 to 18,000 soldiers. It would also be less dependent upon heavy equipment such as tanks and armored weaponry, relying instead upon specialized forces and quick response troops.

Pursuant to the National Environmental Policy Act (NEPA), the Department of the Army has previously prepared a Final Environmental Impact Statement (FEIS) for stationing of a seventeenth Active Component division (designated as the 10th Infantry Division). The Army published its Notice of Intent to prepare this FEIS on April 6, 1984 (49 FR 13738), and filed the draft statement with the Environmental Protection Agency, as announced on May 25, 1984 (49 FR 22133). In a separate notice in today's issue of the Federal Register, the Army announces the filing and availability of the FEIS for stationing of the 10th Infantry Division, the Army's seventeenth Active Component division.

Pursuant to the Council on Environmental Quality regulations (40 CFR 1506.3) implementing NEPA, the Department of the Army adopts the FEIS prepared for the 10th Infantry Division, the Army's seventeenth Active Component division, as the FEIS for the 6th Infantry Division, the Army's eighteenth Active Component division. Stationing alternatives for the 6th Infantry Division are the same as those considered for the 10th Infantry Division; and

the 10th Infantry Division FEIS adequately describes environmental effects which may be anticipated from the proposed stationing of the 6th Infantry Division. The preferred alternative for stationing the 6th Infantry Division is at Forts Wainwright and Richardson, AK.

A final decision on stationing the 6th Infantry Division will not be made until after public circulation of the adopted FEIS. Copies of the FEIS have been circulated to concerned Federal, state, and local agencies in accordance with 40 CFR 1502.19. Interested organizations or individuals may obtain copies of the FEIS and Record of Environmental Consideration (32 CFR 651.7) explaining its adoption and considering the no action alternative by contacting: U. S. Army Engineer District, Mobile ATTN: James B. Hildreth, (SAMPD-EE), P. O. Box 2288, Mobile AL 36628-0001, Telephone (205) 694-4141. Comments concerning this action should be directed to the above on or before 28 October 1984.

Lewis D. Walker
Deputy for Environment, Safety
and Occupational Health, OASA (I&L)

DEPARTMENT OF THE ARMY
MOBILE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 2288
MOBILE, ALABAMA 36628

REPLY TO
ATTENTION OF:

September 18, 1984

Environmental Quality Section

TO ALL INTERESTED PARTIES:

Pursuant to Public Law 91-190, "National Environmental Policy Act of 1969," we are transmitting the Final Environmental Impact Statement (EIS) concerning the stationing of a Seventeenth Active Component Division designed as a Light Infantry Division. The final EIS is being forwarded to the U. S. Environmental Protection Agency (EPA) for filing. The official notice of filing will appear in the Federal Register; the date of such appearance will begin the 30-day post-filing waiting period.

The draft EIS was mailed to the public on May 16, 1984, and filed with the EPA on May 25, 1984. Public comment period on the draft EIS closed on July 9, 1984. Pertinent comments which were received on the draft EIS have been utilized in preparing this final EIS.

Thank you for your interest in this project. Please contact Mr. James B. Hildreth at 205/694-4141 for additional information.

Sincerely,

Lawrence R. Green
Chief, Planning Division

Enclosure

COESAM/PDEE-84/002

LEAD AGENCY: DEPARTMENT OF THE ARMY,
CORPS OF ENGINEERS DISTRICT, MOBILE

TITLE OF PROPOSED ACTION: Stationing of a New Light Infantry Division

AFFECTED JURISDICTION: States of Alabama, Alaska, California, Georgia, Kentucky, New York, Tennessee, and Washington

PREPARED BY:

District Engineer, Mobile District
U. S. Army Corps of Engineers
Environmental Coordinator:
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REVIEWED BY:

Assistant Deputy Chief of Staff,
Operations,
U. S. Army Forces Command

Director of Force Programs
Office of Deputy Chief of Staff
for Operations and Plans,
Headquarters, Department of
the Army

APPROVED BY:

Deputy Assistant Chief of Engineers
for Facilities and Housing,
Headquarters, Department of the Army

DOCUMENTATION DESIGNATION: Final Environmental Impact Statement.

ABSTRACT: The U. S. Army will activate a new light infantry division, a seventeenth active component division, consisting of about 10,200 military personnel. The purpose of this final environmental impact statement is to discuss the potential environmental and socioeconomic effects that could occur if the division is stationed at one or a combination of the following Army forts: Benning, Campbell, Drum, Lewis, Ord, Richardson and Wainwright. The preferred alternative for stationing a seventeenth active component division, designated as the 10th Infantry Division, is Fort Drum, New York, with temporary stationing of an infantry brigade at Fort Benning, Georgia, until facilities at Fort Drum become available. Potential effects vary from fort to fort, but the issues of most general concern are noise and socioeconomic concerns such as availability and affordability of off-post housing and overcrowding of schools. The large increase in regional population that would occur at Fort Drum, New York (Watertown), and Fort Wainwright, Alaska (Fairbanks), would result in short- and long-term changes in regional economic patterns. Several other installation-specific issues are also discussed.

DEPARTMENT OF THE ARMY

FINAL ENVIRONMENTAL IMPACT STATEMENT

ON

STATIONING OF A SEVENTEENTH
ACTIVE COMPONENT DIVISION

PREPARED BY:

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Mobile District

REVIEWED BY:

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Director of Force Programs
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Headquarters, Department of the Army
Washington, D.C.

APPROVED BY:

GEORGE K. WITHERS, JR.
Brigadier General, U.S. Army
Deputy Assistant Chief of Engineers
for Facilities and Housing
Headquarters, Department of the Army
Washington, D.C.

U. S. Army Corps of Engineers
Mobile District
Mobile, Alabama
August 1984

EXECUTIVE SUMMARY

The Department of the Army will activate initial units of a new active component light infantry division in fiscal year 1985 (FY85) with the full division structure planned for completion by the end of FY87. The new division will be created from existing Army assets; the size of the U.S. Army will not increase as a result of this action. The new division will consist of about 10,200 military personnel, stationed in the United States. Formation of the division will occur incrementally during FY85 through FY87 as personnel and equipment become available from related Army force structure changes. Provisional organization of the Division Headquarters is expected in late FY84. Approximate cumulative personnel authorized in the division by year would be as follows:

- Fiscal Year 1985 - 1,319
- Fiscal Year 1986 - 6,189
- Fiscal Year 1987 - 10,218

The proposed Federal action discussed in this environmental impact statement (EIS) is the stationing of a new light infantry division at one or more appropriate Army installations in the United States. The purpose and need for stationing the new light division is self-evident, given the decision that a new light infantry division will be created. This EIS will assist Army decisionmakers in analyzing and considering environmental effects associated with each of the reasonable stationing alternatives available for the new division.

The stationing alternatives considered in detail are as follows:

- Fort Wainwright, Alaska-Fort Lewis, Washington Alternative

Fort Wainwright	- Division minus one reinforced infantry brigade
Fort Richardson, Alaska	- Receive two battalions of the 172nd Infantry Brigade currently stationed at Fort Wainwright
Fort Lewis	- One reinforced infantry brigade

- o Fort Lewis, Washington-Ford Ord, California Alternative

  Fort Lewis - Division minus one reinforced infantry brigade

  Fort Ord - One reinforced infantry brigade

- o Fort Drum, New York Alternative

  Fort Drum - Full light infantry division

- o Fort Drum, New York-Fort Campbell, Kentucky Alternative

  Fort Drum - Division minus one reinforced infantry brigade

  Fort Campbell - One reinforced infantry brigade

- o Fort Drum, New York-Fort Benning, Georgia Alternative I

  Fort Drum - Division minus one reinforced infantry brigade and the aviation brigade

  Fort Benning - One reinforced infantry brigade and the aviation brigade

- o Fort Drum, New York-Fort Benning, Georgia Alternative II

  Fort Drum - Division minus one reinforced infantry brigade

  Fort Benning - One reinforced infantry brigade

- o Fort Drum, New York-Fort Benning, Georgia Alternative III

  Fort Drum - Division minus the aviation brigade

  Fort Benning - The aviation brigade

The no-action alternatives have not been analyzed in detail. It would be unreasonable to have a light infantry division without an assigned station. The alternative of not forming a new light infantry division has not been analyzed because a premise of the EIS is that the division will be formed.

Fort Wainwright, Alaska - Fort Lewis, Washington Stationing Alternative

Under this stationing alternative, the new light infantry division would be split between two installations. The division minus one infantry brigade would be stationed at Fort Wainwright, Alaska along with some support elements. The remaining infantry brigade plus support elements would be stationed at Fort Lewis, Washington. To make room at Fort Wainwright for the division minus one infantry brigade, the 172nd Infantry Battalion and elements of the 222nd Aviation Battalion currently stationed at Fort Wainwright would be restationed at Fort Richardson, Alaska. Civilian employees would be added at each installation to support the new troops. At Fort Wainwright, there would be a net increase of 7,400 military and 9,270 dependents for a total increase of 16,670. On-post civilian employment would increase by 360. At Fort Richardson, there would be a net increase of 1,130 military and 1,270 dependents for a total increase of 2,400. On-post civilian employment would increase by 160. At Fort Lewis, there would be a net increase of 3,890 military and 5,190 dependents for a total increase of 9,080. On-post civilian employment would increase by 270.

Fort Wainwright and Fairbanks, Alaska

Impacts to Fort Wainwright and the Fairbanks Alaska region would result primarily from the large population increase. Fort Wainwright would increase its population by a factor of 1.6 and the region by a factor of 1.26. Training activity on post would also increase.

The physical environment would be altered by land use changes (1,960 acres of new residential land plus added commercial development). Noise occurrences on-post due to artillery, demolition, and aircraft operations would increase in number. The region, which is currently in non-attainment for carbon monoxide, would experience increased emissions from private and military vehicles and from aircraft. The potential for ice fog would be increased. The added population would result in utilization of reserve capacity for water supply, demand in excess of capacity for wastewater disposal, and increased demand on solid waste disposal services.

Ecosystem impacts would result from loss of habitat to residential and commercial development as well as disturbance to sensitive soils and permafrost during training activity. Noise would disturb sensitive wildlife species, although no threatened or endangered species are anticipated to be adversely affected.

The added population would place a demand for an estimated 3,725 housing units to accommodate married civilian and military personnel. While this housing demand will stimulate construction and infuse money into the local economy, there would be considerable stress, with potential housing shortages and high rents, until stabilization occurs. The region will undergo increased employment and resulting increases in personal income. However, it is anticipated that there could be demand for schools well in excess of current and planned capacity; increased traffic, particularly near Fort Wainwright; and possible increases in demand for social services and mental and preventative health care facilities.

Fort Richardson and Anchorage, Alaska

Construction of family housing off-post and bachelor quarters on-post would physically disturb about 350 acres. A 25 percent increase in Army training activities on-post may affect some permafrost areas. Any action such as construction, tracked vehicles, or snowmobiles which remove or crush vegetation may increase permafrost melting in those areas.

Carbon monoxide is already a problem in the Anchorage area. An increase in automobile emissions would exacerbate the existing winter condition caused by atmospheric inversions.

In the 350 acres cleared for housing, the terrestrial habitat would be severely altered. In areas where troops train and in maneuver areas which are disturbed, wildlife would move away and alter behavior patterns due to noise. Vegetation cut would regenerate and eventually increase the availability of moose browse.

Additional sewage, which is treated only to a primary level, would be disposed of into Cook Inlet. The estuary and shellfish here would be impacted secondarily.

Socioeconomic impacts from this stationing alternative would be to the rapidly growing Anchorage area. Land use changes would also occur in the Eagle River area, north of Fort Richardson. The Anchorage area would increase in population less than 1 percent--not significant in an area growing by 10 percent a year. There would be a temporary overcrowding in schools, particularly junior high. There would be a temporary (2-year) overcapacity of sewage treatment facilities. There would be a need for 700 new off-post family housing units. A problem would exist in terms of "affordability" for enlisted married troops, who could not afford to live in Anchorage.

Fort Lewis and the Tacoma-Olympia, Washington Region

Impacts on the physical environment at Fort Lewis, and the general Tacoma-Olympia region would include slight increases in: (1) noise levels associated with vehicle use and aircraft operations, (2) air emissions from mobile sources (vehicles, aircraft) and (3) usage rates for utilities and services (energy, water supply, wastewater treatment, and solid waste disposal). Air emissions from stationary sources at Fort Lewis (boilers, heaters) may increase slightly or remain the same as a planned fuel switching program (fuel oil to gas) is implemented. In the immediate vicinity of Fort Lewis and on the post itself, noise levels associated with use of training ranges may increase slightly. Artillery impact noise at Fort Lewis could decrease slightly in intensity. Physical impacts at Yakima Firing Center, primarily noise and air emissions, would increase slightly as training activities currently conducted at Fort Lewis are displaced to Yakima.

Impacts on the biological environment include minor habitat disturbance from on and off-post construction and increased training. Sediment in area waters from river crossing operations could adversly affect aquatic biota. Adverse effects could occur to bald eagles at the Yakima Firing Center and on Fort Lewis; the official Section 7 consultation process with U.S. Fish and Wildlife Service has been initiated on the eagle question.

Potential impacts on the socioeconomic environment would include an increase in stress on some local schools. However, preliminary plans for school expansions on and off-post could be activated, and the additional student population could be accommodated. Potential for disturbance or destruction of cultural resources would result from on and off-post construction and on-post training. Conflicts with Native Americans could arise on issues surrounding noise, sediment in streams, and access to traditional sites (at Yakima Firing Center). Finally, public safety problems would likely increase at Fort Lewis and Yakima Firing Center.

Fort Lewis, Washington - Fort Ord, California Stationing Alternative

Under this stationing alternative, a new light infantry division would be split between two installations. The division minus one infantry brigade (division minus) would be stationed at Fort Lewis, Washington along with some support elements. The remaining infantry brigade plus some support elements would be stationed at Fort Ord, California. Civilian employees would also be added at each installation to support the new troops. At Fort Lewis, there would

be a net increase of 10,640 military and 12,900 dependents for a total 23,540. On-post civilian employment would increase by 640. At Fort Ord, there would be a net increase of 1,770 military and 2,250 dependents for a total increase of 4,020. On-post civilian employment would increase by 130.

Fort Lewis and the Tacoma-Olympia, Washington Region

Impacts on the physical environment at Fort Lewis and the general Tacoma-Olympia region would include increases in: (1) noise levels associated with vehicle use and aircraft operations, (2) air emissions from mobile sources (vehicles, aircraft) and (3) usage rates for utilities and services (energy, water supply, wastewater treatment, and solid waste disposal). Air emissions from stationary sources at Fort Lewis (boilers, heaters) may increase or remain the same as a planned fuel switching program (fuel oil to gas) is implemented. In the immediate vicinity of Fort Lewis and on the post itself, noise levels associated with use of training ranges will increase considerably. Artillery impact noise at Fort Lewis could decrease in intensity. Physical impacts at Yakima Firing Center, primarily noise and air emissions, would increase moderately as training activities conducted at Fort Lewis are displaced to Yakima. Services at Yakima Firing Center (water supply, wastewater treatment, solid waste disposal) may occasionally be used at full capacity.

Impacts on the biological environment at Fort Lewis and the region would include habitat disturbance from on and off-post construction and on-post training and increased stream sediment from training which could adversly affect aquatic biota. Adverse effects on bald eagles could result at Yakima Firing Center and Fort Lewis; the official Section 7 consultation process with the U.S. Fish and Wildlife Service has been initiated on the eagle question.

Potential impacts on the socioeconomic environment include competition for area housing between FY87 and FY89 because troops would be stationed prior to on-post housing completions. On-post, as many as 3,000 enlisted personnel may have to reside in substandard barracks until adequate housing is available. On-post schools and some off-post schools are currently operating at capacity. Further additions to the student population would increase existing stress. Implementation of some district expansion plans would be likely to accommodate student increases. Potential for disturbance or destruction of cultural resources on Fort Lewis and Yakima would result from construction and training. Conflicts with Native Americans could arise on issues surrounding noise, stream sediment, and, at Yakima, access to traditional sites.

Fort Ord and the Monterey Bay, California Region

Impacts within the Monterey Bay region resulting from the proposed stationing of a light infantry brigade at Fort Ord are associated with an increase in on-post population which aggrevates mostly existing and recognized problems. Major impacts are summarized below in terms of the physical, biological, and socioeconomic environments.

The proposed stationing alternative would result in a regional demand for water. Although all new personnel would be living on-post and no significant immigration of civilian personnel is expected, on-post demand for water would increase thereby affecting the regional demand. Ground-water resources provide most water supply needs in the region (both domestic needs and economically-important agricultural needs), and continual pumpage in excess of natural recharge allows sea-water intrusion which increases chloride concentrations. Emissions of air pollutants will increase as a result of additional mobile and stationary sources. The region is within the North Central Coast Air Basin, which is currently designated as a non-attainment area for ozone (photochemical oxidants), and any additional emissions may aggrevate regional ozone concentrations. There would be an increase in demand for other services currently or potentially planned to be provided by regional authorities (i.e., wastewater and solid waste disposal).

With respect to the biological environment, the increase in manuevering activities would affect vegetation and increase the potential for erosion at both Forts Ord and Hunter Liggett. More frequent training activities, such as foxhole digging and brush and tree limb cutting for camouflage would also destroy vegetation and disrupt animal habitat areas.

The potential increase in demand for housing in surrounding communities would be the major socioeconomic impact. Although all new military personnel would be provided on-post housing, unanticipated housing construction delays could occur. Additionally, the current waiting period for on-post family housing is approximately 6 to 12 months. It is expected that new family housing would be constructed near the particular elementary school which is already overcrowded. Thus the increase in the number of elementary school-age children would increase the need for busing to other near-post schools and may require the construction of a new elementary school. No major impact upon junior and senior high school enrollments is expected. Noise levels and traffic would increase as a result of additional vehicles on major roadways in the region. A slight increase in the number of airlift training

operations from Monterey Peninsula Airport would not represent a significant increase in noise levels. No major impact upon regional health care facilities or cultural resources is anticipated.

Land use would be only affected within the post boundary, involving conversion of approximately 500 acres to developed use (housing) at Fort Ord and more intensive use of existing training areas at both Fort Ord and Hunter Liggett.

Full Light Infantry Division at Fort Drum, New York

Under this alternative, the full light infantry division would be stationed at Fort Drum in the Eastern Lake Ontario - St. Lawrence region of New York. Fort Drum is a facility with a small permanent contingent, but it serves as a training center for more than 50,000 Reserve and National Guard troops who (as many as 10,000 at one time) use the facility--mostly during the May-October season.

Stationing a division at Fort Drum would add 11,630 military personnel and 1,480 civilians at the Fort, and incoming military would be accompanied by about 14,500 dependents. Extensive new facilities (working and living facilities and utilities) costing more than $1 billion would be added to accomodate the division, including more than 4,400 new family housing units.

Effects upon the physical environment on Fort Drum and in the surrounding region would include (1) changes of land use from wooded and farmland to developed areas for housing and services; (2) increased erosion; (3) "strip" development along roadways; (4) potential ground-water contamination from septic systems in unregulated areas; (5) requirements for upgraded water-supply and wastewater-treatment systems; and (6) increased average noise levels.

Effects on the biological environment would mainly be loss of habitat, stream disturbances, and wetland encroachment. There is abundant habitat in the region, however, so the effects on the overall ecological system would be small.

Principal effects of the action would be in social and economic areas. The added military personnel and their dependents would increase the regional (three counties) population by 11 percent, and the overall effects on the economy would include a 19 percent increase in business volume and a 25 percent increase in personal income.

In the community around Fort Drum new housing would be required for at least 1,300 military faimilies, plus an undetermined number of civilian employees and supporting service people who move to the

region as a result of the economic growth. There would be serious short-term impact on schools and on available health-care facilities and personnel because all on-post construction would be completed at least two years after military personnel arrived. On and near Fort Drum there would be considerably increased traffic.

Fort Drum, New York - Fort Campbell, Kentucky Stationing Alternative

Under this stationing alternative, the new light infantry division would be split between two installations. The division minus one infantry brigade would be stationed at Fort Drum, New York along with some support elements. The remaining infantry brigade plus support elements would be stationed at Fort Campbell, Kentucky. Civilian employess would also be added at each installation to support the new troops. At Fort Drum there would be a net increase of 9,960 military and 11,200 dependents for a total increase of 20,160. On-post civilian employment would increase by 1,420. At Fort Campbell there would be a net increase of 1,150 military and 1,640 dependents for a total increase of 2,790. On-post civilian employment would increase by 50.

Fort Drum and the Eastern Lake Ontario-St. Lawrence, New York Region

Effects upon the physical environment on Fort Drum and in the surrounding region would include (1) changes of land use from wooded and farmland to developed areas for housing and services; (2) increased erosion; (3) "strip" development along roadways; (4) potential ground-water contamination from septic systems in unregulated areas; (5) requirements for upgraded water-supply and wastewater-treatment systems; and (6) increased average noise levels.

Effects on the biological environment would mainly be loss of habitat, stream disturbances, and wetland encroachment. There is abundant habitat in the region, however, so the effects on the overall ecological system would be small.

Principal effects of the action would be in social and economic areas. The added military personnel and their dependents would increase the regional (three counties) population by 9 percent, and the overall effects on the economy would be nearly, but not quite as high as those estimated for a full division (19 percent increase in business volume and 25 percent increase in personal income).

In the community around Fort Drum new housing would be required for at least 1,000 military faimilies, plus an undetermined number of civilian employees and supporting service people who move to the region as a result of the economic growth. There would be serious

short-term impacts on schools and on available health-care facilities and personnel because all on-post construction would be completed at least two years after all military presonnel arrived. On and near Fort Drum there would be moderately increased traffic.

Fort Campbell, Kentucky and the Clarksville-Hopkinsville Region

The water supply and wastewater systems are adequate to meet increased demand associated with the alternative, but a shortage in water storage capacity exists.

Construction activities in the cantonment area would not affect natural ecosystems. However, an increase in use of ranges, impact areas, and maneuver areas may result in minor impacts on wildlife and cultural resources. On-going wildlife, forest, and cultural resource management programs could mitigate such impacts.

The existing deficit in range, impact, and maneuver areas at Fort Campbell would become 20,000 to 30,000 acres with the addition of a light infantry brigade. To remedy this deficit, on-post land currently reserved for forest and wildlife management and agriculture would have to be converted to additional training areas. Also, additional lands could be acquired off-post. Doing so, however, could mean taking prime farmland out of active use.

On-post and off-post areas have experienced noise problems in the past and would see a continuation or increase in these problems as a result of the brigade's training activities. The extent of these problems cannot be determined without establishing a training schedule.

On-post traffic congestion and parking problems will increase slightly. The ten percent increase in traffic in ten U.S. Route 41-A corridor coupled with continuing growth in the corridor would worsen existing congestion and safety problems.

Fort Drum, New York - Fort Benning, Georgia Stationing Alternative I

Under this stationing alternative, the new light infantry division would be split between two installations. The division minus one infantry brigade and the combat aviation brigade would be stationed at Fort Drum, New York along with some support elements. One infantry brigade and the combat aviation brigade would be assigned to Fort Benning, Georgia. Civilian employees would also be added at each installation to support the new troops. At Fort Drum there would be a net increase of 7,830 military and 9,710 dependents for a total increase of 17,540. On-post civilian employment would

increase by 1,410. At Fort Benning there would be a net increase of 3,700 military and 4,760 dependents for a total increase of 8,460. On-post civilian employment would increase by 510.

Fort Drum and the Eastern Lake Ontario-St. Lawrence, New York Region

Effects upon the physical environment on Fort Drum and in the surrounding region would include (1) changes of land use from wooded and farmland to developed areas for housing and services; (2) increased erosion; (3) widespread "strip" development along roadways; (4) potential ground-water contamination from septic systems in unregulated areas; (5) requirements for upgraded water-supply and wastewater-treatment systems; and (6) increased average noise levels.

Effects on the biological environment would mainly be loss of habitat, stream disturbances, and wetland encroachment. There is abundant habitat in the region, however, so the effects on the overall ecological system would be small.

Principal effects of the action would be in social and economic areas. The added military personnel and their dependents would increase the regional (three counties) population by 8 percent, and the overall effects on the economy would be nearly, but not quite as high as those estimated for a full division (19 percent increase in business volume and 25 percent increase in personal income). During the peak of construction, regional employment might be increased by 15 to 20 thousand above present levels.

In the community around Fort Drum new housing would be required for at least 890 military faimilies, plus an undetermined number of civilian employees and supporting service people who move to the region as a result of the economic growth. There would be serious short-term impacts on schools and on available health-care facilities and personnel because all on-post construction would be completed at least two years after military personnel arrived. On and near Fort Drum there would be moderately increased traffic.

Fort Benning and the Columbus, Georgia Region

There would not be any requirement for off-post land acquisition or leasing. There would be disturbances to soils, both on-post and off-post, as a result of new construction activities. There would also be an increased potential for soil erosion as a result of construction and a 16 percent increase in the frequency of

utilization of existing training areas. There would be a small increase in the emission of air pollutants, but this would not cause any air quality standard to be violated. The existing water treatment capacity and wastewater treatment capacity would be sufficient to handle the population increase, both on-post and off-post. There would not be any significant impacts to water quality.

Some disturbance to vegetation, wildlife, and habitat would occur as a result of construction, the 16 percent increase in the utilization of maneuvering areas, and the increase in the frequency of other activities that generate noise. These would not be likely to cause a significant impact to the biological environment. These could, however, be a potential for a decline in the wild turkey population on-post. This proposed alternative would not affect any endangered species.

The population of the Columbus, Georgia region would increase by less than 4 percent under the proposed stationing alternative. This would not result in any significant impacts to existing land uses, solid waste disposal capacity, traffic congestion, schools, public safety, or off-post health care facilities. However, trailers and/or space in additional buildings on-post other than Martin Army Community Hospital might have to be utilized for some health services. There would be increased off-post referrals for some health services.

The current surplus of housing units in the region could readily absorb the population growth from this proposed alternative. However, housing demand due to natural populations growth projected for 1990 could necessitate additional units. Based on past trends, the housing market should readily adjust to the increased demand.

Increases in aircraft and artillery operations and vehicular traffic would be unlikely to cause any significant increase in noise levels. However, the frequency of the activities that generate noise would increase. Increase in night rotary-wing aircraft operations could cause the Columbus Airport approach control operations to expand to a 24-hour operation. There would not be any landings or take-offs from the Columbus Airport during the expanded hours of operation.

The proposed alternative would lead to increases in regional personal income, business volume, and employment. Increases in regional business volume and employee equivalent numbers would not exceed rational threshold values. Increases in personal income could slightly exceed the rational threshold value (see Chapter 4E).

Construction activities and other activities that disturb the ground would have a potential for loss or disturbance of significant cultural resources in the area.

Fort Drum, New York - Fort Benning, Georgia Stationing Alternative II

Under this stationing alternative, the new light infantry division would be split between two installations. The division minus one infantry brigade would be stationed at Fort Drum, New York along with some support elements. The remaining infantry brigade plus support elements would be stationed at Fort Benning, Georgia. Civilian employess would also be added at each installation to support the new troops. At Fort Drum there would be a net increase of 8,960 military and 11,200 dependents for a total increase of 20,160. On-post civilian employment would increase by 1,420. At Fort Benning there would be a net increase of 2,450 military and 3,100 dependents for a total increase of 5,550. On-post civilian employment would increase by 430.

Fort Drum and the Eastern Lake Ontario-St. Lawrence, New York Region

The environmental effects at Fort Drum of this stationing alternative would be the same as described above for the Fort Drum-Fort Cambell stationing alternative.

Fort Benning and the Columbus, Georgia Region

Most impacts under this proposed stationing alternative would be similar to those discussed under the Fort Drum-Fort Benning stationing Alternative I. However, the increase in personnel at Fort Benning would be about 68 percent of total under Alternative I and construction would be about 58 percent in terms of square footage. Thus, the magnitude of the changes would be reduced accordingly in most instances.

The major differences would be that maneuver area utilization would increase by 4 percent rather than 16 percent, and this would reduce the potential for indicated impacts to soils, the biological environment, and cultural resources.

Aircraft operations would increase by 3 percent rather than 32 percent and this would reduce the potential for any noise related impacts. In addition, there would be no need for the Columbus Airport approach control operations to expand to 24-hour operation.

There would also be sufficient capacity available at Martin Army Community Hospital to handle the increased military personnel and dependents, providing necessary medical staffing was provided. Increases in regional personal income, business volume, and employee equivalent numbers would all be less than their respective rational threshold values.

Fort Drum, New York-Fort Benning, Georgia Stationing Alternative III

Under this stationing alternative, the new light infantry division would be split between two installations. The division minus one infantry brigade would be stationed at Fort Drum, New York along with some support elements. The combat aviation brigade would be stationed at Fort Benning, Georgia. Civilian employess would also be added at each installation to support the new troops. At Fort Drum there would be a net increase of 10,750 military and 13,290 dependents for a total increase of 24,040. On-post civilian employment would increase by 1,550. At Fort Benning there would be a net increase of 1,090 military and 1,540 dependents for a total increase of 2,630. On-post civilian employment would increase by 380. At Fort Drum there probably would be a reduction in the peak number of Reserve and National Guard trainees present at one time from the present 10,000 to 11,000 to approximately 7,000 to 7,500.

Fort Drum and the Eastern Lake Ontario-St. Lawrence, New York Region

Effects upon the physical environment on Fort Drum and in the surrounding region would include (1) changes of land use from wooded and farmland to developed areas for housing and services; (2) increased erosion; (3) "strip" development along roadways; (4) potential ground-water contamination from septic systems in unregulated areas; (5) requirements for upgraded water-supply and wastewater-treatment systems; and (6) increased average noise levels.

Effects on the biological environment would mainly be loss of habitat, stream disturbances, and wetland encroachment. There is abundant habitat in the region, however, so the effects on the overall ecological system would be small.

Principal effects of the action would be in social and economic areas. The added military personnel and their dependents would increase the regional (three counties) population by 10 percent, and the overall effects on the economy would be nearly as high as those estimated for a full division (19 percent increase in business volume and 25 percent increase in personal income). Regional

employment might be increased by nearly as much as for a full division, which would be 17,000 above present levels, with possibly another 4,000 during the construction period.

In the community around Fort Drum new housing would be required for at least 1,200 military families, plus an undetermined number of civilian employees and supporting service people who move to the region as a result of the economic growth. There would be serious short-term impacts on schools and on available health-care facilities and personnel because all on-post construction would be completed at least two years after military personnel arrived. On and near Fort Drum there would be moderately increased traffic.

Fort Benning and the Columbus, Georgia Region

Most impacts under this proposed stationing alternative would be similar to those discussed under the Fort Drum-Fort Benning stationing Alternative I. However, the increase in personnel at Fort Benning would be about 35 percent of that under Alternative I and construction would be about 42 percent in terms of square footage. Thus, the magnitude of the changes would be reduced accordingly in most instances.

The major differences would be that maneuver area utilization would increase by 11 percent rather than 16 percent, and this would slightly reduce the potential for indicated impacts to soils, the biological environment, and cultural resources. There would be no increase in artillery operations, and this would eliminate the potential for any noise related impacts.

There would also be sufficient capacity available for Martin Army Community Hospital to handle the increased military personnel and dependents, providing necessary medical staffing was provided. Increases in regional personal income, business volume, and employee equivalent numbers would all be less than their respective rational threshold values.

TABLE OF CONTENTS

	Page
LIST OF FIGURES	xlii
LIST OF TABLES	xliii
CHAPTER 1 - PURPOSE AND NEED FOR THE ACTION	1-1
BACKGROUND	1-1
THE PROPOSED FEDERAL ACTION: ITS PURPOSE AND NEED	1-2
CHAPTER 2 - DEVELOPMENT AND COMPARISON OF STATIONING ALTERNATIVES	2-1
INTRODUCTION	2-1
Stationing Alternatives Considered in Detail	2-5
No Action Alternative	2-6
Organization of the Draft EIS	2-6
Organization of the FEIS	2-7
Assumptions On Which All Analyses Are Based	2-7
COMPARISON OF ENVIRONMENTAL AND SOCIOECONOMIC EFFECTS OF THE STATIONING ALTERNATIVES	2-7
CHAPTER 3 - AFFECTED ENVIRONMENTS	3-1
INTRODUCTION	3-1
FORTS WAINWRIGHT, GREELY, AND RICHARDSON, ALASKA	3-1
Fairbanks, Alaska Region	3-1
Climate	3-3
Biological Environment	3-3
Demography	3-3
Land Use	3-4
Noise	3-4
Regional Economic Activity	3-5
Air Quality	3-6
Water Supply	3-7
Wastewater Disposal	3-8
Solid Waste Disposal	3-8
Housing	3-8
Schools	3-8
Health Care	3-10
Cultural Resources	3-11

TABLE OF CONTENTS (Continued)

	Page
Fort Wainwright, Alaska	3-11
Geology, Minerals and Soils	3-13
Biological Environment	3-14
On-Post Population	3-15
Land Use	3-15
Noise	3-15
Air Emissions	3-16
Water Supply	3-17
Wastewater Disposal	3-18
Solid and Hazardous Waste Disposal	3-18
Housing	3-18
Schools	3-19
Health Care	3-19
Public Safety	3-19
Traffic and Transportation	3-20
Energy Usage	3-20
Cultural Resources	3-21
Fort Greeley, Alaska	3-22
Anchorage, Alaska Region	3-23
Climate	3-23
Biological Environment	3-23
Demography	3-26
Land Use	3-27
Noise	3-27
Regional Economic Activity	3-27
Air Quality	3-27
Water Supply	3-28
Wastewater Treatment	3-29
Solid Waste Disposal	3-29
Housing	3-29
Schools	3-30
Health Care	3-30
Cultural Resources	3-31
Fort Richardson, Alaska	3-31
Geology, Minerals and Soils	3-31
Biological Environment	3-32
On-Post Population	3-32
Land Use	3-33
Noise	3-33
Air Emissions	3-33

TABLE OF CONTENTS (Continued)

	Page
Water Supply	3-34
Wastewater Disposal	3-34
Solid and Hazardous Waste Disposal	3-34
Housing	3-34
Schools	3-35
Health Care	3-35
Public Safety	3-35
Traffic and Transportation	3-36
Energy Usage	3-36
Cultural Resources	3-37
FORT BENNING, GEORGIA AND SURROUNDING REGION	3-38
Columbus, Georgia Region	3-38
Climate	3-40
Biological Environment	3-40
Demography	3-41
Land Use	3-42
Noise	3-43
Regional Economic Activity	3-43
Air Quality	3-45
Water Supply	3-45
Wastewater Disposal	3-45
Solid Waste Disposal	3-48
Housing	3-48
Schools	3-49
Health Care	3-50
Cultural Resources	3-51
Fort Benning, Georgia	3-51
Geology, Minerals and Soils	3-54
Biological Environment	3-55
On-Post Population	3-56
Land Use	3-58
Noise	3-59
Air Quality	3-60
Water Supply	3-61
Wastewater Disposal	3-64
Solid and Hazardous Waste Disposal	3-65
Housing	3-66
Schools	3-67
Health Care	3-67
Public Safety	3-67
Traffic and Transportation	3-68

TABLE OF CONTENTS (Continued)

	Page
Energy Usage	3-69
Cultural Resources	3-70
FORT CAMPBELL, KENTUCKY AND SURROUNDING REGION	3-71
Hopkinsville (KY) - Clarksville (TN) Region	3-73
Climate	3-73
Biological Environment	3-73
Demography	3-74
Land Use	3-74
Noise	3-76
Regional Economic Activity	3-78
Air Quality	3-81
Water Supply	3-81
Wastewater Disposal	3-82
Solid Waste Disposal	3-83
Housing	3-83
Schools	3-83
Health Care	3-85
Cultural Resources	3-85
Fort Campbell, Kentucky	3-86
Geology, Minerals and Soils	3-87
Biological Environment	3-87
On-Post Population	3-89
Land Use	3-89
Noise	3-90
Air Quality	3-91
Water Supply	3-92
Wastewater Disposal	3-92
Solid and Hazardous Waste Disposal	3-93
Housing	3-94
Schools	3-95
Health Care	3-95
Public Safety	3-95
Traffic and Transportation	3-97
Energy Usage	3-98
Cultural Resources	3-100
FORT DRUM, NEW YORK AND SURROUNDING REGION	3-101
Eastern Lake Ontario - St. Lawrence, New York Region	3-101
Climate	3-101
Biological Environment	3-101

TABLE OF CONTENTS (Continued)

	Page
Demography	3-103
Land Use	3-105
Noise	3-106
Regional Economic Activity	3-106
Air Quality	3-108
Water Supply	3-108
Wastewater Disposal	3-109
Solid Waste Disposal	3-109a
Housing	3-110
Schools	3-110
Health Care	3-113
Cultural Resources	3-114
Fort Drum, New York	3-114
Geology, Minerals and Soils	3-114
Biological Environment	3-116
On-Post Population	3-117
Land Use	3-118
Noise	3-119
Air Quality	3-121
Water Supply	3-121
Wastewater Disposal	3-122
Solid and Hazardous Waste Disposal	3-122
Housing	3-123
Schools	3-123
Health Care	3-123
Public Safety	3-124
Traffic and Transportation	3-125
Energy Usage	3-126
Cultural Resources	3-127
FORT LEWIS, WASHINGTON AND SURROUNDING REGION	3-128
Tacoma-Olympia, Washington Region	3-128
Climate	3-128
Biological Environment	3-130
Demography	3-130
Land Use	3-131
Noise	3-132
Regional Economic Activity	3-132
Air Quality	3-133
Water Supply	3-133
Wastewater Disposal	3-134
Solid Waste Disposal	3-134

TABLE OF CONTENTS (Continued)

	Page
Housing	3-134
Regional/Local Schools	3-136
Health Care	3-136
Fort Lewis, Washington	3-139
Geology, Minerals and Soils	3-141
Biological Environment	3-142
On-Post Population	3-143
Land Use	3-143
Noise	3-145
Air Quality	3-146
Water Supply	3-147
Wastewater Disposal	3-147
Solid and Hazardous Waste Disposal	3-148
Housing	3-148
Schools	3-149
Health Care	3-149
Public Safety	3-150
Traffic and Transportation	3-150
Energy Usage	3-151
Cultural Resources	3-152
Fort Lewis Subinstallations	3-153
Yakima Firing Center	3-153
Huckleberry Creek Mountain Training Center	3-159
Camp Bonneville	3-160
Vancouver Barracks	3-160
FORT ORD, CALIFORNIA AND SURROUNDING REGION	3-161
Monterey Bay Region	3-161
Climate	3-161
Biological Environment	3-163
Demography	3-163
Land Use	3-164
Noise	3-164
Regional Economic Activity	3-165
Air Quality	3-166
Water Supply	3-167
Wastewater Disposal	3-168
Solid Waste Disposal	3-168
Housing	3-169
Schools	3-169

TABLE OF CONTENTS (Continued)

	Page
Health Care	3-170
Cultural Resources	3-170
Fort Ord, California	3-170
Geology, Minerals and Soils	3-170
Biological Environment	3-172
On-Post Population	3-174
Land Use	3-174
Noise	3-175
Air Emissions	3-176
Water Supply	3-176
Wastewater Disposal	3-177
Solid and Hazardous Waste Disposal	3-178
Housing	3-179
Schools	3-180
Health Care	3-180
Public Safety	3-181
Traffic and Transportation	3-181
Energy Usage	3-182
Cultural Resources	3-183
Fort Hunter Liggett, California	3-183
Geology, Minerals, and Soils	3-183
Biological Environment	3-185
Land Use	3-186
Noise	3-187
Air Emissions	3-187
Water Supply	3-188
Traffic and Transportation	3-188
Cultural Resources	3-188
CHAPTER 4A - ENVIRONMENTAL CONSEQUENCES OF THE FORT WAINWRIGHT, ALASKA - FORT LEWIS, WASHINGTON STATIONING ALTERNATIVE	4A-1
INTRODUCTION	4A-1
FORT WAINWRIGHT AND THE FAIRBANKS, ALASKA REGION	4A-3
Fairbanks, Alaska Region	4A-3
Biological Environment	4A-3
Demography	4A-3
Land Use	4A-6

TABLE OF CONTENTS (Continued)

	Page
Noise	4A-6
Regional Economic Activity	4A-7
Air Quality	4A-9
Water Supply	4A-10
Wastewater Disposal	4A-11
Solid and Hazardous Waste	4A-12
Housing	4A-12
Schools	4A-13
Health Care	4A-13
Cultural Resources	4A-14
Fort Wainwright, Alaska	4A-14
Geology, Minerals and Soils	4A-15
Biological Environment	4A-15
On-Post Population	4A-16
Land Use	4A-16
Noise	4A-17
Air Quality	4A-18
Water Supply	4A-18
Wastewater Disposal	4A-18
Solid and Hazardous Waste Disposal	4A-19
Housing	4A-19
Schools	4A-19
Health Care	4A-20
Public Safety	4A-20
Traffic and Transportation	4A-20a
Cultural Resources	4A-21
Fort Greeley, Alaska	4A-22
FORT RICHARDSON AND THE ANCHORAGE, ALASKA REGION	4A-25
Anchorage, Alaska Region	4A-25
Biological Environment	4A-25
Demography	4A-25
Land Use	4A-26
Noise	4A-26
Regional Economic Activity	4A-26
Air Quality	4A-27
Water Supply	4A-27a
Wastewater Disposal	4A-29
Solid Waste Disposal	4A-29
Housing	4A-29
Schools	4A-30

TABLE OF CONTENTS (Continued)

	Page
Health Care	4A-30
Cultural Resources	4A-31
Fort Richardson, Alaska	4A-31
Geology, Minerals and Soils	4A-31
Biological Environment	4A-31
On-Post Population	4A-32
Land Use	4A-33
Noise	4A-33
Air Quality	4A-34
Water Supply	4A-34
Wastewater Disposal	4A-34
Solid and Hazardous Waste Disposal	4A-34
Housing	4A-35
Schools	4A-35
Health Care	4A-35
Public Safety	4A-35
Traffic and Transportation	4A-35
Cultural Resources	4A-36
FORT LEWIS AND THE TACOMA-OLYMPIA, WASHINGTON REGION	4A-37
Tacoma-Olympia, Washington Region	4A-37
Biological Environment	4A-37
Demography	4A-39
Land Use	4A-40
Noise	4A-41
Regional Economic Activity	4A-41
Air Quality	4A-43
Water Supply	4A-43
Wastewater Disposal	4A-43a
Solid Waste Disposal	4A-44
Housing	4A-44
Schools	4A-45
Health Care	4A-45
Cultural Resources	4A-45
Fort Lewis, Washington	4A-46
Geology, Minerals and Soils	4A-46
Biological Environment	4A-46
On-Post Population	4A-47
Land Use Changes	4A-48
Noise	4A-49
Air Quality	4A-50

TABLE OF CONTENTS (Continued)

	Page
Water Supply	4A-51
Wastewater Disposal	4A-51
Solid and Hazardous Waste Disposal	4A-52
Housing	4A-52
Schools	4A-53
Health Care	4A-53
Public Safety	4A-53
Traffic and Transportation	4A-54
Cultural Resources	4A-55
Native American Concerns	4A-56
Fort Lewis Subinstallations	4A-57
Yakima Firing Center	4A-57
Vancouver Barracks	4A-60
Camp Bonneville	4A-60
Huckleberry Creek Mountain Training Center	4A-60
ENERGY AND FUELS ANALYSIS	4A-60
MITIGATING MEASURES	4A-64
ADVERSE IMPACTS THAT CANNOT BE AVOIDED	4A-64
CHAPTER 4B - ENVIRONMENTAL CONSEQUENCES OF THE FORT LEWIS, WASHINGTON - FORT ORD, CALIFORNIA STATIONING ALTERNATIVE	4B-1
INTRODUCTION	4B-1
FORT LEWIS AND THE TACOMA-OLYMPIA, WASHINGTON REGION	4B-5
Tacoma-Olympia, Washington Region	4B-5
Biological Environment	4B-5
Demography	4B-6
Land Use	4B-10
Noise	4B-11
Regional Economic Activity	4B-11
Air Quality	4B-13
Water Supply	4B-13
Wastewater Disposal	4B-14
Solid Waste Disposal	4B-14
Housing	4B-14
Schools	4B-16
Health Care	4B-17
Cultural Resources	4B-17

TABLE OF CONTENTS (Continued)

	Page
Fort Lewis, Washington	4B-17
Geology, Minerals and Soils	4B-17
Biological Environment	4B-18
On-Post Population	4B-19
Land Use	4B-19
Noise	4B-21
Air Quality	4B-22
Water Supply	4B-24
Wastewater Disposal	4B-24
Solid and Hazardous Waste Disposal	4B-24
Housing	4B-25
Schools	4B-27
Health Care	4B-27
Public Safety	4B-27
Traffic and Transportation	4B-28
Cultural Resources	4B-29
Native American Concerns	4B-29
Fort Lewis Subinstallations	4B-30
Yakima Firing Center	4B-30
Vancouver Barracks	4B-34
Camp Bonneville	4B-34
Huckleberry Creek Mountain Training Center	4B-34
FORT ORD AND THE MONTEREY BAY, CALIFORNIA REGION	4B-34
Monterey Bay, California Region	4B-35
Biological Environment	4B-35
Demography	4B-35
Land Use	4B-35
Noise	4B-36
Regional Economic Activity	4B-36
Air Quality	4B-38
Water Supply	4B-38
Wastewater Disposal	4B-39
Solid Waste Disposal	4B-39
Housing	4B-40
Schools	4B-40
Health Care	4B-40
Traffic and Transport	4B-40
Cultural Resources	4B-40
Fort Ord, California	4B-41
Geology, Minerals and Soils	4B-41
Biological Environment	4B-41

TABLE OF CONTENTS (Continued)

	Page
On-Post Population	4B-42
Land Use	4B-42
Noise	4B-43
Air Quality	4B-44
Water Supply	4B-46
Wastewater Disposal	4B-46
Solid and Hazardous Waste Disposal	4B-46
Housing	4B-47
Schools	4B-47
Health Care	4B-48
Public Safety	4B-48
Traffic and Transportation	4B-48a
Cultural Resources	4B-48a
Fort Hunter Liggett, California	4B-50
Geology, Minerals, and Soils	4B-50
Biological Environment	4B-50
Land Use	4B-51
Noise	4B-51
Air Emissions	4B-51
Water Supply	4B-51
Traffic and Transportation	4B-52
Cultural Resources	4B-52
ENERGY AND FUELS ANALYSIS	4B-52
MITIGATING MEASURES	4B-55
ADVERSE IMPACTS THAT CANNOT BE AVOIDED	4B-55
CHAPTER 4C - ENVIRONMENTAL CONSEQUENCES OF STATIONING A FULL LIGHT INFANTRY DIVISION AT FORT DRUM, NEW YORK	4C-1
INTRODUCTION	4C-1
FORT DRUM AND THE EASTERN LAKE ONTARIO - ST. LAWRENCE, NEW YORK REGION	4C-1
Biological Environment	4C-5
Demography	4C-5
Land Use	4C-5
Noise	4C-6

TABLE OF CONTENTS (Continued)

	Page
Regional Economic Activity	4C-7
Air Quality	4C-9
Water Supply	4C-9
Wastewater Disposal	4C-9
Solid Waste Disposal	4C-10
Housing	4C-10
Schools	4C-11
Health Care	4C-11
Cultural Resources	4C-12
FORT DRUM, NEW YORK	4C-12
Geology, Minerals and Soils	4C-13
Biological Environment	4C-13
On-Post Population	4C-14
Land Use	4C-15
Noise	4C-15
Air Quality	4C-15
Water Supply	4C-16
Wastewater Disposal	4C-16
Solid and Hazardous Waste Disposal	4C-16
Housing	4C-17
Schools	4C-17
Health Care	4C-18
Public Safety	4C-18
Traffic and Transportation	4C-19
Cultural Resources	4C-19a
ENERGY AND FUELS ANALYSIS	4C-21
MITIGATION MEASURES	4C-23
ADVERSE IMPACTS THAT CANNOT BE AVOIDED	4C-26
CHAPTER 4D - ENVIRONMENTAL CONSEQUENCES OF THE FORT DRUM, NEW YORK - FORT CAMPBELL, KENTUCKY STATIONING ALTERNATIVE	4D-1
INTRODUCTION	4D-1
FORT DRUM AND EASTERN LAKE ONTARIO - ST. LAWRENCE, NEW YORK REGION	4D-1

TABLE OF CONTENTS (Continued)

	Page
Eastern Lake Ontario - St. Lawrence, New York Region	4D-1
Biological Environment	4D-5
Demography	4D-5
Land Use	4D-6
Noise	4D-6a
Regional Economic Activity	4D-7
Air Quality	4D-8
Water Supply	4D-8
Wastewater Disposal	4D-8
Solid Waste Disposal	4D-9
Housing	4D-9
Schools	4D-10
Health Care	4D-10
Cultural Resources	4D-11
Fort Drum, New York	4D-11
Geology, Minerals and Soils	4D-11
Biological Environment	4D-12
On-Post Population	4D-13
Land Use	4D-13
Noise	4D-14
Air Quality	4D-14
Water Supply	4D-14
Wastewater Disposal	4D-15
Solid and Hazardous Waste Disposal	4D-15
Housing	4D-15
Schools	4D-16
Health Care	4D-16
Public Safety	4D-17
Traffic and Transportation	4D-17a
Cultural Resources	4D-18
FORT CAMPBELL, KENTUCKY-TENNESSEE AND THE HOPKINSVILLE (KY) - CLARKSVILLE (TN) REGION	4D-19
Hopkinsville (KY) - Clarksville (TN) Region	4D-19
Biological Environment	4D-20
Demography	4D-20
Land Use	4D-21
Noise	4D-21
Regional Economic Activity	4D-22
Air Quality	4D-22a
Water Supply	4D-24
Wastewater Disposal	4D-24

TABLE OF CONTENTS (Continued)

	Page
Solid Waste Disposal	4D-24
Housing	4D-24
Schools	4D-25
Health Care	4D-25
Cultural Resources	4D-25
Fort Campbell, Kentucky-Tennessee	4D-25
Geology, Minerals and Soils	4D-25
Biological Environment	4D-26
On-Post Population	4D-27
Land Use	4D-28
Noise	4D-28
Air Quality	4D-28
Water Supply	4D-29
Wastewater Disposal	4D-29
Solid and Hazardous Waste Disposal	4D-31
Housing	4D-31
Schools	4D-32
Health Care	4D-32
Public Safety	4D-32
Traffic and Transportation	4D-32a
Cultural Resources	4D-33
ENERGY AND FUELS ANALYSIS	4D-35
MITIGATING MEASURES	4D-38
ADVERSE IMPACTS THAT CANNOT BE AVOIDED	4D-38
CHAPTER 4E - ENVIRONMENTAL CONSEQUENCES OF THE FORT DRUM, NEW YORK - FORT BENNING, GEORGIA STATIONING ALTERNATIVE I	4E-1
INTRODUCTION	4E-1
FORT DRUM AND EASTERN LAKE ONTARIO - ST. LAWRENCE, NEW YORK REGION	4E-4
Eastern Lake Ontario - St. Lawrence, New York Region	4E-4
Biological Environment	4E-4
Demography	4E-6
Land Use	4E-6
Noise	4E-7
Regional Economic Activity	4E-7

TABLE OF CONTENTS (Continued)

	Page
Air Quality	4E-8
Water Supply	4E-8
Wastewater Disposal	4E-8
Solid Waste Disposal	4E-9
Housing	4E-9
Schools	4E-10
Health Care	4E-10
Cultural Resources	4E-11
Fort Drum, New York	4E-11
Geology, Minerals and Soils	4E-11
Biological Environment	4E-12
On-Post Population	4E-13
Land Use	4E-13
Noise	4E-14
Air Quality	4E-14
Water Supply	4E-14
Wastewater Disposal	4E-15
Solid and Hazardous Waste Disposal	4E-15
Housing	4E-15
Schools	4E-16
Health Care	4E-16
Public Safety	4E-17
Traffic and Transportation	4E-17a
Cultural Resources	4E-18
FORT BENNING AND THE COLUMBUS, GEORGIA REGION	4E-19
Columbus, Georgia Region	4E-20
Biological Environment	4E-21
Demography	4E-22
Land Use	4E-22
Noise	4E-22
Regional Economic Activity	4E-23
Air Quality	4E-25
Water Supply	4E-25
Wastewater Disposal	4E-26
Solid Waste Disposal	4E-27
Housing	4E-27
Schools	4E-28
Health Care	4E-28
Cultural Resources	4E-29

TABLE OF CONTENTS (Continued)

	Page
Fort Benning, Georgia	4E-29
Geology, Minerals and Soils	4E-30
Biological Environment	4E-31
On-Post Population	4E-34
Land Use	4E-34
Noise	4E-35
Air Quality	4E-37
Water Supply	4E-37
Wastewater Disposal	4E-38
Solid and Hazardous Waste Disposal	4E-39
Housing	4E-39
Schools	4E-40
Health Care	4E-40
Public Safety	4E-41
Traffic and Transportation	4E-41
Cultural Resources	4E-42
ENERGY AND FUELS ANALYSIS	4E-43
MITIGATING MEASURES	4E-46
ADVERSE IMPACTS THAT CANNOT BE AVOIDED	4E-46
CHAPTER 4F - ENVIRONMENTAL CONSEQUENCES OF THE FORT DRUM, NEW YORK - FORT BENNING, GEORGIA STATIONING ALTERNATIVE II	4F-1
INTRODUCTION	4F-1
FORT DRUM AND EASTERN LAKE ONTARIO - ST. LAWRENCE, NEW YORK REGION	4F-5
FORT BENNING AND THE COLUMBUS, GEORGIA REGION	4F-5
Columbus, Georgia Region	4F-6
Biological Environment	4F-6
Demography	4F-7
Land Use	4F-7
Noise	4F-8
Regional Economic Activity	4F-8
Air Quality	4F-9
Water Supply	4F-9
Wastewater Disposal	4F-11
Solid Waste Disposal	4F-12

TABLE OF CONTENTS (Continued)

	Page
Housing	4F-12
Schools	4F-13
Health Care	4F-13
Cultural Resources	4F-14
Fort Benning, Georgia	4F-14
Geology, Minerals and Soils	4F-15
Biological Environment	4F-16
On-Post Population	4F-19
Land Use	4F-19
Noise	4F-20
Air Quality	4F-22
Water Supply	4F-22
Wastewater Disposal	4F-23
Solid and Hazardous Waste Disposal	4F-24
Housing	4F-24
Schools	4F-25
Health Care	4F-25
Public Safety	4F-25
Traffic and Transportation	4F-25a
Cultural Resources	4F-26
ENERGY AND FUELS ANALYSIS	4F-28
MITIGATING MEASURES	4F-31
ADVERSE IMPACTS THAT CANNOT BE AVOIDED	4F-31
CHAPTER 4G - ENVIRONMENTAL CONSEQUENCES OF THE FORT DRUM, NEW YORK - FORT BENNING, GEORGIA STATIONING ALTERNATIVE III	4G-1
INTRODUCTION	4G-1
FORT DRUM AND EASTERN LAKE ONTARIO - ST. LAWRENCE, NEW YORK REGION	4G-5
Eastern Lake Ontario - St. Lawrence, New York Region	4G-5
Biological Environment	4G-5
Demography	4G-6
Land Use	4G-6
Noise	4G-7
Regional Economic Activity	4G-7
Air Quality	4G-8

TABLE OF CONTENTS (Continued)

	Page
Water Supply	4G-8
Wastewater Disposal	4G-8
Solid Waste Disposal	4G-9
Housing	4G-9
Schools	4G-10
Health Care	4G-10
Cultural Resources	4G-11
Fort Drum, New York	4G-11
Geology, Minerals and Soils	4G-11
Biological Environment	4G-12
On-Post Population	4G-13
Land Use	4G-13
Noise	4G-14
Air Quality	4G-14
Water Supply	4G-14
Wastewater Disposal	4G-15
Solid and Hazardous Waste Disposal	4G-15
Housing	4G-15
Schools	4G-16
Health Care	4G-16
Public Safety	4G-17
Traffic and Transportation	4G-17a
Cultural Resources	4G-18
FORT BENNING AND THE COLUMBUS, GEORGIA REGION	4G-19
Columbus, Georgia Region	4G-20
Biological Environment	4G-21
Demography	4G-22
Land Use	4G-22
Noise	4G-23
Regional Economic Activity	4G-23
Air Quality	4G-23
Water Supply	4G-24
Wastewater Disposal	4G-24
Solid Waste Disposal	4G-25
Housing	4G-25
Schools	4G-26
Health Care	4G-26
Cultural Resources	4G-27
Fort Benning, Georgia	4G-27
Geology, Minerals and Soils	4G-28

TABLE OF CONTENTS (Continued)

	Page
Biological Environment	4G-29
On-Post Population	4G-32
Land Use	4G-32
Noise	4G-33
Air Quality	4G-35
Water Supply	4G-35
Wastewater Disposal	4G-36
Solid and Hazardous Waste Disposal	4G-37
Housing	4G-37
Schools	4G-38
Health Care	4G-38
Public Safety	4G-38
Traffic and Transportation	4G-38a
Cultural Resources	4G-39
ENERGY AND FUELS ANALYSIS	4G-41
MITIGATING MEASURES	4G-44
ADVERSE IMPACTS THAT CANNOT BE AVOIDED	4G-44
CHAPTER 5 - LIST OF PREPARERS AND REVIEWERS	5-1
CHAPTER 6 - PUBLIC INVOLVEMENT	6-1
APPENDIX A - COMMENTS AND RESPONSES ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT AND SUMMARY OF PUBLIC HEARING ISSUES	A-1
A-1 - COMMENTS AND RESPONSES CONCERNING ALASKA FORTS AND SUMMARY OF PUBLIC HEARING ISSUES	A-3
Letters of Comment and Responses	A-4
Fort Wainwright Public Hearing Summary	A-48
Fort Richardson Public Hearing Summary	A-60
A-2 - COMMENTS AND RESPONSES CONCERNING FORT BENNING, GEORGIA AND SUMMARY OF PUBLIC HEARING ISSUES	A-63
Letters of Comment and Responses	A-64
Public Hearing Summary	A-73

TABLE OF CONTENTS (Continued)

	Page
A-3 - COMMENTS AND RESPONSES CONCERNING FORT CAMPBELL, KENTUCKY AND SUMMARY OF PUBLIC HEARING ISSUES	A-75
Letters of Comment and Responses	A-76
Public Hearing Summary	A-110
A-4 - COMMENTS AND RESPONSES CONCERNING FORT DRUM, NEW YORK AND SUMMARY OF PUBLIC HEARING ISSUES	A-115
Letters of Comment and Responses	A-116
Public Hearing Summary	A-175
A-5 - COMMENTS AND RESPONSES CONCERNING FORT LEWIS, WASHINGTON AND SUMMARY OF PUBLIC HEARING ISSUES	A-181
Letters of Comment and Responses	
Public Hearing Summary	A-221
A-6 - COMMENTS AND RESPONSES CONCERNING FORT ORD, CALIFORNIA AND SUMMARY OF PUBLIC HEARING ISSUES	A-227
Letters of Comment and Responses	A-228
Public Hearing Summary	A-264
A-7 - COMMENTS AND RESPONSES TO LETTERS REFERRING MORE THAN ONE FORT	A-267
APPENDIX B - ADDITIONAL INFORMATION ON THE FORTS IN ALASKA	B-1
APPENDIX C - ADDITIONAL INFORMATION ON FORT BENNING	C-1
APPENDIX D - ADDITIONAL INFORMATION ON FORT CAMPBELL	D-1
APPENDIX E - ADDITIONAL INFORMATION ON FORT DRUM	E-1
APPENDIX F - ADDITIONAL INFORMATION ON FORT LEWIS	F-1
APPENDIX G - ADDITIONAL INFORMATION ON FORT ORD	G-1
APPENDIX H - ADDITIONAL INFORMATION ON ENERGY AND FUELS	H-1

TABLE OF CONTENTS (Concluded)

	Page
APPENDIX I - ADDITIONAL INFORMATION ON THE REGIONAL ECONOMIC ANALYSIS	I-1
APPENDIX J - OVERVIEW OF TRAINING OF THE NEW LIGHT INFANTRY DIVISION	J-1
APPENDIX K - CONSTRUCTION REQUIRED FOR THE STATIONING ALTERNATIVES	K-1
APPENDIX L - ADDITIONAL INFORMATION ON LABOR FORCE PARTICIPATION OF U.S. ARMY PERSONNEL SPOUSES	L-1
APPENDIX M - ADDITIONAL INFORMATION ON U.S. ARMY PERSONNEL CRIME RATES	M-1
REFERENCES AND BIBILIOGRAPHY	R-1
INDEX	

LIST OF FIGURES

Figure Number		Page
2-1	Location of Army Installations Considered in this Study	2-4
3-1	Location of Army Installations in Alaska	3-2
3-2	Fort Wainwright, Alaska	3-12
3-3	Fort Richardson, Alaska	3-24
3-4	The Columbus, Georgia Region	3-39
3-5	Fort Benning, Georgia	3-52
3-6	The Hopkinsville, Kentucky-Clarksville, Tennessee Region	3-72
3-7	Fort Campbell, Kentucky-Tennessee	3-79
3-8	The Eastern Lake Ontario and St. Lawrence Region	3-102
3-9	Fort Drum, New York	3-115
3-10	Fort Drum C-Weighted Day/Night Level Noise Zones	3-120
3-11	The Western Washington Region	3-129
3-12	Fort Lewis, Washington	3-140
3-13	Yakima Firing Center, Washington	3-154
3-14	The Monterey Bay, California Region	3-162
3-15	Fort Ord, California and Surrounding Areas	3-171
3-16	Fort Hunter Liggett, California	3-184

LIST OF TABLES

Table Number		Page
2-1	Personnel Changes Associated with the Proposed Stationing Alternative for the New Light Infantry Division	2-9
2-2	Comparison of the Environmental Consequences of the Proposed Stationing Alternatives for the New Light Infantry Division	2-10
3-1	1983 Air Quality Concentrations, Columbus, Georgia	3-46
3-2	Columbus, Georgia Region Water Supply	3-47
3-3	Population Associated with Fort Benning	3-57
3-4	1976 Air Pollutant Emissions from Fuel Combusion, Fort Benning	3-62
3-5	Fuel Consumption at Fort Benning, 1976 and 1983	3-63
3-6	Population for the Four County Region and Selected Communities	3-75
3-7	1980 Labor Force Characteristics	3-80
3-8	Housing in the Four County Region	3-84
3-9	On-Post School Enrollment/Capacity	3-96
3-10	County Population by Year Population for Selected Communities Within a County	3-104
3-11	Selected Economic Data for Tri-County Area	3-107
3-12	General Housing Characteristics for Fort Drum Region	3-111
3-13	Public Schools in the Vicinity of Fort Drum	3-112

LIST OF TABLES (Continued)

Table Number		Page
3-14	Number of Students Enrolled in Pierce and Thurston Counties Including the Major School Districts Attended by Students of Fort Lewis Personnel 1983	3-137
3-15	Clover Park School District Enrollment At Elementary Schools on Fort Lewis	3-138
4A-1	Changes in Military and Civilian Personnel For the Fort Wainwright-Fort Lewis Stationing Alternative	4A-2
4A-2	Summary of the Regional Environmental and Secondary Socioeconomic Consequences of the Fort Wainwright-Fort Lewis Stationing Alternative	4A-4
4A-3	Summary of the On-Post Environmental and Secondary Socioeconomic Consequences of the Fort Wainwright-Fort Lewis Stationing Alternative	4A-5
4A-4	Economic Effect of the Proposed Stationing Alternative on the Fairbanks, Alaska Region	4A-8
4A-5	Economic Effect of the Proposed Stationing Alternative on the Anchorage Region	4A-28
4A-6	Manpower Phasing at Fort Lewis With a Brigade of the Proposed Light Infantry Division and Other Ongoing Activities Fiscal Year 1983 Through 1989	4A-38
4A-7	Economic Effect of the Proposed Stationing Alternative on the Seattle-Tacoma-Olympia Region	4A-42
4A-8	Increased Energy Requirements For Wainwright-Fort Lewis Stationing Alternative	4A-61

LIST OF TABLES (Continued)

Table Number		Page
4A-9	Summary of Mitigating Measures for Regional Effects of the Fort Wainwright-Fort Lewis Stationing Alternative	4A-65
4A-10	Summary of Mitigating Measures for On-Post Effects of the Fort Wainwright-Fort Lewis Stationing Alternative	4A-66
4A-11	Summary of Adverse Impacts that Cannot Be Avoided Under the Fort Wainwright-Fort Lewis Stationing Alternative	4A-67
4B-1	Changes in Military and Civilian Personnel For the Fort Lewis-Fort Ord Stationing Alternative	4B-2
4B-2	Summary of the Regional Environmental and Secondary Socioeconomic Consequences of the Fort Lewis-Fort Ord Stationing Alternative	4B-3
4B-3	Summary of the On-Post Environmental and Secondary Socioeconomic Consequences of the Fort Lewis-Fort Ord Stationing Alternative	4B-4
4B-4	Manpower Phasing at Fort Lewis with a Light Division Minus an Infantry Brigade and Other Ongoing Personnel Changes Fiscal Year 1983 Through 1989	4B-7
4B-5	Population Projections for Pierce and Thurston Counties and Fort Lewis Military Personnel	4B-9
4B-6	Economic Effect of the Proposed Stationing Alternative on the Seattle-Tacoma-Olympia Region	4B-12
4B-7	Economic Effect of the Proposed Stationing Alternative on the Monterey Bay Region	4B-37
4B-8	Total Emissions from Major Stationary Sources	4B-45

LIST OF TABLES (Continued)

Table Number		Page
4B-9	Increased Energy Requirements Under the Fort Lewis-Ford Ord Stationing Alternative	4B-53
4B-10	Summary of Mitigating Measures for Regional Effects of the Fort Lewis-Fort Ord Stationing Alternative	4B-56
4B-11	Summary of Mitigating Measures for On-Post Effects	4B-57
4B-12	Summary of Adverse Impacts that Cannot be Avoided under the Fort Lewis-Fort Ord Stationing Alternative	4B-58
4C-1	Changes in Military and Civilian Personnel For the Full Light Infantry Division at Fort Drum	4C-2
4C-2	Summary of the Regional Environmental and Secondary Socioeconomic Consequences of the Fort Drum Stationing Alternative	4C-3
4C-3	Summary of the On-Post Environmental and Secondary Socioeconomic Consequences of the Fort Drum Stationing Alternative	4C-4
4C-4	Economic Effect of the Proposed Stationing Alternative on the Eastern Lake Ontario and St. Lawrence, New York Region	4C-8
4C-5	Increased Energy Requirements If the Full Light Infantry Division is Stationed at Fort Drum	4C-22
4C-6	Summary of Mitigating Measures for Regional Effects of Stationing a Full Light Infantry Division at Fort Drum	4C-24
4C-7	Summary of Mitigating Measures for On-Post Effects of Stationing a Full Light Infantry Division at Fort Drum	4C-25

LIST OF TABLES (Continued)

Table Number		Page
4C-8	Summary of Adverse Impacts that Cannot be Avoided if the Full Light Infantry Division is Stationed at Fort Drum, New York	4C-27
4D-1	Changes in Military and Civilian Personnel For the Fort Drum-Fort Campbell Stationing Alternative	4D-2
4D-2	Summary of the Regional Environmental and Secondary Socioeconomic Consequences of the Fort Drum-Fort Campbell Stationing Alternative	4D-3a
4D-3	Summary of the On-Post Environmental and Secondary Socioeconomic Consequences of the Fort Drum-Fort Campbell Stationing Alternative	4D-4a
4D-4	Economic Effect of the Proposed Stationing Alternative on the Hopkinsville, Kentucky-Clarksville, Tennessee Region	4D-23
4D-5	Point Source Emission Totals For Fort Campbell, Kentucky	4D-30
4D-6	Increased Energy Requirements Under the Fort Drum - Fort Campbell Stationing Alternative	4D-36
4D-7	Summary of Mitigating Measures for Regional Effects of the Fort Drum - Fort Campbell Stationing Alternative	4D-39
4D-8	Summary of Mitigating Measures for On-Post Effects for the Fort Drum - Fort Campbell Stationing Alternative	4D-40a
4D-9	Summary of Adverse Impacts that Cannot Be Avoided Under the Fort Drum - Fort Campbell Stationing Alternative	4D-41a

LIST OF TABLES (Continued)

Table Number		Page
4E-1	Changes in Military and Civilian Personnel For the Fort Drum - Fort Benning Alternative I	4E-2
4E-2	Summary of the Regional Environmental and Secondary Socioeconomic Consequences of the Fort Drum - Fort Benning Stationing Alternative I	4E-3
4E-3	Summary of the On-Post Environmental and Secondary Socioeconomic Consequences of the Fort Drum - Fort Benning Stationing Alternative I	4E-5
4E-4	Economic Effect of the Proposed Stationing Alternative on the Columbis, Georgia Region	4E-24
4E-5	Increased Energy Requirements Under the Fort Drum - Fort Benning Stationing Alternative I	4E-44
4E-6	Summary of Mitigating Measures for Regional Effects of the Fort Drum - Fort Benning Alternative I	4E-47
4E-7	Summary of Mitigating Measures for On-Post Effects of the Fort Drum - Fort Benning Stationing Alternative I	4E-48
4E-8	Summary of Adverse Impacts that Cannot Be Avoided Under the Fort Drum - Fort Benning Stationing Alternative I	4E-49a
4F-1	Changes in Military and Civilian Personnel For the Fort Drum - Fort Benning Alternative II	4F-2
4F-2	Summary of the Regional Environmental and Secondary Socioeconomic Consequences of the Fort Drum - Fort Benning Stationing Alternative II	4F-3
4F-3	Summary of the On-Post Environmental and Secondary Socioeconomic Consequences of the Fort Drum - Fort Benning Stationing Alternative II	4F-4

LIST OF TABLES (Continued)

Table Number		Page
4F-4	Economic Effect of the Proposed Stationing Alternative On the Columbus, Georgia Region	4F-10
4F-5	Increased Energy Requirements Under the Fort Drum - Fort Benning Stationing Alternative II	4F-29
4F-6	Summary of Mitigating Measures for Regional Effects of the Fort Drum - Fort Benning Alternative II	4F-32
4F-7	Summary of Mitigating Measures for On-Post Effects of the Fort Drum - Fort Benning Alternative II	4F-33
4F-8	Summary of Adverse Impacts that Cannot Be Avoided Under the Fort Drum - Fort Benning Alternative II	4F-34
4G-1	Changes in Military and Civilian Personnel For the Fort Drum - Fort Benning Alternative III	4G-2
4G-2	Summary of the Regional Environmental and Secondary Socioeconomic Consequences of the Fort Drum - Fort Benning Stationing Alternative III	4G-3
4G-3	Summary of the On-Post Environmental and Secondary Socioeconomic Consequences of the Fort Drum - Fort Benning Alternative III	4G-4
4G-4	Increased Energy Requirements Under the Fort Drum - Fort Benning Stationing Alternative III	4G-42
4G-5	Summary of Mitigating Measures for Regional Effects of the Fort Drum - Fort Benning Alternative III	4G-45

LIST OF TABLES (Concluded)

Table Number		Page
4G-6	Summary of Mitigating Meaures for On-Post Effects of the Fort Drum - Fort Benning Stationing Alternative III	4G-46
4G-7	Summary of Adverse Impacts that Cannot Be Avoided Under the Fort Drum - Fort Benning Stationing Alternative III	4G-47a
5-1	List of Preparers	5-2

CHAPTER 1

PURPOSE AND NEED FOR THE ACTION

BACKGROUND

1.1 The Department of the Army will activate initial units of a new active component light infantry division in fiscal year (FY) 85 with the full division structure planned for completion by the end of FY87. The new division will be created from existing army assets; the size of the U.S. Army will not increase as a result of this action. The new division will consist of about 10,200 military personnel stationed in the United States. Formation of the division will occur incrementally during FY85 through FY87 as personnel and equipment become available. Provisional organization of the Division Headquarters is expected in late FY84. Approximate cumulative personnel authorized in the division by year would be as follows:

- Fiscal Year 1985 - 1,319
- Fiscal Year 1986 - 6,189
- Fiscal Year 1987 - 10,218

1.2 Since the end of the Vietnam War, the Army has concentrated on countering the massive growth in Soviet landpower. By applying new technology, Army divisions have become "heavier" by the addition of increased firepower capability, more and heavier armored vehicles, and more mechanized transportation capabilities. This has been necessary to meet the armored and mechanized threat to western Europe posed by enemy forces.

1.3 In the world of today, however, the Army must maintain a capability for rapid deployment of units to meet the crises posed by lower-intensity conflict. "Lighter" forces are better suited for the quick reaction - low intensity conflicts that have historically characterized the use of land power over the past 30 years. To enhance the Army's capability to meet this need, a new light infantry concept has been developed.

1.4 The light infantry division will be rapidly deployable world-wide and thus will provide the total Army with a more globally oriented posture. Although the division will have greatest utility as a contingency force at the low-intensity end of the conflict spectrum, it could be employed in mid-intensity scenarios when augmented and employed as part of a larger force. A light infantry division will be staffed and equipped to allow rapid reaction to contingencies. It will have increased infantry strength, and its

small support base will allow relatively quick insertion and extraction in minimal time. Training of the division will emphasize night fighting, small unit operations, and operations in urban and restricted terrain.

1.5 A light infantry division will be about 10,200 soldiers, compared to heavier divisions of 15,000 to 18,000 troops. The division will consist of 3 infantry brigades, 1 artillery brigade, 1 combat aviation brigade and various support elements. To enhance the rapid deployment capability, the division will have no "heavy" equipment such as tanks, armored personnel carriers, large calibre artillery, or large trucks. The division will have about 1,600 wheeled vehicles, 100 helicopters, 100 motorcycles, and for the use of the engineering battalion, 6 tracked vehicles. The largest artillery pieces authorized will be 105 millimeter towed howitzers.

THE PROPOSED FEDERAL ACTION: ITS PURPOSE AND NEED

1.6 The proposed Federal action discussed in this EIS is the stationing of a new light infantry division at one or more appropriate military installations in the United States. The purpose and need for stationing the new light division is self-evident, given the decision that a new light infantry division will be created. This EIS will assist Army decisionmakers in analyzing and considering environmental effects associated with each of the reasonable stationing alternatives available for the new division.

CHAPTER 2

DEVELOPMENT AND COMPARISON OF STATIONING ALTERNATIVES

INTRODUCTION

2.1 While the range of alternatives for stationing a light infantry division is very large, application of certain "rules of reason" significantly narrows the field of alternatives. The following discussion provides the approach used to identify those alternative locations which are "reasonable" for the purpose of stationing the new light infantry division within the meaning of 40 CFR 1502.14.

2.2 The phased activation must commence in FY85 in order to accommodate the strategic need for this division. Stationing locations to be considered were initially narrowed to federally owned or controlled properties available and suitable for military activities. Overseas installations were ruled out as not being supportive of the Army's goal to increase the flexibility and global orientation through the addition of this division. Stationing on foreign soil would tend to restrict flexibility for deployment and potential uses of the division and would regionalize its focus and commitment. Thus, locations to be considered were further restricted to the United States.

2.3 The selection process was iterative and progressed from an initial review of alternatives through a series of increasingly detailed reviews which involved input and evaluation by the Major Army Commands concerned. The initial range of installations considered was based on the "Review of Division and Brigade Stationing" published by the Office, Chief of Engineers, Engineer Studies Group in 1977, a study directed by the Congress. Criteria applied to narrow the range of alternatives to those which are reasonable generally parallel those used in the 1977 study but were tailored to account for the characteristics of the light infantry division (as opposed to all other divisions) and the constraints of timing and focus previously discussed. The following is a synopsis of the major considerations employed.

- Warfighting posture. This factor addresses the overall capability of the installation to support the readiness, maintenance and rapid deployment of a light infantry division. Included are such things as the geographic location, ability to support a variety of training activities, and the proximity of other units for training and employment.

- Conflict with or displacement of in-place units and activities. The ability of the candidate installation to absorb elements of the new division without significantly degrading on-going missions or displacing other units is key to minimizing turbulence within the force and the 2nd and 3rd order costs associated with impacts on other units.

- Base realignment and known environmental considerations. Applicable laws and service regulations must be complied with.

- Extent of in-place base operations structure. This factor addresses the infrastructure available to provide administrative and logistics support to tenant units on the candidate installation.

- Weather and environmental factors. This addresses the impacts on types and seasonality of training which can be conducted and the operational effects if any, of the climate at the candidate installations.

- Size of maneuver area. The size of available maneuver area and restrictions on its use for infantry training were considered. Where significant off-post maneuver opportunities were available, that added capability was assessed.

- Restrictions on infantry division weapons firing. To train and maintain combat readiness, elements of the divison must be able to fire weapons assigned to that division. Safety and environmental considerations would restrict weapons use at some candidate installations.

- Distance to ports of embarkation and rail lines. Since the new division is configured to facilitate rapid deployment, the proximity of ports of embarkation and lines of communication (rail and road) are significant factors in assessing the candidate ports.

- Length and condition of runways and availability of maintenance facilities. The ability of candidate installations to support the operation and maintenance of the division's aviation brigade and USAF units which would support training and deployment were considered.

- Housing status. The quantity and condition of housing units for families as well as for bachelor officers, non-commissioned officers and soldiers available at each candidate installation were considered. The ability of the surrounding communities to absorb shortfalls was considered where appropriate.

- In-place quality of life facilities. The availability and capacity of health, morale and welfare facilities was assessed. These facilities include such things as hospitals, clinics, gymnasiums, commissaries, Army and Air Force Exchange System outlets, etc.

- Construction required. The estimated magnitude of construction projects required to accomodate these new units were assessed at each candidate installation.

- Secondary impacts of personnel turbulence. Consideration was given to maximizing use of existing facilities and minimizing movement of personnel by coordinating the division stationing with other corollary realignment actions to the degree feasible. This must be accomplished without undue degradation of command and control or administrative and logistic support of the units.

2.4 Given these criteria, most of the theoretically available alternatives were rejected as unreasonable because of the various limiting factors described above. Five stationing alternatives involving eight installations have been determined to be reasonable, thus deserving rigorous exploration in this EIS. The no action alternative has been considered and rejected (see below). The eight installations given detailed consideration for stationing the new division or components thereof are:

- o Forts Richardson, Wainwright, and Greely, Alaska
- o Fort Lewis, Washington
- o Fort Ord, California
- o Fort Drum, New York
- o Fort Campbell, Kentucky
- o Fort Benning, Georgia

The locations of the installations are shown in Figure 2-1.

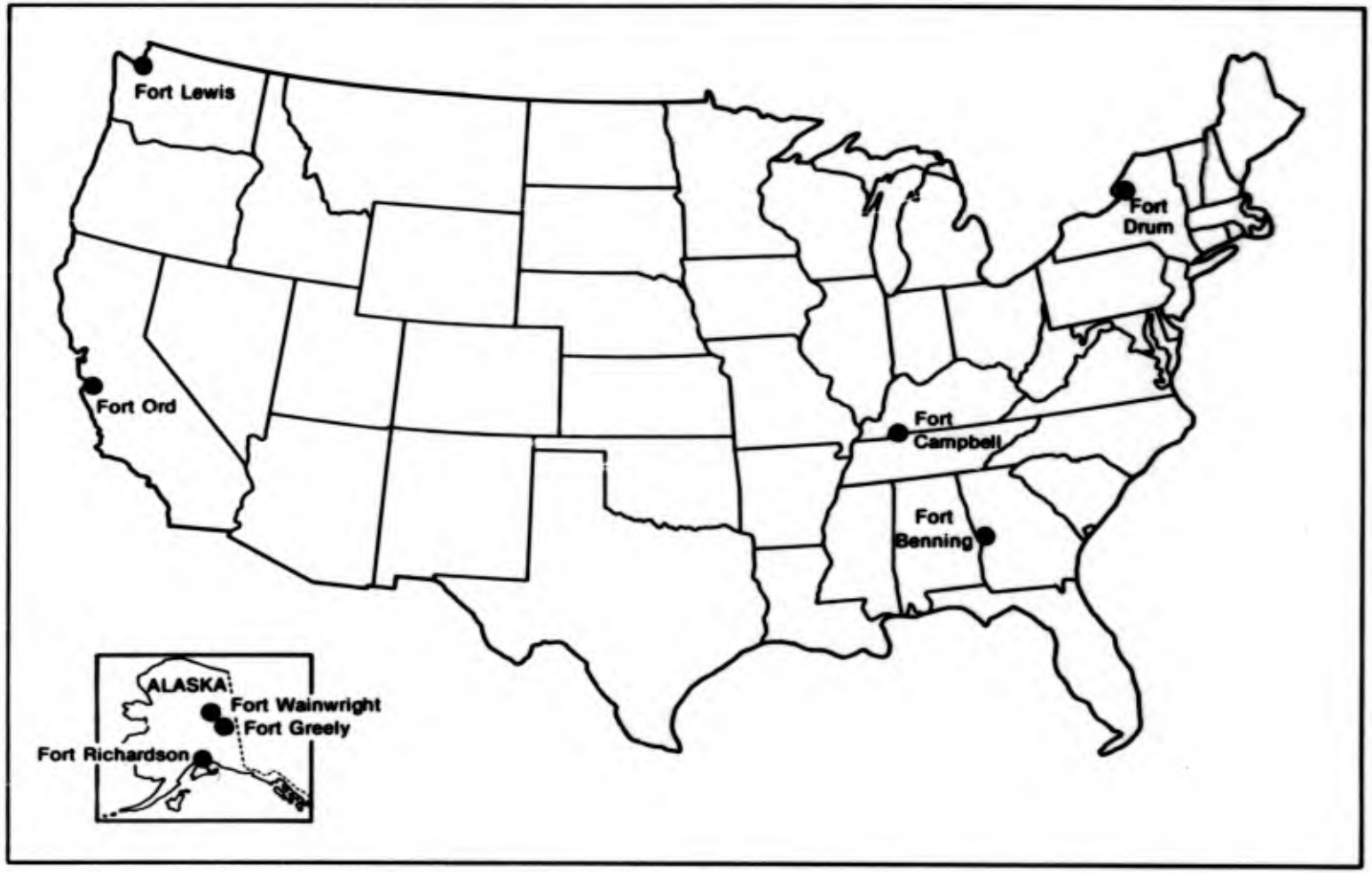


FIGURE 2—1
LOCATION OF ARMY INSTALLATIONS CONSIDERED IN THIS STUDY

Stationing Alternatives Considered In Detail

2.5 Five stationing alternatives are being considered. The Fort Drum-Fort Benning combination has three separate options to facilitate analysis. Each of these options has been evaluated in parallel and is shown throughout this document as Drum-Benning Alternative I, Drum-Benning Alternative II and Drum-Benning Alternative III.

2.6 Since the Alaska-Fort Lewis alternative involves the stationing of a division minus one reinforced infantry brigade at Fort Wainwright with only the restationing of two batallions from Wainwright to Fort Richardson with training only at Fort Greely, the Alaska-Fort Lewis Alternative is addressed in this document and labeled as the Fort Wainwright-Fort Lewis alternative.

2.7 The stationing alternatives considered in detail are as follows:

- Fort Wainwright, Alaska-Fort Lewis, Washington Alternative

  Fort Wainwright - Division minus one reinforced infantry brigade

  Fort Richardson, Alaska - Receive two battalions of the 172nd currently stationed at Fort Wainwright

  Fort Lewis - One reinforced infantry brigade

- Fort Lewis, Washington-Fort Ord, California Alternative

  Fort Lewis - Division minus one reinforced infantry brigade

  Fort Ord - One reinforced infantry brigade

- Fort Drum, New York Alternative

  Fort Drum - Full light infantry division

- Fort Drum, New York-Fort Campbell, Kentucky Alternative

  Fort Drum - Division minus one reinforced infantry brigade

  Fort Campbell - One reinforced infantry brigade

- o Fort Drum, New York-Fort Benning, Georgia Alternative I

  Fort Drum - Division minus one reinforced infantry brigade and the aviation brigade

  Fort Benning - One reinforced infantry brigade and the aviation brigade

- o Fort Drum, New York-Fort Benning, Georgia Alternative II

  Fort Drum - Division minus one reinforced infantry brigade

  Fort Benning - One reinforced infantry brigade

- o Fort Drum, New York-Fort Benning, Georgia Alternative III

  Fort Drum - Division minus the aviation brigade

  Fort Benning - The aviation brigade

No Action Alternative

2.8 As required by 40 CFR 1502.14(d), this EIS must consider the "no action" alternative. Since, the proposed Federal action under consideration herein is the stationing of a new light infantry divison, by definition "no action" would mean that the division would have no designated base. Since it was dismissed as unreasonable to have a light infantry division without an assigned station the no action alternative deserved no detailed discussion.

2.9 It could be contended that another approach to the "no action" alternative would be to abandon entirely the plan to create a new light infantry division. However, that approach is beyond the scope of this EIS, which takes as a fundamental premise the decision that the new division is necessary and will be created.

Organization of the Draft Environmental Impact Statement

2.10 Descriptions of the physical, biological and socioeconomic environment at each installation that would be affected by the proposed stationing alternatives are given in Chapter 3. The environmental and secondary socioeconomic effects of the stationing alternatives are discussed in Chapters 4A through 4G. A list of the preparers and reviewers of the environmental impact statement appears in Chapter 5. A description of the public involvement in the preparation of the environmental impact statement to date is given in Chapter 6.

Organization of the Final Environmental Impact Statement

2.10a The Draft Environmental Impact Statement (DEIS) has been revised based on comments received during the public review period. Responses to comments received are given in Appendix A of the Final Environmental Impact Statement (FEIS). In Appendix A are letters received by the Mobile District, Corps of Engineers concerning the DEIS, responses to comments included in these letters, and a summary of the public hearings held at each of the installation that could be affected by the proposed stationing. The summary of each public hearing includes a listing of all persons who presented oral or written statements at the hearing. All of the issues raised during the public hearing that directly related to the environmental impact statement are summarized and responses are presented.

2.10b Chapters 1, 2, 5 and 6 of the DEIS have been revised and reproduced in the FEIS in their entirety. Reproduced in Chapter 3, Chapters 4A through 4G, Appendix E, and References and Bibliography of this FEIS are only those pages of the DEIS that were revised in response to public comments. The unchanged portions of the DEIS are incorporated by reference.

2.10c Appendices L and M have been added to the FEIS in response to comments on the DEIS.

Assumptions on which all Analyses are Based

2.11 The following Army-wide averages are assumptions on which all analyses are based:

- o 75 percent of officers are married
- o 47 percent of enlisted troops are married
- o 2.5 dependents per married troop
- o 0.9 school-age children per married troop

COMPARISON OF ENVIRONMENTAL AND SOCIOECONOMIC EFFECTS OF THE STATIONING ALTERNATIVES

2.12 Given below is a comparison of the environmental and socioeconomic effects of the proposed stationing alternatives based on the analyses given in Chapters 4A through 4G. Changes in military personnel, civilian employees, military families, military dependents, and school-age children of military personnel that could occur as the result of each stationing alternative are summarized in Table 2-1. A comparison of effects is given in Table 2-2.

2.13 Potential effects of the proposed stationing alternatives vary from fort to fort. In general, no extensive effects on the physical environment would occur. Some capacity problems would be encountered for water supply and wastewater treatment in some areas but would not be significant problems. At Fort Ord, however, additional water demand would add in a small way to the existing regional salt water intrusion problem. Air quality generally would be affected only slightly. At Fort Wainwright, however, current problems with ice fog could be made worse.

2.14 Biological effects would generally be slight under all alternatives. Under the Fort Lewis stationing alternatives, however, the potential exists for disturbance to bald eagles at Fort Lewis and the Yakima Firing Center. Consultation with the U.S. Fish and Wildlife Service on the bald eagle issue has been initiated.

2.15 Socioeconomic effects would generally be slight at Forts Benning, Campbell and Richardson. Various effects could occur at Forts Wainwright, Drum, Lewis and Ord. Off-post housing availability and/or affordability is a particular problem at these Forts. Off-post school capacity could also be a problem depending on actions taken by the affected school district. Because of the relatively large regional population increase that would occur at Fort Wainwright or Fort Drum, the short- and long-term socioeconomic effects could be particularly great.

2.16 Effects on cultural and historic resources would be slight at all installations except Fort Lewis. Native American concerns there include potential problems with siltation affecting salmon in the Nisqually River and effects of increased training activities on traditional hunting and gathering areas on the Yakima Firing Center.

TABLE 2-1

PERSONNEL CHANGES ASSOCIATED WITH THE PROPOSED
STATIONING ALTERNATIVE FOR THE NEW LIGHT INFANTRY DIVISION

	Fort Wainwright - Fort Lewis Alternative			Fort Lewis - Fort Ord Alternative		Full Division	Fort Drum - Fort Campbell Alternative		Fort Drum - Fort Benning Alternative I		Fort Drum - Fort Benning Alternative II		Fort Drum - Fort Benning Alternative III	
	Wainwright	Richardson	Lewis	Lewis	Ord	Ft. Drum	Drum	Campbell	Drum	Benning	Drum	Benning	Drum	Benning
Military														
Current	3400	4490	24860	24860	17610	1030	1030	22210	1030	25660	1030	25660	1030	25660
Change	7400	1130	3890	10000	1770	11630	8960	1150	7830	3700	8960	2450	10750	1090
New Total	10800	5620	28750	34860	19380	12660	9990	23360	8860	29360	9990	28110	11780	26750
Civilian Employees														
Current	1350	1390	4070	4070	3720	920	920	2660	920	7770	920	7770	920	7770
Change	360	160	270	640	130	1480	1420	50	1410	510	1280	430	1550	380
New Total	1710	1550	4340	4710	3850	2400	2340	2710	2330	8280	2200	8200	2470	8150
Military Families														
Current	1690	2260	12460	12460	8820	510	510	11120	510	10010	510	10010	510	10010
Change	3710	510	2080	5160	900	5790	4480	660	3880	1910	4480	1240	5320	620
New Total	5400	2760	14540	17620	9720	6300	4990	11780	4390	11920	4990	11250	5830	10630
Military Dependents														
Current	4230	5640	31160	31160	22050	1280	1280	27810	1280	26470	1280	26470	1280	26470
Change	9270	1270	5190	12900	2250	14480	11200	1640	9710	4760	11200	3100	13290	1540
New Total	13500	6910	36350	44060	24300	15760	12480	29450	10990	31230	12480	29570	14570	28010
School-aged Dependents of Military														
Current	1520	2030	11220	11220	7940	460	460	10010	460	6430	460	6430	460	6430
Change	3340	460	1870	4640	810	5210	4030	590	3500	1720	4030	1120	4790	560
New Total	4860	2490	13090	15860	8750	5670	4490	10600	3960	8150	4490	7550	5250	6990

NOTE: Numbers may not add exactly because of rounding.

TABLE 2-2
COMPARISON OF THE ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED STATIONING ALTERNATIVES FOR THE NEW LIGHT INFANTRY DIVISION

	Ft. Wainwright-Ft. Lewis Alternative			Ft. Lewis-Ft. Ord Alternative		Full Division at Ft. Drum	Ft. Drum-Ft. Campbell Alternative		Ft. Drum-Ft. Benning Alternative I		Ft. Drum-Ft. Benning Alternative II		Ft. Drum-Ft. Benning Alternative III	
	Wain-Wright	Rich-ardson	Lewis	Lewis	Ord		Drum	Campbell	Drum	Benning	Drum	Benning	Drum	Benning
Biological Environment														
Terrestrial	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW
Aquatic	NEGL	LOW	MOD	MOD	LOW	LOW	LOW	NEGL	LOW	NEGL	LOW	LOW	LOW	NEGL
Threatened and Endangered Species	NEGL	NEGL	HIGH	HIGH	NEGL	NEGL	NEGL	NEGL	NEGL	NEGL	NEGL	NEGL	NEGL	NEGL
Demography	HIGH	NEGL	LOW	MOD	LOW	HIGH	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW
Land Use	HIGH	NEGL	NEGL	LOW	LOW	HIGH	HIGH	MOD	HIGH	LOW	HIGH	LOW	HIGH	LOW
Noise	LOW	LOW	LOW	MOD	LOW	MOD	MOD	MOD	MOD	LOW	MOD	LOW	MOD	LOW
Regional Economic Activity	MOD	LOW	LOW	MOD	LOW	HIGH	HIGH	NEGL	HIGH	LOW	HIGH	LOW	HIGH	LOW
Air Quality	HIGH	MOD	NEGL	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW
Water Supply	MOD	LOW	NEGL	LOW	HIGH	MOD	MOD	LOW	MOD	NEGL	MOD	NEGL	MOD	NEGL
Wastewater Disposal	MOD	MOD	NEGL	LOW	MOD	MOD	MOD	LOW	MOD	LOW	MOD	LOW	MOD	LOW
Soild Waste Disposal	NEGL	MOD	NEGL	LOW	LOW	MOD	MOD	NEGL	MOD	LOW	MOD	LOW	MOD	LOW
Housing	HIGH	MOD	LOW	MOD	HIGH	HIGH	HIGH	MOD	HIGH	LOW	HIGH	LOW	HIGH	LOW
Schools	HIGH	MOD	HIGH	HIGH	HIGH	HIGH	MOD	MOD	MOD	LOW	MOD	LOW	HIGH	LOW
Health Care	NEGL	NEGL	NEGL	NEGL	LOW	HIGH	HIGH	LOW	HIGH	MOD	HIGH	NEGL	HIGH	NEGL
Public Safety	LOW	NEGL	LOW	LOW	LOW	MOD	MOD	LOW	MOD	LOW	MOD	LOW	MOD	LOW
Traffic and Transportation	MOD	MOD	LOW	MOD	LOW	MOD	MOD	HIGH	MOD	LOW	MOD	LOW	MOD	LOW
Cultural Resources	LOW	LOW	MOD	HIGH	LOW	LOW	LOW	LOW	LOW	MOD	LOW	MOD	LOW	MOD

NEGL = Neglible potential for effects if stationing alternative is implemented
LOW = Low potential for effects if stationing alternative is implemented
MOD = Moderate potential for effects if stationing alternative is implemented
HIGH = High potential for effects if stationing alternative is implemented

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CHAPTER 3

AFFECTED ENVIRONMENTS

(Revised Pages Only)

CHAPTER 3
AFFECTED ENVIRONMENTS

INTRODUCTION

3.1 Discussed in this chapter are the physical, biological and socioeconomic characteristics of the environments potentially affected by alternatives under consideration for stationing of the new light infantry division. The installations described are:

- o Forts Wainwright, Greely, and Richardson, Alaska
- o Fort Benning, Georgia
- o Fort Campbell, Kentucky
- o Fort Drum, New York
- o Fort Lewis, Washington
- o Fort Ord, California

For each installation, information is provided for the region of which the post is a part and then for the post itself.

FORTS WAINWRIGHT, GREELY, AND RICHARDSON, ALASKA

3.2 The three Army posts in Alaska, Forts Wainwright, Richardson, and Greely are all under the 172nd Infantry Brigade, the major command for Army troops in Alaska. Fort Richardson, near Anchorage, Alaska, is the location of the 172nd Headquarters. It is shown in relation to the other two Forts on Figure 3-1. In 1984 Fort Richardson has 4490 military troops, 5,640 dependents, and provides jobs for 1390 civilians.

3.3 Fort Wainwright is located to the north near Fairbanks, Alaska, and supports about half the population that Richardson does. Wainwright in 1984 has 3400 military with 4230 dependents, and supports 1350 civilians

3.4 Fort Greely is located between Richardson and Wainwright, near Delta Junction. The 1984 population is 730 military, 1200 dependents, and 250 civilians.

Fairbanks, Alaska Region

3.5 Fairbanks, the second largest city in Alaska, is the transportation, trade and service hub of the 200,000 square-mile interior and the major community within the 7,361 square-mile Fairbanks North Star Borough (Research Design Productions, Inc., 1983). Fairbanks lies approximately 120 miles south of the Arctic

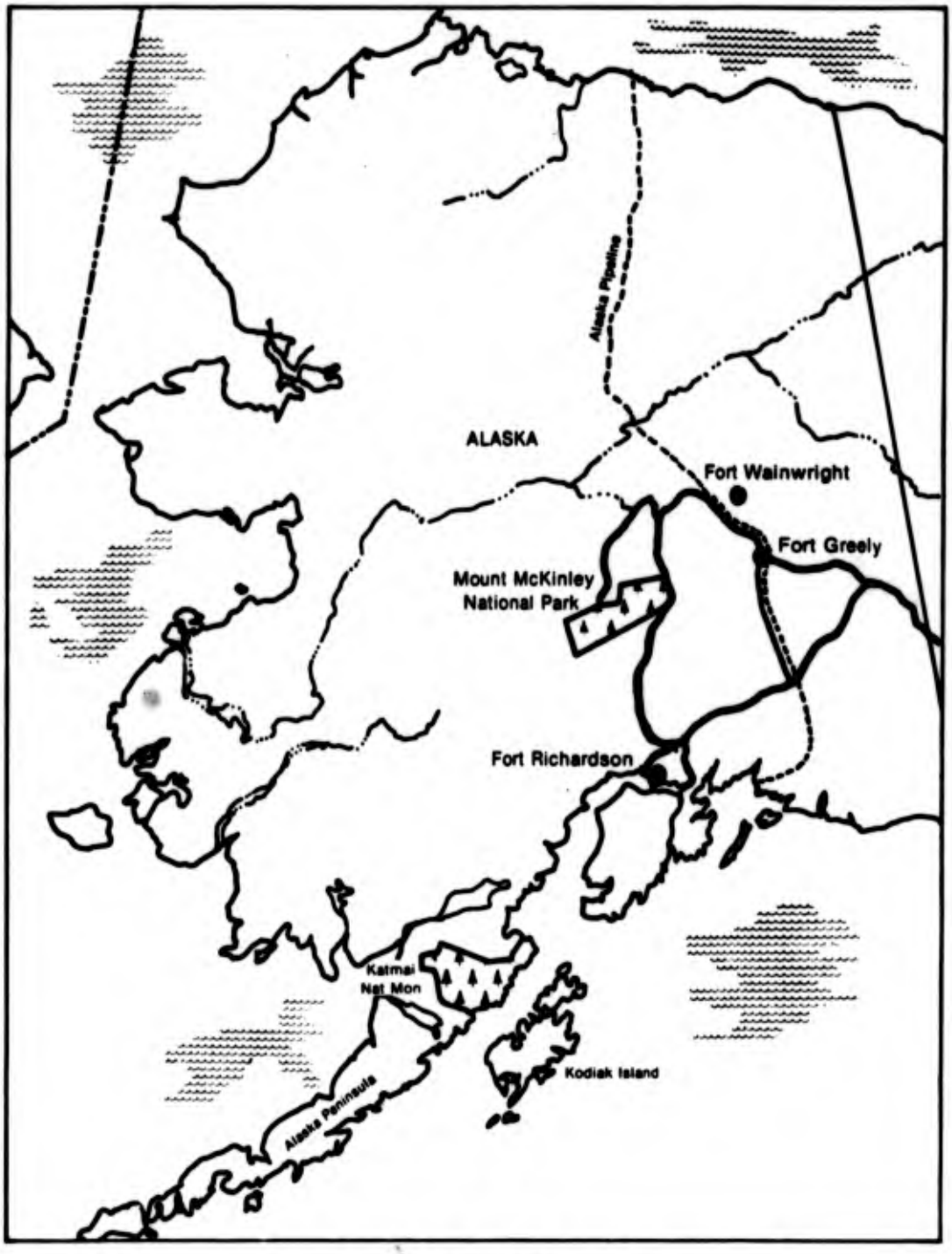


FIGURE 3—1
LOCATION OF ARMY INSTALLATIONS IN ALASKA

SUPERSEDED
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Circle near the confluence of the Tanana and the Chena Rivers (Unwin, Scheben, Korynta and Huettl, Inc., 1983a).

Climate

3.6 Fairbanks comprises part of the climatological division of Alaska referred to as the continental zone. The basin is subject to continental weather conditions characterized by great diurnal and annual temperature variations, short moderate summers, long cold winters, great seasonal contrasts in sunlight duration, low humidity, low precipitation, and low incidence of cloud cover, especially during winter (U.S. Army Forces Command, 1979).

3.7 Temperature ranges measured at the Fairbanks International Airport range from -66°F to 99°F with an annual mean of 25.7°F. Average annual precipitation is 11.2 inches, varying from a normal monthly value of 0.33 inches in April to 2.19 inches in August. The mean annual snowfall in Fairbanks is 69.8 inches, with the maximum normal monthly snowfall of 13.2 inches in November. Relative humidity is low, averaging 55 percent. Prevailing winds are to the north, averaging 5.3 miles per hour (U.S. Army Forces Command, 1979).

Biological Environment

3.8 The biological environment of the region is described in detail in the discussion of the environment of Fort Wainwright.

Demography

3.9 The population of the Fairbanks North Star Borough has undergone considerable change in recent years. The 1980 population of the borough was enumerated at 53,983 with 22,645 living in the city of Fairbanks itself (Fairbanks North Star Borough, Community Research Center, 1983). More recently, in 1983, the borough population was estimated to be 62,900 (Institute of Social and Economic Research, 1984) to 65,300 (Fairbanks North Star Borough, Community Research Center, 1984). A complete census of the city of Fairbanks, conducted by the city in November 1983, indicated a population within the city limits of 27,100 (Fairbanks North Star Borough, Community Research Center, 1984). Population growth forecasts for the year 2000 for the borough range from a high of 83,900 (Institute of Social and Economic Research, 1984) to 72,000 to 81,700 (Fineon and Associates and Wilsey and Ham, Inc., 1983).

3.10 The authorized strength population of Fort Wainwright is 8,900, of which 3,400 are military personnel, 4,230 are military dependents, and 1350 are civilians working on post either for the

military, for tenants, or under non-appropriated funds (base exchange, commissary). In addition, there are personnel located in the schools on post and temporary military trainees and visitors. Approximately 375 of the military personnel currently stationed at Fort Wainwright live off post in the Fairbanks area (Harrell, 1984).

Land Use

3.11 Detailed and accurate data on land use within the Fairbanks North Star Borough are not available. This lack of data is compounded by the fact that much of the subdivision of land takes place without borough approval. There are a total of 7,361 square miles of land in the borough of which 0.5 percent is used for urban and residential purposes and 0.5 percent for streets and highways, agriculture, and other developed uses. The majority of the developed land in the borough is located within 10 to 15 miles of downtown Fairbanks (Wilsey and Ham, Inc., 1983).

3.12 The three military bases in the borough are Fort Wainwright Army Base, Eielson Air Force Base, and Murphy Dome Air Force Station. Some military activities at Fort Wainwright conflict with the civilian population of Fairbanks and the surrounding region. The Fort is a barrier to residential expansion east of the city, including the south-facing slopes of Birch Hill and other local hills which are perceived as prime residential areas. Public access to these areas is precluded by the Chena River and the lack of public bridges and/or roads. Noise from military aircraft has impacted upon local residents to the west of the airfield with encroachment of residential development on approach zones. Some local concern has been expressed over the transportation of hazardous materials by train to the Fort (Unwin, Scheben, Korynta and Heuttl, Inc., 1983a). In addition, there have been increasing numbers of conflicts over hunting and trapping activities by local residents on impact zones in the military training areas, particularly in the northern portions of the Tanana Flats Maneuver Area (Kerns, 1984).

Noise

3.13 Noise in Fairbanks is derived primarily from civilian and military transportation activities and from training activities at Fort Wainwright. Noise related to military activities (U.S. Army Environmental Hygiene Agency 1981) is discussed further in discussion of existing environments on Fort Wainwright. Noise from the Fairbanks International Airport is not considered to be severe over inhabited areas except near the intersection of Airport Way and University Avenue (Wilsey and Ham, Inc., 1983).

Circle near the confluence of the Tanana and the Chena Rivers (Unwin, Scheben, Korynta and Huettl, Inc., 1983a).

Climate

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3.7 Temperature ranges measured at the Fairbanks International Airport range from -66°F to 99°F with an annual mean of 25.7°F. Average annual precipitation is 11.2 inches, varying from a normal monthly value of 0.33 inches in April to 2.19 inches in August. The mean annual snowfall in Fairbanks is 69.8 inches, with the maximum normal monthly snowfall of 13.2 inches in November. Relative humidity is low, averaging 55 percent. Prevailing winds are from the north, averaging 5.3 miles per hour but often at a much lower wind speed (U.S. Army Forces Command, 1979).

Biological Environment

3.8 The biological environment of the region is described in detail in the discussion of the environment of Fort Wainwright.

Demography

3.9 The population of the Fairbanks North Star Borough has undergone considerable change in recent years. The 1980 population of the borough was enumerated at 53,983 with 22,645 living in the city of Fairbanks itself (Fairbanks North Star Borough, Community Research Center, 1983). More recently, in 1983, the borough population was estimated to be 62,900 (Institute of Social and Economic Research, 1984) to 65,300 (Fairbanks North Star Borough, Community Research Center, 1984). A complete census of the city of Fairbanks, conducted by the city in November 1983, indicated a population within the city limits of 27,100 (Fairbanks North Star Borough, Community Research Center, 1984). Population growth forecasts for the year 2000 for the borough range from a high of 83,900 (Institute of Social and Economic Research, 1984) to 72,000 to 81,700 (Finson and Associates and Wilsey and Ham, Inc., 1983).

3.10 The authorized strength population of Fort Wainwright is 8,900, of which 3,400 are military personnel, 4,230 are military dependents, and 1350 are civilians working on post either for the

3.14 Noise levels in the developed areas of the region are those of a low density urban area (50 to 60 dB equivalent) while these elsewhere are these of a rural area (40 to 48 dB equivalent). The geographical extent of vehicular noise is usually limited to areas near roads and highways, and the noise levels in the vicinity of Richardson Highway are only marginally affected by military activities on Fort Wainwright (Unwin, Scheben, Korynta and Huettl, Inc., 1983a).

Regional Economic Activity

3.15 The regional economy has a diversified base with a large portion of the local employment in the government sector (including military, University of Alaska, Federal, state, and local government), in mineral exploration and mining (coal, gold, and asbestos), in oil and gas activities, in tourism, and in agriculture (Research Design Productions, Inc., 1983). In 1980, the employment level in the borough was 26,636 persons, with 20 percent employed in the uniformed military, 9 percent in the federal government, 20 percent in state and local government, and 51 percent in the private sector (Finson and Associates and Wilsey and Ham, Inc., 1983).

3.16 Within the civilian sector, the average annual employment for 1980 was 21,100 and increased to 26,700 in 1983. In 1980, the per capita income for the borough as a whole was $13,308 (Fairbanks North Star Borough, Community Research Center 1984). Based on questions asked of individuals during the 1980 Census, individual income for the borough as a whole was $9,823; for the military personnel at Fort Wainwright was $5,037; for the military at Eielson Air Force Base was $5,206; and for the civilian population sector in the borough was $11,049 (Burke, 1984). Total employment in the borough is projected to grow to 40,300 in the year 2000 and to 43,000 in the year 2005 (Institute of Social and Economic Research, 1984).

3.17 Unemployment in the Fairbanks area is seasonal, with higher levels of unemployment during the winter months. Unemployment data (Fairbanks North Star Borough, Community Research Center 1984) indicated average annual unemployment rates for Fairbanks ranging from 17.6 percent in 1978 following completion of the Trans Alaska Pipeline to 11.7 percent in 1981. In 1982 the average annual unemployment for the area was 13.5 percent, and, for the first nine months of 1983 a peak average monthly unemployment of 17.1 percent in January declined to 11.7 percent (preliminary) in September. The average 1983 unemployment was 15.1 percent.

3.18 The military payroll for FY 1984 is projected to be $44.6 million and the civilian payroll is projected to be $17.0 million (Fort Richardson, 1984a).

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Air Quality

3.19 Fairbanks is located in the Northern Alaska Intrastate Air Quality Control Region (AQCR 9). Air quality problems are of particular concern in the developed urban areas of the borough. Air quality in the undeveloped areas is considered to be excellent (Wilsey and Ham, Inc., 1983).

3.20 Regional air quality is characterized by a high susceptibility to temperature inversions, relatively high carbon monoxide and particulate levels, low sulfur dioxide levels, and the occurrance of ice fogs. Natural climatic and topographical features of the region, coupled with vehicular traffic and major emission point-sources, result in relatively poor air quality at many times during the year, primarily during the winter months (Unwin, Scheben, Korynta and Huettl, Inc., 1983a). For most of the year, however, air quality is excellent in Fairbanks.

3.21 The urban areas of the Fairbanks North Star Borough have been declared to be in nonattainment of the national ambient air quality standard for carbon monoxide. Air monitoring in the borough since the early 1970's has indicated numerous violations, particularly in the winter, of the federal standard of 9 ppm carbon monoxide over an eight-hour period. Specifically, there were 156 days of violation in 1974 dropping in annual number of violations to 24 violation days in 1981. In 1982, there were 37 violations. As a consequence of the high levels of carbon monoxide, the borough prepared an air quality attainment plan (Fairbanks North Star Borough, Environmental Service Department, 1979) that was approved by the U.S. Environmental Protection Agency in late 1982. This plan calls for mandatory vehicle inspections in Fairbanks in order to reduce vehicular emissions, which are considered to be the primary source of carbon monoxide (Wilsey and Ham, Inc., 1983 and Fairbanks North Star Borough, Community Research Service, 1984).

3.22 Ice fog is a significant air quality problem in the Fairbanks area that is a consequence of the extreme winter cold. Ice fog results from rapid cooling of warm, moist air and subsequent formation of many small ice crystals which remain suspended in the air and drastically reduce visibility. Ice fog in the Fairbanks area is generated from power plant cooling water (the Municipal Utilities System plant located in Fairbanks and the Fort Wainwright power plant) as well as from moisture in vehicular emissions. It can be expected to form any time the ambient temperature falls below -25°F. During an unusually cold winter in 1961-1962, there were 40 days with ice fog and during an unusually warm winter in 1962-1963, there were only 25 days in which ice fog was observed (Unwin, Scheben, Korynta, and Huettl, Inc., 1983a).

Water Supply

3.23 Water supply to the residents of the Fairbanks North Star Borough is by public utility systems in the urbanized portions of the region and by private wells or holding tanks in the outskirts of towns and in the rural areas. There are three public water system service areas in the Fairbanks North Star Borough: the Fairbanks Municipal Utilities System which supplies water to most of the area within the incorporated areas of Fairbanks; the College Utilities Corporation which services the area to the west of Fairbanks; and the City of North Pole which provides water service to businesses and residences within the city limits. Water supply at Fort Wainwright is handled by on-post facilities (Wilsey and Ham, Inc., 1983).

3.24 The Municipal Utilities System obtains water from three wells near the Chena River and services 20,000 of the approximately 25,000 persons living in Fairbanks. The average daily demand for water in the Municipal Utilities System service area is 2.7 million gallons per day and is projected to grow to about 4.0 million gallons per day by the year 2000. There is adequate water supply to meet this demand. The water treatment plant, however, has a rated capacity of 3.5 million gallons per day and can produce up to 4.6 million gallons per day only for a short period (Wilsey and Ham, Inc., 1983).

3.25 The College Utilities Corporation obtains its water from five wells along the Chena River with a production capacity of four to five times the current rate of utilization. The system currently serves 7,000 people, but with minor modifications could easily serve 35,000 (Wilsey and Ham, Inc., 1983).

3.26 The North Pole water supply system consists of two water supply wells, two wells recently drilled to supply water for fire protection, a water treatment plant, and a reservoir. The two water supply wells have a capacity to supply a population of approximately 3,000 people, given adequate storage facilities (Wilsey and Ham, Inc., 1983).

3.27 Groundwater quality in the region differs between water taken from the lowlands (below 500 feet elevation) and water taken from the uplands. Lowland water is generally hard, with more than 50 percent of the wells sampled by the USGS having water hardness in excess of 200 mg/L. In addition, water from these wells tends to have iron levels in excess of the EPA standards of 0.3 mg/L. Upland wells tend to yield hard water and water that contains objectionable levels of iron or manganese or that has an objectionable odor. In addition, some wells in the upland area yield water with excessive

amounts of arsenic and of nitrates, which pose potential health problems (Wilsey and Ham, Inc., 1983). Ground water in the region is not taken from sole-source aquifers (Brewster, 1984).

Wastewater Disposal

3.28 Wastewater disposal in the Fairbanks North Star Borough is by means of public utility systems in the urbanized portions of the region and by means of private septic systems or outhouses in the rural areas and in the outskirts of the urban areas. The three public utility systems that provide wastewater disposal service in the region include: the Municipal Utilities System, which collects and treats sewage from the incorporated limits of the city of Fairbanks and also provides treatment for sewage collected by the College Utilities Corporation and by the Fort Wainwright system and the City of North Pole which operates a sanitary sewer system within the city limits (Wilsey and Ham, Inc., 1983).

3.29 The present design capacity of the Municipal Utilities System wastewater treatment facility is 8 million gallons per day, but, due to design problems, it is currently restricted to an operating capacity of only 6 million gallons per day. This operating capacity is now being approached and studies are needed to determine the cost of plant modification to increase capacity. The North Pole system has a capacity of 300,000 gallons per day and can handle a population of 3,000 persons.

Solid Waste Disposal

3.30 With the exception of the military installations, all refuse in the borough is consolidated centrally. The solid waste disposal facility is a 100-acre site located adjacent to the Tanana River 2.5 miles south of the downtown area. This site has been used as a landfill since 1962. The city of Fairbanks collects solid waste for disposal from residences within the city limits. There are several firms which are licensed to haul refuse within the borough. The military installations haul their own refuse and operate their own sanitary landfill sites (Wilsey and Ham, Inc., 1983).

Housing

3.31 As of the 1980 census, which closely followed the completion of the Trans Alaska Pipeline, there were 22,105 homes in the borough suitable for all-year occupancy. Of these, 18,224 were occupied and 3,881 were vacant. A total of 48.7 percent of the occupied housing units were rental units and a total of 2,042 of the vacant units were for rent (Wilsey and Ham, Inc., 1983).

3.32 Considerable change has occurred in the housing situation in the Fairbanks North Star Borough since the 1980 census. There has been some new housing construction through early 1983, but during the time period, there has been even greater population growth. Trends in monthly rents for housing units in the 'Fairbanks Daily News Miner' from 1976 through October 1983 went from a low of less than $150 in early 1976 to over $900 in 1978. In late 1979, with the completion of the Trans Alaska Pipeline, the number of advertized rental units began to decline rapidly to a low of less than 150 units in early 1982. During 1983 there has again been an increase in advertized rental units, with 457 units (299 of which were apartments, 112 were houses, and 46 were mobile homes or cabins) advertized for rent in the newspaper during October 1983 (Fairbanks North Star Borough, Community Research Center, 1984).

3.33 In addition to an increase in the number of available rental units during 1983, there has been an increase in the number of construction permits issued in early 1983 as well as an increase in the proportion of permits issued for multi-family units. During the first 10 months of 1983, the number of housing units authorized for construction was 46 percent more than for the same period in 1982. A significantly large number of these units were multi-family, with 66 percent of the 900 authorized units being multi-family units during the first 10 months of 1983. During construction of the Trans Alaska Pipeline, a peak of 59 percent of total authorized housing units were multi-family to met the demand for housing on the part of the pipeline construction workers (Fairbanks North Star Borough, Community Research Center, 1984).

Schools

3.34 The borough currently has 21 elementary schools of which one is closed due to substandard conditions; 14 are located on non-military portions of the borough, and six are located on the military bases. There is one separate junior-high school, two separate high schools, and two combination junior/senior high schools in the district. In addition, the district has a vocational education center and an alternative school (Dowl Engineers and Simpson Associates, Inc., 1981). There are several private schools in the region. The University of Alaska with an enrollment of more than 5,500 and the Tanana Valley Community College are located just west of Fairbanks (Research Design Productions, Inc., 1983).

3.35 As of September 1983, there were 12,659 students enrolled in the Fairbanks North Star Borough School District. Public school enrollments for the on-post schools operated by the district totalled 2,460. Currently, there are approximately 1,000 school-age children on post at Fort Wainwright, and an approximately

equal number of pre-school children (under 5 years of age). State aid to the school district currently amounts to $3,688 per student and federal funding amounts to 80 percent of the calculated tuition for an on-post student (corresponding dollar amounts not available). The district strives for a student-to-teacher ratio of 25 to 1, and although the district-wide average is less than 25 to 1, some schools do exceed the 25 to 1 goal. Planned capacities for new elementary schools will accommodate approximately 600, while plans for new secondary schools (a new senior high school at North Pole will be completed in the fall of 1984) will accommodate 1,000 students (Arradondo, 1984).

Health Care

3.36 In addition to Bassett Army Hospital on Fort Wainwright, there is one hospital in Fairbanks, the Fairbanks Memorial Hospital. This hospital recently added a large wing and will open up a second floor in the summer of 1984. Additional space will be completed over the next five years and existing space is slated for remodeling. The current capacity of the hospital (April 1984) is 145 beds and 21 bassinets. Capacity is scheduled to increase to approximately 196 beds and 30 basinetts. Additional floors of the tower will provide space for obstetrics, nursery, and pediatrics. Space made available by these services will be used to expand facilities for ambulatory surgery and psychiatric care (Burke, 1984).

3.37 In 1983, the occupancy rate of the hospital was 80.7 percent with a average of just over 117 patients per day. The annual number of newborns has increased from 1,267 in 1981 to 1,503 in 1983. Medical staff represent a wide range of specialties, and including consulting physicians available from Anchorage, consist of 94 M.D.'s and 9 D.D.S.'s. Approximately three quarters of the medical staff physicians are active (Burke, 1984).

3.38 In addition to the Fairbanks Memorial Hospital and military health-care facilities, other facilities in the region include a 101-bed nursing home, the Fairbanks Pioneers Home (119 beds), the Fairbanks Health Center, the Alaska Area Native Health Service Clinic, the Fairbanks Community Mental Health Center, the Fairbanks Native Association Regional Center for Alcoholism and Other Addictions, the Fairbanks Drug Treatment Center, and a private-sector mental-health clinic (Research Design Productions, Inc., 1983). Bills currently before the state legislature would provide funding for construction of a facility for the mentally ill in Fairbanks (Burke, 1984).

3.39 Besides the increasing pressures in the area on health care delivery systems from general medical problems, mental health,

drug abuse, and alcoholism problems are also increasingly prevalent (The MITRE Corporation, 1978). This trend at least partially results from rapid changes in neighborhood character, population pressures, radical changes in life styles, and a climate with relatively long, dark winters.

Cultural Resources

3.40 See on-post cultural resource description.

Fort Wainwright, Alaska

3.41 Fort Wainwright is strategically located as the major U.S. Army installation in the Alaskan Interior (Figure 3-2). Its mission is to command, train and maintain assigned units at the state of readiness required for the ground defense of northern Alaska; to provide facilities for training personnel and testing equipment under extreme cold weather conditions; and to provide space, facilities, and support for a variety of military and non-military government users.

3.42 The authorized strength population of Fort Wainwright includes 3,400 military, 4,230 dependents and 1350 civilians (including tenant and non-appropriated fund personnel), as well as employees of the school district and transients.

3.43 The Fort Wainwright installation has been described in detail in U.S. Army Forces Command (1979) and in Unwin, Scheben, Korynta and Huettl, Inc. (1983a and 1983b). The Fort Wainwright installation proper consists of two cantonment areas, North Post and South Post, separated by the Fort Wainwright Army Airfield. In addition, there are two large training areas; the Yukon Maneuver Area which consists of 256,000 acres of land located approximately 26 miles southeast of Fairbanks, and the Tanana Flats Area which consists of 643,000 acres located south of the main garrison area.

3.44 The North Post is used for housing, recreational facilities, some administrative offices, and for tenants such as the Bureau of Land Management. The South Post is used for the majority of administrative, maintenance, engineering and housing facilities, schools, community facilities, and recreational areas. The airfield consists of two runways, along with associated maintenance hangers, operations offices, control tower, and refueling system serving both helicopters and fixed-wing aircraft. The Yukon Maneuver Area is used for bombing and gunnery impact, various firing ranges, demolitions practice, large-scale winter exercises, and infantry field exercises. A portion of the northwest sector of the Yukon Maneuver Area has been outgranted to the Air Force for a seismic

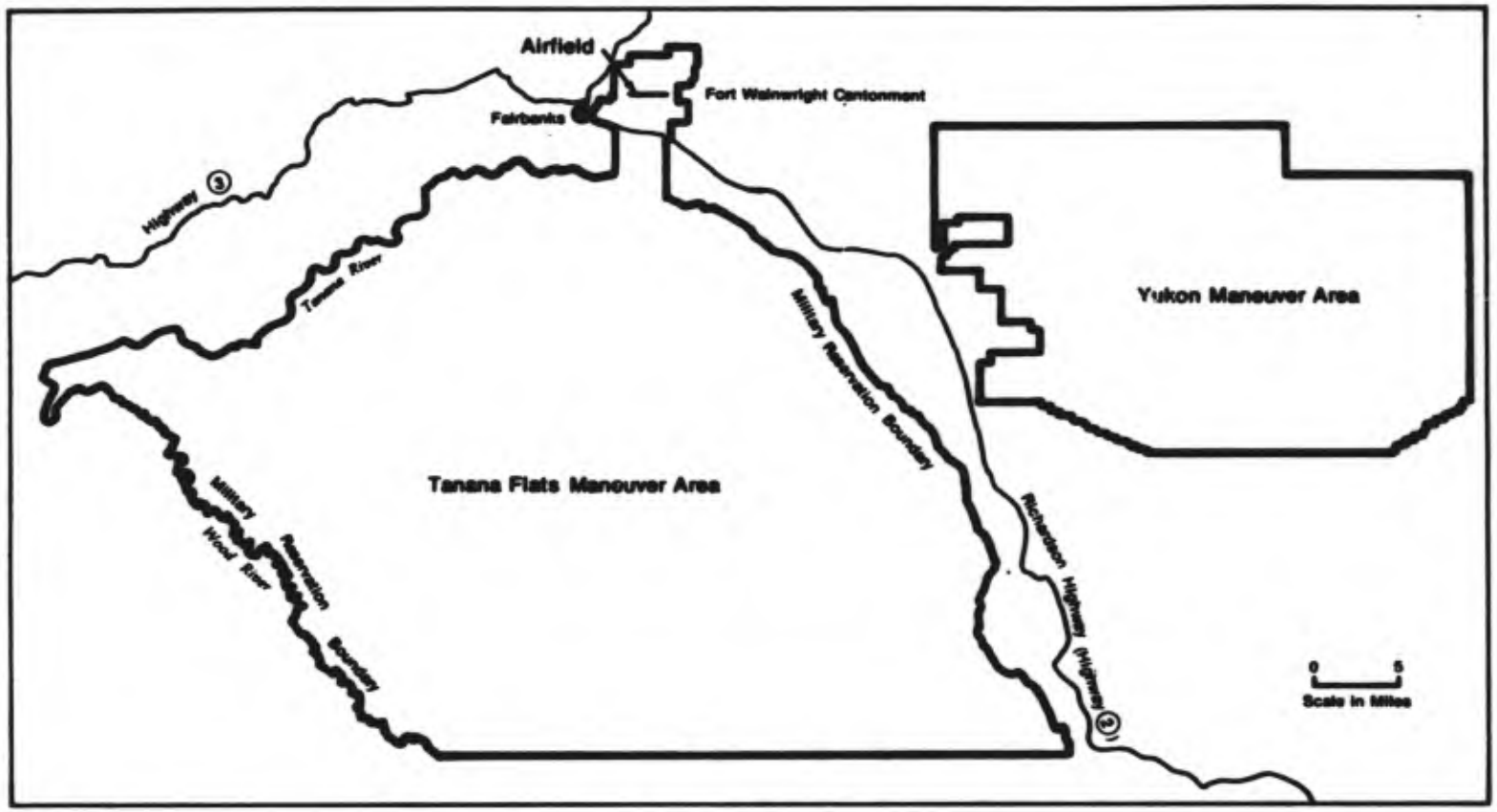


FIGURE 3—2
FORT WAINWRIGHT, ALASKA

monitoring station. The Tanana Flats Area is a large maneuver area and bombing/gunnery range, the northern portion of which is an artillery firing range and aerial gunnery range, the middle of which is used for company and platoon-sized exercises, and the southern portion of which (50,000 acres in the Blair Lakes Region) is permanently outgranted to the Air Force for attack aircraft training and proficiency training in gunnery and bombing techniques (The MITRE Corporation, 1978).

Geology, Minerals and Soils

3.45 The geological setting of Fort Wainwright has been described extensively in several documents (U.S. Army Forces Command, 1979; The MITRE Corporation 1978; Unwin, Scheben, Korynta, and Huettl, Inc., 1983a). The following description is taken primarily from these sources.

3.46 The eastern and northern sections of the Fort are within the Yukon-Tanana Upland, which is characterized by rounded, even-topped ridges 2,000 to 3,000 feet high rising 500 to 1,500 feet from the valley floor with gently side slopes, broad undulating divides, and flat-topped spurs. The cantonment area and the Tanana Flats Area are within the Tanana-Kuskokwim Lowland, a broad depression north of the Alaska Range. The flats consist of outwash fans from the mountains that slope northward at a rate of 20 to 50 feet per mile (less than 20 feet per mile as the lowland reaches the area of the post closer to the river) to the floodplain of the Tanana River; the major drainage of the area.

3.47 Various mineral deposits include gold, tin, silver, zinc, lead, antimony, bismuth and tungsten. An active gold mine is being worked in the Pine Creek drainage in the Yukon Maneuver Area (Kerns, 1984). Sand and gravel deposits are plentiful, particularly in the flood plains of the Tanana River and its major tributaries.

3.48 Four major soil associations encompass the cantonment and training areas. Two of these soil types, the silt loams, are moderately to severely limiting to off-road traffic due to steep-sloped or rough terrain, wetness, or the fact that they are dusty when dry and soft and slippery when wet. These silt-loam soil types occupy much of the post. South-facing slopes receive more solar radiation than do north-facing slopes and are usually well drained and free of permafrost. North-facing slopes tend to be underlain by permafrost and poorly drained. Permafrost places constraints on building, road and utility design, and siting and requires extreme care in site preparation and foundation construction.

Biological Environment

3.49 The biological environment of Fort Wainwright is described in detail in various documents (The MITRE Corporation 1978 and Unwin, Scheben, Korynta, and Huettl, Inc., 1983a). The Tanana Valley is unique due to its northern location, climate, and physiography. The valley is broad and surrounded by high mountains, both of which factors contribute to the characteristic low precipitation, extreme seasonal temperature range, low humidity, and low winds. These factors foster large forest and brush fires during the hot dry summers, dense natural forests and lowland vegetation inhabited by a diverse wildlife population, and plant and animal life easily stressed by human activity.

3.50 Terrestrial Ecosystems. Terrestrial ecosystems include forests, high brush, shrub wetlands, tundra, and barren ecosystems with their animal populations. Forests on post consist mostly of white and black spruce mixed with hardwoods. Black spruce is common in the southern portion of the Tanana Flats Maneuver Area and in other areas where there are poorly drained permafrost sites. On colder northern slopes, black spruce may be found up to the 2,500-foot elevation. High brush ecosystems are usually narrow zones of transitional vegetation between forests and barren areas and are widespread in the Tanana Flats Maneuver Area. Shrub wetlands, characterized by standing water or high watertable, include bogs, muskeg, swamp, and low bushes. Muskeg is common in many areas of the Tanana Flats Maneuver Area. Moist tundra, characterized by dwarf, low or procumbent vegetation, occurs on hilltops at elevations of 2,500 to 3,000 feet. Some areas of tundra are found along the extreme eastern boundary of the Yukon Maneuver Area. The Granite Tors form a limited barren rock outcrop ecosystem several miles north of the northeast corner of the Yukon Maneuver Area and there are some small, barren hilltops in the Yukon Maneuver Area. Wildlife populations on Fort Wainwright include a number of big game species such as moose, black bear and grizzly bear; small game such as hare, grouse, ptarmigan, and waterfowl; and furbearers such as mink, marten, beaver, otter, lynx, wolverine, and wolf. The Fort supports the major calving area for moose in the Tanana Flats Area (Kerns, 1984).

3.51 Aquatic Ecosystems. Most of the streams and rivers in the area are gravel-bottomed, clear water streams that are capable of supporting a relatively diverse biota. The Tanana River is a glacial river with a heavy, milky sediment load and a braided bed. Aquatic fauna that are characteristic of the area are discussed in detail in The MITRE Corporation (1978). Arctic grayling utilize the small, clear, slow-moving creeks that drain the Tanana Flats Area as

rearing streams where they spend the first year of their life (Kerns, 1984).

3.52 Threatened and Endangered Species. The Arctic peregrine falcon (Falco peregrinus tundrius) is the only threatened species which might be found on Fort Wainwright. None are known to nest there, but potential feeding or breeding habitat exists in the Salcha Bluff area. The bald eagle is known to nest in the Granite Tors and may nest along the Tanana River Bluffs. The gray wolf and grizzly bear, both found on post, are federally listed in the lower-48 states, but not in Alaska (U.S. Department of the Interior, 1983).

On-Post Population

3.53 The current population of Fort Wainwright consists of 3,400 military and 5,580 civilians, including dependents and civilian employees.

Land Use

3.54 Land use on Fort Wainwright has been described briefly in the introduction to the existing on-post environment. Extensive discussions can be found in The MITRE Corporation (1978) and in Unwin, Scheben, Korynta, and Huettl, Inc. (1978a). The majority of the land comprizing the facilities of Fort Wainwright is utilized for training and maneuvers. The remaining major uses are for the airfield and for housing, offices, recreational and general residential use.

3.55 The extreme southeast corner of Fort Wainwright is adjacent to land that has been designated by regional planning authorities as potential agricultural land. There has been no development to date and state agencies are currently debating the feasibility of permitting its agricultural development (Kerns, 1984).

Noise

3.56 The major sources of noise on post are ground vehicle operations, aircraft operations, construction activities, demolition, and artillery firing (The MITRE Corporation, 1978; U.S. Army Environmental Hygiene Agency, 1981).

3.57 The U.S. Army Environmental Hygiene Agency (1981) analyzed noise due to activities at the airfield and to detonations during demolition activities. The 65 dB Ldn contours for the airfield do not extend into residential areas of either Fort Wainwright or the Fairbanks community. Individual operations could result in complaints from the populace.

3.58 Noise from the demolition area, located north of the Chena River on the narrow neck of Fort Wainwright, can cause a moderate potential for noise complaints from the current residential areas near the post. However, the LCdn = 65 dB contour for the demolition area will not extend beyond the post boundary unless a minimum of 5,000 equivalent demolitions per year are detonated (Army Environmental Hygiene Agency, 1981). Demolition of ammunition, usually once every three months, along the Tanana River has caused some complaints (Watz, 1984). If areas closer to the boundary of the military reservation are developed for residential use, a high potential for noise complaints could exist.

Air Emissions

3.59 Air emissions on Fort Wainwright result primarily from mobile sources such as motor vehicles and from area sources such as forest fires. Point sources are considered to contribute only a relatively small portion of the total air pollutant emissions (Unwin, Scheben, Korynta, and Huettl, Inc., 1983a). Currently, the motorpool reports 162 non-tactical (administrative) vehicles on post. Brigade tactical units at Fort Wainwright have 60 wheeled vehicles (to be replaced by tracked SUS-V's) and 40 snow machines (Kerns, 1984).

3.60 The major point source for air emissions on Fort Wainwright is the heating plant, where six coal-fired boilers generate steam for electric power generation and for steam heat. Particulate emissions from the facility are controlled by multicyclone collectors and cinder reinjection systems. Particulate and sulfur dioxide emissions from this facility represent 15 percent of the total emissions in the Fairbanks area (Unwin, Scheben, Korynta, and Huettl, Inc., 1983a).

3.61 In August 1982, the Alaska Department of Environmental Conservation performed emission testing on the exhaust of Boiler Six at the power plant to determine if it was in compliance with applicable state regulations for particulate matter and sulfur dioxide (Clay and Chapple, 1982). Sulfur dioxide levels ranged from 219 to 320 ppm (applicable state requirements are 500 ppm or less). Particulate concentrations in the flue gas ranged from 0.08 to 0.09 grains per dscf (applicable state requirements allow a maximum particulate emission rate of 0.1 grains per dscf). During these tests, Boiler Six was operating at approximately 125,000 lb/hr of steam. Each of the six boilers at the plant are rated at 150,000 lb/hr. The facilities were installed prior to 23 December 1971 and have a heat input of less than 250 million Btu's per hour, therefore federal regulations do not apply to them (Unwin, Scheben, Korynta, and Huettl, Inc., 1983a).

3.62 Other actual or potential stationary sources of pollutant emissions at Fort Wainwright include an auxiliary standby power generator, exhaust emissions from vehicle maintenance shops and parking lots, fugitive emissions from storage piles and unvegetated areas, small space heaters from isolated buildings, emissions from the laundry and dry cleaning facility, and emissions from the petroleum storage facilities. Because of the relatively smaller volume of traffic on post, ambient concentrations of carbon monoxide on or near Fort Wainwright can be expected to be less than in downtown Fairbanks (Unwin, Scheben, Korynta, and Huettl, Inc., 1983a).

3.63 A particular problem both on and off post at Fort Wainwright is ice fog generated from the water vapor in the stack gases from the power plant, from water vapor in vehicle exhausts, and from water vapor from the power plant cooling pond on post. Ice fog can be expected to occur any time the ambient temperature falls below -25°F (McFadden and Collins, 1978; Fairbanks North Star Borough, Environmental Service Department, 1979; Coutts and Turner, 1978).

Water Supply

3.64 Fort Wainwright's water supply is pumped from wells and treated in facilities on post. Two wells on the South Post serve as the primary source of water. These wells are supplemented by 5 standby wells which can be fed directly into the main distribution system. An additional 12 wells supply individual buildings and irrigation. Another 8 wells of known location have been abandoned. Numerous other abandoned wells exist, but their exact locations are not known (Unwin, Scheben, Korgnta and Huettl, Inc., 1983a).

3.65 Well water on Fort Wainwright has concentrations of iron and manganese in excess of recommended standards. The water treatment plant, constructed in 1953, has a maximum design capacity of 2.5 million gallons per day and has historically produced 1.0 to 2.0 million gallons per day. The primary treatment is for iron, reducing levels from approximately 2.0 ppm to 0.2 ppm (federal standards recommend a maximum level of no more than 0.3 ppm). Facilities renovation and expansion slated for the summer of 1983 were expected to increase the capacity of the treatment system by 20 percent. Water supplied by the standby wells is treated by chlorination prior to its supply to the main distribution system. The current water supply system on Fort Wainwright is adequate to supply treated water to the post at 100 percent occupancy. Some restrictions would have to be placed on water use for non-essential purposes such as irrigation and washing of automobiles during peak demand periods, particularly if current post capacity were increased (Unwin, Scheben, Korynta and Huettl, Inc., 1983a).

3.66 Potable water storage consists of a clear well in the treatment plant with a 375,000 gallon capacity and a 112,000-gallon tank on top of the hospital. Non-potable water for firefighting is stored in four tanks with a total capacity of 1,710,000 gallons (Unwin, Scheben, Korynta, and Huettl, Inc., 1983a).

Wastewater Disposal

3.67 Wastewater from Fort Wainwright is disposed of by the Municipality of Fairbanks under contract with the U.S. Government. This contract requires the municipality to provide a facility for the secondary treatment and disposal of 8.0 million gallons per day of sewage, of which capacity 1.2-million-gallons-per-day average flow is to be available for use by Fort Wainwright. Daily flows, monitored since October 1977, range from 1.1 to 1.2 million gallons per day. The contract provides for a renegotiation of costs if the plant size must be increased solely as a result of greater quantities of sewage from the post than are currently anticipated. The intercepter on post is capable of handling a flow of 4.8 million gallons per day (Unwin, Scheben, Korynta, and Huettl, Inc., 1983a).

Solid and Hazardous Waste Disposal

3.68 Solid waste, including ash from the power plant, is disposed of in a sanitary landfill operated by Fort Wainwright on the North Post about 0.3 miles north of the Chena River. Solid wastes are spread and compacted on the natural ground surface and then covered with ash. There does not seem to be a problem with leaching of material into either groundwater or surface waters, and the presence of the ash discourages tunneling by rodents (The MITRE Corporation, 1978).

3.69 Fort Wainwright does not handle or produce any industrial or nuclear wastes, chemicals, or biological weapons that might pose an environmental hazard (Unwin, Scheben, Korynta, and Huettl, Inc., 1983a).

Housing

3.70 Currently (mid-April 1984) there are 1,429 quarters on Fort Wainwright, 1,387 of which are useable. Of the 1,387 useable married quarters, 1,245 are currently occupied. The occupancy rate for married housing on Fort Wainwright is 95.9 percent, with 22 single officers, 16 married officers, and 336 married enlisted (154 ineligible) living in off-post housing. On post, 249 officers and 1005 enlisted personnel are currently assigned quarters (Harrell, 1984).

SUPERSEDED
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Schools

3.71 The Fairbanks North Star Borough School District operates the schools on Fort Wainwright with a budget of $780 million (Fort Richardson, 1984). The status of schools in the region has been described in the discussion of the regional environment.

Health Care

3.72 Health care is provided by the Bassett Army Hospital on-post as well as by various clinics and outpatient facilities. Bassett Army Hospital is a nominal 200-bed facility for which much of the space is currently utilized for clinics and outpatient services. Bassett serves an eligible population of 8,259 (active duty army and their dependents) and an additional eligible population of 18,445 air force, retirees and veterans; is currently authorized at 40 beds with an average daily occupancy of 28 beds; averages 181 outpatients daily; and has an authorized total staffing of 317 (Lam, 1984).

Public Safety

3.73 Public safety facilities both on and off post in the Fort Wainwright area have been described in Unwin, Scheben, Korynta and Huettl, Inc. (1983a) and in The MITRE Corporation (1978). Both law enforcement problems and the demand for fire protection are increasing, at least partially as a result of the increasing population of the region.

3.74 Law enforcement is maintained by the Fairbanks Police Department, the Alaska State Troopers, the Federal Bureau of Investigation, the United States Marshal, the College, Alaska Police Department, and the Military Police (The MITRE Corporation, 1978). Of the 2,571 offenses reported to the civilian law enforcement agencies in the third quarter of 1983, the most frequent was larceny theft (18 percent), followed by driving while intoxicated (12 percent). Violent crimes constituted three percent of the total offenses reported during the period and represented a 17 percent decrease in similar crime over the same period in 1982 (Fairbanks North Star Borough, Community Research Center, 1984).

3.75 Law enforcement on Fort Wainwright is maintained by the Military Police under the jurisdiction of the Provost Marshal. The major offense handled by the Provost Marshal in 1983 was crime against property, with 229 offenses in 1983. A total of 119 cases of driving while intoxicated were handled, with 66 on-post and 53 off-post offenses. Thirteen assaults were handled, all during

the winter/fall months of January and September through December. Also handled were 19 absent without leave; 63 domestic disturbances which tended to peak in winter; 206 traffic accidents which again were more prevalent in winter; 229 crimes against property; 78 drug offenses; and 7 crimes of violence (D.E. Williams, 1984).

3.76 The Fort Wainwright Fire Department participates in a mutual aid arrangement with the other fire departments in the region. This arrangement requires the fire department to respond to emergencies throughout the area. On Fort Wainwright itself there are 2 fire stations with 6 fire trucks and 45 trained personnel. There is a need for an additional substation on the North Post portion of the base (The MITRE Corporation, 1978).

Traffic and Transportation

3.77 Traffic and transportation on and in the vicinity of Fort Wainwright is discussed in several documents, including Wilbur Smith and Associates (1984), Wilsey and Ham, Inc. (1983) and DeLuw, Cather and Company and Alaska Transportation Consultants, Inc. (1983). Regional transportation consists primarily of the road network, the rail system, and airport facilities. Extensive studies have been conducted recently, particularly along Richardson Highway and Airport Way, to determine future highway needs in the area.

3.78 Major highways near Fort Wainwright include Airport Way, Badger Road, and Richardson Highway. These roads (at counters nearest the post) had average daily traffic counts for September 1983 of 20,982, 7,776 and 14,558 vehicles, respectively, representing 6 to 13 percent increases in traffic compared to September 1982 (Fairbanks North Star Borough Community Research Center, 1984).

Energy Usage

3.79 The total on-post energy usage at Fort Wainwright for FY 83 was 3.08 trillion Btu, obtained from the following sources:

Coal	2,807,400 MBtu
Fuel Oil	17,700 MBtu
Gasoline	41,400 MBtu
Diesel Fuel	37,300 MBtu
Aviation Fuel	171,700 MBtu
Electricity	242,400 MBtu

Based on an effective population of 5,700 residents derived using the methodology described in Appendix H, on-post energy consumption is approximately 537 MBtu per resident per year.

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3.74 Law enforcement is maintained by the Fairbanks Police Department, the Alaska State Troopers, the Federal Bureau of Investigation, the United States Marshal, the College, Alaska Police Department, and the Military Police (The MITRE Corporation, 1978). Of the 2,571 offenses reported to the civilian law enforcement agencies in the third quarter of 1983, the most frequent was larceny theft (18 percent), followed by driving while intoxicated (12 percent). Violent crimes constituted three percent of the total offenses reported during the period and represented a 17 percent decrease in similar crime over the same period in 1982 (Fairbanks North Star Borough, Community Research Center, 1984).

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3.80 Coal is used to generate electricity and steam for heating. Therefore, electrical energy is not included in the total on-post usage to avoid erroneously high energy usage figures. Steam generators are rated at 22 MW although actual power output can be 30 percent higher because of the cold environment. Diesel generators can provide 3.5 MW of supplementary power. The generators at Fort Wainwright supply Fort Greely with electricity and any excess electricity is routed to Fairbanks. Approximately 750,000 lb/hr of steam can be generated for continuously heating all buildings at Fort Wainwright. The maximum hourly steam production in 1983 represented 52 percent of the plant capacity.

3.81 Average coal consumption is approximately 500 tons per day. The amount of coal stockpiled in August 1983 was 56,000 tons and the total storage capacity is approximately 160,000 tons. The coal used at Fort Wainwright has a relatively low heating value of 8,500 Btu/lb and this value is used for converting mass to energy usage. Liquid fuel storage capacity is approximately 50,000 gallons.

3.82 Energy consumption by military vehicles was 250.4 billion Btu in FY 83.

3.83 Gasoline consumption by vehicles owned by military personnel is estimated at 2.5 million gallons (320 billion Btu) per year based on estimated ownership of 4,300 cars driven an average of 9,026 miles per year at a mileage of 15.53 miles per gallon. Present energy use for personal transportation by military personnel is approximately 8 percent of that of civilian personnel in the Fairbanks North Star Borough.

3.84 Estimated energy consumption for off-post housing of military personnel and their dependents is 540 billion Btu per year based on an average per capita residential energy consumption of 171.6 MBtu per year. Residential energy consumption in the Fairbanks North Star Borough is approximately 11,200 billion Btu per year. Military personnel consume approximately 5 percent of the total residential energy used in the area.

3.85 Total energy consumption for Fort Wainwright in 1983 was approximately 3.93 trillion Btu, including on-post energy usage, military vehicles, private vehicles owned by military personnel and off-post housing requirements of military personnel. Total energy usage is approximately 1,156 MBtu per troop per year.

Cultural Resources

3.86 There have been extensive studies on the cultural resources of Fort Wainwright and the surrounding area, including

Matheson and Haldeman (1981), Dixon et al. (1980), and Holmes (1979). There is a rich history of the gold rush in the Fairbanks area. Several sites of historic importance exist on post, most notably the Post Commmander's House and Hanger No. 1 on the North Post. Training areas, particularly along the river bluffs, have a high potential for archeological resources. No sites on post are listed on the National Register of Historic Properties.

Fort Greely, Alaska

3.87 Fort Greely is located approximately 80 miles southeast of Fairbanks near the town of Delta Junction. The mission of Fort Greely is to provide a command, staff, and station complement for the command, control, administration and operation of Fort Greely; to provide administrative and logistical support to the U.S. Army Cold Regions Test Center, Northern Warfare Training Center, and such other units and activities as may be directed; and to maintain Allen Army Airfield and Hanger. A detailed description of the post is provided in The MITRE Corporation (1977).

3.88 Fort Greely encompasses two physiographic regions. The northern portions of the post are a part of the Tanana-Kuskokwim Lowland section of the Western Alaska physiographic province, consisting of a broad depression extending north to the Tanana River. The southern-most portion of the post is part of the Alaska-Aleutian province, consisting of rugged, mountainous, glaciated terrain. Soils on post are generally derived from glacial action and are influenced by the presence of streams and permafrost.

3.89 Vegetation types on the post include Alpine tundra, barren areas, coniferous forests, deciduous forests, muskeg, mixed forest, high bush and moist tundra. Important wildlife areas occur on post (Kerns, 1984). Dall sheep are on and adjacent to Fort Greely along the southern boundary of the post. The southern-most portion is closed to military activity from late May through June for bison calving. Areas from the south of Oklahoma Range to the south boundary are closed during the same time due to caribou calving. The Delta Creek/Delta River area is important as a waterfowl staging area in the fall and is used by the lesser sandhill crane. During September, many ranges are restricted due to waterfowl staging. The Arctic peregrine falcon (Falco peregrinus tundrius), a threatened species, may occasionally occur on Fort Greely.

3.90 Sullivan Roadhouse, located on the northern portion of Fort Greely, was listed in July, 1979 on the National Register of Historic places. Several other historical and archaeological sites exist on the post, but are not on the National Register.

Anchorage, Alaska Region

3.91 Anchorage is the largest city in Alaska and one of the fastest growing metropolitan regions in the U.S. From 1973 to 1975, population increased by 13 percent because of the Alaska pipeline construction. The 1980 U.S. Census reported Anchorage's population to be 174,431, but by 1983 the population grew to 230,846 (Schaedel, 1984). Thus, in three years the growth rate was 32 percent. Most of this influx was inmigration of people seeking high-salary jobs from the "lower 48". The Municipality of Anchorage is keeping abreast with this growth with new schools, new housing, new highways and expanding services. Several major new public works projects in the planning stages include the Eklutna Water Project, the Knik Arm Crossing, and the Big Susitna Hydroelectric Project.

3.92 Figure 3-3 depicts the location of Fort Richardson in relation to Anchorage. The Fort is immediately northwest of the Municipality and adjacent to another large military installation, Elmendorf Air Force Base. Elmendorf is immediately north of Anchorage and West of Richardson.

Climate

3.93 The study area is included in a climatic transition zone between the maritime climate of the coast and the continental climate of Interior Alaska. Climatological conditions in the eastern portion of the study area are influenced by the higher mountainous terrain, resulting in very different winds, precipitation, and temperature.

3.94 The study area is characterized as being moderately to very cloudy throughout the year. The Anchorage Bowl receives from 13 to 20 inches of precipitation (water equivalent) a year. Total mean snowfall in Anchorage is 70 inches.

3.95 The mean annual temperature for Anchorage is 35°F (1.7°C), with record extremes of 85°F (29°C) and -34°F (-37°C). Temperature extremes in the higher elevations show a wider range of variability both annually and on a long-term basis than in Anchorage, and the mean annual temperature is lower. The Anchorage area is subject to temperature inversions approximately 60 percent of the time in winter months.

Biological Environment

3.96 The Anchorage region has both marine and freshwater aquatic communities, with adjacent estuarine and freshwater wetland ecosystems. Cook Inlet estuary is West of Anchorage and supports a

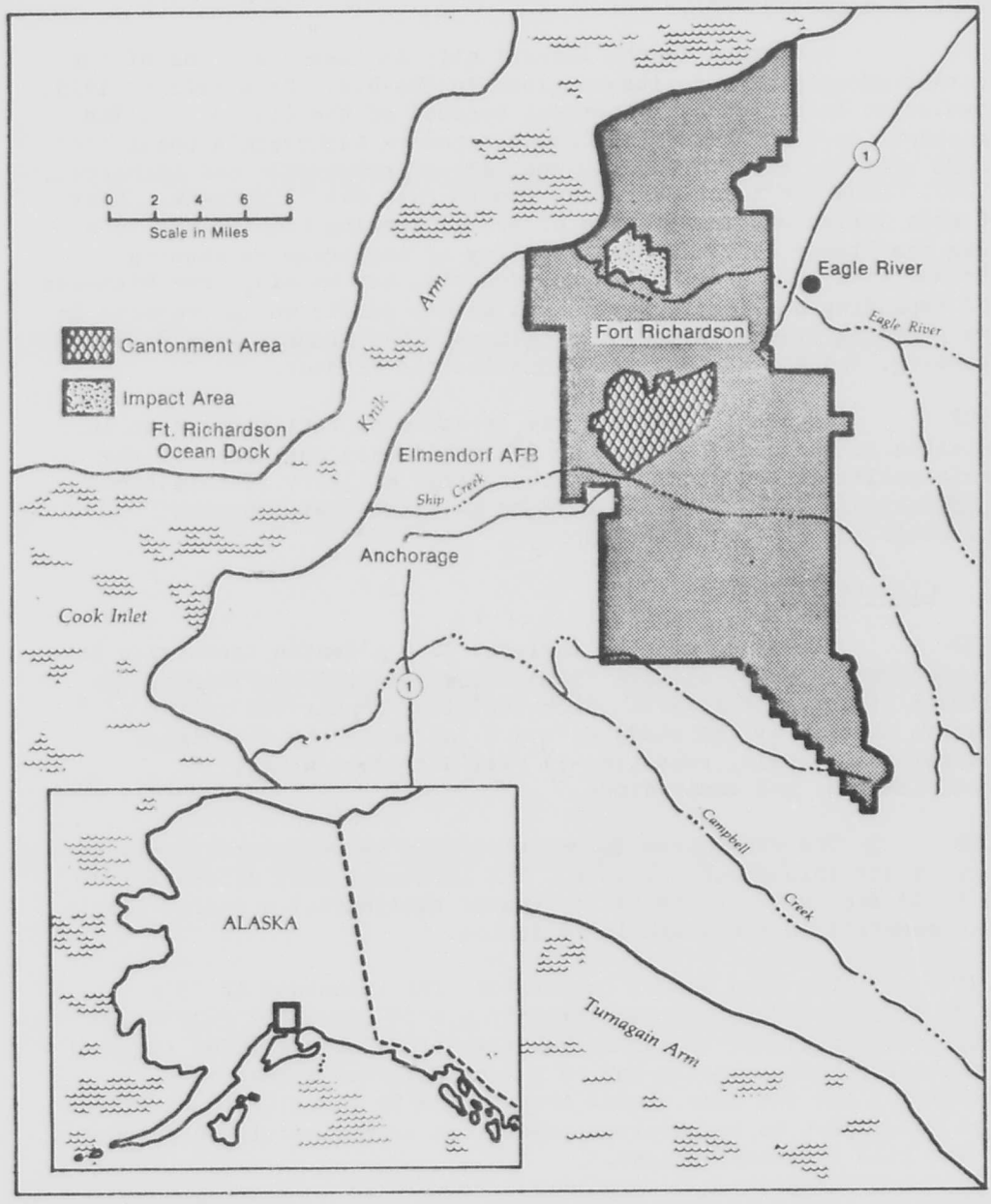


FIGURE 3—3
FORT RICHARDSON, ALASKA

substantial fishery and shellfish population. Knik Arm is a large estuarine bay north of Fort Richardson. Freshwater wetlands surround the many lakes and ponds in the Anchorage area and are characterized by horsetail, pondweed, arrowhead, duckweed, and sedges.

3.97 As elevation increases and in areas where permafrost is present, wet mossy spruce bogs dominate. Black spruce and willow provide the overstory, mixed with white paper birch, and the understory is bog blueberry and crowberry. On the higher and dryer elevations, the interior white spruce forest is the most common forest type. Common trees include the spruce, paper birch, quaking aspen, balsam poplar, cottonwood, alder, and many species of willows.

3.98 At higher altitudes, the high brush ecosystem and tundra become dominant. High brush ecosystems are narrow zones of transitional vegetation between forests and alpine barren areas. In the study area, high brush occurs between the timberline and moist tundra along west facing slopes.

3.99 The moist type of tundra occurs in the eastern portion of the study area above treeline at about 3,500 to 4,000 feet. Alpine tundra varies from matted dwarf shrubs, thick moss, and grass, to barren rock and a few lichens.

Demography

3.100 Anchorage and the surrounding community are growing rapidly, over a 10 percent growth rate each year (Schaedel, 1984). According to the U.S. Census, 98 percent of the Anchorage area population was urban. Fifty-two percent of the population is male, mostly in the 25 to 45 age group, due to both the military and other traditionally male-dominated jobs. Eighty-five percent of the population is white, 5 percent black, 5 percent Native Alaskan (Eskimo or Aleut), 2 percent Asian, and 3 percent other non-white.

3.101 The distribution of the Anchorage population is listed below, from the 1980 U.S. Census (U.S. Department of Commerce, 1983i) and the 1983 Anchorage Community Planning Department. The Anchorage Bowl is a natural bowl bounded by the Alaska Range and the Kenai-Chugach-Talkeetna Mountains.

Area Population	1980	1983
Anchorage Bowl	143,351	207,452
Military (Army and Air Force)	17,346	16,574
Eagle River/Chugiak	12,858	21,949
Municipality of Anchorage	174,431	230,846
Region Total	347,986	476,821

SUPERSEDED
AUG 1984

Land Use

3.102 The old "downtown" area of Anchorage was rebuilt after the earthquake of 1964 and in the 1970's grew rapidly with new high rise office complexes. More new high rise development continues in the center of Anchorage and south to approximately Tudor Road.

3.103 New suburban development of single family and apartment/condominium growth is occuring east of downtown to the Fort Richardson border and is spreading further south along Turnagain Arm. In April, 1984, the Anchorage Assembly approved additional residential zoning in southern Anchorage, in the area of Rabbit Creek. Since urban development north and east is limited by government lands, and limited on the west by water, the only areas open for more growth are to the south.

3.104 Northeast on the Glenn Highway, past Fort Richardson from Anchorage, another growth area can be defined. The small towns of Eagle River, Birchwood and Chugiak can be expected to grow in the next decade and are an easy commuting distance to Fort Richardson. North of here to Palmer, the area becomes agricultural land use.

Noise

3.105 Based on the population density, and vehicular activity in the urban region, a background noise level of 60 dBL_{dn} assumed for a noisy urban area environment (U.S. Army Corps of Engineers, 1978, Vol. 1). Most of the region is in Zone I, as defined by the Army in Airport Master Planning "Installations Compatible Use Zones" (ICUZ), acceptable for noise sensitive land uses (i.e. schools, housing). In a 1983 survey of noise on Fort Richardson, land uses were found to be compatible at the Fort Richardson boundary. While in an acceptable Zone I for aircraft, Eagle River is impacted from existing firing on Fort Richardson (Gaydos, 1984).

Regional Economic Activity

3.106 The economy in Anchorage has strengthened due to growth in construction and the infusion of oil money, and it is expected to remain strong in the future. Nonagricultural wage and salary employment is expected to grow over 8 percent by the end of 1983 from 1981. In spite of the fact that employment levels are rising, the unemployment rate may remain undiminished (9 percent, February 1984), due to the economic condition of the lower-48 states.

3.107 The service industries accounted for 21 percent of total employment in Anchorage, showing a healthy gain over the past 10 years. Hotel and other lodging facilities represent 2 percent of

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SUPERSEDED
AUG 1984

total employment in Anchorage and statewide. Because of the shift of responsibility from federal to state and local governments, 55 percent of government employment is now represented by state and local government.

3.108 Trade, the second largest employer in Anchorage, represents 21 percent of Anchorage's total employment. The portion of the total employment in Anchorage represented by finance, insurance, and real estate is 6.8 percent.

3.109 Construction employment accounts for 7.1 percent of the nonagricultural employment in Anchorage. Of the 3 types of contractors in the industry (general building construction, heavy construction, and special trades contractors), the special trade firms employed 4 percent of total employment.

3.110 Mining employment has practically doubled since 1974, when it consisted of 2.1 percent of the total employment. It currently represents 3.2 percent of nonagricultural wage and salary employment. Of the mining industries, oil and gas extraction firms employ 94 percent of mining personnel (U.S. Army Corps of Engineers, 1983a).

3.111 Fort Richardson itself is a large employer within the Anchorage area. The number of troops living on to the post is approximately 4,500, and there are 1,400 civilian employees on Fort Richardson. In 1983, Fort Richardson spent $27.9 million for local goods and services. Eighty percent of the contracting is to Alaskan vendors; in 1983 the Army spent $53.3 million for local contracts (Anderson, 1984). Economic projections for the Anchorage area to 2005 are shown on Table 1 of Appendix B.

Air Quality

3.112 Fort Richardson is located in the Cook Inlet Intrastate Air Quality Control Region (AQCR No. 8). The nearest Class I areas are Chugach Park and the Kenai Wildlife Refuge. Although there are a few major point sources of pollutant emissions, the natural conditions are conducive to the buildup of air pollutants in the Anchorage area. Upward diffusion of pollutants is restricted during a temperature inversion due to a plume trapping condition or an absence of turbulent mixing. Inversions occur mostly during the winter months in the Anchorage area, when the air pollution problem is greatest.

3.113 In addition to temperature inversions, low wind velocities and relatively stable high pressure centers in the region tend to reduce ventilation and increase pollutant concentrations.

In wintertime, shorter days and lower temperatures tend to increase the inversion problem in the area, while an increase in fossil fuel combustion adds to pollutant emissions. In the summertime, on the other hand, extended daylight and an increase in human activities results in reduced air quality due to photochemical smog. Increased concentrations of particulate matter also are more pronounced in the summertime.

3.114 The Cook Inlet AQCR is a Priority I area for suspended particulates, and Priority III for sulfur oxides, carbon monoxide, nitrogen dioxide and photochemical oxidants (40 CFR 52.91).

3.115 The closest measurements of carbon monoxide have been taken at Muldoon, with a 1982 hourly high reading of 5 ppm and an average reading between 0 to 1 ppm. For particulates in 1982, the Muldoon station recorded levels for a 24-hour mean of 17.3 ppm and a high of 63 ppm, both within federal limits (U.S. Army Corps of Engineers, 1983a). The Greater Anchorage Area, however, has exceeded federal standards on a number of occasions.

3.116 Anchorage is a non-attainment area for carbon monoxide; in fact, Anchorage is the worst region in the U.S. for carbon monoxide (MacGlence, 1984). At the Spenard and Merrill Field air stations, the eight-hour standard for CO was exceeded 33 and 19 times respectively in 1983-1984. The reason for this is that automobiles will not "cold start", therefore people idle their vehicles for twenty minutes before they drive off. This problem is compounded by the winter conditions of air inversion and snow cover.

Water Supply

3.117 Two utilities supply water to about 75 percent of the Anchorage Metropolitan Area. The remaining 25 percent relies on individual wells and small private systems. Fort Richardson supplies its own water and water for Elmendorf Air Force Base. Fort Richardson uses both surface and groundwater sources to supply water. No sole source aquifiers are present. Surface water is taken from Ship Creek by the military and by Anchorage at a dam and intake located near the mouth of Ship Creek Canyon (about 11.5 miles upstream). The water is then diverted to separate treatment facilities.

3.118 The military is allotted 7.1 million gallons per day (MGD) from Ship Creek. Anchorage is allotted 23.8 MGD, Alaska Game and Fish 11.9 MGD, and Chugach Electric 20.6 million MGD from Ship Creek (Prokosch, 1984). In the winter, this quantity is greater than the water available in Ship Creek. Therefore, since the legal allocation exceeds the actual flow, a new water source is needed for Anchorage.

Land Use

3.102 The old "downtown" area of Anchorage was rebuilt after the earthquake of 1964 and in the 1970's grew rapidly with new high rise office complexes. More new high rise development continues in the center of Anchorage and south to approximately Tudor Road.

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Regional Economic Activity

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SUPERSEDED
AUG 1984

3.119 In 1984, construction will begin on the Eklutna Water Project. Phase I will interconnect the Eagle River water systems by 1987, and by the year 2025, the Eklutna project will provide 70 MGD to Anchorage. The Eklutna pipeline will pass through Fort Richardson.

Wastewater Treatment

3.120 Fort Richardson and Elmendorf Air Force Base together treat 7 MGD wastewater (Prokosch, 1984) on the installation. The Municipal sewage treatment Pt. Woronzof plant was designed to treat 34 MGD, but capacity is expected to be exceeded in 1984. In 1985, construction will begin to increase capacity to 58 MGD by 1989. Treatment is only primary, and the wastewater is disposed of in Cook Inlet (Warren, 1984).

Solid Waste Disposal

3.121 The existing Anchorage municipal landfill has only 80 acres remaining and will be filled by 1985 (Kryger, 1984). Rates of solid waste generation are 6 to 8 pounds per person per day. The Municipality has a 20-year plan ongoing to expand its capacity. The proposed Highland Road Landfill would take 700 acres, 300 of Municipal land and 400 from Fort Richardson. This federal land would have to be made available for this future use.

Housing

3.122 Off-post housing has been increasing steadily in Anchorage since 1970. Listed below is a summary of housing from the 1980 U.S. Census and a 1983 survey from the Anchorage Department of Community Planning:

Anchorage Area	1980 Housing Units	1983 Housing Units
Anchorage Bowl	59,740	70,143
Military	3,834	3,694
(Fort Richardson)	1,720	1,800
Eagle River/Chugiak	4,468	6,680
Turnagain Arm	868	1,092
Municipality of Anchorage	68,910	81,609
Region Total	139,540	165,018

3.123 The majority of people (44 percent) in Anchorage live in single family homes, while 11 percent live in duplexes, 10 percent in 3-4 plex, 14 percent in 5-19 plex, 10 percent in 20 plus plex, and 10 percent in trailers (Anchorage Housing Survey, 1983).

3.124 In 1983, over 20,000 homes were listed for sale. Almost half of those were residential units, and 3100 were condominiums. The majority of actual sales in 1983 were homes in the $100,000 to $140,000 range. Only 13 homes were purchased for less than $80,000. In 1983 over 2200 new homes were constructed, and by March 1984, almost 1000 were under construction (Bishop, 1984).

3.125 Rental units are not readily available in lower income brackets. For example, a one-bedroom or efficienty low-rental range is $280-500/month with a 1983 vacancy rate of 2.7 percent; moderate rent $501-625 has 9.1 percent vacancy, and high rent $620-800 has a 4.4 percent vacancy (Robinson, 1984). There has been an overall increase in rent from 1982 to 1983 of 23 percent.

Schools

3.126 The Anchorage area schools are temporarily overcrowded, with some double shifting in junior high schools. The Anchorage schools are 75 percent State-funded, 24 percent local, and only 0.15 percent funded with federal impact assistance. The cost to educate a student is between $4500-$4900 per year, almost double that reported in 1980 (Schaedel, 1984). There has been a 12 percent growth in numbers of school-age children each year since the 1980 Census.

3.127 There are 3 elementary schools on Fort Richardson and 4 on Elmendorf Air Force Base. All junior high military dependents attend Central High, currently with a 90 percent utilization rate. Senior high military dependents attend either Bartlett (60 percent utilization) or West High, which is currently overcrowded.

3.128 In 1984 to 1986, the Anchorage School District will open 3 new junior high schools and 5 new elementary schools, with 8 to 10 additions to other schools (Schaedel, 1984). The student:teacher ratio is 21.5:1 in Anchorage.

Health Care

3.129 The military CHAMPUS program refers military and their dependents to Anchorage area hospitals. In FY 1983 there were 2848 referrals to Anchorage hospitals for special services at a cost of $360,000 (Shepherd, 1984).

3.130 In Anchorage, the Province Hospital has 240 beds and will be expanded to 400 by 1986. The staff is 330 physicians and 662 nurses. Humana Hospital has 199 beds and by 1985, will be expanded to 292. Humana has 300 physicians and 263 nurses. The Valley Hospital in Palmer has 30 beds, 13 physicians and 67 nurses.

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Cultural Resources

3.131 See on-post cultural resources description.

Fort Richardson, Alaska

3.132 Fort Richardson is the location of the Headquarters, 172nd Infantry Brigade (Alaska), the major command element for Army forces stationed in Alaska. The primary mission of the 172nd Brigade is to defend Alaska. It is one of three Army posts in Alaska containing military units and facilities controlled by the Brigade.

3.133 On Fort Richardson, there are 4500 military and 1400 civilians, and 4500 dependents. Off-post there are another 8,000 dependents (172nd Brigade Fact Sheet, 1984).

Geology, Minerals, and Soils

3.134 Geology. The surface geology is divided into major classes: Ridge formation and valley deposits. The ridges are made up of various metamorphic rocks of the McHugh Complex of the Upper Jurassic or Cretaceous Age, and the valleys contain unconsolidated deposits of Quaternary Age. The McHugh Complex characteristically forms very jagged ridges and peaks and is composed of two distinct rock sequences, mataclastic and metavolcanic.

3.135 The unconsolidated, undifferentiated deposits of the lowlands and valleys include a variety of glacial, alluvial, and lacustrine deposits consisting of a mixture of gravel, sand, silt, and clay (Selkregg, 1972). The bulk of this unconsolidated material was deposited during the Quaternary Period, specifically during the Pleistocene Epoch.

3.136 Minerals and Energy Resources. A literature review by Cobb (1972) indicated no deposits, either lode or placer, within the study area. The nearest deposits are copper, lead, zinc, and chromite approximately 15 miles northeast of Fort Richardson, near the mouth of Peters Creek, and lode deposits of copper, gold, zinc, silver and lead in the upper reaches of Eagle River.

3.137 A large deposit of gravel and sand extends beneath Fort Richardson to downtown Anchorage (Schmoll and Dobrovolny, 1973). Along the eastern side of the deposit the material is predominantly coarse gravel, and it becomes progressively finer-grained sand westward.

3.138 Soils. There are two major soil associations in the study area. The southeastern portion consists of steep mountains and is occupied by upland rocky soil association. Most of the

remaining portions are occupied by an upland mineral soil developed on glacial deposits and composed primarily of silt, loam, and peat soil. The shallow silt loam occurs over sandy or gravelly loam on moraine hills. The wetter soil is peat that occurs primarily in poorly drained, low-lying areas (Michaelson, 1974). No prime farm lands are in the study area.

Biological Environment

3.139 Terrestrial Ecosystems. Approximately 13 percent of Fort Richardson is modified for lawns, roads, and cantonment area, and 87 percent is included in the natural resources program. The habitats are similar to those previously discussed under the Anchorage area biological environment.

3.140 There are 49,529 acres open to public hunting (Quirk, 1980). The most important species on the post is moose; population estimates from 1972 to 1979 range from 350 to 400 moose on Fort Richardson. Several projects to increase moose browse have been undertaken on Fort Richardson. Other hunted small game include ducks, geese, spruce grouse, ptarmigan and snowshoe hare. Furbearers on Fort Richardson include beaver, muskrat, mink, ermine, marten, wolverine, lynx, red fox, coyote and wolf. Also present on Fort Richardson are Dall sheep, black and brown bear.

3.141 Aquatic Ecosystems. On Fort Richardson there are 264 acres of lakes and about 25 miles of streams open to fishing, and numerous adjacent wetlands. Four lakes are stocked with rainbow trout for sport fishing. Otter Lake has a unique freshwater habitat, and several management projects are ongoing here to increase waterfowl productivity. The Lake's edge is wet bog and sedge meadow, which is being developed as islands and open water for birds, with auto access limited. Eagle River flats are an important swan habitat. Canadian geese have been transplanted to Otter Lake. In 1979, brush piles were distributed to Otter, Clunie, Gwen and Thompson Lakes to improve fish habitat (Quirk, 1980).

3.142 Threatened and Endangered Species. Alaska harbors few species that are threatened or endangered. No endangered species have been identified on Fort Richardson, either by the state or federal wildlife agencies.

On-Post Population

3.143 There are 4500 military and 4500 dependents who live on post. In addition, there are 1400 civilians who commute to Fort Richardson daily. The total daytime population is 10,400.

Land Use

3.144 Land use on Fort Richardson is described in Phase I of the Master Plan (U.S. Army Corps of Engineers, 1983a). The main garrison area is centrally located north of Glenn Highway, and includes housing, administration, motor pools, warehousing, and support functions. Training areas are located both north and south of Glenn Highway and north and northwest of the contonment areas.

3.145 Bryant Army Airfield is located on 370 acres northeast of the garrison area. There are two major ordnance storage areas, one is a mile northwest of the central garrison and the other near the Glenn/Davis Highway junction.

3.146 Recreation facilities include a theater, gym, swimming pool, craft shop, rec center, library, and a golf and ski area located in the Arctic Valley area. A park and picnic area is located south of Arctic Valley Road.

Noise

3.147 Firing ranges are located east of the main garrison and Glenn Highway, at McLaughlin, in the northern part of the reservation, west of Eagle River Flats, and the Biathlon range is located to the south. The noise source of most concern is the Eagle River impact area, where over 300 days per year, weapons, mortar and artillery are fired (U.S. Army Corps of Engineers, 1983a). Noise contours have been plotted by the army. Even though the noise contours show that Eagle River is in an acceptable noise zone (Zone I), the noise from demolitions, mortar and artillery firing can have an impact in this community. Eagle River is located on a hillside overlooking the firing and impacts points. With this line of sight to the noise sources, the noise is not attenuated by the vegetation (Gaydos, 1984).

3.148 Also, the airfield has 28,000 helicopter and 43,000 fixed-wing operations a year, which affect the JFK Elementary School and neighboring housing during the winter (Thiessen, 1980).

Air Emissions

3.149 Fort Richardson has one general permit for existing sources; no Fort Richardson data are available. Sources of emissions within the post include the following: A central heating and power plant consisting of four coal-fired stand-by boilers and four natural gas-fired boilers; an auxiliary generation plant with five diesel engines; vehicular exhausts from on-post traffic, motor parks, airfield operations, and several other minor sources.

3.150 Only half the boilers on Fort Richardson are in compliance with state and federal standards, and therefore, those failing the inspection are being upgraded (MacGlence, 1984). The rehabilitated boilers are being converted to coal, thus coal-fired emissions (e.g., SO_x and NO_x) would increase in the future.

Water Supply

3.151 Fort Richardson and Elmendorf Air Force Base combined use 3.8 MGD of their allotted 7.1 MGD from Ship Creek. Three wells are also available to supply additional water if needed. The federal reserved groundwater right is not quantified (Prokosch, 1984).

Wastewater Disposal

3.152 Fort Richardson and Elmendorf Air Force Base water treatment is 7 MGD. Sewage goes to the Anchorage treatment plant, which has a design capacity of 34 MGD. By 1989 capacity will be expanded to 58 MGD for primary treatment only (Warren, 1984). Currently, sewage treatment capacity is a problem.

Solid and Hazardous Waste Disposal

3.153 Assuming the 10,400 people on-post produce seven pounds of solid waste per day (this is the amount used by planners for Anchorage area landfill, but would be lower since most wastes would be produced from off-post housing), Fort Richardson produces a maximum of 36 tons of garbage a day. Solid wastes are disposed of in a sanitary landfill, east of the warehouse loop on Fort Richardson. It is estimated that this site can be used (U.S. Army Corps of Engineers, 1983a).

3.154 Fort Richardson has a current Pollution Spill Control Plan (U.S. Army Corps of Engineers, 1983b), to comply with PL 92-500 and PL 94-580 (RCRA). There were 9 areas identified as landfills and disposal areas and one site of PCB contamination (U.S. Army Toxic and Hazardous Materials Agency, 1984).

Housing

3.155 Based upon Army authorizations for Fort Richardson, family housing available is 212 officers' houses and 1576 enlisted family quarters on-post, for a total of 1788 units. For bachelors, there are 259 officers' quarters and 2539 enlisted bachelor quarters on-post (Anderson, 1984). Currently on-post housing has a two percent vacancy rate, since on-post housing cost is about half that for off-post housing. The military pays a $9600 per military person allowance "rent plus" for off-post housing (Anderson, 1984).

Schools

3.156 There are 3 primary schools (elementary) on Fort Richardson. In 1982, there were 4041 military dependents and in 1983, 3671 dependents in schools on Elmendorf Air Force Base and Fort Richardson (Schaedel, 1984). One third of these are from Army homes.

3.157 Kennedy elementary school in north Fort Richardson has 17 classrooms and a 91 percent occupancy rate. Ursa Minor in central Fort Richardson has 16 classrooms and 115 percent occupancy rate. These 2 primary schools could be upgraded to 24 rooms, for a total of 500 students each. Ursa Major on the south of Fort Richardson has 24 classrooms, but is underutilized, at 79 percent occupancy (Schaedel, 1984).

3.158 All junior and senior high school dependents attend Anchorage area schools off-post. West High is currently overcrowded.

Health Care

3.159 The U.S. Air Force Hospital on Elmendorf Air Force Base treats the active duty patients. Retirees and dependents are referred through the CHAMPUS program to Anchorage-area hospitals. The Elmendorf Hospital has 100 beds, with an expansion capability to 278. In an emergency, this hospital could take up to 400 people. In 1983, the hospital had 28,225 occupied bed days. The Air Force has 55 physicians, 69 nurses, and 24 dentists to serve the installation (Shepherd, 1984).

3.160 Also on Fort Richardson, there is a "troop medical clinic", not a full-scale clinic. It has two physicians, one assistant, six medics, and 91 support personnel. In 1982 and 1983 this clinic averaged 149 to 235 visits per month (Bratcher, 1984).

Public Safety

3.161 On-post and for military police matters, the Provost Marshall enforces the laws. In Anchorage, the Municipality has 280 police officers and 106 police cars. By 1985, Anchorage will have 300 officers and 210 cars for enforcement.

3.162 On Fort Richardson there are 46 firefighters and four fire trucks for on-post emergencies. In the Anchorage area, there are 340 firefighters and 110 vehicles (these numbers include the areas of Chugiak, Girdwood and Anchorage).

3.163 The Bureau of Land Management helicopters for firefighting and Medevac helicopters are also available for emergencies.

Traffic and Transportation

3.164 There are 288 vehicles in the troop motor pool at Fort Richardson, and approximately 8,800 private vehicles used by the military and civilians on-post, that is one car per person on post.

3.165 The major traffic pattern to Fort Richardson is the Glenn Highway. The average daily traffic on Glenn is as follows (Alaska Department of Transportation, 1982):

Location	Average Daily Traffic
Glenn at Muldoon	24,000
Muldoon to Arctic Valley	29,000
Arctic to Fort Richardson	24,000
Highland Drive/Glenn	22,900
Eagle River/Glenn	24,000

3.166 The State Department of Transportation has several long-range plans that will affect Glenn Highway, and thus Fort Richardson in the future. One is the Highland Drive exchange to extend a road from Eagle River to the Highland exit. In the next ten years, Glenn will be widened to six lanes. From 1985 to 1987 an interchange is planned at Bonaface, and McCary will be separated from Glenn. The Mt. View Drive extension will effect the Elmendorf entrance gate traffic.

3.167 The Knik Arm Crossing may have a major impact on traffic, if the Muldoon/Elmendorf alternative is selected. Design and construction are planned to begin in the 1986-1987 timeframe (Childress and Hamel, 1984).

Energy Usage

3.168 The total on-post energy usage at Fort Richardson for FY 83 was 2.54 trillion Btu, obtained from the following sources:

Coal	44,300 MBtu
Fuel Oil	11,800 MBtu
Natural Gas	2,113,800 MBtu
Gasoline	97,100 MBtu
Diesel Fuel	63,600 MBtu
Aviation Fuel	117,500 MBtu
Electricity	91,300 MBtu (Purchased)

Based on an effective population of 7,500 residents derived using the methodology described in Appendix H, on-post energy consumption is approximately 338 MBtu per resident per year.

3.169 The majority of on-post energy usage is for heating; 2.13 trillion Btu were consumed in FY 83. Natural gas is the main heating fuel, accounting for 99 percent of annual heating energy consumption. Because natural gas is in short supply nationally, although not locally, future use of natural gas is expected to decrease due to the use of alternative fuels for new construction and for retrofit of existing facilities.

3.170 Electrical energy and steam for heating are generated on-post. Electrical generation capacity is 18 MW. Four boilers using coal as the primary fuel are operated on a limited basis. Four other boilers operate primarily on natural gas with fuel oil as a secondary fuel. Natural gas is supplied by the Enstar Natural Gas Company. Fuel oil storage capacity is approximately 50,000 gallons and 21,000 tons of coal are stockpiled.

3.171 On-post energy consumption by military vehicles was 280 billion Btu in FY 83. Gasoline consumption by vehicles owned by military personnel is estimated at 5 million gallons (630 billion Btu) per year based on ownership of 8,800 cars driven an average of 9,026 miles per year at a mileage of 15.53 miles per gallon. Present energy use for personal transportation by military personnel is approximately 9 percent of that of civilian personnel in counties adjacent to the fort.

3.172 Estimated energy consumption for off-post housing of military personnel and their dependents is 1,860 billion Btu per year based on an average per capita residential energy consumption of 170 MBtu per year. Residential energy consumption in the counties adjacent to the fort is approximately 39,600 billion Btu per year. Military personnel consume approximately 5 percent of the total residential energy used in the area.

3.173 Total energy consumption for Fort Richardson in 1983 was approximately 5 trillion Btu, including on-post energy usage, military vehicles, private vehicles owned by military personnel and off-post housing requirements of military personnel. Total energy usage is approximately 1,200 MBtu per troop per year.

Cultural Resources

3.174 In June 1980 an Archaeological Survey and Cultural Resources Overview for Fort Richardson was prepared (Steele, 1980). Approximately 2 percent of the 71,356 acres were sampled by transects. Four historical sites related to the European American

activities in the past 80 years were located. None of these sites appears to be eligible for the National Register of Historic Places (Steele, 1980).

3.175 No archaelogical remains were noted from a sample of 200 test pits in this survey. The mouth of Eagle River would be a likely area for cultural resources, but it is already impacted by military use and was off-limits to researchers.

FORT BENNING, GEORGIA AND SURROUNDING REGION

3.176 Fort Benning is located in the west-central portion of the State of Georgia. The reservation lies within Muscogee and Chattahoochee Counties, Georgia and Russell County, Alabama, and is contiguous with the city of Columbus, Georgia (Figure 3-4). The Chattahoochee River borders and passes through the reservation and marks the state boundary between Georgia and Alabama.

Columbus, Georgia Region

3.177 Muscogee, Chattahoochee, and Russell Counties comprise the Columbus-Phenix City standard metropolitan statistical area (SMSA). These three SMSA counties, plus Harris County, Georgia, which lies to the north of the SMSA, are considered to be the areas most likely to be affected by the proposed stationing action, based on land use and settlement patterns. They are referred to here as the four-county assessment area. Harris County is included in the assessment area because it has been absorbing population growth from the SMSA counties for almost two decades and is expected to do so in the future (Columbus Department of Community Development, 1983). This section presents current baseline data on the environment and the economic and social infrastructure of the four-county assessment area.

3.178 The social and economic relations between the four-county area and Fort Benning are closely interwoven. The area has long been a military community and derives significant economic support from the continued mission of Fort Benning. The 52,100 military personnel and dependents associated with Fort Benning comprise over 20 percent of the population of the four-county assessment area. In addition, there are approximately 30,300 retired military personnel and dependents in the area. Fort Benning also employs almost 7,800 civilians. Thus, the total population associated with Fort Benning is over 35 percent of the population of the area.

3.179 Economic effects of the proposed stationing alternative, both direct and indirect, are expected to occur beyond the four-county assessment area. For purposes of assessing regional economic

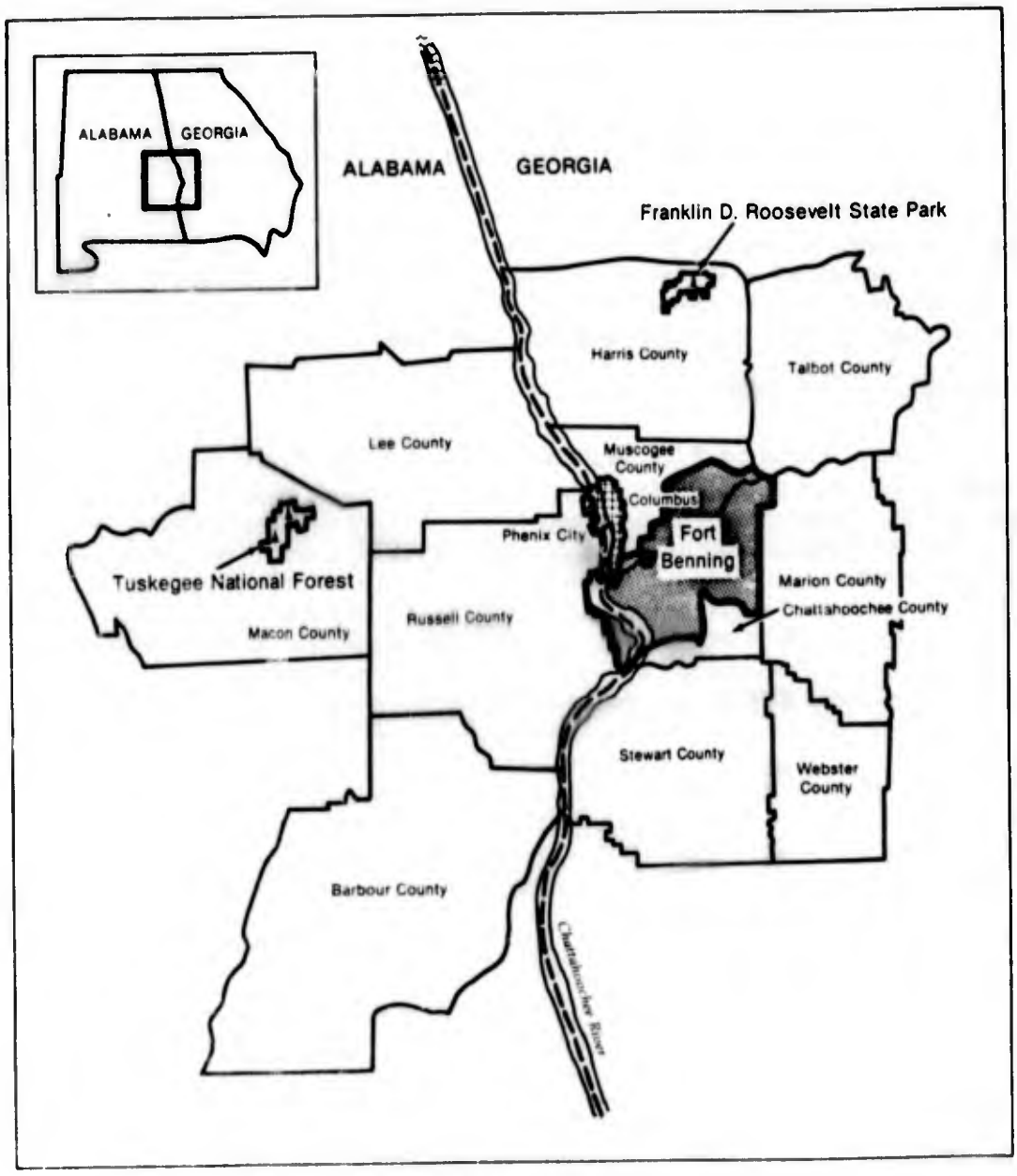


FIGURE 3—4
THE COLUMBUS, GEORGIA REGION

impacts only, the following larger set of eleven counties is also examined in the Regional Economic Activity Section (see Figure 3-4):

- o Alabama - Barbour, Lee, Macon, and Russell Counties
- o Georgia - Chattachoochee, Harris, Marion, Muscogee, Stewart, Talbot, and Webster Counties.

These eleven counties are considered the area most likely to experience economic changes, both directly and indirectly, as a result of the proposed stationing action. They have been selected based on adjacency to the installation, contiguity of the area, a 50-mile driving radius, and land use and settlement patterns.

Climate

3.180 The climate of Fort Benning is characterized by long, warm summers and short, mild winters. The mean annual temperature is almost 65°F. Summer months are dominated by maritime effects from the Gulf of Mexico and are almost invariably hot and humid with only rare incursions of drier continental air. Winter months are subject to considerable variations in temperature and may be dry and cold, or comparably warm and humid, depending on whether continental or maritime effects dominate. Prevailing winds are from the southwest and average about 7 miles per hour. Atmospheric stagnations occur an average of 12 days per year. Rainfall averages approximately 51 inches a year, but is quite variable. The months of highest normal rainfall are March and July. The driest are October and November. Traces of snowfall occur annually, but any lasting accumulation is extremely rare (U.S. Army Corps of Engineers, 1978; Fort Benning Directorate of Engineering and Housing, 1983).

Biological Environment

3.181 The four-county assessment area geographically spans two distinct physiographic regions which offer some very unique mixtures of plant and animal life as well as topographical variations. This split is a result of the junction of two larger geologic provinces, the Coastal Plain to the south, and the Piedmont Plateau to the north. This junction is marked by waterfalls and rapids that occur in streams and rivers and is referred to as the fall line. The two general terrain conditions that dominate the areas are the river bottomlands and rolling hills (Lower Chattahoochee Area Planning and Development Commission, undated).

3.182 Terrestial Ecosystems. Among the most important natural resources of the assessment area are the vast forests. The area is included within the broad oak-hickory-pine forest of the southeastern United States. Deciduous hardwood stands, pine savannas, pine

barrens, and yellow pines stands are abundant in the region (Lower Chattahoochee Area Planning and Development Commission, undated). Four basic ecosystems make up the hardwood areas: scrub oak ridge type, oak-hickory type, bottomland hardwood type, and wooded swamp type. The ecosystems are essentially the same as those within Fort Benning and are discussed under the Fort Benning Biological Environment Section.

3.183 Aquatic Ecosystems. The freshwater ecosystems in the four-county assessment area include the Chattahoochee River, along with its tributaries and basins. The Chattahoochee flows along the western edge of the three Georgia counties and the eastern edge of Russell County, Alabama, serving as the state line. A large area is drained by Upatoi Creek which forms the Muscogee/ Chattahoochee county line. The Bull Creek drainage basin extends north into Harris County, Georgia (Columbus Department of Community Development, 1978). The predominantly sand substratum of the streams draining the region provide only marginal habitat for benthic macroinvertebrates due to its unstable nature (U.S. Army Corps of Engineers, 1978).

Demography

3.184 Population characteristics for the four-county assessment area are as follows (U.S. Department of Commerce, 1982a and 1982c):

	Population		Households*	
County	Total	Percent by County	Total	Persons Per Household
Chattahoochee	21,732	8.5	3,012	3.71
Harris	15,464	6.1	5,236	2.92
Muscogee	170,108	66.8	59,112	2.76
Russell	47,356	18.6	16,252	2.89
Total	254,660	100	83,612	3.05

*These household statistics do not include group quarters (e.g., barracks).

3.185 The 1980 population for the four-county area was 254,660. This represents less than a 2 percent increase over the 1970 population of 250,114. The four-county area has a projected 1990 population of about 278,000, an increase of 9 percent over 1980 (Georgia Office of Planning and Budget, 1983; Columbus Department of Community Development, 1983).

3.186 Of the four counties, Harris County, Georgia has exhibited the greatest population growth rate, 34.2 percent between 1970 and 1980. During this same period, the SMSA area containing the remaining three counties, experienced less than a 0.3 percent increase in population. Chattahoochee County population decreased almost 16 percent while Muscogee County and Russell County had population increases of less than 2 and 5 percent, respectively. In 1980 less than 6 percent of the total population was urban in Harris County while over 60 percent was urban in both Chattahoochee and Russell Counties and almost 99 percent was urban in Muscogee County (Lower Chattahoochee Area Planning and Development Commission, 1983).

3.187 The 52,100 military personnel and dependents associated with Fort Benning comprise over 20 percent of the population of the area. Approximately 22,400 of these people (43 percent) live off-post and 29,700 live on-post (57 percent). In addition, there are almost 30,300 retired military personnel and dependents living in the area. Fort Benning also employs almost 7,800 civilians. Thus, the total population served, 90,200, comprises over 35 percent of the population of the four-county area.

Land Use

3.188 Fort Benning contains approximately 181,400 acres, and occupies nearly 74 percent of Chattahoochee County, over 35 percent of Muscogee county, and nearly 3 percent of Russell County (Myers, 1984; Lower Chattahoochee Area Planning and Development Commission, 1976 and 1977). The eastern boundary of Fort Benning abuts Marion County, Georgia, a rural county that is almost 99 percent agricultural and forest land (Middle Flint Area Planning and Development Commission, 1978). The northwestern boundary of Fort Benning is contiguous with the City of Columbus. There are areas of residential development on the northwestern and southeastern boundaries of Fort Benning and a small commercial area to the northwest. Woodlands primarily surround the rest of the perimeter of the Fort Benning Reservation, except for agricultural lands to the north (Robert and Company, 1982a).

3.189 Of the four counties in the assessment area, three are essentially urban counties comprising the Columbus, Georgia SMSA while the fourth, Harris County, Georgia is classified as rural to urbanizing (Lower Chattahoochee Area Planning and Development Commission, 1977). The most recent land use data for these counties are from 1976 (Lower Chattahoochee Area Planning and Development Commission, 1976, 1977, 1981, 1983, and undated; Columbus Department of Community Development, 1977). The data indicate that the four counties contain a total of 1.0 million acres, of which 55 percent

is commercial forest land, 15 percent is agricultural and idle land, 11 percent is commercial/residential/developed land, 1 percent is water, and the remaining 18 percent is occupied by Fort Benning. All of the counties, except Chattahoochee County, grew in population during the 1970 to 1980 period. Future growth is expected to occur primarily in the Columbus-Phenix City area and in Harris County both around the exits of Interstate 185 and around the Harris-Muscogee County boundary.

Noise

3.190 To the northwest of Fort Benning is the city of Columbus, Georgia and to the west is the city of Phenix City, Alabama with scattered commercial and industrial activities intermixed. The background noise levels for these communities is normal for urban areas. Sources include railroads, airfields, highways, industrial and commercial activities. Typically, dense urban areas with heavy traffic have noise levels of 65 to 75 dB while suburban and low density urban areas have noise levels of 50 to 60 dB. The areas to the east, south, and west of the installation are predominantly rural with isolated residential dwellings, small cities or unincorporated areas. Such areas typically have noise levels of 40 to 50 dB.

3.191 An area of potential noise conflict with Fort Benning range activities has been identified as extending off-post near the northeast boundary of Fort Benning (see Fort Benning Noise Section). However, there are currently no noise sensitive land uses in that area. No noise complaints have been received by Fort Benning from off-post residents during 1983 and 1984 (Divinyi, 1984).

Regional Economic Activity

3.192 The four-county assessment area's economic base has long been supported predominantly by two major sectors, manufacturing and activities related to Fort Benning, with Fort Benning being the single largest employer in the area. These two sectors together account for almost 48 percent of the total (civilian plus military) employment in the area. Major industries include textiles, food products, primary and fabricated metals, and machinery (Columbus Department of Community Development, 1983). For 1983, total civilian employment was 87,200 in the four county area and military employment was about 25,000, for a total of 112,200 employed persons. Over 29 percent of those employed worked at Fort Benning (Morris, 1984; Harris, 1984; Howell, 1984).

3.193 The region that is considered to be most likely to be economically affected by the proposed stationing alternatives in

which Fort Benning may be involved has been defined as consisting of the following 11 counties:

- o Alabama - Barbour, Lee, Macon, and Russell Counties
- o Georgia - Chattahoochee, Harris, Marion, Muscogee, Stewart, Talbot, and Webster Counties

These counties have been selected based on adjacency to the installation, contiguity of the area, a 50-mile driving radius, and land use and settlement patterns. According to the 1980 Census (U.S. Department of Commerce, 1982a and 1982c), this 11 county region has a population of approximately 402,600. The region may be characterized as generally rural in nature, except for the Columbus SMSA.

3.194 For purposes of analysis, the baseline economic activity in the eleven-county area is indicated in terms of employment, personal income, and business volume. Total business volume indicates the overall economic condition of the region. For 1984, business volume (in 1984 dollars) is estimated to be about $3.9 billion for the eleven county region, based on the Economic Impact Forecast System (EIFS) of the U.S. Army Corps of Engineers, Construction Engineering Research Laboratory.

3.195 Employment and personal income are less aggregated measures of the region's economy. The former indicates a region's activity in the production of new goods and services. In 1983, over 146,200 people were employed in the region (Harris, 1984; Morris, 1984). Personal income is a measure of the well-being of the population. Total personal income for the region in 1981 (in 1981 dollars) is estimated to be $3.0 billion (Harris, 1984; Morris, 1984; U.S. Department of Commerce, 1982a and 1982c.) Per capital personal income in 1981 is estimated at $7,420.

3.196 Fort Benning's contribution to the region's economy is considerable. More than $384 million were disbursed to the local area by Fort Benning in its direct mission and support activities during FY 1983. Based on a multiplier of 2.5, the Fort Benning Directorate of Resources Management estimates that these disbursements had about a $960 million impact on the economy of the local area. The FY 1983 disbursements were as follows (Howell, 1984):

Military Payroll	$245,200,000
Civilian Payroll	$ 95,400,000
Commercial and Miscellaneous	$ 43,700,000
Total	$384,300,000

Air Quality

3.197 Air quality in the Columbus SMSA is generally good. While the area is technically designated as nonattainment for ozone because of its population size, actual monitoring data show that the area is in attainment status for all the criteria air pollutants (U.S. Army Environmental Hygiene Agency, 1983; Kemerick, 1984). Four pollutants are currently being monitored: total suspended particulates (TSP), sulfur dioxide, lead, and ozone. Air quality concentrations for these pollutants for 1983 are shown in Table 3-1 and are all within applicable standards.

3.198 For the period from 1936 to 1965, atmospheric stagnation episodes in the area occurred an average of 12 days per year. During this period, seven episodes lasted 7 days or longer (U.S. Army Corps of Engineers, 1978).

Water Supply

3.199 The four-county assessment area contains a number of separate public water systems as well as several private systems serving specific local residential communities. Columbus, Phenix City, and portions of Harris County utilize the Chattahoochee River as a water source while most other localities utilize ground water supplies. In general, ground water quality is good to excellent throughout the area (Lower Chattahoochee Area Planning and Development Commission, 1981 and 1983). There are no sole source aquifers in the area. Available data on water treatment capacities and water consumption are summarized in Table 3-2.

Wastewater Disposal

3.200 The Columbus wastewater treatment plant has a normal capacity of 30 million gallons per day (mgd) and an average flow of 27 mgd. An expansion of the wastewater treatment plant to 42 mgd is currently being designed. The existing plant's peak flow rate capacity is 37.5 mgd and the peak rate flow is 34 mgd. Approximately 85 percent of the population is currently served by the sewage collection system (Tant, 1984; Columbus Chamber of Commerce, 1984).

3.201 Phenix City has a wastewater treatment plant with a capacity of 5 mgd and an average daily flow of about 3 mgd. The peak flow rate can range up to 10 mgd and is caused by rainfall, not sanitary sewage. Such peak flows are handled by controlled bypass, as approved by the U.S. Environmental Protection Agency. The wastewater treatment plant is currently being studied for possible expansion (Gaylor, 1984).

TABLE 3-1

1983 AIR QUALITY CONCENTRATIONS,
COLUMBUS, GEORGIA

Pollutant	Standard (ug/m^3)	Highest Concentration (ug/m^3)
TSP	150[a]	87
Sulfur Dioxide	1300[b]	122
Lead	1.5[c]	0.39
Ozone	235[d]	275[e]

[a]Secondary standard - maximum 24-hour concentration.

[b]Secondary standard - maximum 3-hour concentration.

[c]Primary and secondary standard - maximum arithmetic mean over calendar quarter.

[d]Primary and secondary standard - maximum hourly average concentration not to be exceeded more than one day per year.

[e]Standard exceeded only one day in 1983; not exceeded in 1981 or 1982; therefore in attainment.

Source: Kemerick, 1984.

TABLE 3-2

COLUMBUS, GEORGIA REGION WATER SUPPLY

Location	Water Treatment Capacity (gpd)	Average Consumption (gpd)	Peak Consumption (gpd)	Water Source
Columbus (Muscogee County)	54,000,000[a]	29,000,000	48,000,000	Chattahoochee River (Lake Oliver)
Cusseta (Chattahoochee County)	140,000	21,500	25,000	2 deep wells
Harris County	1,000,000[b]	250,000-300,000	Not Available	Chattahoochee River
Pine Mountain (Harris County)	230,000	120,000	Not Available	Ground water
Phenix City (Russell County)	17,000,000	5,000,000[c]	7,500,000[c]	Chattahoochee River

[a]The water treatment system has an expansion capacity to 90,000,000 gpd.

[b]This system is expected to be on-line throughout the county about May 1984. It will serve about two-thirds of the county. The two deep wells currently used will be closed down, but kept as backup supplies.

[c]About 80 percent of the water is supplied to Phenix City, the remainder is supplied to portions of Russell and Lee Counties, Alabama.

Source: Tant, 1984; Gaylor, 1984; Ellis, 1984; Lower Chattahoochee Area Planning and Development Commission, 1983.

3.202 The jurisdiction of Pine Mountain in northern Harris County has a water treatment plant with a capacity of 0.2 mgd and an average flow of 0.1 mgd. Most other portions of the four-county assessment area are not served by sewage collection systems and residents rely on septic tanks (Ellis, 1984; Lower Chattahoochee Area Planning and Development Commission, 1983).

Solid Waste Disposal

3.203 The Columbus landfill, located in the eastern portion of Columbus, serves all of Muscogee County. The Phenix City landfill, located 6 miles southwest of the city, serves all of Russell County. The Harris County landfill, located 3 miles east of Hamilton, serves all of Harris County. Baseline characteristics of these landfills are as follows (Alexander, 1984; Ellis, 1984; Gaylor, 1984; LaGross, 1984; Rogiers, 1984):

Landfill	Projected Annual Waste Quantity	Projected Life Remaining (Years)
Columbus	233,000 tons	5
Phenix City	128,000 cubic yards	20
Harris County	12,000 tons	over 10

3.204 Chattahoochee County uses the Fort Benning landfill for solid waste disposal. (See Fort Benning Solid and Hazardous Waste Disposal for a discussion of the landfill.)

Housing

3.205 Harris County, Georgia with a population increase during the last decade of almost 35 percent, experienced a 45 percent increase in housing units over the same period. Russell County, Alabama and Muscogee County, Georgia, experienced population increases respectively of 4.3 percent and 1.6 percent; the two counties had gains in housing units over the same period of 26.3 percent and 12.6 percent respectively. Chattahoochee County showed a population decrease during the last decade of 15.8 percent, while registering a gain of 50.5 percent in total housing units. This seeming incongruity results from additional housing for personnel assigned to the Fort Benning military installation which is located partially in Chattahoochee County. The new housing is primarily replacement of existing infrastructure, not necessarily surplus housing (Lower Chattahoochee Area Development Planning Commission, 1983).

3.206 The Columbus Housing Market Area (HMA) is defined by the U.S. Department of Housing and Urban Development as Muscogee and Chattahoochee Counties, Georgia and Russell County, Alabama. As of July 1, 1982, the HMA had 85,750 total housing units, an increase of 880 total units since 1980. Of these, 81,000 were occupied, an increase of 2,630 occupied units since 1980. About 56 percent are owner-occupied and 44 percent are renter-occupied. About 4,750 units are vacant. Of these, 1,800 units are considered not to be available for occupancy (e.g., dilapidated, rented or sold and awaiting occupancy, vacant seasonal units, units held off the market, and units held for migratory workers). The 2,950 vacant units available for occupancy included 690 that are for sale and 2,260 that are for rent (U.S. Department of Housing and Urban Development, 1982). Therefore, in 1982 the three counties combined had a minimum housing surplus of 2,950 units. Since 1977, housing increases in Columbus have exceeded projections and are expected to continue to do so (Mills, 1984). For example, between 1980 and February 1984, the city of Columbus, Georgia alone issued a total of 3,021 residential building permits, including 1,393 for single-family homes, 1,493 for apartment units, and 135 for condominiums. Of this increase, 45 percent occurred in 1983. In addition, there are currently a number of platted subdivisions with available utility hook-ups, for which no building permits have yet been issued (Gant, 1984).

3.207 The 1980 Census reports Harris County, Georgia as having 6,053 total housing units, 4,137 of which are owner-occupied and 1,099 of which are renter-occupied (U.S. Department of Commerce, 1982c). Housing units not on the market totaled 817. The rental vacancy rate in Harris County in 1980 was 10.9 percent, which represents 130 vacant rental units in the county. Vacancy rates for owner-occupied units are not available for Harris County.

Schools

3.208 The four-county assessment area is served by the following five school districts (Andrews, 1984; Garrett, 1984; Pope, 1984; McGuire, 1984; and Stecklenburg, 1984):

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School District	Enrollment	Percent of Total	Total Capacity Available	Excess Capacity	Military Dependents
Muscogee County	29,519		73	37,800	8,281 2,643 (9%)
Russell County	3,600	9	3,950	350	112 (3%)
Phenix City	4,375	11	5,000	625	88 (2%)
Chattahoochee County	305	1	340	35	12 (4%)
Harris County	2,448	6	2,890	442	0 (0%)
Total	40,247	100	49,980	9,733	2,855 (7%)

3.209 These school systems serve a combined total of over 40,000 students. Approximately 7 percent of the total school enrollment consists of Fort Benning military dependents. Total excess capacity for schools currently operating in the four-county assessment area is about 9,730 student spaces. All the school districts in the four-county assessment region have experienced declines in school enrollment during the past several years. Several area schools have been forced to close or consolidate as a result of declining school age population (Garrett, 1984).

Health Care

3.210 The Civilian Health and Medical Program for Uniformed Services (CHAMPUS) provides for use of community health facilities within a 40-mile radius of the installation, with special allowances made for hardship and emergency cases and the needs of individual installations as determined by location and specific medical needs. The attitude of local physicians towards the CHAMPUS program is good (Thornton, 1984).

3.211 Presently, CHAMPUS referrals from Fort Benning's Martin Army Community Hospital (see Fort Benning Health Care) are being handled by St. Francis Hospital, Doctor's Hospital, and the Medical Center in Columbus, Georgia and Cobb Memorial Hospital in Phenix

REVISED 1984

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3.211 Presently, CHAMPUS referrals from Fort Benning's Martin Army Community Hospital (see Fort Benning Health Care) are being handled by St. Francis Hospital, Doctor's Hospital, and the Medical Center in Columbus, Georgia and Cobb Memorial Hospital in Phenix

City, Alabama. These are general medical and surgical facilities with capacities and utilization rates as follows (Health Systems Agency of Central Georgia, 1984; Thornton, 1984):

Hospital	Number of Licensed Beds	Number of Beds Currently Available	Current Occupancy Rate (Percent)
Medical Center	417	417	70
St. Francis	292	265	80
Doctors	252	250	56
Cobb Memorial	290	239	80
Total	1,251	1,171	71 (average)

Within a 40 to 50 mile radius of Fort Benning, there are 12 additional hospitals which could be utilized if the need arose to expand the present CHAMPUS referral area. However, there are no hospitals within Harris or Chattahoochee Counties, Georgia. Cobb Memorial Hospital in Phenix City is the only hospital within Russell County, Georgia.

Cultural Resources

3.212 See on-post cultural resources description.

Fort Benning, Georgia

3.213 Fort Benning is located in the west-central portion of Georgia (see Figure 3-4). The installation is contiguous to the City of Columbus, Georgia, occupying areas in Muscogee and Chattahoochee Counties, Georgia, and extending into Russell County, Alabama. The Chattahoochee River borders and passes through the installation on the west and serves as the state boundary between Georgia and Alabama. The Main Post area of Fort Benning lies approximately eight miles south of the central business district of Columbus.

3.214 Fort Benning contains approximately 181,400 acres (Figure 3-5). Garrison cantonments and family housing areas encompass approximately 7 percent of the entire reservation. The Main Post is the nucleus of activities at Fort Benning although the satellite cantonment areas located at Kelley Hill, Sand Hill and Harmony Church also provide support for mission accomplishment.

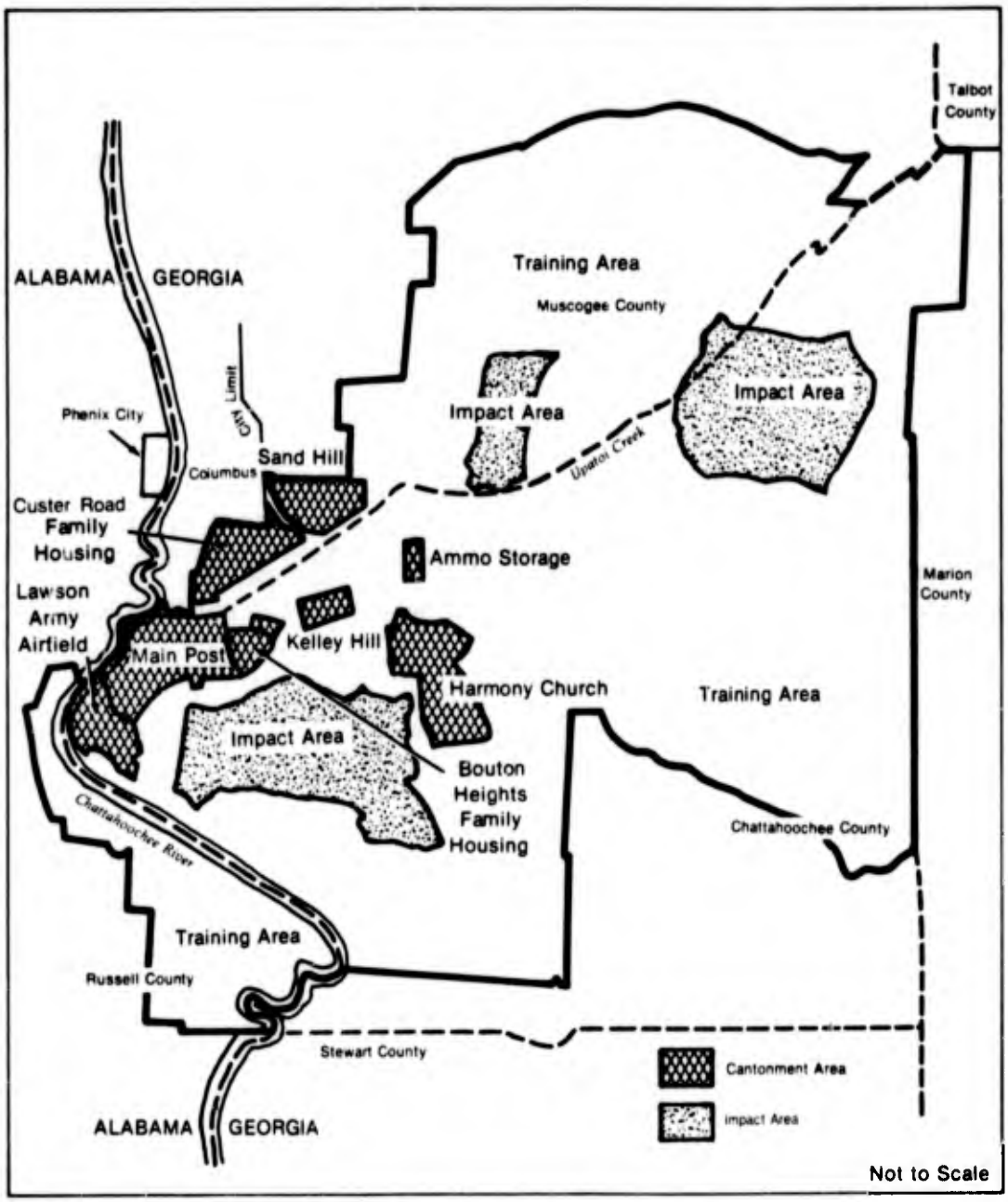


FIGURE 3—5
FORT BENNING, GEORGIA

3.215 Fort Benning, the United States Army Infantry Center (USAIC), is a U.S. Army Training and Doctrine Command (TRADOC) installation with two primary missions. The first mission is the preparation and training of combat infantry troops. The second mission, accomplished through the United States Army Infantry School, is the training of combat leaders, both commissioned and noncommissioned officers of all ranks. These missions specifically include the maintenance of a high state of combat readiness for assigned U.S. Forces Command (FORSCOM) units; preparation of troops for combined arms operations in mechanized infantry, light infantry, ranger, and airborne units; and development of infantry doctrinal concepts, as well as organizational and materiel needs. Fort Benning is also responsible for the training of Reserve Component forces.

3.216 Training activities include academic training and practical field training exercises. Academic training is essentially classroom instruction which is conducted by the Infantry School in conjunction with the practical training, including infantry doctrine and philosophy, leadership training, and weapon systems training. Field training activities include: weapons qualifications training conducted at ranges designed for specific weapons; infantry, armor, and artillery maneuver exercises conducted in specified maneuver areas; and engineering, aviation, and other support training exercises.

3.217 Infantry activities occur throughout the training area and include movement of personnel through wooded areas on foot, movement of wheeled vehicles on dirt and gravel roads, and establishment of bivouac sites. Activities conducted by the mechanized infantry and tank units at Fort Benning are limited by the amount of suitable terrain. These activities include road marches (driving tracked vehicles on tank trails throughout the post), cross country training (driving tracked vehicles within developed maneuver areas), and fording streams.

3.218 The engineer units carry out infantry activities and support the infantry and mechanized units as necessary. Major support activities include construction and demolition of obstacles, assisting in river crossing operations, and supporting day-to-day operations and maintenance of the installation.

3.219 Artillery and mortar firing occurs from established firing points around post and are directed toward one of the three central impact areas. Other weapons firing conducted at ranges include miscellaneous rifles, pistols, and automatic weapons, as well as special training devices which electronically simulate firing at targets.

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AUG 1984

3.220 Other activities related to military training include training in operation and field maintenance of vehicles, academic military training, and physical training. Various supporting units such as transport units and signal units also participate in training activities.

Geology, Minerals, and Soils

3.221 Fort Benning is located in the Coastal Plain physiographic province, near the boundary of the Piedmont Plateau province. The predominant geological deposits of the area are layered, unconsolidated, poorly to well-compacted mixtures of clay, silt, sand, and gravel. These materials are divided into seven different geological formations which rest on consolidated crystalline rock (U.S. Army, Engineer Topographic Laboratories, 1976). Numercus sand and gravel pits have been developed or identified in many of the formations, together with several areas having quarry potential for sandstone. The sand and gravel excavated so far has been used for fill, surfacing, and road construction and maintenance.

3.222 The soils of the military installation have been divided into three major categories that include eight separate soil units. The major categories are soils of the Coastal Plain upland, soils of alluvial floodplains and terraces, and steep soils on rough, gullied land where much of the original soil has eroded away. The Coastal Plain soils cover approximately 80 percent of Fort Benning and include deep, poorly graded sandy soils (in places on a clay subsoil) and some highly plastic clay soils. The soils of the alluvial floodplain generally have severe limitations for various activities, primarily due to flooding and wetness. Approximately 5 percent of the reservation has steeply sloping soils which also place severe limitations on their use (U.S. Army, Engineer Topographic Laboratories, 1976).

3.223 In the very deep sands, the potential for erosion is high. In portions of many of the training areas, erosion has become a problem. Natural reseeding is the most common method of control, but where necessary, check dams, water bars, seedings, etc. are implemented to control the erosion. Land utilization is rotated to reduce wear on vegetation, thus reducing the potential for erosion. Activities that potentially contribute to erosion include timber harvesting, tracked and wheeled vehicle movements on trails and cross-country, constant foot traffic, and construction projects. Mitigation methods are implemented to fit the specific problem to reduce or eliminate erosion, as necessary (Fort Benning Directorate of Engineering and Housing, 1983 and 1984).

3.220 Other activities related to military training include training in operation and field maintenance of vehicles, academic military training, and physical training. Various supporting units such as transport units and signal units also participate in training activities.

3.220a Fort Benning implements an extensive environmental management program, which includes such activities as annual preparation of Ongoing Mission and Siting Activities Environmental Impact Statements; an Environmental Control Committee; Waste POL (petroleum, oils and lubricants) Management; and the Installation Historic Preservation Commmittee. The Environmental Management Office uses a comprehensive computer system for program performance and long-range planning. Fort Benning has been named one of three Army finalists for the Environmental Quality Award.

Geology, Minerals, and Soils

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3.224 The U.S. Soil Conservation Service (SCS) has prepared maps and a summary table which estimates prime and unique farmland for each soil association existing on Fort Benning. An estimated 21,000 acres could be identified as prime farmland (Fort Benning Directorate of Engineering and Housing, 1983).

Biological Environment

3.225 The following discussion of the biological environment is based on Fort Benning Directorate of Engineering and Housing (1983) and U.S. Army Corps of Engineers (1978), except where noted.

3.226 Terrestrial Ecosystems. Fort Benning is included within the broad, oak-hickory-pine forest area of the southeastern United States. However, as a result of changes in agricultural and forestry practices and of land ownership through the past 150 years, the original vegetative cover has been modified to a predominantly coniferous or coniferous/deciduous mixture.

3.227 Vegetated acreage on Fort Benning consists of approximately 12,000 acres of lawn and grassed areas, 40,000 acres of open land and old field, and approximately 130,000 acres of woodland. Loblolly and longleaf pine are the principal conifers on the reservation and comprise approximately 34,000 acres of the woodlands. The remaining 96,000 acres of woodland are comprised of approximately 42,000 acres of mixed pine and hardwoods, and 54,000 acres of hardwood forest.

3.228 Four basic ecosystems make up the hardwood areas. The scrub oak ridge type and oak-hickory type are characterized by the oaks (red, white, and black), blackgum, dogwood, hawthorne, and numerous herbaceous plants. These two types produce mast and seed for deer, turkey, quail, and squirrel. The bottomland hardwood type is found along stream borders and flood plains. The principal species found there are sweetgum, blackgum, water oak, laurel oak, swamp chestnut oak, American holly, and loblolly pine. This type provides an excellent escape cover for game. In addition, large quantities of browse, seeds and mast are produced here. In the wooded swamp type, the predominant species are tupelo gum, blackgum, and sweetleaf as well as grasses, sedges and rushes; water lilies grow in some of the shallow ponds. Vines such as Similax also occur here and are good browse plants for deer. Kudzu, which was introduced as a means of erosion control several years ago, abounds on the installation.

3.229 Many species of animals are hunted on Fort Benning, the primary ones being deer, quail, dove, rabbit, and squirrel. In

addition, wild turkey populations are present. In 1983, approximately 3,000 individuals were issued permits for deer hunting on installation properties (Dunn, 1984).

3.230 Aquatic Ecosystems. Freshwater ecosystems on Fort Benning include the Chattahoochee River, Upatoi Creek, their tributaries, 18 man-made and natural ponds, marshes and swamps. All of the free flowing streams and ponds are fishable. Ten of the ponds are classified as intensive management waters and are fertilized and limed as needed to ensure proper growth of fish food items. Stocked and native fish populations of Fort Benning include catfish, bass, bream, crappie, blue-gill, pickerel, and an assortment of non-game fish. Individuals of many of the 89 species of fish reported from the Chattahoochee River drainage would be expected in the waters of Fort Benning. The predominantly sand substratum of the streams draining Fort Benning would be expected to provide only marginal habitat for benthic macroinvertebrates due to its unstable nature. As with hunting, fishing is a popular outdoor sport which is permitted in the ponds and streams on Fort Benning.

3.231 Threatened and Endangered Species. The only endangered species common to Fort Benning and managed on the installation is the Red-cockaded woodpecker (Picoides borealis). The red-cockaded woodpecker species usually nests in overmature longleaf, slash, loblolly, or shortleaf pine infected with red heart disease. The age of cavity (nest) trees ranges from 35-167 years. The bird is gregarious and builds its nests in colonies. Over 150 colonies of red-cockaded woodpeckers have been identified on Fort Benning. An on-going inventory of the installation to map the bird's locations for management purposes indicates that there are more than 500 known red-cockaded woodpecker den trees on the installation.

3.232 The American alligator (Alligator mississippiensis) has been sighted on Fort Benning several times in recent years at Lake W.F. George. It has not been determined whether alligators now inhabit Fort Benning or are just transient to the area (Divinyi, 1984).

On-Post Population

3.233 The population of Fort Benning fluctuates on a month-to-month basis. Table 3-3 presents the population associated with Fort Benning.

3.234 As of March 31, 1984, the Fort Benning military strength is almost 25,700 active duty personnel. Another 6,200 military personnel are located away from Fort Benning (e.g., at satellite units). In addition, the installation employs almost 7,800

TABLE 3-3

POPULATION ASSOCIATED WITH FORT BENNING

Population	March 31, 1984	FY 1984[a]	FY 1983[b]
Military Population			
Military[c]	25,659	24,558	25,043
Retired Military	9,635	9,770	9,406
Civilian Employees			
Dept. of Army Civilians	4,813	4,778	4,687
Miscellaneous Civilians Employed On-Post	2,956	3,041	3,347
Dependents			
On-Post (military)[d]	10,786	10,767	10,733
On-Post (civilian)	21	22	25
Off-Post (military)	15,681	15,203	14,998
Off-Post (retired military)	20,691	20,960	19,978
Total Population Served[e]	90,215	89,098	89,217
Effective Population On-Post[f]	34,600	33,500	34,100

[a]Average population for FY 1984 through March 31, 1984.

[b]Average population for FY 1983.

[c]Includes active military, allied students and officers, and average daily student and trainee load, visitors, and on-post reserve component training. Does not include satellite units and reserve component inactive duty training.

[d]Includes dependents of active military, allied liaison, and other service liaison personnel.

[e]Total of all population listed, including civilians.

[f]See text.

Source: Howell, 1984.

civilians. The military personnel have almost 26,500 dependents, for a total military family population of almost 52,100 in the four-county assessment area. Approximately 29,700 of these people (57 percent) live on-post and 22,400 (43 percent) live off-post.

3.235 The effective population of Fort Benning is defined as the number of military, dependents, and civilians living on-post (resident population) plus one-third of the number of military and civilians who work an eight-hour shift on-post but live off-post (non-resident population) (Harland Bartholomew and Associates, Inc., 1983). The effective population is determined for purposes of assessing the adequacy of utility systems (e.g., water treatment) at Fort Benning. As of March 31, 1984 the effective population is almost 34,600 persons. The average effective population for all of FY 1984 to date is 33,500 persons.

Land Use

3.236 Fort Benning contains approximately 181,400 acres (see Figure 3-5). The rolling terrain that makes up the majority of the reservation is gentlest in the Main Post area and becomes progressively rugged toward the east and northeast as typified in the Sand Hill and Harmony Church areas. Further east and north, the terrain becomes increasingly difficult to traverse and is used solely for ranges and maneuver areas.

3.237 Cantonment and family housing areas encompass almost 12,000 acres, nearly 7 percent of the installation. Of this, the Main Post occupies 3,000 acres and is the largest and most diversely developed area, containing nearly every type of land use found anywhere else on the installation. Kelley Hill is a 500 acre brigade-size permanent cantonment area. Sand Hill occupies 1,500 acres and is being redeveloped as a permanent cantonment area to support Advanced Infantry Training (AIT)/One Station Unit Training (OSUT). Harmony Church, located seven miles east of the Main Post, consists of World War II mobilization structures and two areas of temporary facilities built around 1967. Harmony Church occupies 3,000 acres and is used primarily for training and for the storage and maintenance of tactical equipment for field maneuvers. It also contains the site of the new solid waste landfill for Fort Benning (see Solid and Hazardous Waste Disposal). Lawson Army Airfield occupies 1,500 acres and is one of the U.S. Army's largest airfields. It contains two principal runways. The Custer Road and Bouton Heights family housing areas occupy a total of 2,200 acres (Robert and Company, 1982a).

3.238 Range and training areas occupy about 170,000 acres of Fort Benning (see Figure 3-5). Of this, over 128,000 acres are maneuver areas and almost 42,000 acres are impact areas. The maneuver areas currently contain 33 dedicated training areas, 50 artillery firing points, and 5 river crossings. Training is currently conducted on a peace time level of 242 days per year. On the average, 109,900 acres per day are currently required for this training. Thus, an average of 86 percent of the maneuver area is utilized for daily training, based on a training level of 242 days per year. (Based on a moderate escalation to 330 days per year, the average utilization of the maneuver area would decrease to about 63 percent). The 42,000 acres of impact areas include 3 major impact areas, 2 very small dud areas, and 79 active firing ranges. These impact areas are not available for maneuvers (Caldwell, 1984).

3.239 When not used for training, the maneuver areas are used for activities such as controlled burning in the forest areas, timber harvesting, hunting, and fishing. These areas are currently available about 120 days per year (primarily weekends and holidays), plus an average of about 14 percent of the training period.

Noise

3.240 With respect to both types and levels, noise around the Fort Benning cantonment areas is somewhat characteristic of noise generated in the local civilian communities. Daytime noise comes from frequent aircraft overflights, passenger car operations, light and heavy duty truck operations, heavy construction equipment and light industrial operations. There are, however, many noise sources which differ from those found in a civilian community. These noise sources include low flying tactical aircraft, small arms and artillery fire, as well as tanks and other mechanized vehicles.

3.241 A comprehensive survey of major noise sources on Fort Benning, including both industrial and mission-related sources, was conducted in the summer of 1977 by the U.S. Army Corps of Engineers, Construction Engineering Research Laboratory (CERL). Appendix C presents the noise contour maps developed by CERL. Aircraft operations, artillery and armor operations (impulse noise), and vehicular traffic were found to be the three major sources of noise. The approximate day-night average sound level (L_{dn}) on the installation itself was estimated to be 75 dB or less in all areas, except for small portions of a few training and impact areas. The nearest inhabited area off the installation was estimated to encounter an L_{dn} value of 65 dB or less. The on-post noise level is considered moderately high, while no problems normally result from L_{dn} values below 65 dB (U.S. Army Corps of Engineers, 1978; Fort Benning Directorate of Engineering and Housing, 1983).

3.242 In 1982 Installation Compatible Use Noise Zone (ICUZ) contours were developed for Fort Benning by the U.S. Army Environmental Hygiene Agency. The ICUZ contours are planning tools used to identify zones where noise levels from certain noise genrating activities on-post may potentially be in conflict with noise sensitive land uses (e.g., residences, hospitals) both on and off the installation, providing any such land uses are actually present. ICUZ contours were developed for three activities: the Lawson Army Airfield, the large caliber weapons ranges, and the infantry fighting vehicle (IFV) ranges. Appendix C presents the ICUZ contours. The only zone of potential noise conflict identified as extending off-post is located near the northeast boundary of Fort Benning. However, no noise sensitive land uses are currently present within that zone. In addition, the study noted that an increase in flight operations from Lawson Army Airfield could result in a zone of potential noise conflict being expanded off-post near the southwest boundary of Fort Benning (U.S. Army Environmental Hygiene Agency, 1982).

3.243 No noise complaints have been received by Fort Benning during 1983 and 1984 (Divinyi, 1984).

Air Quality

3.244 An inventory of stationary sources identified over 5,000 separate sources at Fort Benning, of which 80 require permits by the State of Georgia. The sources requiring permits include 13 boilers, 2 pathological waste incinerators, 1 rock crusher, and 64 fuel storage tanks. All of these sources have been issued permits to operate and are within applicable emission standards (U.S. Army Environmental Hygiene Agency, 1983a; Fort Benning Directorate of Engineering and Housing, 1983 and 1984).

3.245 Major non-stationary emission sources at Fort Benning include vehicular traffic and aircraft operations. Another non-stationary source is the smoke generated from grenades, mortars, smoke pots, etc., that soldiers in-training utilize to conduct their missions. On any given day, varying amounts and types of training smokes are utilized, but their use is strictly controlled to prevent exposure of the civilian community. Controlled forest burning on Fort Benning also results in air pollutant emissions, although on a temporary basis (Fort Benning Directorate of Engineering and Housing, 1983). Painting operations also have the potential to release volatile organic compounds (U.S. Army Environmental Hygiene Agency, 1983a).

3.246 The most recent air pollutant emission estimates for Fort Benning are from 1976 (Table 3-4). For purposes of comparison, Table 3-5 presents data on fuel consumption at Fort Benning in 1976 and 1983. Except for JP-4, the total Btu's of fuel consumed in 1983 were about 2 percent lower than in 1976 (2,150 million Btu in 1983 versus 2,550 million Btu in 1976). Thus, while there are differences in the mix and characteristics of emissions sources in 1983 and 1976, it is likely that 1983 air pollutant emissions from stationary sources and ground vehicle emissions are of the same order of magnitude as the 1976 emission estimates in Table 3-4. The use of JP-4 is about 3 times higher in 1983 than in 1976. Thus, 1983 aircraft emissions are likely to be on the order of 3 times the values shown in Table 3-4. Except for particulates, emissions from aircraft operations are small compared to those from stationary sources and ground vehicles. In addition, painting operations are estimated to release about 7 tons/year of volatile organic compounds in 1983 (U.S. Army Environmental Hygiene Agency, 1983a).

Water Supply

3.247 Upatoi Creek, a tributary to the Chattahoochee River, is the major raw water source for Fort Benning. Upatoi Creek has an estimated seven-day, ten year low flow of 72 mgd and a mean daily flow of 339 mgd (Robert and Company, 1982a). The only other sources of water supply on Fort Benning are four wells located at outlying training and recreation areas. These wells have a rated supply capacity of approximately 10 to 15 gallons per minute. Storage capacity at the Camp Darby well is 10,000 gallons while the other three wells have no storage capacity except for small pressure tanks (Fort Benning Directorate of Engineering and Housing, 1983).

3.248 Raw water from Upatoi Creek is treated at the post treatment plant, which has a treatment capacity of 18 mgd. For the one-year period March 1983 through February 1984, average daily water demand was 7.3 mgd (data from plant records), which is the same as the average daily demand for the six-year period July 1976 through September 1982 (Harland Bartholomew and Associates, Inc., 1983). The peak daily demand during the one-year period was 13.0 mgd in August 1983.

3.249 The water distribution system consists of a network of mains, ranging in size from three inches up to 20 inches in diameter, which supply water to Main Post, Kelley Hill, all family housing areas, Sand Hill, and Harmony Church. A recent study has indicated that while the distribution system can support an effective population several times the current effective population, water pressures in several areas, including Harmony Church, were below the 1,000 gallons per minute at 10 psi required for firefighting (Harland Bartholomew and Associates, Inc., 1983).

TABLE 3-4

1976 AIR POLLUTANT EMISSIONS FROM FUEL COMBUSTION,
FORT BENNING (Tons/Year)

Pollutant	Stationary Source Emissions	Ground Vehicle Emissions[a]	Aircraft Emissions
Particulates	70	20	30
SO_x	540	50	9
CO	50	1,740	170
HC	20	180	8
NO_x	340	520	7

[a]Emissions from military vehicles on training exercises plus civilian commuter traffic.

Source: U.S. Army Corps of Engineers, 1978.

TABLE 3-5

FUEL CONSUMPTION AT FORT BENNING,
1976 and 1983

Fuel	Fiscal Year 1976	1983
Propane (10^3 gal)	990	1,190
Fuel Oil (10^3 gal)	1,280	1,630
Natural Gas (10^6 ft^3)	1,830	1,750
Coal (short tons)	90	3
JP-4 (10^3 gal)	1,230	4,050
Aviation Gas (10^3 gal)	60	60
Gasoline (10^3 gal)	1,760	1,570
Diesel (10^3 gal)	1,080	1,130
Total Energy Consumption (Million Btu)	3,000	2,700

Source: U.S. Army Corps of Engineers, 1978; Sharp, 1984; Cardin, 1984.

3.250 Water storage at Fort Benning consists of nine elevated tanks, one standpipe, and two underground tanks, all supplied from the distribution system connected to the water treatment plant. The total water storage capacity is 6.7 million gallons. In addition, a 0.5 million gallon solar pond is also currently being completed and is expected to be in operation in late 1984. The solar pond will provide hot water for domestic uses and boiler makeup water on the Main Post.

Wastewater Disposal

3.251 The sewage collection system at Fort Benning serves the military reservation exclusively. The overall system is made up of two major systems that collect and route raw sewage to two treatment plants located on the reservation. Most of the sanitary sewers are over 35 years old and experience substantial inflow and infiltration.

3.252 Plant 1 serves Harmony Church, Sand Hill, Kelley Hill, Fort Benning Mall, Martin Army Hospital, Custer Road Family Housing, Bouton Heights Family Housing, and the extreme northeast portion of the Main Post family housing area. This plant has a hydraulic capacity of 4.6 mgd. The average daily flow for Plant 1 during the one-year period from March 1983 through February 1984 was 2.2 mgd and the peak daily flow was 3.4 mgd.

3.253 Plant 2 serves the Main Post and Lawson Army Airfield. This plant has a hydraulic capacity of 3.8 mgd. The average daily flow during the above one-year period was 2.3 mgd and the peak daily flow was 3.6 mgd.

3.254 Sludge collected at the treatment plant is either dried and disposed at the Fort Benning landfill or disposed by surface application to low traffic, non-agricultural areas, using "big wheels" vehicles. The areas used for surface application are rotated and the quantity applied to any one area is small due to the amount of land available at the installation. The sludge was analyzed for eight heavy metals by the U.S. Army Environmental Hygiene Agency in the spring of 1981 and 1982. The analysis was performed using the RCRA hazardous waste Extraction Procedure Toxicity Test (40 CFR 261.24). None of the eight metals analyzed were detected (Fort Benning Directorate of Engineering and Housing, 1983; Schladensky, 1984).

3.255 One-thousand-gallon precast concrete septic tanks are used at range and field training sites on the Malone Range Complex. These are emptied by dispatch truck and taken to the nearest sewage collection system. Earth soak pit latrines are used at existing

older ranges elsewhere down range. The earth soak pit latrines are being phased out and replaced with concrete vault, chemical toilets, and septic tanks.

Solid and Hazardous Waste Disposal

3.256 During FY 1983 Fort Benning generated nearly 590,000 cubic yards of non-compacted refuse (on the order of 100,000 to 120,000 cubic yards of compacted refuse) and disposed it at the sanitary landfill on-post. In addition, Chattahoochee County, which also uses the landfill under a 1977 agreement, disposed about 540 tons of solid waste (approximately 900 compacted cubic yards) at the landfill (Duncan, 1984).

3.257 The present Fort Benning landfill reached its capacity for additional trenches in 1980. Solid waste is currently being area filled over the old trenches. Fort Benning has received a permit from the State of Georgia for a new landfill to be located in the northern tip of Harmony Church area. The landfill is expected to begin operation in FY 1984, at which time the old landfill will be closed. The new landfill has a projected life of about 5.3 years (Roy F. Weston, Inc., 1982; Divinyi, 1984).

3.258 Fort Benning and the City of Columbus are considering a joint solid waste incineration-steam generation facility. If the plant is proposed, an environmental impact statement will be prepared (Fort Benning Directorate of Engineering and Housing, 1984).

3.259 During CY 1983 Fort Benning activities generated 16.3 tons of waste considered hazardous under Subtitle C, Resource Conservation and Recovery Act of 1976. Of this, 12.8 tons (79 percent) consisted of soil contaminated with lead from clean-up of a spill from battery acid neutralization operations. About 16.1 tons of hazardous waste were in storage on-post at the end of 1983. A contract is currently being developed for disposal of all the waste in storage, and all such waste is expected to be disposed off-post in the near future. Once a disposal contract is in place, it is expected that any hazardous waste placed in storage will be removed in less than 90 days (Divinyi, 1984).

3.260 In addition to the RCRA hazardous wastes, Fort Benning also generates waste oil, infectious and pathological wastes, pesticide wastes, and radioactive materials. Fort Benning has an active program to reuse waste oil, and almost 38,000 gallons of used oil were collected and burned at the central heating plant during 1983 (Fort Benning Directorate of Engineering and Housing, 1984; Schladensky, 1984; Willis, 1984).

3.261 Infectious and pathological wastes from Martin Army Hospital and the Veterinary Clinic are burned in a permitted type IV pathological incinerator. Infectious plastic wastes are autoclaved and disposed, along with the residues from the pathological incinerators, in the sanitary landfill. Pesticide containers are triple rinsed and disposed at the sanitary landfill in accordance with pertinent regulations. Radioactive materials are managed under the USAIC Radiation Protection Program (Fort Benning Directorate of Engineering and Housing, 1983 and 1984).

Housing

3.262 For FY 1984 on-post family quarters are provided for 4,149 families. There are currently 4,084 usable military-owned family housing units, with the remaining units being leased properties. The occupancy rate at any time for the on-post family housing is approximately 98 percent, which is considered essentially "full occupancy" due to maintenance requirements (Earhart, 1984). There is currently a waiting list for on-post family housing. At this time there are no plans to construct additional family housing units on-post (Carmody, 1984).

3.263 Off-post housing is available in the assessment area for military personnel and their families not able to reside on-post, as well as for authorized bachelor personnel for which no space is available at the bachelor officer quarters (BOQs) or bachelor enlisted quarters (BEQs).

3.264 For FY 1984 the off-post military related population includes 5,860 family households with 15,700 dependents, for a family component of 21,560 residing off-post. In addition, there are 453 officers and 412 enlisted personnel drawing Bachelor Allowance Quota (BAQ) who are authorized to live off-post because of excess demand for on-post housing (Earhart, 1984). Thus, the total military off-post population is over 22,400.

3.265 Off-post family housing includes about 1,700 owner-occupied households and 4,160 rental units. In 1984, another 1,800 off-post rental units are being utilized by temporary and student personnel. In addition, there are about 870 bachelor military personnel living off-post. Thus, the total number of off-post housing units utilized by military personnel may be as high as 8,500 units, or about 10 percent of the off-post housing units. When on-post family housing units are included, the total number of units utilized by military personnel amounts to about 15 percent of all housing units in the Columbus metropolitan area.

Schools

3.266 Approximately 3,040 students living on the Fort Benning installation, attend schools on-post (Howell, 1984). There are seven permanent elementary schools, providing classrooms for grades K through 8. Fort Benning owns and operates schools under the jurisdiction of Department of the Army and the Department of Health, Education and Welfare. The schools are dispersed around the Main Post close to or in the various family housing areas. All elementary school buildings are in good condition. Other students living on-post include about 125 who attend high schools and private or special education schools off-post.

Health Care

3.267 Martin Army Community Hospital and branch clinics located throughout Fort Benning provide medical services and facilities for Fort Benning military personnel and dependents. Martin Army Community Hospital has a design capacity of 480 beds. There are presently 355 adult beds and 22 bassinets available, of which 225 adult beds and 19 bassinets are currently staffed. The occupancy rate is 75 percent of the staffed beds. The average occupancy is 189 adult beds and 10 to 11 bassinets. An administrative annex to the hospital, planned for 1991, would not add any beds but would allow the current facility to expand to the design capacity of 480 beds if additional staff were provided. There are currently 88 doctors (including 16 civilians) and 39 dentists assigned to Fort Benning (Thornton, 1984).

3.268 There are two troop medical clinics currently located in the Harmony Church area. Each can support approximately 3,000 troops (Thornton, 1984).

3.269 Health services, such as the Civilian Health and Medical Program for Uniformed Services (CHAMPUS), provide diversified services for all military members of the local area. Annually, there are approximately 2,100 CHAMPUS referrals and 4,600 supplemental care referrals to local (Columbus-Phenix City) health services.

Public Safety

3.270 During FY 1983, the military strength at Fort Benning averaged approximately 25,000 personnel. The incidence of founded criminal offenses involving military personnel both on-post and off-post at Fort Benning for FY 1983 is given below (Moore, 1984). For comparative purposes, Army-wide, Continental United States (CONUS) aggregate statistics (combined on- and off-post) of founded

offenses are presented as well (U.S. Corps of Engineers, 1978). All statistics represent numbers of specific crimes per 1,000 military personnel.

	Fort Benning On-Post and Off-Post	CONUS
Crimes of Violence	4.4	5.2
Crimes against Property	57.3	81.5
Drug Offenses (includes marijuana use and possession)	28.0	32.5

3.271 It should be noted that both FORSCOM and TRADOC crime analysts point out that off-post crime statistics are generally understated. This is generally attributable to several factors:

1. On-post reporting is generally assessed as more accurate than off-post reporting because on-post founded offenses can be readily matched with military personnel;

2. Off-post founded offenses are reported to military officials only if the offender is identified as a soldier. Hence with many off-post founded offenses, the offender may not be identified or may not be identified as a military personnel and thus not reported to military officials;

3. The extent of reporting of off-post founded offenses involving military personnel varies by installation in part as a function of the reporting practices of local law enforcement officials and the relationship between post officials and local law enforcement officials.

Traffic and Transportation

3.272 Fort Benning is an open installation accessible by several roads that are controlled to various degrees ranging from roads with closed, locked gates to unmonitored open roads. Due to its proximity to the Columbus and Phenix City areas, primary access to Fort Benning is predominantly from the north. In terms of average daily traffic (ADT), the four most utilized access roads are Fort Benning Boulevard, Lindsay Creek Bypass, Lumpkin Road and Victory Drive (US27/280/Georgia State 1). The first three roads have north-south orientation, while Victory Drive is oriented

northwest-southeast. Of the other access roads at Fort Benning, only two carry significant volumes of traffic. They are Old Cusseta Road in the Sand Hill area and 82nd Airborne Division Road in the Alabama training area.

3.273 Of the four primary access roads, Fort Benning Boulevard receives the most use. Fort Benning Boulevard connects the center of the Main Post with the southern portion of the residential Columbus area. The main gate to Fort Benning is located at the intersection of Fort Benning Boulevard and Lumpkin Road, approximately 2-1/4 mile within the reservation boundary. Fort Benning Boulevard has an ADT of 37,000 south of Lumpkin Road and an ADT of 20,000 north of Lumpkin and Custer Roads. Lumpkin Road, which was previously the main entrance road, has an ADT of approximately 7,800. Lindsey Creek Bypass, which is an extension of I-185 from the north, has an ADT of 16,900. Victory Drive has an ADT of 25,000 west of its intersection with Lindsey Creek Bypass and an ADT of 15,000 east of Lindsey Creek Bypass (Fort Benning Directorate of Engineering and Housing, 1983).

3.274 The access roads to the Main Post are congested during rush hours, as are the roads in the Main Post area. Roads in the Harmony Church area, including Victory Drive and on-post secondary roads, are considerably under capacity at present. With recruits currently moving from Harmony Church to Sand Hill, roads in the Harmony Church area will become even more free flowing (Armstrong, 1984).

Energy Usage

3.275 The total on-post energy usage at Fort Benning for FY 83 was 5.08 trillion Btu, obtained from the following sources:

Coal	100 MBtu
Fuel Oil	228,800 MBtu
Natural Gas	1,814,800 MBtu
Propane	113,000 MBtu
Gasoline	193,900 MBtu
Diesel Fuel	152,100 MBtu
Aviation Fuel	522,300 MBtu
Electricity	2,055,000 MBtu

Based on a FY 1983 effective population of 34,100 troops (see Table 3-3), on-post energy consumption is approximately 149 MBtu per resident per year.

3.276 Of the 2 trillion Btu used for heating and domestic purposes, 89 percent was obtained from natural gas supplied by the Gas Light Company of Columbus, Georgia. Natural gas supplies are plentiful and future construction will continue to use gas. Energy use at Fort Benning has not increased significantly in the last ten years because of the successful implementation of conservation measures. A solar energy unit is being started up at Fort Benning and will provide hot water for domestic use and steam make-up water.

3.277 On-post energy consumption by military vehicles was 870 billion Btu in FY 83. Military vehicles presently located at Fort Benning include 139 heavy tracked vehicles, 554 light tracked vehicles, 1,342 heavy wheeled trucks and 1,187 light wheeled trucks. The total of 3,922 military vehicles also includes 104 buses, 21 tractor trailers and 575 sedans, vans, and pick-ups. Diesel fuel is used by 55 percent of the vehicles. Fifty helicopters are located on-post. Aviation fuel consumption includes 3,647,000 gallons of JP4 used in Air Force planes for Army training exercises.

3.278 Gasoline consumption by private vehicles owned by military personnel is estimated at 23 million gallons (2,900 billion Btu) per year based on estimated ownership of 40,100 cars driven an average of 9,026 miles per year at a mileage of 15.53 miles per gallon. Present energy use for personal transportation by military personnel is approximately 16 percent of that of civilian personnel in counties adjacent to the fort.

3.279 Estimated energy consumption for off-post housing of military personnel and their dependents is 2,200 billion Btu per year based on an average per capita residential energy consumption of 100.5 MBtu per year. Residential energy consumption in the counties adjacent to the fort is approximately 25,700 billion Btu per year. Military personnel consume approximately 8 percent of the total residential energy used in the area.

3.280 Total energy consumption for Fort Benning in 1983 was approximately 10 trillion Btu, including on-post energy usage, military vehicles, private vehicles owned by military personnel and off-post housing requirements of military personnel. Total energy usage is approximately 405 MBtu per troop per year.

Cultural Resources

3.281 Fort Benning is currently in the process of preparing a Cultural Resources Management Plan. This plan includes identifying disturbed and undisturbed areas and prioritizing specific areas for archeological surveys. To date, 10,100 acres on the installation

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AUG 1984

have been surveyed and over 150 prehistoric and historic sites have been located (Mullen, 1984; U.S. Army Corps of Engineers, 1982; Department of the Army, Fort Benning, 1983). Only within the last few years have the surveys been systematic.

3.282 Protection of cultural resources currently consists of active and passive measures. Fort Benning has begun conducting comprehensive and site specific surveys to locate, inventory, and nominate all sites that appear to qualify for listing on the National Register of Historic Places. Coordination of such surveys is effected with the National Park Service and the State Historic Preservation Officers. Extensive reoccuring vehicle maneuvering requirements are limited to specific training areas which localizes potential damage. Major projects, whether they are construction or training related, are environmentally assessed, and consideration is given to identifying potential cultural resources, as well as protecting those known to exist. Due to potential "collecting" known site locations are not publicized and, in some instances, they are physically protected. Additionally, the public is made aware of the installation's resources and informed of the restriction. pertaining to, and importance of protection of, these archeological resources.

3.283 An Installation Historic Preservation Committee (IHPC) has been formed and will result in more sites being evaluated for possible nomination to the National Register. The evaluation and nomination will be conducted as the IHPC identifies sites, collects data, evaluates the information, and decides to make nominations.

3.284 Riverside, the Commanding General's quarters, is the only structure on Fort Benning currently listed on the National Register of Historic Places. Other structures on the installation have been reviewed for eligibility in the past. Within the limits of functional requirement and available money, structures are maintained and repaired in the spirit of preservation and trusteeship for future generations, whether on the Register or not (Fort Benning Directorate of Engineering and Housing, 1983).

FORT CAMPBELL, KENTUCKY AND SURROUNDING REGION

3.285 Fort Campbell lies in western Kentucky and Tennessee, northwest of Nashville, Tennessee (Figure 3-6). The post contains about 105 thousand acres in mostly a rural setting. It is the home of the 101st Airborne Division. The post currently has about 2,210 military, plus 2,660 Department of the Army civilian personnel.

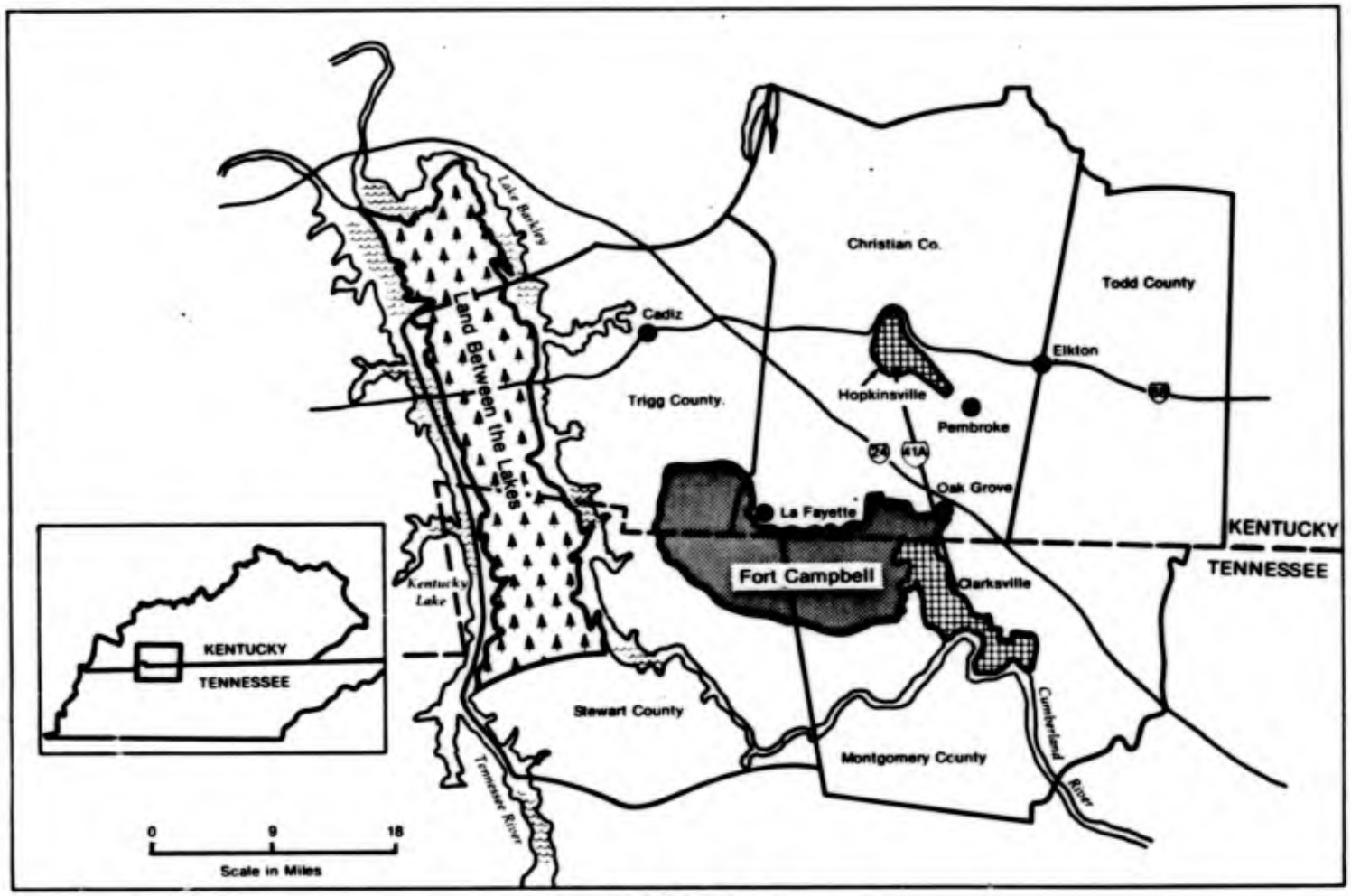


FIGURE 3—6
THE HOPKINSVILLE, KENTUCKY-CLARKSVILLE, TENNESSEE REGION

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Hopkinsville (KY) - Clarksville (TN) Region

3.286 The region that would be affected by the proposed alternative at Fort Campbell is defined as consisting of the following counties: Montgomery and Stewart Counties in Tennessee and Christian and Trigg Counties in Kentucky. The major urban areas in the region affected by the Fort are the cities of Clarksville in Montgomery County and Hopkinsville in Christian County (Figure 3-6).

Climate

3.287 The four county region surrounding Fort Campbell has a warm, temperate climate. Summers are characteristically hot and humid with mean high temperatures of 89°F and mean low temperatures of 68°F. The relative humidity during a summer day averages about 55 percent. The winters are characterized by damp, mild conditions with mean high of 45°F and the average minimum of 28°F with January typically the coldest month of the year. The annual precipitation is approximately 47 inches. Two air masses influence the area--the first from the Gulf of Mexico brings warm, moist air; and the other from the north and west consists of generally cool, dry continental air. Although the prevailing wind direction is south, these winds interchange often in the spring and fall causing frequent changes in weather. Thunderstorms occur at an average rate of approximately 53 per year with the greatest frequency of occurrence in July. Severe storms, tornadoes, damaging hail, or extreme winds are rare.

Biological Environment

3.288 Fort Campbell is located near the western edge of the mesophytic forest region. The original forest was cut by the mid-nineteenth century, and the present forest consists of regrowth in abandoned fields. Typical tree types are oaks, hickories, sassafras, persimmon, and eastern red cedar. Pines are found in areas reforested by forest management programs. Perennial grasses and weeds dominate the more recently abandoned areas. Approximately one-half of the total land area is used for crops or pasture.

3.289 Abandoned fields and scrub thickets provide excellent wildlife habitat throughout the region. Cultivated fields are relatively small, and brushy fence rows are common. A wide variety of common birds, mammals and fish inhabit the area. Quail and deer are hunted extensively and are considered major area resources. Squirrel, rabbit and mourning dove are also hunted. Fishing is both a popular sport and a major revenue source via tourism in the Barkley and Kentucky Lake impoundments west of the region (U.S. Army, 1975a).

3.290 Enclosed between Lake Barkley and Kentucky Lake is the Land Between the Lakes national recreational area. The area draws fishermen, winter sports participants, and campers from a wide area of central U.S.

Demography

3.291 The four county area surrounding Fort Campbell had a combined 1980 population of 168,269 compared to a 1970 population of 134,884 for an increase of 25 percent during the ten year period. Population is projected to increase regionwide to 195,263 by 1990 for an additional increase of 16 percent. Examination of Table 3-6 shows that the bulk of the regional population has historically been located in Christian County and in Montgomery County and that this pattern will continue in the future. Hopkinsville and Clarksville as urban centers within these counties accounted for almost half (49 percent) of the region's 1980 population and are projected to grow at faster rates than the region as a whole. Trigg and Stewart are rural agricultural counties with small population bases. Growth has occurred and will continue in these counties, but 1990 population totals are projected to be only ten percent of the region's total.

3.292 The estimated military and dependent population at Fort Campbell in FY 83 was 44,423. This represents approximately 25 percent of the region's total as interpolated from 1980-1990 population data in Table 3-6.

Land Use

3.293 The four counties adjacent to Fort Campbell have a wide range of urban and rural land uses. Urban development is concentrated in Clarksville, Hopkinsville, and along the U.S. Route 41-A corridor which connects these centers. These communities provide the bulk of residential, commercial, and industrial development in the region. Other communities in this area generally have populations of 2,500 or less and are primarily residential in nature.

3.294 Montgomery County contains 346,583 acres of which 60 percent is classed as agricultural and serve primarily as cropland and pasture. Forest and woodlands account for 20 percent of the county, Fort Campbell for another 12 percent, and urban development for the remaining 8 percent of the county area.

3.295 The Montgomery County portion of the U.S. Route 41-A corridor is characterized by strip commercial development oriented to the needs of the Fort Campbell population. Adjacent to and interspersed with this development is a mix of single- and

TABLE 3-6

POPULATION FOR THE FOUR COUNTY REGION AND SELECTED COMMUNITIES
(1970, 1980 and Projected)

Jurisdiction	Population			Percent Change	
	1970	1980	1990 Projected	1970-1980	1980-1990
Christian County	56,224	66,878	72,730	19	9
Hopkinsville	21,395	27,318	31,858	28	17
Oak Grove	--	2,088	NA	--	--
Pembroke	—	636	NA	--	--
Trigg County	8,620	9,384	10,177	9	8
Montgomery County	62,721	83,342	102,486	33	23
Clarksville	31,719	54,777*	67,360	73*	23
Stewart County	7,319	8,665	9,870	18	14
Regional Total	134,884	168,269	195,263		

*Includes increase due to annexation.

Sources: Hopkinsville-Christian County Planning Commission, 1983.
Pennyrile Area Development District, 1983.
Brown, C., 1984.
Hancock, J., 1984.

multi-family housing and mobile homes, the latter found mostly in mobile home parks.

3.296 Christian County contains 404,640 acres, 60 percent of which are devoted to agriculture, mostly as cropland. Forests and woodlands account for 30 percent of the county and 4 percent are classed as idle, wildlife areas or water. The remaining 6 percent of the county includes Fort Campbell and urban development, most of which is found in Hopkinsville.

3.297 The Christian County portion of the U.S. Route 41-A corridor adjacent to the post boundaries has strip commercial development similar to that found along its Montgomery County counterpart. Beyond the post however, this development is replaced by agriculture and scattered single-family residential development until approaching Hopkinsville.

3.298 Trigg County (292,480 acres) and Stewart County (300,608 acres) are more rural in nature than Montgomery or Christian counties. Both Trigg and Stewart counties have a majority of their area in commercial and non-commercial forest land. In addition, 33 percent of Trigg, and 29 percent of Stewart County are in agricultural use. Small communities with populations of less than 2,500 occur in each.

Noise

3.299 Noise levels are typically a function of land use and the activities which are associated with these uses. Within the four county region, existing outdoor noise levels may be expected to range from 40 dB L_{dn} in rural agricultural and wooded areas to 70 dB L_{dn} in built-up environments such as those found in downtown and strip commercial areas of Clarksville.

3.300 Training activities at Fort Campbell result in both aircraft and blast noise being experienced at off-post areas adjacent to the fort. Fixed-wing aircraft activities at Campbell Army Airfield generate noise levels in excess of 75 dB L_{dn} for approximately 60 acres of off-post pasture and cropland in line with the northeast end of Runway 4-22. Fixed-wing aircraft operations also generate noise levels of 65 to 75 dB L_{dn} for approximately 1,400 acres of agricultural and wooded areas containing scattered farmhouses and other residences (Fort Campbell, 1981). This represents an increase of between 17 and 35 dB L_{dn} over an assumed background noise level of 40 to 48 dB L_{dn}. This increase is considered significant and would be problematic were there to be additional residential development in the affected areas.

3.301 Rotary-wing (helicopter) aircraft operations affect three off-post areas located generally north and west of Campbell Army Airfield/Destiny Heliport and north of the North Impact Area. These areas include agricultural and residential development along Kentucky Highway 117 between U.S. 41-A and the community of Herndon, the area north of Angels Road, and the area along Kentucky Highway 164. Background noise levels in these areas are estimated to be between 40 and 55 dB L_{dn}. However, rotary-wing operations along well travelled helicopter corridors are estimated to result in a noise level of 70 dB L_{dn} which is an increase of between 15 and 30 dB L_{dn}. Continued residential development in what is now primarily farmland and woodlands will result in incompatible land uses.

3.302 Nap-of-Earth (NOE) operations are conducted entirely off-post in an area south of Fort Campbell generally bounded on the north by the Cumberland River and extending to the south of the Cities of Dickson and Waverly, Tennessee. Within this area, eight lanes or corridors ranging in length from approximately 4 to 25 miles have been defined. In a typical NOE exercise, the helicopter flies as close to the earth's surface as vegetation or obstacles will permit while generally following the contours of the earth. Airspeed and altitude are varied; and in flight, the pilot uses a weaving and devious route within the defined lane in order to take maximum advantage of the cover and concealment afforded by the terrain, vegetation, and man-made features.

3.303 Usually, only one helicopter is allowed on a lane at any one time. In a given day, an average of 12 operations or six aircraft will use the NOE area. The noise levels relating to NOE training will be high due to the low altitude and varied maneuvers. However, all NOE lanes are approved for use in advance so that noise-sensitive areas can be indicated as no-overfly areas. Furthermore, NOE air crews are required to maintain sufficient separation from populated areas, farms, cattle and poultry, schools, etc., to limit noise pollution and prevent being a hazard or nuisance.

3.304 Weapons firing also results in off-post noise effects with areas adjacent to the boundary of the western half of the Fort Campbell reservation being most affected. Approximately 160 acres of off-post land falls within the 65 dB Lc_{dn} or greater noise level range. The area within this noise level range is farmland which includes one farmhouse. The rural communities of LaFayette, Roaring Springs, and Big Rock are the closest concentrations of population. LaFayette falls within the 60 to 65 dB Lc_{dn} noise contours, while Roaring Springs and Big Rock falls within the 55 to 60 dB Lc_{dn} contours. Assuming the background noise level for

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AUG 1984

these small towns is 45 to 55 dB Lc_{dn}, the increase in noise levels in LaFayette is between 5 and 20 dB Lc_{dn}, while in Roaring Springs and Big Rock the increase is between 0 and 15 dB Lc_{dn}.

3.305 Off-post areas from which noise complaints have been received are shown in Figure 3-7 (see Fort Campbell, Kentucky). Further discussion of off-post noise effects as a result of Fort Campbell's ongoing mission can be found in the installation's environmental impact statement (Fort Campbell, 1981).

Regional Economic Activity

3.306 The four county region enjoys a diversified economy with major sectors including agriculture, manufacturing, government, and retail and wholesale trade. Table 3-7 provides a brief profile of the region's labor force by county including resident labor force (civilian and military), employment and median family income. The bulk of the region's labor force is resident in Christian and Montgomery counties as are the majority of the region's jobs. Nonagricultural jobs are predominant, however, total agricultural employment may be substantially underreported as these totals do not include farm owners. In Montgomery County this may add as many as 1,000 additional jobs.

3.307 Nonagricultural employment in Christian County for 1982 included 3,220 in manufacturing, 4,000 in wholesale and retail trade, 2,480 in state and local government, and 2,845 in service occupations with other sectors of the economy providing lesser levels of employment (Kentucky Department of Economic Development, 1983). Likewise, for 1981 Trigg County reported 716 jobs in manufacturing, 467 jobs in state and local government, 350 jobs in wholesale and retail trade, and 245 jobs in service occupations (Kentucky Department of Economic Development, 1982a).

3.308 In Montgomery County, 1981 employment included 6,918 jobs in manufacturing, 5,066 jobs in wholesale and retail trade, and 1,992 jobs in service occupations (U.S. Department of Commerce, 1983f). For this same year, Stewart County showed 277 jobs in manufacturing and 176 jobs in retail trade (U.S. Department of Commerce, 1983f). Other sectors provided additional employment.

3.309 Fort Campbell is the largest single employer in the region. In addition to military employment, the post provides approximately 4,860 civilian jobs. Total payroll during FY 83 for military and civilian employment was $262.7 million.

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3.305 Off-post areas from which noise complaints have been received during 1978 are shown in Figure 3-7 (see Fort Campbell, Kentucky). No complaints have been recorded since 1978. Further discussion of off-post noise effects as a result of Fort Campbell's ongoing mission can be found in the installation's environmental impact statement (Fort Campbell, 1981).

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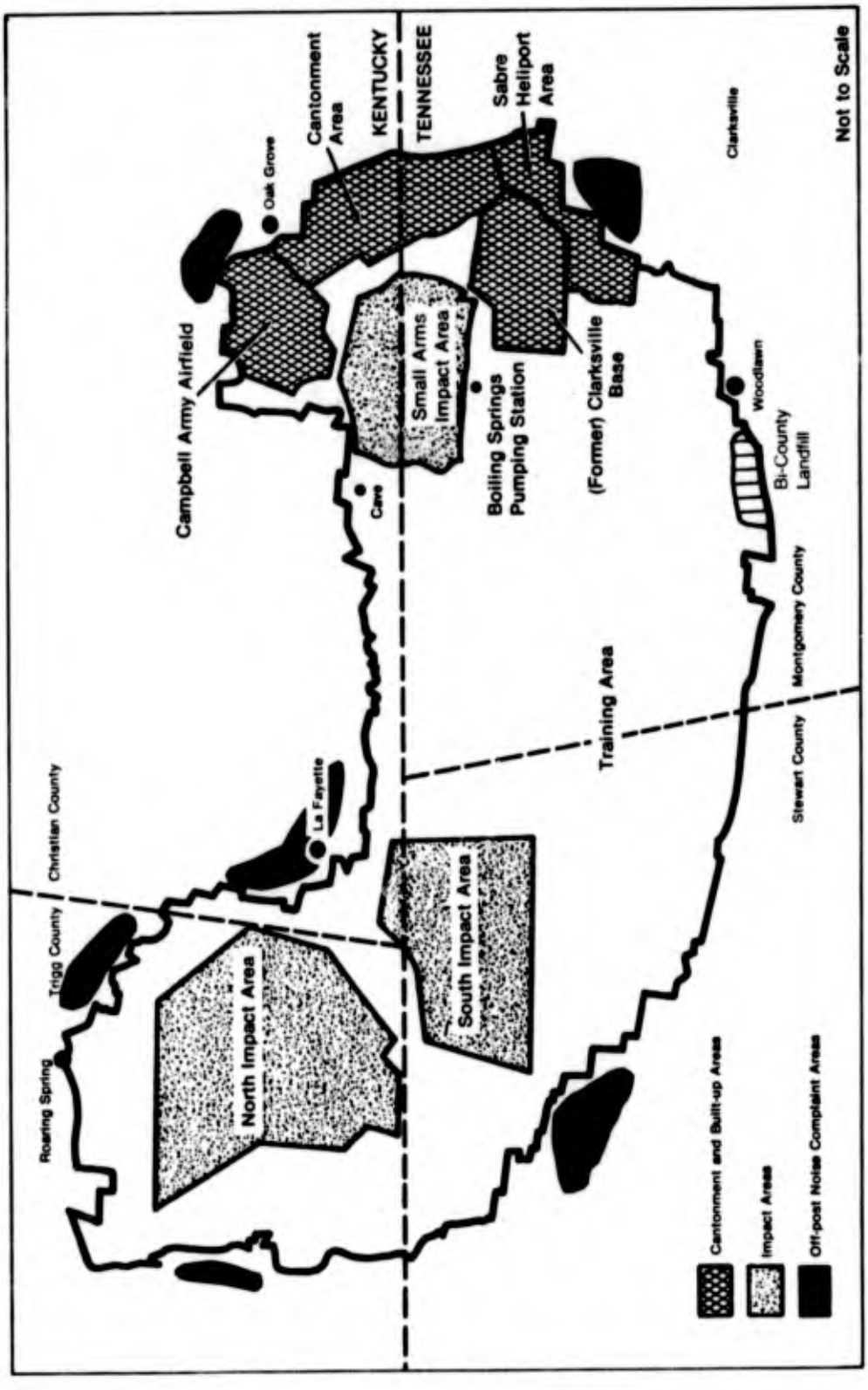


FIGURE 3—7
FORT CAMPBELL, KENTUCKY-TENNESSEE

TABLE 3-7

1980 LABOR FORCE CHARACTERISTICS

County	Labor Force	Employment		Median Family Income (1979)
		Agricultural	Nonagricultural	
Christian	21,352	1,238	17,666	$13,464
Trigg	3,925	448	3,149	$14,565
Montgomery	30,657	862	27,276	$15,699
Stewart	3,377	176	2,810	$13,352

Sources: U.S. Department of Commerce, 1982 d,f

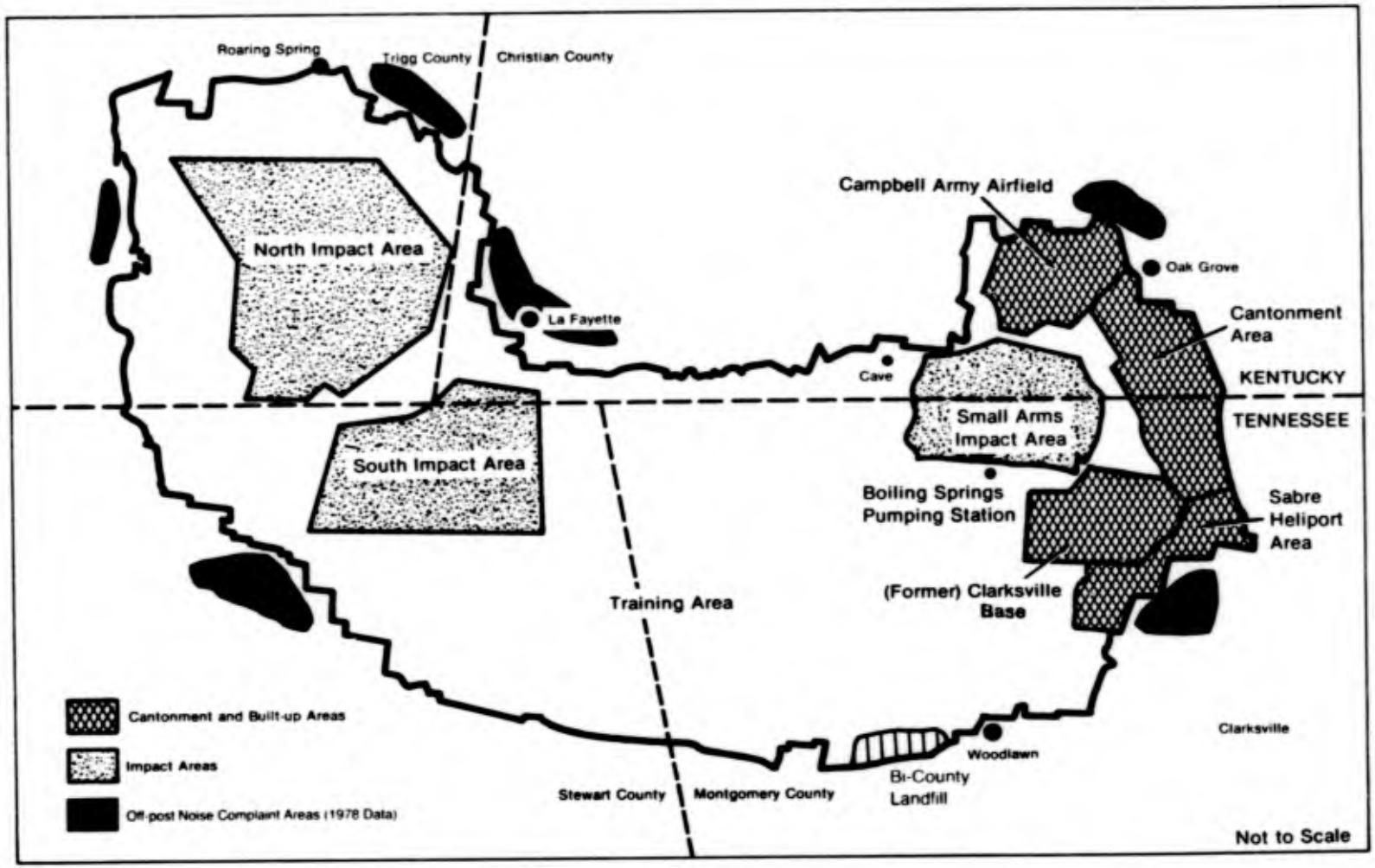


FIGURE 3—7
FORT CAMPBELL, KENTUCKY-TENNESSEE

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Air Quality

3.310 Christian and Trigg counties are part of the Paducah-Cairo Interstate Air Quality Control Region (AQCR 072) while Montgomery and Stewart counties are in the Middle Tennessee Air Quality Control Region (AQCR 208). The four counties are in attainment of state and federal air quality standards for total suspended particulates, sulfur dioxide, carbon monoxide, and nitrogen oxides and are unclassified with respect to photochemical oxidants. These counties have been designated as Class II Prevention of Significant Deterioration (PSD) areas and continued development can occur in accordance with PSD regulations. No air quality maintenance areas have been established and the only air quality monitoring conducted by a state agency is in Clarksville for total suspended particulates.

Water Supply

3.311 The emphasis in this section is given to the water systems considered to be most affected by the proposed stationing action at Fort Campbell, i.e., systems of the urban systems of Clarksville, Tennessee and Hopkinsville, Kentucky and the individual utility systems of Pembroke and Oak Grove, Kentucky. Rural, unincorporated areas of the region are served by many private well systems.

3.312 Sole source aquifers have not been defined for the region. It appears that a regional or widespread groundwater gradient does not exist, especially around Fort Campbell. Groundwater movement near the post is likely controlled by the location and magnitude of local sources of recharge (sinkholes) and local points of seepage.

3.313 The Hopkinsville Sewerage and Water Works Commission's Service District is contained within a five mile radius of the courthouse. Presently, the system serves 10,567 customers, and additionally provides water to the Christian County Water District which serves 875 rural customers. The system is in adequate condition to serve all its customers with a present capacity to treat and pump seven million gallons per day. Future plans of the Commission include construction of a million gallon storage tank. These plans are based on the present average and peak consumption rates of 4.7 mgd and 5.4 mgd, and future projected population growth in the service area (Clarksville-Montgomery County Regional Planning Commission and Hopkinsville-Christian County Planning Commission, 1981).

SUPERSEDED
1984

3.314 The existing Pembroke Water System is in need of renovation. The system has deficiencies in back-up pumping units, piping size, hydrants, the pumping units, as well as an insufficient chlorination unit. Water is received from a tank with a drilled well. The system's storage capacity is 2,294,000 gallons and has a daily pumping capacity of 165,000 gallons. As of March 1981, the average daily consumption was 71,770 gallons. At the present time, there are 300 customers, and although there is an adequate supply of water to service these customers and future projected meters, contamination from the surrounding farm areas is a major issue of concern (Clarksville-Montgomery County Regional Planning Commission and Hopkinsville-Christian County Planning Commission, 1981).

3.315 The City of Oak Grove has an estimated 1000 to 1100 customers on the system. The water tank has a storage capacity of 150,000 gallons. As of March 1981, 260,000 gallons were pumped per day. The system has the capacity to pump 400,000 gallons daily. At the present time, the water system is capable of serving the City of Oak Grove.

3.316 Clarksville's public water system extends to all sections of the city and is generally considered adequate. In addition, this system supplies water to large portions of the county through four separate utility districts. The City is in the process of expanding its water treatment plant. This project will add to the plants' capability enabling treatment of up to 20 million gallons of water a day (Clarksville-Montgomery County Regional Planning Commission and Hopkinsville-Christian County Planning Commission, 1981; Clarksville-Montgomery Co. Regional Planning Commission, 1977).

Wastewater Disposal

3.317 Christian County presently is operating sanitary sewer systems in Hopkinsville and Pembroke. Hopkinsville's Sewage Treatment Plant has a capacity of three million gallons per day, and is currently operating over capacity. To remedy this situation, the existing treatment plant is being renovated. In addition, a new treatment plant will be built in Hopkinsville. These two treatment plants will have the capacity to treat 6-1/2 million gallons of sewage per day. The improvement program will also contain the construction of an additional five new pumping stations, and the expansion of sewer service lines. The pumping station located in Pembroke is currently functioning at full capacity. Plans are being prepared to study expansion of this system (Clarksville-Montgomery County Regional Planning Commission and Hopkinsville-Christian County Planning Commission, 1981).

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Wastewater Disposal

3.317 Christian County presently is operating wastewater treatment facilities in Hopkinsville, Pembroke and Crofton. Hopkinsville has two wastewater treatment facilities: the newly constructed Hammond-Wood Plant and the renovated Northside Plant. The Hammond-Wood Wastewater Treatment Plant is designed to treat the peak equalized wet weather flows of 6.10 mgd and average design flows of 3.00 mgd. The plant treats sanitary waste generated in the southern two-thirds of Hopkinsville and also the anticipated growth to the year 2000 for the area encompassed by the 201 Facilities Plan. Its present average flow is 1.5 mgd. The Northside Wastewater Treatment Plant is designed to treat peak equalized wet weather flows of 5.76 mgd and average design flows of 2.88 mgd. The plant treats sanitary waste generated in the north and northwest portion of Hopkinsville. Its present average flow is 1.5 mgd. The improvements also include the construction of 5 additional new sewage lift stations and 14 miles of new sanitary sewer service lines. These facilities presently serve 10,500 sewer customers. The Wastewater Treatment Facility located in Pembroke has a design capacity of 70,000 gpd. The Crofton facility has a design capacity of 66,000 gpd.

SUPERSEDED
AUG 1984

3.318 Oak Grove is currently undertaking the development of the Phase I, 201 Wastewater Facilities Plan to assess the needs of the area. Clarksville is upgrading its sewer system and constructing a new treatment plant. New customers from North Clarksville (along 41A) will be able to connect onto the system when it is completed.

Solid Waste Disposal

3.319 Hopkinsville has a 220 acre landfill site approved by the State of Kentucky. A "Bi-County" landfill located on Fort Campbell is leased to Montgomery County, Stewart County, and the City of Clarksville. The Bi-County landfill is operated by Montgomery and Stewart Counties, under a lease agreement with Mobile District Corps of Engineers. Disposal of organic waste in this facility approximates 60,000 tons per year. This site is adequate for many more years (Fort Campbell, 1981).

Housing

3.320 The distribution of the regional housing stock (1980) by jurisdiction and housing type is shown in Table 3-8. The bulk of existing housing is found in Montgomery and Christian counties. Most of the projected increase in housing will occur in these two counties.

3.321 During the 1981 to 1983 period there were a total of 2,285 housing starts in Montgomery County of which 816 were multi-family units. In this same period, Christian County saw 289 housing starts, 253 of which were multi-family.

3.322 Rents for apartments in Montgomery County showed a steady increase during the 1979 to 1982 period but declined by 7 percent in 1983. The median rents for apartments ranged from $260 for one bedroom units to $365 for three bedroom units. Vacancy rates ranged from 2.2 percent for two bedroom units to 6.5 percent for three bedroom units. In Christian County, rents tend to be 10 to 15 dollars a month lower with average rents for two bedroom units being $260-$275 per month (Hart-Freeland-Roberts, 1984).

3.323 It is estimated by Fort Campbell housing officials that there is currently a 1,000-plus dwelling unit deficit for eligible military families assigned to the post. Some 97 percent of the deficit is due to substandard conditions and 3 percent to excess distance between home and post (Hart-Freeland-Roberts, 1984). Over 90 percent of the families living in substandard housing are in pay grades E-4 through E-6 and have one to two bedroom requirements.

TABLE 3-8

HOUSING IN THE FOUR COUNTY REGION

Jurisdiction	1980 Housing Stock			1990 Projected Increase
	Single Family	Multi Family	Mobile Homes	All Units
Montgomery County	20,655	6,202	2,861	7,349
Stewart County	2,954	106	412	NA
Christian County	14,839	4,480	1,848	3,344
Trigg County	3,022	212	512	288

N.A. = Data not available.

Sources: Prem, 1984.
Pennyrile Area Development District, 1983.
Sloane, 1984.

3.318 Oak Grove has submitted a facility plan for wastewater treatment. The plan is under review by the U.S. Environmental Protection Agency. Clarksville is upgrading its sewer system and constructing a new treatment plant. New customers from North Clarksville (along 41A) will be able to connect onto the system when it is completed.

Solid Waste Disposal

3.319 Hopkinsville has a 220 acre landfill site approved by the State of Kentucky. A "Bi-County" landfill located on Fort Campbell is leased to Montgomery County, Stewart County, and the City of Clarksville. The Bi-County landfill is operated by Montgomery and Stewart Counties, under a lease agreement with Mobile District Corps of Engineers. Disposal of organic waste in this facility approximates 60,000 tons per year. This site is adequate for many more years (Fort Campbell, 1981).

Housing

3.320 The distribution of the regional housing stock (1980) by jurisdiction and housing type is shown in Table 3-8. The bulk of existing housing is found in Montgomery and Christian counties. Most of the projected increase in housing will occur in these two counties.

3.321 During the 1981 to 1983 period there were a total of 2,285 housing starts in Montgomery County of which 816 were multi-family units. In this same period, Christian County saw 289 housing starts, 253 of which were multi-family.

3.322 Rents for apartments in Montgomery County showed a steady increase during the 1979 to 1982 period but declined by 7 percent in 1983. The median rents for apartments ranged from $260 for one bedroom units to $365 for three bedroom units. Vacancy rates ranged from 2.2 percent for two bedroom units to 6.5 percent for three bedroom units. In Christian County, rents tend to be 10 to 15 dollars a month lower with average rents for two bedroom units being $260-$275 per month (Hart-Freeland-Roberts, 1984).

3.323 It is estimated by Fort Campbell housing officials that there is currently a 1,000-plus dwelling unit deficit for eligible military families assigned to the post. Some 97 percent of the deficit is due to substandard conditions and 3 percent to excess distance between home and post (Hart-Freeland-Roberts, 1984). Over 90 percent of the families living in substandard housing are in pay grades E-4 through E-6 and have one to two bedroom requirements.

3.324 Additional discussion of the regional housing supply and housing costs is found in Hart-Freeland-Roberts (1984).

Schools

3.325 As noted in previous sections most of the development within the four county area has occurred and will continue to occur in Christian and Montgomery counties. Accordingly, the discussion on schools which follows is limited to these two counties. In addition, Fort Campbell operates its own, independent school system for military dependents living on-post. Off-post, 2,785 dependent children attended area schools as of January 1984. Federal impact aid for these students totalled $267,000.

3.326 The Christian County Board of Education operates a school system comprised of 13 elementary schools, 2 middle schools, 2 high schools, the Phelps Avenue School, and Christian County Day Treatment. During 1983, the school system had 9,386 students (Bell, 1984). Enrollment within the school system has been steadily declining over the last decade with 1983 enrollment being 943 less than the 1973 total. The school system has no plans for additional construction and some redistricting is likely to occur in response to continuing enrollment trends (Bell, 1984).

3.327 The Clarksville-Montgomery County School Board operates a school system which includes 11 elementary, 3 middle, and 4 high schools in addition to vocational schools. Total enrollment as of February 1984 was 13,901 (Kyriakos, 1984). Generally enrollments have been increasing over the last ten years but do show some fluctuation with the 1984 total being 384 students lower than 1980 enrollment. Over the last several years, the school system has undertaken the construction of new facilities to ease overcrowding. Currently elementary schools in the northern portion of the county are at or near capacity and a need exists for two additional elementary schools. In addition, the county's middle schools are experiencing capacity problems. Schools in the southern portion of the county are well within capacity. This situation suggests that redistricting may be required in the future (Kyriakos, 1984).

Health Care

3.328 Regional health care facilities are primarily located in Christian and Montgomery counties. Christian County has the Jennie Stuart Memorial Hospital, a 216 bed facility which was recently expanded to include an additional 216 bed House-Care facility. This facility is located in Hopkinsville as is the Western State Hospital, a 520 bed psychiatric treatment facility and the Pennyroyal Regional Mental Health-Mental Retardation Center. In

addition, there are seven nursing homes in the county with a total of 618 beds as of 1981 (Clarksville-Montgomery County Regional Planning Commission and Hopkinsville-Christian County Planning Commission, 1981).

3.329 Montgomery County health facilities include 239 bed Memorial Hospital, the Harriett Cohn Mental Health Center, the Cumberland Dialysis Center, and three public and one private nursing homes. Nursing home capacity in 1981 was 340 patients with an estimated need for an additional 100 spaces (Clarksville-Montgomery County Regional Planning Commission and Hopkinsville-Christian County Planning Commission, 1981).

Cultural Resources

3.330 See on-post cultural resources descriptions.

Fort Campbell, Kentucky

3.331 Fort Campbell consists of 104,963 acres located in southwestern Kentucky and northwestern Tennessee. Approximately two-thirds of the total land area is in Montgomery and Stewart Counties in Tennessee and one-third in Christian and Trigg Counties in Kentucky (Figure 3-7).

3.332 The main built-up area is situated adjacent to U.S. Highway 41-A about eight miles north of Clarksville, Tennessee and 17 miles south of Hopkinsville, Kentucky. Clarksville is the larger of the two communities and its corporate limits extend to the Kentucky State line and include the southern portion of the Fort Campbell cantonment area. Urban development has occurred in almost a continuous strip from downtown Clarksville to the Kentucky state line along U.S. Highway 41-A. To the north, towards Hopkinsville, the land is more rural in character with only a scattering of commercial establishments located along U.S. Highway 41-A in the immediate vicinity of the installation. Interstate 24 passes to the east and north of the installation with an interchange with U.S. Highway 41-A approximately four miles north of the installation. U.S. Highway 79 runs east-west along the southern boundary of the installation providing principal access to the Land Between the Lakes (Tennessee Valley Authority) recreation area (Figure 3-6).

3.333 Fort Campbell's primary mission is to support and train the 101st Airborne Division (Air Assault) and other associated U.S. Army Forces Command units located on the installation in preparation for a variety of assigned combat and combat related missions. Secondary missions include advancing the combat readiness of U.S. Army Reserve and National Guard units; providing medical and dental

SUPERSEDED
AUG 1984

care for active military, their dependents and retired military personnel; and providing for the safety, security, administration, training, service, maintenance and supply of all individuals, units and activities at Fort Campbell (Fort Campbell, 1981; Harland Bartholomew and Associates, Inc., 1982).

Geology, Minerals and Soils

3.334 The post is underlain by limestone bedrock. Up to 50 feet of unconsolidated gravel covers upland areas and hills in the extreme western portion. Most of the post is covered with a thick overburden of soil (derived from weathering of the limestone). Most of this soil is designated by the U.S. Department of Agriculture as prime agricultural land. A detailed description of the geology, minerals and soils of the post is contained in Appendix D.

Biological Environment

3.335 Terrestrial Ecosystems. Prior to 1940, most of the land on the installation had been cleared for cultivation. Since that time, due to extensive plantings and natural regrowth, over half of the installation now has tree cover. A major timber harvesting and reforestation program has been carried out since 1956. Thousands of acreas of loblolly pine have been planted, and another ten to twenty acres of walnut trees are planted annually. Trees found in natural regrowth areas include numerous oak species, hickory species, ash, elm, sycamore, sweet gum, beech, dogwood, locust, silver maple, yellow poplar, and eastern red cedar. Some of the more common understory species include huckleberry, dogwood, blue beech, grape, paw paw, spicebush, redbud, May apple, violets, poison ivy, Virginia creeper, wild ginger, toothwort, aster, stick-tights, bladdernut, and honeysuckle. Improvement plantings for wildlife enhancement include seeding of corn, milo, wheat, sunflower, and Korean lespedeza (Fort Campbell 1981).

3.336 The installation is relatively rich in animal life, although it is dominated by species which are adaptable to agricultural land use and to other disturbances brought about by the training activities of the post. Principal game species include whitetail deer, bobwhite quail, cottontail rabbit, gray squirrel, raccoon, mourning dove, and several species of ducks. Reptiles and amphibians have not been surveyed, but it is estimated that over 30 species of each are distributed on and near the post (Fort Campbell 1981).

3.337 Aquatic Ecosystems. Piney Fork Creek and Jordan Creek are perennial streams, whereas their tributaries and the streams in

the western part of the installation are intermittent. There are three lakes which add considerable scenic and natural value to the installation. Taal Lake (30 acres) is located south of former Clarksville Base; Lake Kyle (80 acres) is located in the western portion of Fort Campbell; and a small lake, formerly an abandoned quarry, is located near the golf course. Fish species on and near the installation include bass, bluegill, catfish, rainbow trout (stocked), white sucker, silver redhorse, stargazing minnow, shiners, and Tennessee snubnose darter.

3.338 Threatened and Endangered Species. The U.S. Fish and Wildlife Service has identified four species, listed as endangered species under the Endangered Species Act of 1973, which may be present on Fort Campbell. The species which may be present (all are considered to be endangered) are:

Mammals
Gray bat - Myotis grisescens
Indiana bat - Myotis sodalis

Birds
Bald eagle - Haliaeetus leucocephalus
Red-cockaded woodpecker - Picoides borealis

3.339 In addition to listed and proposed threatened and endangered species, the U.S. Fish and Wildlife Service has identified other species (which may be present) that are under status review and may be listed at some time in the future. Species under status review are not legally protected under the Endangered Species Act, and biological assessment requirements do not apply to them. The following species under status review may occur within the project area:

Plants
Price's potato-bean - Apios priceana
Appalachian bugbane - Cimicifuga rubifolia
Short's bladderpod - Lesquerella globosa
Synandra - Synandra hispidula
Gattinger's lobelia - Lobelia appendiculata var. gattingeri
False foxglove - Aureolaria patula
Eastern blue-star - Amsonia tabernaemontana var. gattingeri

Amphibians
Hellbender - Cryptobranchus alleganiensis
Reptiles

SUPERSEDED
AUG 1984

care for active military, their dependents and retired military personnel; and providing for the safety, security, administration, training, service, maintenance and supply of all individuals, units and activities at Fort Campbell (Fort Campbell, 1981; Harland Bartholomew and Associates, Inc., 1982).

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3.337 Aquatic Ecosystems. Piney Fork Creek and Jordan Creek are perennial streams, whereas their tributaries and the streams in

Copperbelly water snake - Nerodia erythogaster neglecta

Alligator snapping turtle - Macroclemys temmincki

Birds

Bachman's sparrow - Aimophila aestivalis

Appalachian Bewick's wren - Thryomanes bewickii altus

On-Post Population

3.340 Fort Campbell's on-post population includes military personnel assigned to the installation, Department of the Army and other civilian employees, and military dependents residing in family housing. The post also supports military dependents residing off-post and retired military personnel and their families who utilize the post's facilities.

3.341 The authorized strength of Fort Campbell as of the beginning of FY 84 was 22,210 military and 2,659 Department of the Army civilian personnel. In addition, an estimated 2,200 civilians hold non-Department of the Army jobs at the post. As of December 1983 the number of on-post dependents was 11,353 while off-post dependents numbered 10,861. Retired military and their families who utilize Fort Campbell facilities are estimated at 96,431, though not all of these reside in the four county area surrounding the fort. The total supported population including all of the above categories is 145,713. However, for planning purposes, the effective population which consists of the resident population (military and dependents residing on-post) and the part-time, non-resident population (military residing off-post and civilian employees) is equivalent to approximately 32,000 (Miller/Wihry, 1983).

Land Use

3.342 Fort Campbell has a land area of 104,963 acres of which approximately 14,000 acres are in built-up areas and 91,000 acres serve as training and impact areas. In addition, the post maintains lease agreements with area landowners to use some 97,504 acres for off-post maneuvers subject to seasonal limitations imposed by planting and harvesting crops, flooding and land reconstruction operations.

3.343 The built-up area is generally divided into the cantonment area (5,900 acres), Campbell Army Airfield (2,500 acres), Clarksville Base (3,400 acres), Lake Taal Recreation Area (1,600 acres) and Sabre Heliport (600 acres). The activities which occur

in these areas include family housing, troop housing and support facilities, commercial services and other activities as noted in Table D-2, Appendix D.

3.344 Training and impact areas generally include firing ranges and courses and maneuver areas. The post currently has 47 firing ranges distributed among three impact areas and 51 training areas ranging from 247 acres to 3,420 acres. In total, the present training areas are adequate for battalion sized maneuvers, however, division-level training exercises require the use of leased acreage adjacent to the post.

3.345 A total of 7,787 acres of on-post land are currently under lease for agriculture crop production. On 1,108 acres of these agricultural outleases, post land use regulations require wildlife habitat protection or improvement through specified wildlife management practices. In addition to wildlife improvement on leased lands, the Fort has begun a 5-year plan for the conservation and development of fish and wildlife resources on the post. A fish and wildlife improvement program supported by hunting and fishing permits and fees established under the plan manages over 60,000 acres. A summary of activities conducted under the program is contained in Appendix D.

3.346 Detailed discussion of land use at Fort Campbell is presented in the installation's ongoing mission environmental impact statement (Fort Campbell, 1981) and the analytical-environmental assessment report on plans for future development (Harland-Bartholomew and Associates, 1982).

3.347 The post is used extensively by the military and citizens from the surrounding area for hunting, fishing, and non-consumptive recreational activities. A summary of these activities is provided in Appendix D.

Noise

3.348 Training activities are primary sources of on-post noise. These sources include fixed- and rotary-wing aircraft operations and weapons firing. Other noise sources include military and civilian motor vehicle operation.

3.349 Fixed-wing operations occurring at Campbell Army Airfield result in noise levels in excess of 75 dB L_{dn} in the vicinity of Runway 4-22 and between 65 and 75 dB L_{dn} along the flight path. However, these effects are limited to the airfield itself and training areas to the south and west.

3.350 Rotary-wing operations produce high noise levels in certain portions of the Cantonment Area. The west end of LaPointe Village and Campbell Army Airfield family housing areas receive noise levels estimated to be between 70 and 75 dB L_{dn} with other portions of LaPointe Village and Pierce Village experiencing noise levels of 65 to 70 dB L_{dn}. Family housing located north of Mabry Road are also subject to noise levels of between 70 and 75 dB L_{dn}.

3.351 Helicopter noise produces noise levels of between 70 and 75 dB L_{dn} at troop housing areas along the west troop row, at Campbell Airfield and at Clarksville Base. Noise levels for portions of the east troop row due to helicopter operations are estimated at 65 to 70 dB L_{dn}. Troop housing support facilities, such as branch exchanges, recreational areas, dispensary, office areas, and mess facilities would receive similar noise effects.

3.352 Weapons firing resulting in blast noise generates noise levels of from 60 to 75 dB Lc_{dn} in the North and South Impact Areas and lesser levels at other on-post locations. Small arms firing also creates high noise levels, but only personnel in the immediate vicinity of the firing are affected.

3.353 Motor vehicle noise is highest along major post roads, especially those providing access to the post and in the vicinity of motor pool areas. The number of noise sensitive land uses in these areas is limited. Motor vehicle noise does, however, adversely affect portions of the Turner Loop and Lee Village Family Housing Areas where noise levels exceed 70 dB L_{dn}.

3.354 Additional information concerning on-post noise effects is contained in the Installation Ongoing Mission Final Environmental Impact Statement (Fort Campbell, 1981).

Air Quality

3.355 The principal sources of air pollutant emissions at Fort Campbell are heating plants and motor vehicles. Smaller sources of emission include a pathological waste incinerator at the hospital; six paint spray booths (three with water wash systems and three that exhaust directly to the atmosphere); two carpentry shops with dust emission; a laundry plant with solvent storage tanks and a boiler for heating purposes; a sanitary landfill; a construction waste landfill site; and vapor emissions associated with liquid fuel transfer to and from storage tanks, most of which are underground.

3.356 Post heating needs are met through a combination of natural gas, fuel oil, and propane. During FY 83, natural gas accounted for 78 percent of the 1.7 trillion BTU consumed for

SUPERSEDED
AUG 1984

heating with #2 and #5 fuel oil accounting for approximately 20 percent and propane the remainder. Estimated total air pollutant emissions from stationary sources at Fort Campbell include 2.0 tons of particulates, 23.6 tons of sulfur oxides, 14.8 tons of carbon monoxide, 0.8 tons of hydrocarbons, and 39.2 tons of nitrogen oxides [Kentucky Division of Air Pollution Control, 1984; Tennessee Department of Health and Environment, 1984].

3.357 No air pollution problems or violations are associated with dust emissions from the two carpenter shops on the post, the six paint spray booths at various locations on the installation, or the two landfill sites.

3.358 There are approximately 3,500 military vehicles on the installation and 36,000 privately-owned vehicles registered at the post. In addition, 414 rotary wing aircraft and two fixed wing aircraft are assigned to Fort Campbell Army Airfield. There are no state requirements for exhaust emission inspection of vehicles and no violations of emission control regulations.

3.359 All air pollution sources are in compliance and no monitoring is required (Fort Campbell, 1981).

Water Supply

3.360 The primary water supply for Fort Campbell is ground water obtained from Boiling Springs, an artesian spring located south of the small arms impact area adjacent to Little West Fork Creek. According to pumping tests, this spring water supply has been found to be of high quality and adequate for any foreseeable demands. Water from the Red River is available as an alternate or emergency water supply source. Increased water demand from Boiling Springs is not expected to affect the water supply of adjacent communities (Harland Bartholomew and Associates, Inc., 1982).

3.361 The current pumpage is 5-6 million gallons per day (annual average consumption rate of 160 gallons per capital per day). Water supply is currently limited by the installation's emergency storage capacity. The capacity is adequate only to provide water on a 24-hour basis or for fire control to the post's current military and dependent residing population and to off-post military and civilian employees on a part-time basis (Miller/Wehry, Inc., 1983).

Wastewater Disposal

3.362 All sanitary sewage is treated on post at a plant located on the former Clarksville Base. This plant has been

heating with #2 and #5 fuel oil accounting for approximately 20 percent and propane the remainder. Estimated total air pollutant emissions from stationary sources at Fort Campbell include 2.0 tons of particulates, 23.6 tons of sulfur oxides, 14.8 tons of carbon monoxide, 0.8 tons of hydrocarbons, and 39.2 tons of nitrogen oxides [Kentucky Division of Air Pollution Control, 1984; Tennessee Department of Health and Environment, 1984].

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3.361 The current pumpage is 5-6 million gallons per day (annual average consumption rate of 160 gallons per capita per day). The maximum effective population which can be served by various elements of the post water supply system is 58,100 (raw water transmission), 46,000 (treatment plant), 50,000 (distribution system), and 31,500 (existing storage capacity) (Miller/Wihry, Inc., 1983).

Wastewater Disposal

3.362 All sanitary sewage is treated on post at a plant located on the former Clarksville Base. This plant has been

SUPERSEDED
AUG 1984

expanded and upgraded to meet federal water quality standards which apply to secondary wastewater treatment plants. Higher than desired levels of ammonia nitrogen persist during cold weather months, and an application for a permit that would allow these seasonally high levels has been submitted to EPA for review and approval (Harland Bartholomew and Associates, Inc., 1982).

3.363 Historic flow data available (1971 through 1981) for the Fort Campbell sewage treatment plant indicates a wide variation in sewage flows. The average daily sewage flow increased sharply between 1976 and 1979 and then decreased to a current annual average daily flow of 3.0 MGD for 1981 (Harland Bartholomew and Associates, Inc., 1982). The design sewage flow expected by 1987 is approximately 4.1 million gallons per day. The Fort Campbell Sewage Treatment Plant will be near theoretical capacity when the sewage flows reach this level under current development plans, not including the proposed stationing of a brigade at the post as a result of the formation of the 17th Division (Harland Bartholomew and Associates, Inc., 1982).

Solid and Hazardous Waste Disposal

3.364 There are three landfills in operation on Fort Campbell. The first, located south of the small arms impact area and just west of the former Clarksville Base, is a landfill for bricks, brush, concrete and other construction waste collected on post. The second, a landfill for domestic waste collected on post, is located immediately west of the cantonment area. The third site (Bi-County Landfill), located next to the southern perimeter of the Fort Campbell property northwest of Gate 10 at Woodlawn Road and U.S. 79, is leased to Montgomery County, Stewart County, and the City of Clarksville for disposal of off-post waste.

3.365 The inorganic landfill is operated by post personnel primarily for construction waste from the numerous projects underway. The present site of approximately 25 to 30 acres is partially filled. Wastes are spread and covered intermittently to prevent scavenging. The domestic waste landfill is managed by post personnel and contains approximately 14 acres. The landfill is periodically inspected by the Tennessee Department of Public Health. A new 90-acre site is being opened and will be under Kentucky jurisdiction. The Bi-County landfill is operated by Montgomery and Stewart Counties, under a lease agreement with Mobile District Corps of Engineers. The disposal of domestic waste in this facility approximates 60,000 tons per year. This site is also adequate for many more years (Fort Campbell, 1981).

3.366 While extensive chemical storage had taken place on the installation during the past, volumes of stored materials have been reduced significantly during the last few years. Hazardous materials with the largest stored volumes on the installation at present are non-saleable or usable petroleum products (derived from draining engine crankcases, transmissions, fuel pads, fuel tanks, oil/water separators, etc.), dry cleaning solvents, and various pesticides.

3.367 The post has specific regulations for the handling, storing, and disposal of solid and hazardous wastes (CAM Supplement 1 to AR420-47). The generation, storage, transport, and disposal of such wastes is conducted in accordance with state and federal regulations (primarily the Resource Conservation and Recovery Act). The installation spill contingency plan and the spill prevention, control, and countermeasures plan reflect procedures to follow for accidental spillage situations. The procedures are contained within the Fort Campbell regulation CAM Supplement 1 to AR200-1.

Housing

3.368 Troop housing and military family housing are provided on-post within the cantonment area. Troop housing consists of both permanent and temporary enlisted barracks, bachelor enlisted quarters (BEQ), and bachelor officer quarters (BOQ).

3.369 Presently there are 12,674 permanent and 5,652 temporary enlisted troop housing spaces. Approximately 2,300 of the permanent spaces are not being used and are thus considered as excess (Huser, 1984).

3.370 Bachelor enlisted quarters currently number 76, all of which are located in temporary facilities. Bachelor officer quarters number 164 spaces. There are no excess bachelor enlisted or officer quarters.

3.371 The on-post military family housing stock currently (1984) consists of 800 officer units and 3,354 enlisted units. Occupancy rates run to 99 percent with the remaining units vacant for maintenance. In general, there is a waiting period of five to seven months after application for military family housing for enlisted personnel and as much as a year for company grade officers (Bonner, 1984).

3.372 Economic studies are currently being conducted to consider the feasibility of constructing an additional 300 units of family housing. If approved, construction would not take place before FY 86.

expanded and upgraded to meet federal water quality standards which apply to secondary wastewater treatment plants (Harland Bartholomew and Associates, Inc., 1982).

3.363 Historic flow data available (1971 through 1981) for the Fort Campbell sewage treatment plant indicates a wide variation in sewage flows. The average daily sewage flow increased sharply between 1976 and 1979 and then decreased to a current annual average daily flow of 3.0 MGD for 1981 (Harland Bartholomew and Associates, Inc., 1982). The design sewage flow expected by 1987 is approximately 4.1 million gallons per day (Harland Bartholomew and Associates, Inc., 1982). An expansion capability study (Miller/Wihry, Inc., 1983) indicates that the treatment system currently can serve a population of 40,000 and the collection system a population of 36,300.

Solid and Hazardous Waste Disposal

3.364 There are three landfills in operation on Fort Campbell. The first, located south of the small arms impact area and just west of the former Clarksville Base, is a landfill for bricks, brush, concrete and other construction waste collected on post. The second, a landfill for domestic waste collected on post, is located immediately west of the cantonment area. The third site (Bi-County Landfill), located next to the southern perimeter of the Fort Campbell property northwest of Gate 10 at Woodlawn Road and U.S. 79, is leased to Montgomery County, Stewart County, and the City of Clarksville for disposal of off-post waste.

3.365 The inorganic landfill is operated by post personnel primarily for construction waste from the numerous projects underway. The present site of approximately 25 to 30 acres is partially filled. Wastes are spread and covered intermittently to prevent scavenging. A 90-acre domestic waste landfill straddles the Tennessee/Kentucky state line. Operations began on the Kentucky side in August 1982 under Kentucky jurisdiction and permit. The Bi-County landfill is operated by Montgomery and Stewart Counties, under a lease agreement with Mobile District Corps of Engineers. The disposal of domestic waste in this facility approximates 60,000 tons per year. This site is also adequate for many more years (Fort Campbell, 1981).

Schools

3.373 Fort Campbell is one of the few remaining military installations with a complete public school system located on-post. Presently, there are four elementary schools, one middle school, one junior high, and one high school serving the on-post population.

3.374 Enrollment figures for the 1983-1984 school year are found in Table 3-9 as is the capacity of each school. Comparison of enrollment and capacity figures shows that the school system as a whole is overcrowded. Part of this overcrowding will be alleviated with completion of a new 800 student high school this year and the subsequent reassignment of existing senior and junior high school space to lower grade levels. However, a need will still exist for construction of additional space for elementary school pupils (Sitter, 1984; Harland Bartholomew and Associates, 1982).

Health Care

3.375 Health care facilities at the post consist of a 241 bed hospital constructed in 1982 and four dental clinics. Hospital facilities are adequate to meet the needs of the current and retired military and dependent populations. During FY 83, an average of 144 of the 241 beds were occupied on any given day. Outpatient visits for FY 83 were 514,078 which approximates the capacity of clinics and supporting facilities (Muldoon, 1984). The four dental clinics have a total of 90 chairs, which is eight less than military standards prescribe for the current population.

Public Safety

3.376 Fort Campbell is responsible for maintaining public safety within the installation boundaries. Police protection is provided through the Provost Marshall's office while fire services are provided by the post's fire department.

3.377 The Law Enforcement Command under the Provost Marshall has 379 personnel and is equipped with 36 tactical and 47 administrative vehicles. Public safety responsibilities assigned to this command require full utilization of these resources (Dunn, 1984).

3.378 The post currently operates four fire/crash stations, three of which are located at Campbell Army Airfield, Destiny Heliport, and Sabre Heliport. The fire department has a total of 80 personnel and 26 vehicles. At present, there are insufficient fire fighting personnel to operate an 85 foot ladder truck and a P-4 crash truck. Based on building square footage factors, the post should have two additional 1,000 gpm trucks for structural fires (Cundiff, 1984).

TABLE 3-9

ON-POST SCHOOL ENROLLMENT/CAPACITY

School	Grades	1983/1984 Enrollment	Capacity
Jackson	K-5	742	675
Lincoln	K-5	709	625
Marshall	K-5	680	600
Barkley	K-5	505	450
Middle (WWII Buildings)	K&6	513	-
Junior High	7-9	777	650
High School	10-12	417	450
TOTAL		4343	3450

Source: Sitter, 1984.

Traffic and Transportation

3.379 Fort Campbell has both air and ground transportation facilities. The following is a brief overview of these facilities. Additional information is contained in the installation's ongoing mission environmental impact statement (Fort Campbell, 1981) and analytical assessment report (Harland Bartholomew and Associates, 1982).

3.380 Airfields. Campbell Army Airfield located north of the cantonment area provides two runways for fixed-wing operations. The northeast-southwest instrument runway (11,800 feet in length) handles all major fixed-wing activity. The secondary, north-south runway is 4,500 feet long. Parking, fueling, and hangar facilities are available.

3.381 Fort Campbell has two major heliports. Destiny Heliport is located on Campbell Army Airfield north of the primary fixed-wing pads. Sabre Heliport, south of former Clarksville Base on Woodlawn Road, has seven hover points and two takeoff and landing helipads. Supporting the rotary-wing activity are parking and maintenance aprons, taxiways, hangars, and fueling facilities.

3.382 There are ten helipads in the cantonment area and 13 landing strips in the maneuver areas.

3.383 Two twin-engine fixed-wing aircraft are based at Campbell Army Airfield, while 414 helicopters are based at Destiny and Sabre Heliports. These helicopters average 1,280 operations a day (Fort Campbell, 1981).

3.384 Roadways. Five major entrance locations provide access to Fort Campbell during the primary work hours. Gates 1, 3, 4 and 6 are adjacent to U.S. Route 41-A, and Woodlawn Road enters the installation from U.S. Route 79 on the south. Gates 2 and 5 are open during the morning and evening peak periods to supplement entrance and exit capacity. Traffic counts taken in 1972 (3,200) and 1978 (4,910) showed a 53 percent increase in morning rush hour traffic and a 63 percent increase in daily traffic through these gates during this six year period.

3.385 The existing on-post street network consists of four major east-west traffic corridors leading from the entrance gates along U.S. 41-A and five north-south corridors serving cross-post traffic movement. These roadways are listed in Table D-3, Appendix D. Traffic counts taken in 1967, 1972 and 1976 show an

increase of 10 to 15 percent increase in annual daily traffic (Harland-Bartholomew and Associates, 1982). As of January 1984, there were 26,500 privately owned vehicles registered on-post in addition to 3,960 military vehicles.

3.386 The present on-post street system is characterized by inadequate street widths, limited sight distances, and inadequate intersection control. Traffic problems are compounded by the fact that motorists tend to diffuse through the road network in an effort to choose routes that cause the least delay. Consequently, roadways designed to operate as residential and collector streets sometimes function as arterials (Harland Bartholomew & Associates, 1982).

3.387 Off-post, U.S. Route 41-A serves as the principal link between the Fort Campbell and the communities of Hopkinsville and Clarksville. Traffic counts conducted during 1981 showed average daily traffic volumes of 28,000 in the vicinity of the post increasing to over 41,000 at the intersection with U.S. Route 79.

3.388 Development in the Route 41-A corridor coupled with unrestricted access has produced congestion at major intersections as well as a number of high accident locations. The Clarksville-Montgomery Regional Planning Commission has undertaken a series of studies to reduce congestion and improve roadway safety in this corridor.

3.389 Railway System. The present on-post government-owned and operated rail system consists of some 17 miles of track, a switch engine, and 30 rail cars. The track enters the installation near Gate 2 and runs west to Missouri Avenue where it turns north and runs generally parallel with Missouri across the length of the cantonment area to Campbell Army Airfield. Short rail spurs are provided to Clarksville Base and the Facilities Engineer's maintenance and support facilities along Ohio Avenue.

Energy Usage

3.390 The total on-post energy usage at Fort Campbell for FY 83 was 5.43 trillion Btu, obtained from the following sources:

Fuel Oil	348,100 MBtu
Natural Gas	1,333,700 MBtu
Propane	20,200 MBtu
Gasoline	172,000 MBtu
Diesel Fuel	146,000 MBtu
Aviation Fuel	1,044,000 MBtu
Electricity	2,363,600 MBtu

Based on an effective population of 30,500 residents derived using the methodology described in Appendix H, on-post energy consumption is approximately 178 MBtu per resident per year.

3.391 The majority of on-post energy usage is for heating; 1.7 trillion Btu were consumed in FY 83. Natural gas is the main heating fuel, accounting for 78 percent of annual heating energy consumption. Although natural gas is in short supply nationally, future use of natural gas is expected to continue due to the implementation of conservation measures at Fort Campbell.

3.392 Natural gas is supplied by the City of Clarksville, Tennessee. Fort Campbell is allotted a maximum of 13,000 MCF per day. Peak demand over the past five years was 10,400 MCF per day. The total on-site storage capacity for No. 2 fuel oil is approximately 448,000 gallons and for No. 5 fuel oil the capacity is 1,060,000 gallons. Liquid propane is used to heat 72 buildings and approximately 72,000 gallons can be stored on-post.

3.393 Electrical power is purchased from the Tennessee Valley Authority (TVA) and the peak power allotted is 40,000 KW per month. Present demand has exceeded this allotment for 6 to 8 hours in several days in September 1983. TVA is aware of Fort Campbell's power shortage and is investigating mitigating measures that can be implemented in two to three years.

3.394 On-post energy consumption by military vehicles was 1.36 trillion Btu in FY 83. In 1981 there were 3,500 military vehicles, 414 helicopters and 2 fixed wing aircraft at Fort Campbell.

3.395 Gasoline consumption by vehicles owned by military personnel is estimated at 21 million gallons (2,580 billion Btu) per year based on ownership of 36,000 cars driven an average of 9,026 miles per year at a mileage of 15.53 miles per gallon. Present energy use for personal transportation by military personnel is approximately 27 percent of that of civilian personnel in counties adjacent to the fort.

3.396 Estimated energy consumption for off-post housing of military personnel and their dependents is 2,4 trillion Btu per year based on an average per capita residential energy consumption of 140 MBtu per year. Residential energy consumption in the counties adjacent to the fort is approximately 23,800 billion Btu per year. Military personnel consume approximately 10 percent of the total residential energy used in the area.

3.397 Total energy consumption for Fort Campbell in 1983 was approximately 10.4 trillion Btu, including on-post energy usage,

military vehicles, private vehicles owned by military personnel and off-post housing requirements of military personnel. Total energy usage is approximately 467 MBtu per troop per year.

Cultural Resources

3.398 Prior to a recent University of Kentucky survey, seven archaeological sites on Fort Campbell were located, investigated, and recorded with the Division of Archaeology, Tennessee Department of Conservation. Three sites have been identified as Paleo and Archaic, two as Mississippian, and two with an unknown culture. Three of the sites contained stone box graves, while the others consisted of midden material and lithic debris. A record of the investigation of each site is available at the Fort Campbell Facilities Engineers Office; the Division of Archaeology, Tennessee Department of Conservation; or the Fort Campbell Museum (Harland Bartholomew and Associates, Inc., 1982).

3.399 An archaeological reconnaissance of Fort Campbell was conducted by scientists from the University of Kentucky in the fall of 1980 and the spring of 1981. The study provided basic inventory data on cultural resources documented by a sample survey. The study was performed for the U.S. Army Corps of Engineers, Nashville District (O'Malley, et al., 1983).

3.400 Evidence of human occupation from Paleo-Indian through historic times was obtained from 424 sites documented during the survey. Prehistorically, the area appears to have been used primarily as a "hunting ground" with few intensively occupied sites until the late prehistoric (Mississippian) period. At this time, there appears to have been a major shift to more intensive, semi-permanent or permanent occupations, probably associated with horticultural pursuits (O'Malley, et al., 1983).

3.401 Although no sites on Fort Campbell are included in the National Register of Historic Places, there are several areas of historic importance. They include the gravesite of Samuel Smith, a Revolutionary War soldier and pioneer in Tennessee, and several other cemeteries and farmhouses. There is one National Register Property adjacent to Fort Campbell. The Old Post House, located on a traffic island on U.S. 41-A (between Gates 2 and 3), was built in the early 1800's as a stage coach stop. There are additional National Register Properties in Clarksville and the surrounding counties (Harland Bartholomew and Associates, Inc., 1982).

3.402 All graves were removed from impact areas before their activation. The Directorate of Facilities Engineering maintains a cemetery location map for the post. Maneuvering is not allowed on identified gravesites (Harshbarger, 1984).

SUPERSEDED
AUG 1984

FORT DRUM, NEW YORK AND SURROUNDING REGION

3.403 Fort Drum is located in northern New York between Lake Ontario and the Adirondack Mountains, approximately 25 miles southeast of the Thousand Islands region, where the St. Lawrence River is formed by outflow from the northeast corner of Lake Ontario (Figure 3-8). Fort Drum currently has 1,030 military, 920 civilians, and 1,390 dependents associated with the post. The primary mission of the post is to provide training facilities and services to U.S. Armed Forces, active and reserve.

Eastern Lake Ontario - St. Lawrence New York Region

3.404 The Eastern Lake Ontario and St. Lawrence region is basically rural and sparsely populated, with many small communities and a few small cities. Much of the area is wooded, with mixed hardwood and coniferous forests, but substantial areas have been cleared for farming, especially south of Fort Drum. The urban community nearest to Fort Drum is Watertown, NY, located along the Black River, approximately 10 miles southwest of the Fort.

3.405 For the purpose of this study, the principal area affected by increased personnel and activities at Fort Drum are the three counties (tri-county area) that adjoin the Fort: (1) Jefferson, in which most of Fort Drum is located; (2) Lewis, containing a small part of the western corner of the Fort and extending to the south; and (3) St. Lawrence, adjoining the Fort to the north and northeast. Some economic and social effects of actions at Fort Drum, especially during construction and buildup, also will spill into Oswego and Oneida Counties, 30 to 50 miles to the south, and probably into Onondaga County, 60 miles to the south of Fort Drum. Onondaga County contains the city of Syracuse, the largest metropolitan area in central New York (population over 600,000).

Climate

3.406 Regional climate is humid, cool (average temperature 45°F), and continental, influenced by the large water masses of Lake Ontario and the other Great Lakes (Williams, 1980). Summer months are warm, but winters are long and cold, and growing seasons are short. Storm systems moving off Lake Ontario frequently bring cloudiness, rain, snow, and winds, and changing wind directions and temperatures (see Appendix E).

Biological Environment

3.407 Terrestrial environments of the eastern Lake Ontario and St. Lawrence region are typical of those found in upland regions of

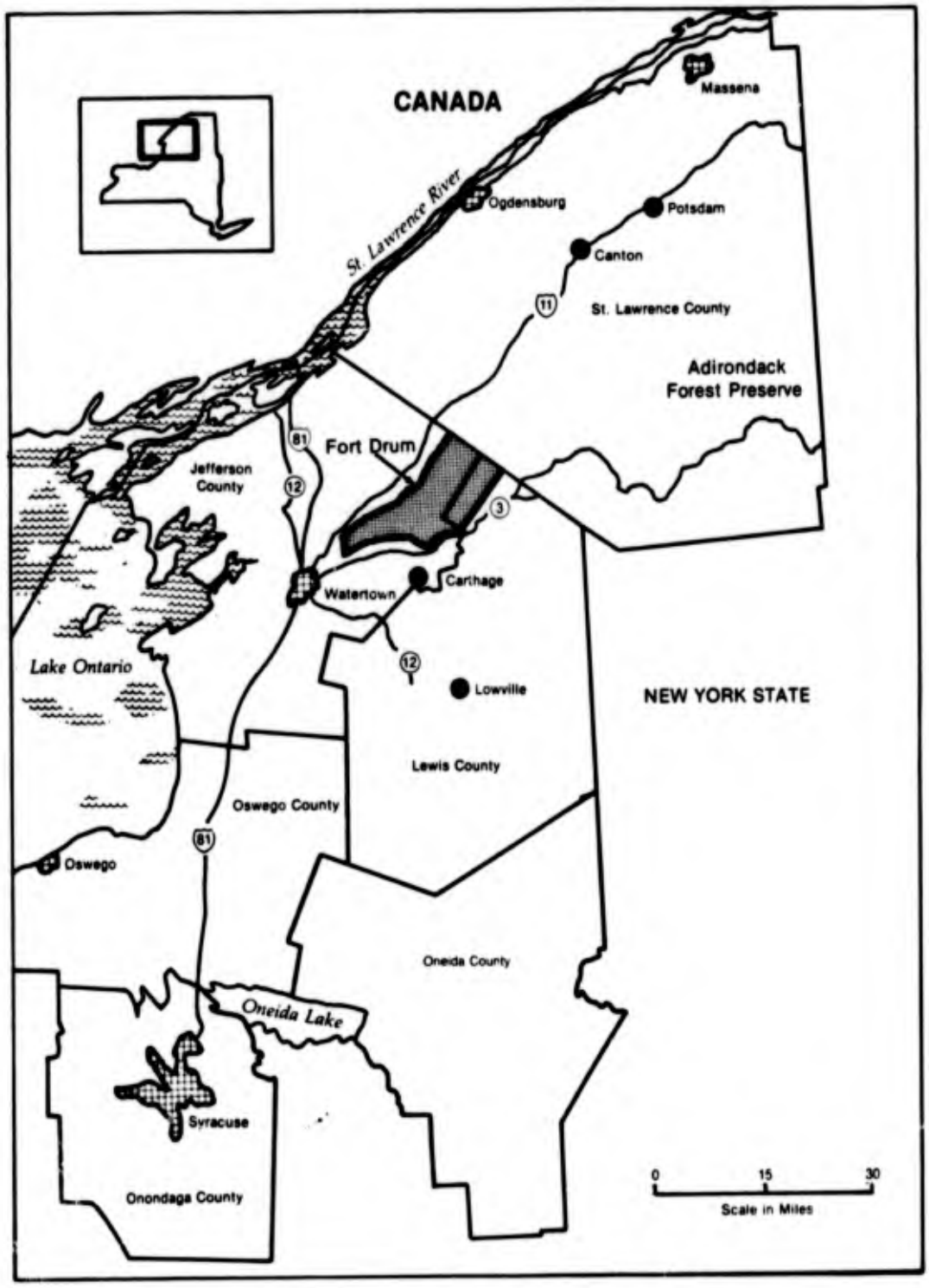


FIGURE 3—8
THE EASTERN LAKE ONTARIO AND ST. LAWRENCE REGION

FORT DRUM, NEW YORK AND SURROUNDING REGION

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3.405 For the purpose of this study, the principal area affected by increased personnel and activities at Fort Drum are the three counties (tri-county area) that adjoin the Fort: (1) Jefferson, in which the major portion of Fort Drum (i.e., approximately 83%) is located; (2) Lewis, containing approximately 17% of the Fort from the Northeast corner, extending southwest; and (3) St. Lawrence adjoining the Fort to the northeast. Some economic and social effects of actions at Fort Drum, especially during construction and buildup, also will spill into Oswego and Oneida Counties, 30 to 50 miles to the south, and probably into Onondaga County, 60 miles to the south of Fort Drum. Onondaga County contains the city of Syracuse, the largest metropolitan area in central New York (population over 600,000).

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Biological Environment

3.407 Terrestrial environments of the eastern Lake Ontario and St. Lawrence region are typical of those found in upland regions of

northeastern United States. Hardwood and mixed forests provide food and cover for a wide variety of large and small, game and non-game animals, including white-tailed deer, bear, and coyote. Large deer herds inhabit the region and from time to time they experience feed shortages and starvation during bad winters.

3.408 The aquatic environment in the vicinity of the installation includes a large number of free running streams (generally with gravel or cobble beds), slow-moving streams in flatlands, and small natural ponds and wetlands in flat low-lying areas. The principal rivers in the area of the post (the Black and Indian Rivers) have been dammed in many places for low-head hydropower plants. These generating plants are run-of-the river and do not have significant storage reservoirs.

3.409 Free running streams are inhabited by a variety of gamefish, including trout and salmon, and are heavily fished by local residents. The streams, lakes, and wetlands provide habitat for furbearing animals (beaver, muskrat, racoon, and mink) and waterfowl.

Demography

3.410 The tri-county region surrounding Fort Drum had a combined 1980 population of 227,440. Population has remained stable in the region over the last ten years, although the urban areas have experienced a decrease in population. Population densities within 50 miles of Fort Drum vary greatly, with 32 percent living in four urban areas of Watertown, Potsdam, Ogdensburg, and Canton. Watertown City, located approximately 10 miles southwest of Fort Drum, is the largest city within a 50 mile radius with a population of 27,961, while north and east of the installation population density is less than 25 persons per square mile. Table 3-10 shows county population trends for major towns or cities in each county. Total population for the region is projected to increase about 3 percent to 234,000 by 1990.

3.411 The above population figures do not include the transient summer population. The Thousand Islands area (25 miles northwest of the installation) attracts many recreationists. Seasonal homes in the region account for 10 to 18 percent of all housing. Although accurate figures are not available, it is possible that populations of the towns along the St. Lawrence River and eastern Lake Ontario shore may double during the summer vacation season (U.S. Corps of Engineers, 1978).

3.412 The racial distribution in each of the counties varies significantly from the State. In 1980 the nonwhite population in

TABLE 3-10

COUNTY POPULATION BY YEAR

	1960	1970	1980	Projected 1990*
Jefferson	87,835	88,500	88,151	91,000
Lewis	23,249	23,600	25,035	27,000
St. Lawrence	111,239	111,731	114,254	116,000

*Population projections taken from 1983-84 New York State Statistical Yearbook.

Source: U.S. Census, 1980, 1970, 1960.

POPULATION FOR SELECTED COMMUNITIES WITHIN A COUNTY

	Urban Populations*	Percent of Total County
Jefferson County		
Watertown City and Town	30,959	35.1
Lewis County	--	
St. Lawrence County		
Potsdam Village and Town	17,411	15.2
Massena Town	14,856	13.0
Ogdensburg City	12,375	10.8
Canton Village and Town	11,568	10.1

*Areas of 10,000 or more.

Source: U.S. Census, 1980.

SUPERSEDED
AUG 1984

New York was 20 percent compared to a nonwhite population of 0.7 percent in Jefferson County, 0.3 percent in Lewis County and 0.9 percent in St. Lawrence County.

Land Use

3.413 Approximately 90 percent of the installation lies in the northeast corner of Jefferson County, with the remaining area located in Lewis County. The towns of Wilna, Antwerp, Philadelphia, LeRay, and Diana all have land adjoining the installation. All of these towns are rural, dairy farming communities. In Jefferson County as a whole about 40 percent of the total area is used for agriculture, although active agricultural land use has been declining recently and residential and commercial use has increased slightly (Jefferson County Department of Planning, 1984).

3.414 Within 50 miles of Fort Drum, forest cover predominates to the east, especially in the Adirondack area; agriculture lands predominate to the north and west (although major wetlands also occur in the area); and to the south, agricultural land extends in two finger like areas: one along Lake Ontario and the other along the Black River Valley. The forest cover of the Tug Hill Upland lies between. The Lake Ontario and St. Lawrence River shoreline has extensive recreational development. With the exception of the continued abandonment of marginal agricultural lands and reversion to forest, the general land use pattern is expected to remain essentially the same through the year 2000.

3.415 Dairy farming is the predominant agricultural activity. Corn, oats, other small grains, and especially hay are grown on the croplands. Pastures range from improved (tilled and seeded) to unimproved (invaded by shrub and tree species). The most productive agricultural area is in the Black River Valley of Lewis County.

3.416 Small scattered wetlands occur throughout the region and there are large wetlands in northern Jefferson and western St. Lawrence Counties. The wetlands are interspersed with forest and agricultural lands.

3.417 As would be expected, recreational developments along the shoreline are water oriented. The Thousand Islands area is famous as a fishing and boating area. Further downstream along the St. Lawrence River, summer homes and vacation camps line the shore. From Cape Vincent southward along the eastern shore of Lake Ontario, there are many summer homes, fishing stations, and boat marinas. Many public parks are concentrated in the area from Henderson Harbor in the northeastern corner of Lake Ontario down the St. Lawrence River to Ogdensburg (U.S. Corps of Engineers, 1978).

Noise

3.418 Noises in the region include those typical of small towns and rural areas. The principal sources are transportation farm and forestry equipment and construction. None of these represents a serious nuisance problem.

3.419 In the area of Fort Drum, noise is heard from military aircraft and weapon firing. The problem is worst in communities located within one or two miles of the firing ranges--Antwerp, Deferiet, and Natural Bridge. Two studies of noise from weapons firing have been conducted by the U.S. Army Environmental Hygiene Agency (Luz, 1976, 1979), with very similar results. Adverse impacts from blasts during daytime were minimal in Philadelphia, but somewhat annoying in parts of Antwerp and Natural Bridge. Nighttime noises created a slight annoyance in Philadelphia, a moderate annoyance in Antwerp, and a strong annoyance in Natural Bridge. Distributions of sound pressure level (SPL) measured at three sites in Natural Bridge and average equivalent C-weighted energy levels for the three sites are given in Appendix E. Levels shown are almost all above an early U.S. Environmental Protection Agency (1974) limit of 51 dB, but many are below a current Department of Defense Criterion of 65 dB. A zone of C-weighted levels on Fort Drum, as determined by the U.S. Army Construction Engineering Research Laboratory (1979) is illustrated in Apprendix E.

Regional Economic Activity

3.420 A summary of business, economic, labor, government, and transportation data for the tri-county region is given in Table 3-11. The principal nonfarm, nongovernment economic activities are manufacturing, service businesses, and retail trade. Paper and allied products comprise the main manufacturing sector in Jefferson and Lewis Counties, and primary metal industries make up the largest sector in St. Lawrence County.

3.421 Government accounts for more that 20 percent of the employment in the region, followed by manufacturing and service industries. Fort Drum contributed a total payroll of $36.7 million in FY 1983. Total FY 83 disbursements by Fort Drum were $61 million.

3.422 Dairy farming is a major business in the region, with sales of about $130 million per year. Jefferson and St. Lawrence counties rank among the highest in the state in number of farms, numbers of cattle and calves, number of milk cows, acres of corn for silage, and acres of hay.

New York was 20 percent compared to a nonwhite population of 0.7 percent in Jefferson County, 0.3 percent in Lewis County and 0.9 percent in St. Lawrence County.

Land Use

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TABLE 3-11

SELECTED ECONOMIC DATA FOR TRI-COUNTY AREA
(All dollar amounts are in thousands)

	Jefferson County	Lewis County	St. Lawrence County
INDUSTRIAL EMPLOYMENT AND PAYROLL, 1981[a]			
Number of establishments	1,380	338	1,630
Number of employees, Mar. 12, 1981	19,642	3,324	22,482
Annual payroll, total ($)	276,744	47,097	343,863
Contract construction ($)	20,844	2,804	12,449
Manufacturing ($)	107,191	31,236	172,737
Transportation and utilities ($)	23,705	1,726	21,423
Wholesale trade ($)	17,162	2,618	11,390
Retail trade ($)	39,953	4,738	37,868
Finance, insurance, and real estate ($)	12,337	1,040	9,708
Services	52,939	2,403	62,157
BUSINESS[b]			
Receipts of service businesses, 1977 ($)	35,125	3,515	24,893
Deposits in commercial and state-chartered savings banks, June 30, 1982 ($)	606,099	95,182	417,978
FARMS[b]			
Number, 1978	1,319	711	1,834
Total acres, 1978	387,788	209,267	500,142
Total cattle, 1981-82	92,000	65,000	95,000
Milk cows, 1981-82	46,000	33,000	50,000
Value of products sold, 1978 ($)			
Crops	3,565	1,314	3,188
Livestock, poultry, and products	56,490	40,744	56,543
Dairy products	48,458		48,888
INCOME, 1979[c]			
Per capita average ($)	5,602	5,356	5,272
Household median ($)	13,547	14,472	13,673
Family median ($)	16,295	16,257	16,540
Percent below poverty level	13.7	13.2	17.2
EMPLOYMENT SUMMARY, February 1984[d]			
Civilian labor force	39,000	10,400	
Unemployment	6,700	1,100	
Employed	32,400	9,300	
Nonagricultural employment	26,700	5,600	
Manufacturing	4,700	2,000	
Trade	5,200	700	
Services	5,500	500	
Government	7,800	2,000	
Federal	1,800		
State	1,000		
Local	5,000		
TAXES AND GOVERNMENT[b]			
State personal income tax, 1981			
Number of returns	31,061	8,310	35,271
Total income ($)	454,387	120,092	539,378
Tax liability	17,052	4,266	21,501
Local governmental entities, 1981			
Cities	1		1
Towns	22	17	32
Villages	20	9	13
School districts	13	5	18
Local government revenues (including counties), 1981 ($)	129,831	41,044	164,952
Equipment and capital outlays by local and county governments, 1981 ($)	12,795	4,192	21,560
VEHICLES, ROADS, AND AIR OPERATIONS[b]			
Motor vehicles registered, 1982	58,902	17,314	68,576
Highway miles, 1982	2,133	1,328	3,130
Air operations by U.S. Certified Carriers, 1982			
Passenger emplanements	338		555
Aircraft departures	509		509
Motorboats used in county, 1982	9,911	1,279	7,235
Snowmobiles used in county, 1982	1,744	1,523	1,767

[a]U.S. Department of Commerce, 1983a.
[b]The Nelson A. Rockefeller Institute of Government, 1983.
[c]U.S. Department of Commerce, 1982a.
[d]New York State Department of Labor, 1984.

3.423 Regional incomes generally are 13 to 30 percent lower than they are statewide--New York State per capita average is $7,500, household median is $16,647, and family median is $20,180. Regional unemployment rates also are higher than the statewide average rate of 8.1 percent in January 1984. Jefferson County's unemployment rate for January 1984 was 20.4 percent.

Air Quality

3.424 The region surrounding Fort Drum lies in two New York air quality control regions. St. Lawrence County is in the Northern Air Quality Control Region (NAQCR), which includes a total of seven counties lying to the north and east of Fort Drum. Jefferson, Lewis, Oswego, Oneida, and Onondaga Counties are in the Central Air Quality Control Region (CAQCR) which includes a total of nine counties lying generally south of Fort Drum. All monitored sites in these regions (12 in NAQCR, 27 in CAQCR) were in compliance with New York State Ambient Air Quality Standards (AAQS) in 1982 (New York State Department of Environmental Conservation, 1983), and were in attainment of Zone 4 (rural area) standards (Williams, 1984). The air quality is also well below federal standards for all criteria.

3.425 The only monitoring of primary pollutants at the three sites nearest Fort Drum (Watertown, Lowville, and Ogdensburg) is for total suspended particulates (TSP), for which the NYAAQS is 250 micrograms per cubic meter (ug/m^3) (24-hour average, not to be exceeded more than once per year). Highest and second highest 24-hour averages recorded at the three sites in 1982 are:

- Watertown - 147 and 84 ug/m^3
- Lowville - 124 and 120 ug/m^3
- Ogdensburg - 187 and 107 ug/m^3

Water Supply

3.426 There is abundant water supply throughout the eastern Lake Ontario and St. Lawrence region. Most communities, farms, and rural residences use ground water as a source of supply, but moderate supplies also can be taken from the Black and Indian Rivers. There are no EPA designated sole source aquifers in the Fort Drum region. Lake Ontario remains a potential large source of supply to support any great increases in needs within a reasonable distance of the lake (possibly 25 miles). Three communities near Fort Drum that are known to use surface-water supplies are (Williams, 1980):

- Watertown - 5,000,000 gallons per day (gpd) from Black River
- Evans Mills - 75,000 gpd from West Creek
- Philadelphia - 100,000 gpd from a tributary of Trout Brook
- Antwerp - 70,000 gpd from surface springs on Fort Drum

3.427 On post, a well field northeast of the cantonment area serves as the installations's source of drinking water. The combined capacity is 3.8 mgd.

3.427a The amounts of excess capacity in the community system vary greatly. The City of Watertown has a system capable of delivering 7.5 to 8 mgd, compared with an average usage of 6.1 mgd. Within months, the system will be expanded to a capacity of 10 mgd. For other communities, the system capacities and present water usage, in thousands of gallons per day, are:

Community	Capacity	Usage
Antwerp	325	70
Black River	210	150
Carthage	800	650
Deferiet	240	120
Evans Mills	300	42
Herring	50	30
Philadelphia	3000	130
West Carthage	700	300

Some of the community water systems in the region are old and have fallen into neglect and lack distribution, storage, or adequate flow for fire fighting (Williams, 1980). Many communities also lack the economic base and scale to accomplish improvements.

Wastewater Disposal

3.428 Municipally owned sewage treatment plants in three counties surrounding Fort Drum are (The Nelson A. Rockefeller Institute of Government, 1983):

County	Total	Primary Treatment	Secondary Treatment	Tertiary Treatment
Jefferson	13	0	13	0
Lewis	4	2	0	0
St. Lawrence	17	0	16	1

These generally are adequate to serve present community populations, but because populations are relatively stable, some have limited capacity for expansion.

3.428a Design and loading information for several communities in Jefferson County are:

City or Village	Capacity (mgd)	Present Loading (mgd)
Watertown	8.0	6.2
Evans	0.1	0.04
Philadelphia	.1	.09
Carthage & West Carthage	4.0	3.5

Watertown, which has the greatest excess capacity, estimates that its present system could support an additional population of 5,500 to 8,700 people. A sewage treatment plant on-post provides primary, secondary, and tertiary treatment for sanitary sewage generated on the installation.

3.429 The area surrounding Fort Drum has a great deal of single-family dwelling and small business development along roads and highways--often without zoning regulation. These housing units (often trailers) and businesses generally dispose of wastewater through individual septic systems. These systems have been and continue to be unregulated or very poorly regulated. They represent a threat for local groundwater contamination, although the risk may not be great (Mooers, 1984). Some communities (e.g., Antwerp, Black River, Carthage, and Herring) also do not have central sewerage works and rely on individual or cluster septic systems.

Solid Waste Disposal

3.430 There is a regional problem with finding suitable solid waste landfill sites because of the general prevalence of permeable

soils. In 1982 Jefferson County had 12 operating disposal sites with none having necessary permits, St. Lawrence County had 36 sites and no permits, and Lewis County had 9 sites with only 1 permit (The Nelson A. Rockefeller Institute of Government, 1983). The landfill site operated by the City of Watertown received a permit in October 1983. St. Lawrence County has elected to solve the problem by constructing a major incineration facility at Ogdensburg to handle wastes from the entire county (Moores, 1984). Plans have been developed and proposals will be evaluated in mid 1984. Jefferson County also is considering a county-wide facility (O'Brien and Gery Engineers, Inc., 1981), but plans are not so far advanced as they are in St. Lawrence County.

Housing

3.431 In the tri-county area there are 80,154 year round housing units. The median value of homes ranges from $26,400 to $28,600 with a rental vacancy rate of 6.8 to 9.2 percent. Table 3-12 presents a summary of 1980 census data on housing characteristics in the tri-county area. However a closer look at housing availability shows that the census data can be misleading. For example, although a total of 2,430 houses were vacant at the time of the census (for a vacancy rate of 7.4) in Jefferson County, over 50 percent of these units were not available for occupancy. The 1,156 units vacant and available for occupancy in Jefferson County represent only a 3 percent vacancy rate for total year round housing. The vacancy rate for properties available for occupancy in Lewis County was 3 percent, and in St. Lawrence County 2 percent (Black River-St. Lawrence Region Planning, 1980).

3.432 In addition, the median contract rent given in the census is generally lower than fair market rents. Fair market rents for one to four bedroom housing ranged from $251-$392 in Jefferson County in 1983. 1980 data for the same size units show rents ranging from $159 to $222 in Lewis County and from $163 to $246 in St. Lawrence County (Jefferson County Department of Planning and Federal Register, Vol. 45, No. 66).

3.433 Single family homes are the predominate structure in the region although the number of mobile homes has increased significantly in the area. A housing needs analysis done for the region in 1976 described a critical shortage of housing for rural, low income people which was projected to worsen through 1990 (Black River-St. Lawrence Region Planning, 1976).

Schools

3.434 There are nine school districts within a reasonable commuting distance of Fort Drum. As shown in Table 3-13 during the

TABLE 3-12

GENERAL HOUSING CHARACTERISTICS FOR FORT DRUM REGION

Location	Housing Units (Year Round Housing)	Value (Dollars)			Monthly Contract Rental Rate (Dollars)			Rental Vacancy Rate (%)
		Less Than $20,000	$50,000 or more	Median	Less Than $100	$200 or More	Median	
Jefferson County	33,222	3,668	1,571	28,300	1,676	1,491	151	7.4
Watertown City	11,302	1,048	541	29,200	1,063	846	151	6.9
Carthage Village	1,458	188	35	25,600	160	83	131	6.5
Black River Village	504	32	61	36,600	4	30	169	6.2
Lewis County	8,722	1,136	362	26,400	312	102	102	9.2
St. Lawrence County	38,210	4,575	2,357	28,600	1,438	1,589	149	6.8
Ogdensburg City	4,395	853	147	23,500	305	174	146	4.8
Potsdam Village	2,605	94	216	38,500	82	537	177	10.6
Canton Village	1,606	45	206	42,000	166	322	176	2.3

Source: U.S. Department of Commerce, 1980 Census of Housing and Population.

TABLE 3-13

PUBLIC SCHOOLS IN THE VICINITY OF FORT DRUM[a]

School District	Grades	Current Enrollment	Total Capacity	Excess Capacity
Carthage Central	K-12	2,939	2,917[b]	0
Indian River Central	K-12	1,821	2,701	880
Copenhagen Central (Lewis County)	K-12	580	750	170
General Brown	K-12	1,588	2,190	602
LaFargeville	K-12	475	650	175
Lyme Central	K-12	352	381	29
Watertown	K-12	4,280	6,350	2,070
Hounsfield	K-12	510	700	190
South Jefferson	K-12	1,829	2,500	671
		14,374	19,139	4,787

[a]All schools are in Jefferson County unless otherwise marked. Data are for the 1983-84 school year.

[b]Includes capacity of one inactive school building of 105 spaces.

Source: Office of the District Superintendent of Schools, Watertown, New York, April 1984.

1983-84 school year 14,374 students were enrolled in the public schools leaving an excess capacity overall of 4,787. However, the Carthage Central district is currently operating above their total capacity. Of the 392 military dependents attending city and rural schools around Fort Drum, approximately 67% attend Carthage Central schools (District Superintendent of Schools, Watertown, NY). There are also six parochial schools with grades K through 12 within 25 miles of Fort Drum. During the 1981-82 school season eleven military dependents were attending five of the six schools. All of these schools show an excess capacity. Enrollment in Jefferson County schools has been declining steadily over the last ten years, going from 21,251 in 1973 to 16,494 in 1982 for a decrease of 22 percent countywide (NY State Statistical Yearbook, 1983).

3.435 Within a more extended 40 mile radius of the installation there are 12 school districts. These districts are currently experiencing an increasing vacancy rate, with a surplus of 7,000 spaces in 1982. In the 31 public school systems in the 12 districts there are 63 elementary schools, 10 private schools, and two technical/vocational schools at the secondary level. In addition, there are 17 colleges and universities within a 75-mile radius as well as community and junior colleges nearby. These educational facilities offer a full range of academic and sports programs (St. Lawrence County, 1978a).

Health Care

3.436 There are two major hospitals in the immediate Fort Drum area. Mercy Hospital has 222 beds plus 198 long term care beds for a total of 420 and an average occupancy rate of 65 to 70 percent. The House of Good Samaritan Hospital has 258 acute care beds plus 272 long term care for a total of 530 beds with an 81 percent occupancy rate. Both of these hospitals offer a complete range of health services, extensive psychiatric services, and an array of specialized medical services. Two additional hospitals are within the Fort Drum area: the Edward D. Noble Hospital in Alexandria Bay (35 miles from the Fort) with 48 beds and Carthage Area Hospital in Carthage (8 miles from the Fort) with 48 beds (Poulton, 1984). The attitude of local physicians toward CHAMPUS patients is characterized as very good (Williams, 1980).

3.437 There are no year round hospital facilities on-post. During the summer training cycle the Wilcox Hospital Clinic on-post has 25 beds available. Patients are referred to a community hospital for extreme emergencies, in-patient care, and special services. During non-annual training periods only the clinic operates, and referrals to community hospitals average 96 per month (Poulton, 1984).

Cultural Resources

3.438 See on-post cultural resources description.

Fort Drum, New York

3.439 What is now Fort Drum (Figure 3-9) began as Pine Camp in 1908. The installation, which originally was 10,000 acres, was established as one of the Army's first field training projects for use of regular and National Guard troops. In 1939-40 the government purchased approximately 90,000 additional acres, and in the winter of 1940-41 the cantonment area and facilities were constructed to house 20,000 troops. After World War II the use of the facility reverted to that of a training facility for Guard and Reserve units. While reserve component (RC) (i.e., ARNG and USAR) two weeks of annual training (AT) is conducted by Reserve Component Units (e.g., USAR, ARNG), during the period mid April to mid September, other periods are now being scheduled to conduct their AT during January-March time frame. In addition, RC units conduct weekend training exercises (Multiple Unit Training Assemblies - MUTAs) or Inactive Duty for Training (IDT) from April until late November. There are also active component units (AC) that include U.S. Marines that conduct winter training exercises during the months of December through March. The U.S. Army units to include smaller units such as a Special Forces Group, as well as brigade sized elements also that conduct winter training exercises predominantly during the January-March time frame.

3.440 The present size of the installation is 107,265 acres (167.6 sq mi), and its primary mission remains that of providing training facilities and services to US Armed Forces requiring land and air space to practice combat skills and operations. Although used mainly by Army units, it also supports Marine, Naval, Air Force, and interservice activities. Other missions are:

- o Support activities of other DOD tenant units,
- o Commands all assigned or attached Army units,
- o Support Reserve and National Guard training, and
- o Support Reserve Components in the event of mobilization.

Geology, Minerals and Soils

3.441 Fort Drum lies between Lake Ontario and the Adirondack Mountains in two major physiographic provinces, the Lake ErieOntario Lowlands and the Adirondack Highlands. The southwestern two-thirds of the reservation is part of the Eastern Ontario Hills and the Black River Valley. The northeastern third falls in the Western Adirondack Hills, a subdivision of the larger Adirondack Highlands. This portion of the reservation includes several large lakes, widespread rock outcrops, and numerous hillocks (Williams, 1980).

3.442 Land forms on the installations include plains and high plains. The low plains, which cover about 98 percent of the reservation, have large areas of flat to gently rolling surfaces.

SUPERSEDED
AUG 1984

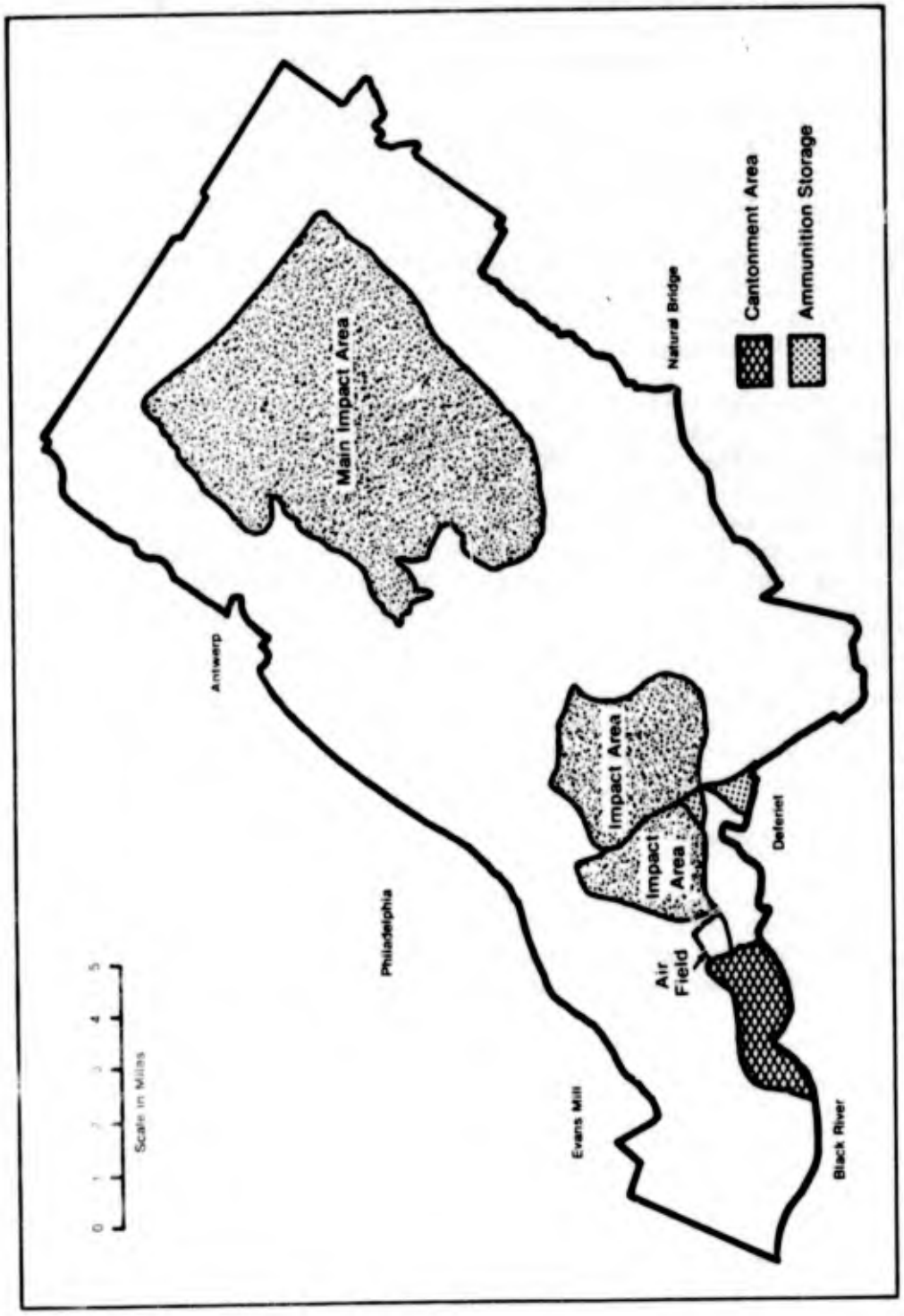


FIGURE 3—9
FORT DRUM, NEW YORK

Numerous hillocks are concentrated in the northwestern third of the reservation. Altitudes on Fort Drum range mostly between 490 and 690 feet above sea level--extremes are 420 and 902 feet.

3.443 Various minerals have been and continue to be extracted from the Precambrian rocks on the east side of the Indian River. Iron, sulfur, and zinc were mined in the region, and talc continues to be mined adjacent to the northeastern boundary of Fort Drum. Limestone suitable for sale as marble has been quarried at the northern edge of the post. Rocks sold as granite in New York State that occur on the installation are granite, syenite, anorthosite, and gabbro. Glacial deposits of clay, sand, and gravel are available throughout the region.

3.444 Soils in the region are generally shallow and poorly drained. The best soils for agricultural purposes occur in the Black River Valley. Areas with productive soils occur locally along the northwestern boundary of the installation. Installation soils vary from sandy gravels to clays to mucks. Silty sand lying on surface bedrock covers 31 percent of the post, clayey silts cover 23 percent, silty sand with areas devoid of vegetation make up 21 percent.

3.445 Some of the neighboring land adjacent to Fort Drum has been surveyed indicating prime farmlands of state wide and county wide importance. Precise data indicating unique farmlands in Jefferson and Lewis Counties have not yet been published. St. Lawrence County does not contain any.

Biological Environment

3.446 Terrestrial Ecosystems. The majority of Fort Drum reservation is covered by four major vegetation types: forests, scrub, grasslands, and wetlands. The major vegetation distribution is as follows (Terrain Analysis Center, 1977):

- o forests, 46 percent
- o grasslands, 27 percent
- o scrub, 15 percent
- o wetlands, 6 percent
- o open acres, 4 percent
- o open water, 2 percent.

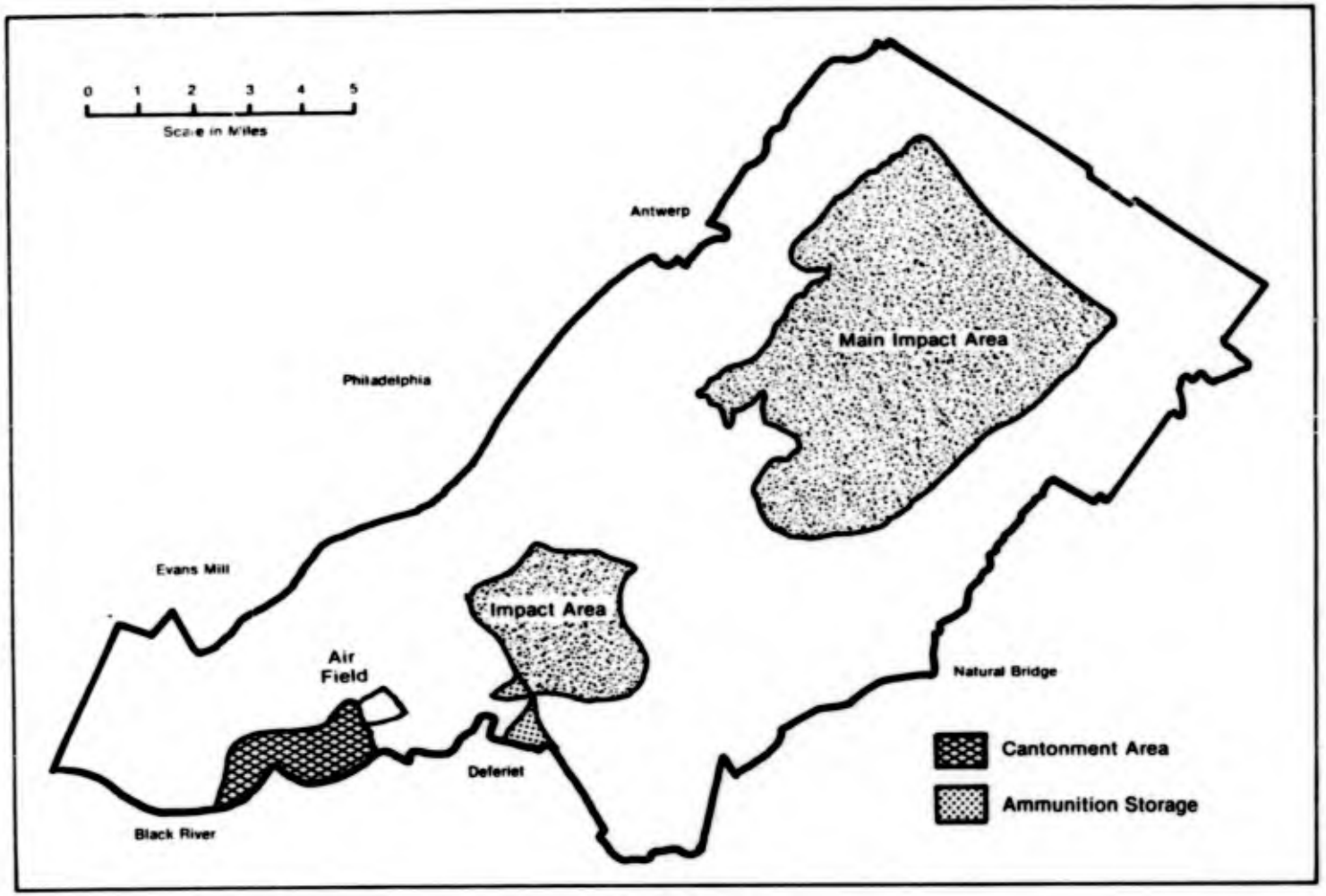


FIGURE 3—9
FORT DRUM, NEW YORK

3.447 Of the 107,000 acres under management, 55,000 acres has commercial timber management, and 83 acres is managed for wildlife and recreation hunting and fishing. Two significant habitats on Fort Drum have been identified by New York State as winter deer concentration areas (Ozard, 1984).

3.448 Aquatic Ecosystems. Wetland habitats include wooded swamps (59 percent) and marshes (1 percent) in the northern portion of the Fort. Four large rivers, 12 small creeks, lakes, ponds, and reservoirs are on the installation. They support trout, pike, bass, beaver, and other populations. A heron rookery is located in the eastern portion of Little Meadow Swamp, in the north central section of the main impact area. About 8 percent of Fort Drum (7,500 acres in Jefferson and Lewis Counties) has been identified by the New York State Department of Environmental Conservation (NYS-DEC) as being regulated wetlands, under Article 24 of the New York Environmental Conservation Law.

3.449 Pursuant to U.S. Executive Order 11752, federal facilities cooperate fully with the state in environmental matters, secure all necessary permits to conduct activities (including payment of all application fees), and accomplish required environmental reviews for construction projects and troop training activity. Fort Drum has established a dual permitting system with NYS-DEC regarding freshwater wetlands. One permit has been developed which specifically allows training activity to take place within the vicinity of wetlands. A second permit exists which is directed at specific construction projects. Periodic updates of new projects are provided to NYS-DEC in accordance with the installation's memorandum of understanding with NYS-DEC. Fort Drum personnel report that vehicle stream crossings now cause occasional damage to spawning areas (Williams, 1984).

3.450 Threatened and Endangered Species. Federally designated endangered or threatened species are not known or suspected to be on Fort Drum.

On-Post Population

3.451 Fort Drum's population is composed of a small, stable resident segment and a large training segment which fluctuates significantly on a yearly cycle. The authorized resident work force population consists of 1030 military and 920 civilian for a total of 1950. This includes the garrison and tenant elements as well as two augmentation units: the 76th Engineer Battalion, 553rd Engineer Detachment (Utilities), 520th Engineer Detachment (Fire truck), and 597th Engineer Detachment (Water truck). The 76th Engineer Battalion transferred to Fort Drum from Fort Meade beginning in 1980 with the final segment of the Battalion, Company D, to arrive on post during FY85. The 553rd Engineer Detachment is scheduled to move to Fort Meade in FY85. In addition

to the work force population there are also 850 military dependents residing on post in 350 family quarters. 770 of the military personnel live on post for a total resident population of 1620 (Ft. Drum Public Affairs, 1984).

3.452 Armed Forces train at Fort Drum on a year round basis. April through September is devoted almost exclusively to AT, but some MUTAs are conducted during this period. MUTA/IDT are concentrated between late September and late April. Active Component winter training is concentrated in the months of January, February, and March. During Annual Training of Reserve Components, the number of persons on the installation increases by as much as a factor of 10 in response to the arrival of reservists and guardsmen as well as a small number of civilians and military support persons who are added to the work force. Expansion of the armed forces during the Vietnam era caused a peak strength of 14,000 training troops to be reached in 1972. In less active and more representative years, such as calendar year 1976, training troop strengths peaked at 8,500 and averaged 6,500 persons. Annual Training was attended by 46,520 individuals in 1976. The Annual Training group changes every week from mid-April to mid-September because combat and logistical units have overlapping schedules. On alternate weekends, 80 percent of the training troops population exchanges. The work force augmentation is less turbulent. During cold weather training about 3,000 training troops and support personnel are present for six weeks each January and February. If a major field training exercise is held, this figure may increase to 10,000, as it did during exercise EMPIRE GLACIER in January 1978 (Williams, 1980). Empire Glacier 1980 was the last of that cycle of major combined services field training exercises to be held at Fort Drum. Since that time the training population has enjoyed a greater "stability" factor due to FORSCOM bridge rotation (Task Force Drum - TFD) program conducted in January-March time frame.

Land Use

3.453 Field training space predominates over other land uses at Fort Drum. Approximately 95 percent of the surface area is devoted to accommodating training situations requiring large tracts of land. Training space is developed into general and specialized training sites, weapon-specific firing points, and projectile impact areas, all of which are served by networks of roads and telephone cables. The remaining space is intensely developed with structures designed to shelter support and service facilities. In this space are quarters for military members and their dependents, work areas, outdoor vehicle storage areas, an airfield, and an ammunition storage area.

3.454 At Fort Drum, persons both live and work in the cantonment area. The cantonment area and airfield are contiguous and are separated from the ammunition storage area by a 3-mile wide buffer. All three areas adjoin the Black River in the southwest quarter of the installation. Other land uses on the installation are parcels containing cemeteries, historical artifacts, public water supply stations, utility corridors, and similar entities (Williams, 1980).

SUPERSEDED
AUG 1984

3.455 Field training space contains two subdivisions: maneuver areas and impact areas. Maneuver areas accomodate nearly all types of ground activity or aircraft overflight, whereas unexploded ordnance in the impact areas precludes ground occupation. Heavy tracked vehicles (tanks) disturb the surface and therefore the five tank ranges must be restored after each training use. The Army's principle of management is to use land at the perimeter of the installation as a buffer to separate the public from noise, dust, aircraft overflight, and weapon and vehicular hazards associated with training activities. The trend is to relocate large-bore, high-velocity firing ranges away from populated areas, and also to close the perimeter of the main impact area.

3.456 Selected areas totaling 35,250 acres are managed to produce merchantable timber. All cutting is selective--no areas are clear-cut except those areas being prepared for new ranges by vegetation removal.

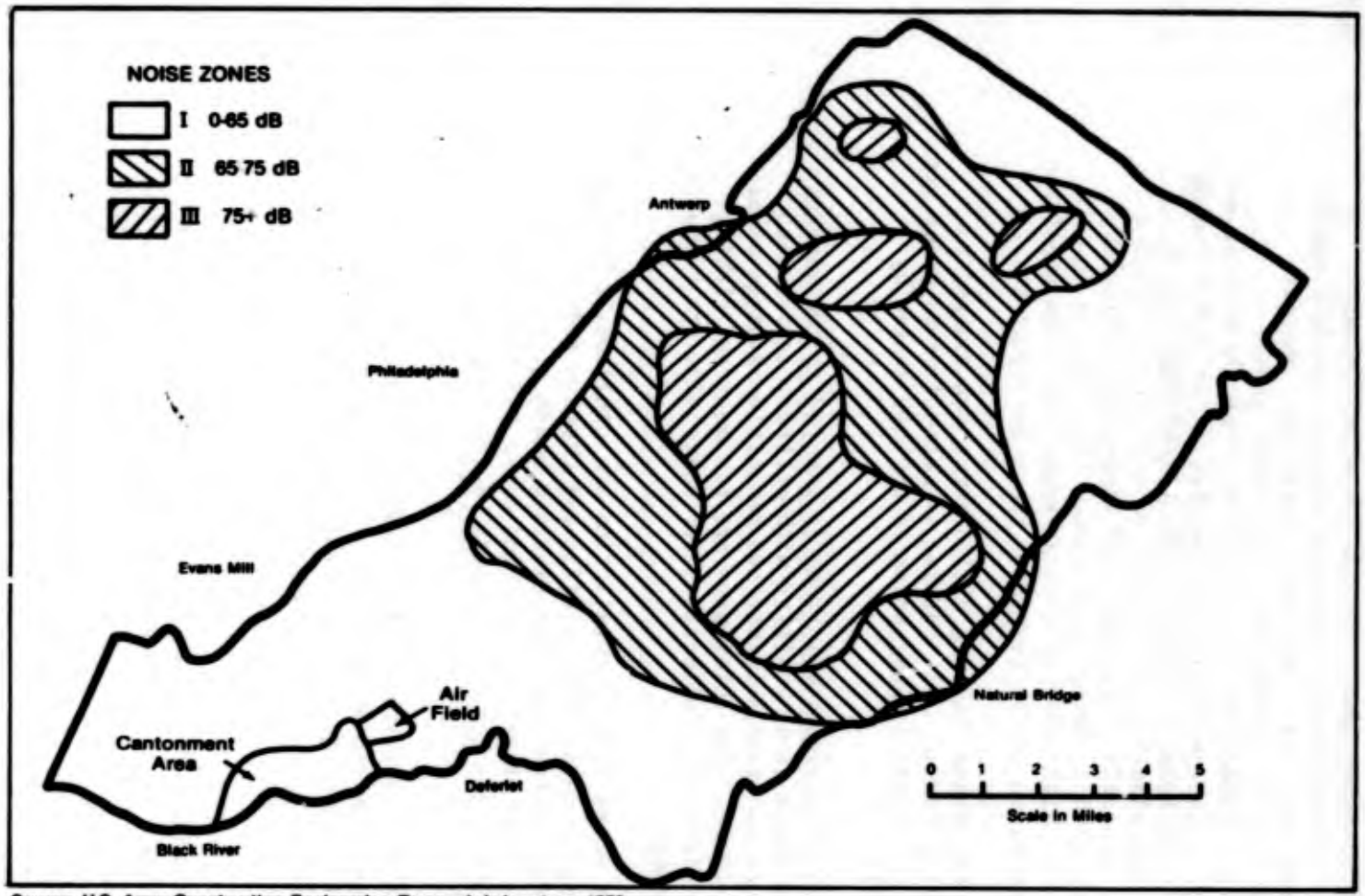
3.457 Access to installation lands is granted to the general public, providing there is no conflict with military activities. Certain areas, such as weapons-impact and ammunition-storage areas are permanently closed. The chief uses are for hunting, fishing, snowmobiling, and fire wood collection, but there also are trapping, hiking, and canoeing.

3.458 Sandy areas of the installation are continually being revegetated to repair damage from traffic and thereby reduce erosion. Red pine, scotch pine, and American beach grass are the species planted. Some areas, such as sand dunes and depressions rarely develop sufficient cover to support vehicle or heavy foot traffic.

3.459 Limestone is extracted and crushed to form aggregate at one major site near the cantonment area. Gravel is mined at various sites on the installation to support construction such as the building of trails, roads, and building platforms.

Noise

3.460 In general, the noise level in and around Fort Drum is not excessive. There have, however, been a few complaints due to obtrusive noise from artillery operations that have affected towns near the boundaries of the installation (see earlier subsection on noise in the eastern Lake Ontario and St. Lawrence region). Blast noises from artillery operations have not resulted in excessive sound levels on the cantonment area (Figure 3-10). Experience at Fort Drum indicates that recent noise complaints can be attributed to the use of a single range on the east side of the installation.



Source: U.S. Army Construction Engineering Research Laboratory, 1979

FIGURE 3—10
FORT DRUM C-WEIGHTED DAY/NIGHT LEVEL NOISE ZONES

3.455 Field training space contains two subdivisions: maneuver areas and impact areas. Maneuver areas accomodate nearly all types of ground activity or aircraft overflight, whereas unexploded ordnance in the impact areas precludes dismounted maneuver. Heavy tracked vehicles (tanks) disturb the surface and therefore the five tank ranges require minor engineer support after each training use. This is common for armor training. The Army's principle of management is to use land at the perimeter of the installation as a buffer to separate the public from noise, dust, aircraft overflight, and weapon and vehicular hazards associated with training activities. The trend is to relocate large-bore, high-velocity firing ranges away from populated areas, and also to close the perimeter of the main impact area.

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3.461 Other sources of noise on the installation are vehicular traffic and aircraft operations, although noise from these sources generally does not create so large an impact as blast noises. The traffic volume on Fort Drum is typical of a small urban community, and the resulting noise levels would be similar. Day-night average sound level (L_{dn}) from aircraft operations is estimated to exceed 65 dBA, which constitutes the minimum level for noise impacts according to federal standards. The number of flight operations is not large, averaging only 66 per day, but the proximity of nearby residences results in an L_{dn} value of 73 dBA for on-post locations and 66dBA for off-post locations. There have been a few complaints concerning rotary-wing aircraft operations.

Air Quality

3.462 Air quality at Fort Drum generally is excellent because emissions are small and dilution effects are large. Primary pollution sources on the installation are from space heating, petroleum storage, aircraft, and vehicular traffic. Approximate annual emission rates are (in tons per year, t/y): 212 t/y particulates, 70 t/y sulfur oxides, 799 t/y carbon monoxide, 216 t/y hydrocarbons, and 316 t/y nitrogen oxides (Williams, 1980). Fort Drum now has permits for 23 separate emission sources, including 3 for coal-fired boilers (each 1.2 MBtu/hr with no controls) and many for vents on fuel tanks (Mc Anally, 1981; Williams, 1984).

3.463 There is no central heating or power plant for the installation, although plans exist to build a plant to be fueled by wood chips, waste oil, or coal. The new facility will be subject to requirements for Prevention of Significant Deterioration (PSD) and Best Available Control Technology (BACT) (NUS Corporation, 1984). Heating on Fort Drum now is accomplished mainly by small oil-burning boilers or coal fired stoves or furnaces.

3.464 There have been no violations or complaints registered regarding air pollutants emitted from sources at Fort Drum (Williams, 1980).

Water Supply

3.465 Much of Fort Drum is underlain by prolific aquifers. Principal aquifers are fine and medium sands; permeable zones in Paleozoic sandstone; joints, bedding planes, and solution openings in Paleozoic limestones; and joints, fractures, and possible solution openings in Precambrian igneous and metamorphic rocks (Williams, 1980).

3.466 A well field northeast of the cantonment area serves as the installation's source of drinking water. There are twelve drilled wells--nine in rock and three in sand. The combined capacity is 3.8 million gallons per day (mgd). Wells operate on rotational bases depending on the maintenance schedule.

3.467 The installation water storage system has two steel elevated tanks, each having a capacity of 500,000 gallons, and one underground storage reservoir with a capacity of 750,000 gallons.

Wastewater Disposal

3.468 The Fort Drum sewage treatment plant provides primary and secondary treatment for sanitary sewage generated on the installation. Primary stage design capacity is 4 million gallons per day (mgd), and the secondary stage design capacity is 1.1 mgd. The current sewage treatment capacity also includes tertiary treatment in the form of phosphate removal. Effluent is chlorinated before release to the Black River south of the installation. Sludge is deposited into the landfill.

3.469 Storm water flow is collected by catch basins, manhole inlets, paved or grassed open swales, and ditches. The piped portion of the system has 67,907 linear feet of tile, clay, cast iron, or concrete pipe 6 to 48 inches in diameter. Outflow from the piped system goes into the Black River. There is considerable infiltration into the sewage system during wet spring seasons, and the plant flow now exceeds design capacity 3 or 4 days each year (Williams, 1984).

Solid and Hazardous Waste Disposal

3.470 Non-hazardous solid wastes generated on Fort Drum are disposed of in a sanitary landfill on the installation at the rate of about 87,500 cubic yards per year. The present landfill has been in use since 1973, but the NYS-DEC permit to operate it will expire in December 1985, by which time Fort Drum will require a new landfill.

3.471 There are two landfills on the installation which were capped when it was discovered that one of them had unacceptable leaching (Magness and others, 1980). The degree of effectiveness of the capping is now being studied. Studies are also underway to determine if and where a new landfill site might be located on the installation. Fort Durm's permeable soils present the installation with the same problems that local communities have encountered in locating a landfill site. Consequently, the installation is considering whether and how it might cooperate with Jefferson County in the development of and operation of a waste incineration facility.

REVISED 1984

3.472 Disposal of hazardous wastes generated on Fort Drum is the responsibility of the Defense Property Disposal Agency (DPDA) office at Griffith Air Force Base, NY. Materials are accumulated in suitable containers and removed by DPDA contractors. The volume of materials to be handled will be increased considerable when, as expected, New York classifies used lubricating oil as a hazardous waste. Fort Drum now has a "Hazardous waste management plan" done in 1981 (U.S. Army-Fort Drum, 1981) and a "Spill prevention control/contermeasure plan and installation spill contingency plan" done in 1982 (U.S. Army-Fort Drum, 1982).

Housing

3.473 Fort Drum currently has 350 family housing units. Existing adequate barracks spaces number about 800. There are an additional 10,330 substandard spaces available in WWII barracks (Ft. Drum Public Affairs, 1984). The majority of buildings within the cantonment area are designed to billet troops. Other buildings contain mess, supply, administrative, and maintenance facilities. All but a few buildings were constructed during World War II as temporary structures with a life expectancy of five to six years. In June 1973, a five year phased barracks renovation project designed to upgrade all barracks, mess halls, and administration and supply buildings was undertaken. The buildings affected are primarily used for billeting Reserve Component troops during Annual Training and active Army, Navy and Marine personnel during winter Field Training Exercises. Local Reserve Component units attending weekend assemblies and ROTC students also are housed in the renovated buildings (Williams, 1980).

Schools

3.474 There are no schools for military dependents located on the installation at Fort Drum. Nearly all of the military dependents living on post attend either Carthage Central or Watertown schools in Jefferson County. Attendance at these two schools accounts for 80 percent of the total 329 military dependents attending schools in the area of Fort Drum. During the 1981-82 school season there were also eleven military dependents attending five of the six parochial schools in the area. Table 3-13 presented current enrollment and total capacity for public schools near Fort Drum (District Superintendent of Schools, Watertown, NY).

Health Care

3.475 Fort Drum has a single, small medical clinic and one small dental clinic on post. Each of these is staffed by an authorized 3 doctors and 3 dentists services are provided through these operations for active

military, their dependents, and retirees in the area. Emergencies, for both active duty and dependent personnel, are transported to civilian hospital facilities in the city of Watertown. The army covers the entire cost of civilian-provided services for active duty personnel. Civilian care for dependents is reimbursed under the CHAMPUS program. All major, non-emergency medical services for active duty personnel are scheduled at Walter Reed Army Medical Center (Washington, D.C.) or Fort Devens Massachusetts (U.S. Corps of Engineers, 1978).

3.476 During the summer, the Fort Drum population increases significantly due to a variety of reserve and special units training. Medical problems for this increased population are handled by attendant (special summer training) reserve medical units and/or enlisted specialists. This augments the primary medical staff by about 4 doctors and 4 dentists every two weeks. Summer training units do not have accompanying dependents. In addition, approximately 20 beds are activated in the on-post clinic to handle short term care needs of military personnel (Poulton, 1984).

Public Safety

3.477 During calendar year 1977, the military strength at Fort Drum totaled approximately 931 personnel. The incidence of founded criminal offenses involving military personnel both on- and off-post at Fort Drum for calendar year 1977 is given below. For comparative purposes, Army-wide, Continental United States (CONUS) aggregate statistics (combined on- and off-post) of founded offenses are presented as well. All statistics represent numbers of specific crimes per 1,000 military personnel (Williams, 1980).

	1977	
	Fort Drum	Conus
Crimes of violence	3.06	5.21
Crimes against property	67.52	81.45
Drug offenses	0.96	3.74
Marijuana use and possession	16.61	29.75

3.478 1983 crimes of violence at Fort Drum were experienced at a rate about the same or below that of FORSCOM installations Army-wide, .40 vs. .50 per 1,000 soldiers. Crimes against property were experienced at a rate slightly above that of other FORSCOM installations, 18 vs 15 per 1,000 soldiers (FORSCOM, 1984). These numbers are down from the 1977 levels cited earlier.

Traffic and Transportation

3.479 The road net on the installation consists of public and military roadways of which the military portion totals 248 miles of improved light duty and hard surface roads. Most military roads exist as constructed when the installation was established, except for new roads in the family housing area. In the cantonment area, five east-west roads serve barracks and support areas. The northernmost road will support armored vehicles, has petroleum fueling points and parallels the railhead (Williams, 1980).

3.480 A 1983 survey showed Gate 1 had the greatest 24-hour traffic volume, with 3500 vehicles, followed by Gate 3 (2300 vehicles), then Gate 2 (1400 vehicles) (Transportation Engineering Agency, 1983). These volumes are low and do not cause congestion. Traffic congestion does occur at the intersection of Nash Boulevard and First Street West, adjacent to Gate 2 for a short time in the evening. The two busiest morning routes are Black River Road and First Street West. The study made several recommendations to improve traffic flow, most of which have been or are being adapted on post.

3.481 Roads in the training areas are constructed of sand or sandy clay (on-site materials). Federally owned rail lines serve the cantonment area and the ammunition storage area east of the airfield (Williams, 1980).

3.482 The following state highways run to Fort Drum, across or near the installation. The range of annual average daily traffic counts are given below for 1982-1983:

Route	Traffic (Annual Average Daily)
283	1900-2600
3	3800-4800
11	2600-4100
26	1300
342	1400-4000

Source: New York State, Highway Sufficiency Book, 1983.

3.483 Winter traffic rates are lowest and summer rates highest due to tourists and summer training. Maximum daily traffic peaks of 7300 occur at the Watertown city line.

Energy Usage

3.484 The total on-post energy usage at Fort Drum for FY 83 was 457 billion Btu, obtained from the following sources:

Coal	24,700 MBtu
Fuel Oil	129,300 MBtu
Natural Gas	4,400 MBtu
Propane	13,300 MBtu
Gasoline	40,500 MBtu
Diesel Fuel	18,600 MBtu
Aviation Fuel	10,500 MBtu
Electricity	216,000 MBtu

Based on an effective population of 4,600 residents, including 69,469 reserve troops training for 2 weeks each, derived using the methodology described in Appendix H, on-post energy consumption is approximately 99 MBtu per resident per year. Energy consumption is 233 MBtu per resident per year based on the permanent effective population of 1,960.

3.485 The majority of on-post energy usage is for heating; 170 billion Btu were consumed in FY 83. Fuel oil is the main heating fuel, accounting for 75 percent of annual heating energy consumption. Because natural gas is in short supply nationally, future use of natural gas is expected to decrease due to the use of alternative fuels for new construction and for retrofit of existing facilities.

3.486 On-post energy consumption by military vehicles was 70 billion Btu in FY 83. On-post military vehicles include 1,124 wheeled vehicles, 735 tracked vehicles, 2 helicopters and one trainer aircraft. Additional helicopters are brought in by summer training units.

3.487 Gasoline consumption by vehicles owned by military personnel is estimated at 1 million gallons (118 billion Btu) per year based on estimated ownership of 1,650 cars driven an average of 9,026 miles per year at a mileage of 15.53 miles per gallon. Present energy use for personal transportation by military personnel is approximately 1 percent of that of civilian personnel in counties adjacent to the fort.

3.488 Estimated energy consumption for off-post housing of military personnel and their dependents is 90 billion Btu per year based on an average per capita residential energy consumption of 105.8 MBtu per year. Residential energy consumption in the counties adjacent to the fort is approximately 24,100 billion Btu per year.

Military personnel consume approximately 0.4 percent of the total residential energy used in the area.

3.489 Total energy consumption for Fort Drum in 1983 was approximately 670 billion Btu, including on-post energy usage, military vehicles, private vehicles owned by military personnel and off-post housing requirements of military personnel. Total energy usage is approximately 649 MBtu per troop per year, or 180 MBtu per effective troop per year including the apportioned number of reserves training at the installation.

Cultural Resources

3.490 50 potentially significant historic sites, 13 cemeteries, and 24 sites in the vicinity of Fort Drum have been mapped. A reconnaissance survey was completed in 1977 to determine sites which might be nominated to the National Register. A complete cultural resource overview and management plan is in progress for the National Park Service.

3.491 Fort Drum contains one historical landmark, the LeRay Mansion, that is included in the National Register of Historic Places (U.S. Department of the Interior, Heritage Conservation and Recreation Service, 1978). Built in 1806 as a settlement for Frenchmen escaping the Revolution, the mansion is a neoclassic design structure containing 26 rooms and is situated in a 60-acre parcel of lawns and wood areas just outside the cantonment area (Williams, 1980).

3.492 A fortified Iroquois village was uncovered in 1969 and the site was fenced and placed off limits to Army maneuvers. Those portions of the installation that have not experienced extensive surface disturbance due to construction activities have a high probability of containing potentially significant archeological sites.

3.493 The archaeological site (Camp Drum No. 1) has been studied intensively since 1967 when the Iroquois Village Site was first reported (Pratt and Pratt, 1982). It is expected that this site's nomination to the Federal Register will be completed soon (Klein et al., 1983).

3.494 Several historical sites, known as the "Furnaces of Fort Drum" (Allen, 1980) have been described. They include:

- Sterlingville, Sterling iron furnace (1837-1873)
- Sterlingburgh, Antwerp furnace (1846-1856)

- o Wegatchie, Caledonia furnace (1847-1857)
- o Sterlingbush, Lewisburg furnace (1832-1881)
- o Alpina, on Fusa Boulevard (1846-1881)

FORT LEWIS AND THE TACOMA-OLYMPIA, WASHINGTON REGION

3.495 Fort Lewis is located in west-central Washington state at the southwestern end of Puget Sound, near Tacoma (Figure 3-11). The post covers 86,770 acres in two counties, Pierce and Thurston. Current strength is authorized in FY 1983 at about 24,860 military personnel; with about 31,160 dependents there is a total population of 56,000. Current civilian employment is over 4,000 (U.S. Forces Command, 1984b). Several subinstallations are affiliated with Fort Lewis, they are: Yakima Firing Center in Yakima and Kittitas Counties, Wa., Huckleberry Creek Mountain Training Center north of Mt. Rainier National Park, Camp Bonneville in the western foothills of the Cascade Mountains in Southwestern Washington and Vancouver Barracks in the City of Vancouver.

Tacoma-Olympia, Washington Region

3.496 Fort Lewis is located approximately ten miles south of Tacoma, 40 miles south of Seattle, and 15 miles east of Olympia, Washington. The installation occupies land in the western portion of Pierce County and the east-central portion of Thurston County, Washington. Major features of the region include a large metropolitan area (Seattle/Tacoma), the Puget Sound tidal inlet system, the Olympic Mountains, and the Cascade Range. The Cascade Range and Mount Rainier are approximately 30 and 45 miles east, respectively, of Fort Lewis. The Pacific Ocean in 75 miles to the west.

Climate

3.497 The climate of the Tacoma-Olympia area is characterized by cool, generally dry summers and wet, mild winters. Beginning in October, storm fronts move across the region from the Pacific; during March, storms move northward resulting in longer intervals between frontal systems. The storms occurring between October and March bring about 70-80 percent of the area's average yearly rainfall of 38 inches. Cloud cover is common. Periods of drought are common during the summer months. Temperatures average 38°F in winter and 63°F in summer. Prevailing winds are from the southwest and average eight miles per hour. In general, the potential for damaging storms in the area is low (SRI International, 1983).

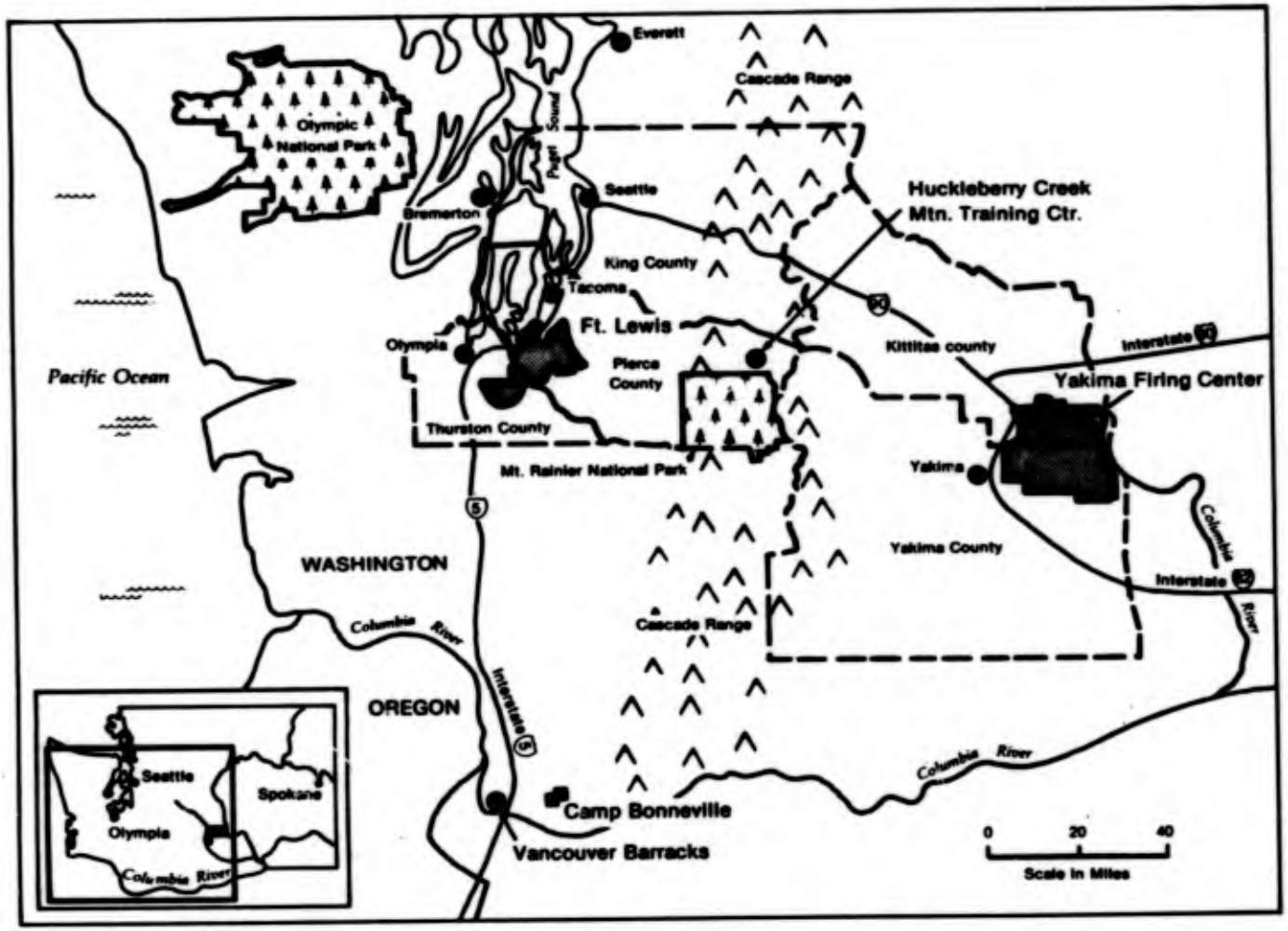


FIGURE 3—11
THE WESTERN WASHINGTON REGION

SUPERSEDED
AUG 1984

Biological Environment

3.498 Vegetation types on Fort Lewis are within the "Puget Sound Area" (Tsuga heterophylla), a plant zone identified by Franklin and Dyness (1973). The most widespread vegetation is the forest dominated by douglas fir with lesser amounts of western red cedar and western hemlock (U.S. Army Corps of Engineers, Seattle District, 1984b). A variety of plant communities exist in the region: wet and dry coniferous forest, wet and dry broadleaf woodlands, thickets and dry grasslands.

3.499 Terrestrial fauna in the area are diverse. Common mammals include deer, racoon, hare, coyote, red fox, muskrat, beaver, mice and voles. Western grey squirrel are found in oak woodlands and open coniferous forests; douglas squirrel occur in dense conifer forests. Raptors in the region include, Cooper's hawk, redtailed hawk, bald eagle, marsh hawk, osprey, merlin, and kestrel. Upland game birds, waterfowl and song birds are also present (U.S. Army Headquarters 9th Infantry and Fort Lewis, 1979).

3.500 The Nisqually River drainage is a major producer of salmonids in southern Puget Sound. Over 75,000 Nisqually River salmon are caught each year, while 24,000 return to spawn during the summer, fall and winter (U.S. Army Corps of Engineers, Seattle District 1984b). Other tributaries in the region are important to annual spawning as well.

3.501 The northwestern border of the fort lies on Cormorant Passage and Nisqually Reach in Puget Sound. Overall water quality in this area is excellent (U.S. Army Headquarters 9th Infantry and Fort Lewis, 1979). The typically productive waters of Puget Sound support rockfish and bottomfish in addition to salmon.

3.502 Threatened and Endangered Species. Two important species exist in the Pierce and Thurston County region. The rigid white topped aster (Aster curtus), a candidate for federal listing under the Endangered Species Act and the bald eagle (Haliaeetus leucocephalus), listed as threatened. The bald eagles are known to overwinter in the Muck Creek drainage and Nisqually River areas (U.S. Army Corps of Engineers, Seattle District, 1984b).

Demography

3.503 Seven counties in the Fort Lewis region are primarily affected by the economic stimulus associated with the Army, its procurements and spending by personnel. These counties are: Grays Harbor, King, Kitsap, Lewis, Mason, Pierce and Thurston.

Biological Environment

3.498 Vegetation types on Fort Lewis are mainly within the Tsuga heterophylla plant zone (Franklin and Dyness 1973). However, large areas differ from the zone where there are notable features found on the Tacoma prairies. The preservation of the region's prairies has been enhanced by the establishment of Fort Lewis. The forests of the area are dominated by douglas fir with lesser amounts of western red cedar and western hemlock (U.S. Army Corps of Engineers, Seattle District, 1984b). The variety of plant communities that exist in the region also include wet and dry coniferous forest, wet and dry broadleaf woodlands, thickets and dry grasslands.

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SUPERSEDED
AUG 1984

3.504 Two of the seven counties, Pierce and Thurston, are particularly affected by fort activities. About 85 percent of military families living off-post reside in Pierce county while 10 percent are primarily located in Thurston County (U.S. Army Corps of Engineers, Seattle District, 1984b). In 1980, the population for the seven county aggregate was 2.18 million; 77 percent lived in urban areas mostly in the Seattle, Tacoma corridor. The 1983 population estimate for Pierce county was 507,000 (Washington State Employment Security Department, 1984), up 23 percent from 1970. Thurston County experienced about a 73 percent increase in its population during the same period reaching an estimated 133,500 in 1983 (Washington State Employment Security Department, 1984a). As in the seven county aggregate, most of the population of the two counties is located in an urban setting; 80 percent in Pierce and 55 percent in Thurston (U.S. Department of Commerce). Fort Lewis personnel plus dependents (over 56,000) constitute about 9 percent of the two county population.

3.505 Population projections for 1990 indicate that Pierce county would have an estimated 599,895 persons (Tacoma-Pierce Co. Chamber of Commerce, 1981) while Thurston county residents would amount to 158,700 (Thurston Regional Planning Council, 1984). These projections are increases of 18 percent and 19 percent respectively over the 1983 population estimates.

3.506 Most of the population growth in Pierce County has occured outside the city of Tacoma, (U.S. Army Headquarters 9th Infantry Division and Fort Lewis, 1979). Expectations are that future growth will occur in smaller communities outside of Tacoma in Pierce County while in Thurston, growth is anticipated in the northeastern section of the county near Lacey, and in smaller towns of Yelm and Rainier (U.S. Army Corps of Engineers, Seattle District, 1984b).

Land Use

3.507 The northern boundary of the 86,770 acre post in Pierce County is predominately urban with scattered commercial and industrial uses. Among those urban areas are Steilacoom, Lake City, Dupont, Tillicum, McChord Air Force Base, and Parkland. Although most of the southern, eastern, and western boundaries are rural residential or rural, there is increasing urban and lower density residential development, particularly in the Spanaway section which borders Fort Lewis. Several small towns are located along the Fort's southern border in Thurston, including Roy, Yelm, McKenna, and Rainier. Forest plantation lands owned by Weyerhaeuser to the south are being divided into 5-acre parcels for residential use (Pilcher, 1984. Personal Communication).

3.508 Currently, Pierce County has submitted for public review a Comprehensive Plan for Growth Management. The document includes an updated inventory of current land use in the county. The previous plan and inventory was conducted in the 1960's; the new plan is likely to be adopted by 1985. Other land use plans and regulations which may affect Fort Lewis include the Coastal Zone Management Act, the Yelm-Rainier Sub area Plan and the proposed Graham and Tanawax Subarea Plans governing land use to the west and south of the Fort (Thurston Regional Planning Council, 1979; Morrison, 1983 Personal Communication; Pilcher, 1983 Personal Communication).

Noise

3.509 Sources of noise in the general Tacoma-Olympia area include aircraft flyovers and related operations at McChord Air Force Base and the Seattle-Tacoma Airport, highways (Interstate 5), and railroad lines. In the predominantly developed areas of Pierce County, ambient noise levels typically range from 50 to 60 dBA, with levels as high as 75 dBA adjacent to major highways. Highway noise from I-5 varies little from day to night because of heavy auto traffic during the day and high levels of truck traffic at night (Jones and Stokes, 1984). In the vicinity of McChord Air Force Base and the Seattle-Tacoma Airport, noise levels between 75 and 85 dBA can occur. In the more sparsely developed or rural areas of Thurston County, typical ambient noise levels are considerably lower and range from 40 dBA for rural settings to 50 dBA in small communities. Passage of trains throughout the entire region can result in noise levels ranging from 88 to 98 dBA in nearby areas (Jones and Stokes, 1984).

Regional Economic Activity

3.510 Fort Lewis has a major influence on employment, personal income, and retail and wholesale trade in the Tacoma Standard Metropolitan Statistical Area (SMSA) (Pierce County) and the Olympia SMSA (Thurston County). Both areas function as trade and service areas to Fort Lewis. Within the two-county area, employment totaled 246,300 in 1983 and average unemployment was 11.5 percent. Employment in the Olympia SMSA is strongly tied to government and retail trade, and in the Tacoma SMSA to government, trade, services, aerospace, and forest products industries. Civilian employment at Fort Lewis has substantially increased and now is authorized at about 4,070 persons (U.S. Forces Command, 1984b). Combined military/civilian employment totals about 12 percent of the two-county area, with civilian employment alone almost 2 percent of the total. Total Fort Lewis payroll in fiscal year 1983, which includes Yakima Firing Center (YFC), was about $475 million, $386

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million of which was active military and $90 million was civilian. About $205.5 million was paid to military-retired in the Fort Lewis area (Fort Lewis Office of Public Affairs, 1984). These wages are spent largely in the regional economy, creating additional jobs. Since 1973, the Fort Lewis payroll has represented 10-12 percent of the total two-county income (U.S. Army Corps of Engineers, Seattle District, 1984b).

3.511 Total and per capita personal income for Pierce and Thurston counties in 1981 was $5 billion and $10.2 thousand in Pierce, and $1.4 billion and $10.9 thousand in Thurston (U.S. Army Corps of Engineers, 1984b). Median household income was about $17.9 thousand as reported in the 1980 Census (U.S. Department of Commerce, 1983g).

3.512 Retail and wholesale trade on-post is principally from the commissary, post exchange, clubs, and package stores. Procurements, purchase contracts, and minor construction totalled about $169 million in fiscal year 1983 (Fort Lewis Office of Public Affairs, 1984). A substantial amount of this goes to local contractors and business firms. These procurements also generate employment in the Tacoma and Olympia SMSAs.

Air Quality

3.513 The Tacoma-Olympia region is located in the Puget Sound Interstate and Olympic Northwest Washington Interstate Air Quality Control Regions (ACQR). In general, air quality in the Puget Sound/Olympia area is quite good, except for heavily industrialized sections such as the Tacoma Tideflats (U.S. Army DFAE, Fort Lewis, 1982). Fort Lewis is located within a Class II Prevention of Significant Deterioration (PSD) area. The only Class I area near the post is Mount Rainier National Park (approximately 45 miles east). In terms of stagnation and dispersion characteristics, the Puget Sound Region is classified as having low to moderate air pollution potential (Environmental Science and Engineering, Inc., 1983).

Water Supply

3.514 Regional water supplies include groundwater-fed municipal water systems in developed urban areas and individual or neighborhood supply systems based on wells in less developed areas.

3.515 In the predominantly rural and rural/residential areas of eastern Thurston County, wells provide water to individuals and small neighborhood communities. These are privately owned, or owned and operated by neighborhood associations (Thurston Regional

Planning Council, 1981; Thurston County Planning Commission, 1983). In the more densely-populated areas of Pierce County to the north and northeast of Fort Lewis, municipal water supply systems are the major source. The principal supplier is the City of Tacoma, and the Lakewood and Parkland/Spanaway water companies. Current water service is described as good (SRI International, 1983).

Wastewater Disposal

3.516 Wastewater disposal in the area around Fort Lewis is provided by municipal systems in the more developed communities, and by septic tank systems in less populated areas. In the developed communities to the north, municipal wastewater collection systems are available, and a recent expansion in the Lakewood/Spanaway area will alleviate previous capacity problems in these communities. Treatment capacity is provided by the City of Tacoma, which has excess capacity (SRI International, 1983). In the more rural areas to the east, west and south of Fort Lewis, individual residences utilize septic tanks, and septic systems are available for small residential developments and mobile home parks. There is concern that some water quality difficulties could arise in areas which are developing and which utilize septic systems (Thurston Regional Planning Council, 1981).

Solid Waste Disposal

3.517 Solid waste in the southeastern Puget Sound area is generally collected by private collection companies and disposed of in county-owned or private landfill facilities (U.S. Army Headquarters, 9th Infantry Division, Fort Lewis, 1979). County-owned landfill facilities in western Pierce County have been turned over to private companies. Capacities and operating lifetimes of these landfills vary widely according to specific locations. The City of Tacoma has operated a 191-acre landfill which is reaching its design capacity. Operators are hoping to install a recycling and compacting system to extend the site's lifespan. Thurston County's Hawks Prairie site has been extended by opening an interim landfill at a nearby location. Capacity is expected to last until the mid-1980's. Alternative sites have not been chosen (U.S. Army Headquarters, 9th Infantry Division, Fort Lewis, 1979).

Housing

3.518 Fluctuations in Fort Lewis personnel can affect occupancy rates and availability of housing in Pierce and Thurston counties. Currently about 85 percent of off-post military personnel reside in Pierce County (Fort Lewis Housing Referral Office, 1984).

SUPERSEDED
AUG 1984

Population increases of off-post personnel if large enough can affect the adequacy of an area's community services. The availability of schools, health care facilities, sewage treatment, water supply, solid waste and the like can be influenced if new housing construction is needed. In 1983, year round housing units in the two county area amounted to over 246,000 (U.S. Army Headquarters, I Corps, Fort Lewis, 1984). Total housing vacancies in the cities and two counties principally affected by off-post residency were about 13,400 the same year (U.S. Army Headquarters I Corps, Fort Lewis, 1984). About 6 percent of all housing units in 1980 were vacant in Pierce County between 1980 and the end of 1982 and over 9,500 building permits were issued for housing units in incorporated and unincoporated parts of the county (Pierce County Planning Department, 1983). In 1983, 2.2 percent of residences and 5 percent of apartments were vacant in Thurston County. The growth in housing units in Thurston increased by more than 78 percent between 1970 and 1980 (Thurston Regional Planning Council, 1984). The unincorporated areas around Lacey and East Olympia have attracted over 40 percent of the housing growth outside of municipalities. In 1983, 9,930 Fort Lewis military families lived off-post (Fort Lewis Office of Public Affairs, 1984) while over 900 authorized singles are also estimated to live in the community (Fort Lewis Housing Referral Office, 1984). The proportion of military personnel by area follows:

- o Lakewood, Steilacoom, University Place - 51 percent
- o Tacoma - 25 percent
- o Parkland, Spanaway - 10 percent
- o Olympia, Lacey, Tumwater - 11 percent
- o Elsewhere 3 percent (Fort Lewis Housing Referral Office, 1984).

3.519 The average monthly cost for rental units by number of bedrooms in Pierce and Thurston counties are listed below (U.S. Army Headquarters I Corps and Fort Lewis, 1984):

- o Apartment Rentals

  1 bedroom - $270
  2 bedrooms - $348
  3 bedrooms - $487
  4 or more bedrooms - $550

- o Single Dwelling Units

  1 bedroom - $252
  2 bedrooms - $356
  3 bedrooms - $567
  4 or more bedrooms - $638

3.520 There are 3,315 government subsidized units in Pierce County and 321 in Thurston. Waiting periods for subsidized units vary from 12 to 18 months. The long waiting period discourages military personnel from applying since they usually need immediate accommodations (U.S. Army Headquarters I Corps and Fort Lewis, 1984).

Regional/Local Schools

3.521 Primary and secondary education in Pierce and Thurston counties is administered by local school districts. The major districts affected by offspring of the military personnel at Fort Lewis are shown in Table 3-14. The Clover Park and the North Thurston districts are particularly affected by Fort Lewis students. The Clover Park district is currently operating at capacity; 35 percent of total enrollment is attributed to Fort Lewis families, with 28 percent of the students residing on-post while 7.5 percent live off (Clover Park School District No. 400, 1984). The five elementary schools located within the installation are under Clover Park administration. Current enrollment and capacity of each is shown by Table 3-15. As of March 1984, the North Thurston district has been operating in excess of capacity of its permanent buildings and portable units (Moffatt, 1984). Currently, the district has submitted a funding request for a new elementary and a new high school which could be built by 1987 if planning projections indicate that the new facilities would definitely be required (Moffatt, 1984). The elementary school would be built for 550 students; the high school for 1,250. Over the years school sites have been purchased by the district where residential growth is expected to occur on available, buildable land. Projected growth areas are along Steilacoom Road and Yelm highway (Moffatt, 1984). The kindergarten through sixth and junior high grades in the Bethel district also are currently operating at capacity (Lobitta, 1984) as is the elementary school system in the Tacoma District (Magnuson, 1984).

3.522 In the Clover Park district, the number of students associated with Fort Lewis has increased, while overall Clover Park enrollment has declined. Presently, there are plans to renovate and expand the school facilities on the post and possibly construct a new elementary school (Watson, 1984, personal communication) (U.S. Army Corps of Engineers, Seattle District 1984b). In fiscal year 1983 Fort Lewis contributed $2.5 million in school subsidies to the region (Fort Lewis Office of Public Affairs, 1984).

Health Care

3.523 Based on the 1980 census (U.S. Department of Commerce 1983h) there were 13 hosptials in Pierce County with a bed count of

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- o Lakewood, Steilacoom, University Place - 51 percent
- o Tacoma - 25 percent
- o Parkland, Spanaway - 10 percent
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  2 bedrooms - $348
  3 bedrooms - $487

- o Single Dwelling Units

  1 bedroom - $252
  2 bedrooms - $356
  3 bedrooms - $567
  4 or more bedrooms - $638

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TABLE 3-14

NUMBER OF STUDENTS ENROLLED IN PIERCE AND THURSTON COUNTIES INCLUDING THE MAJOR SCHOOL DISTRICTS ATTENDED BY STUDENTS OF FORT LEWIS PERSONNEL DURING 1983

County/Major Districts Affected by Fort Lewis	Number of Students Enrolled			
	Kindergarten-Sixth	Junior High	High	Total
Pierce	42,882	14,741	26,935	84,558
Bethel	4,764[a]	2,246[a]	2,042	9,052
Clover Park	6,875[a]	2,414	2,521	11,810
Franklin Pierce[b]	2,578	1,432	1,277	5,287
Steilacoom Historical[c]	581[c]	355[c]	478[c]	1,414
Tacoma	15,000[a]	6,684	5,896	27,580
Thurston	12,224	4,474	8,064	24,762
North Thurston	4,768[a]	1,509[a]	2,575[a]	8,852
Rainier	312	112	267	691
Yelm	1,342	443	790	2,575

[a]At capacity or exceeding capacity
[b]Under capacity; recently 2 elementary schools were closed. A peak total enrollment of 8,465 was reached in 1969, with the same facilities available today.
[c]K-5, 6-8 and 9-12

Sources: Shish, 1984; Lobitta, 1984; Logan et al., 1984; Krammer, 1984; Feaster, 1984; Magnuson, 1984; Moffatt, 1984; Drees, 1984; Yelm School District; Clover Park School District No. 400, 1984.

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TABLE 3-15

CLOVER PARK SCHOOL DISTRICT ENROLLMENT
AT ELEMENTARY SCHOOLS ON FORT LEWIS

Clover Park Elementary Schools Located on Fort Lewis	October 1983 Full Time Equivalency (FTE) Enrollment	Student Capacity	
		Regular	Handicapped
Beachwood	329	328	10
Clarkmoor	309	355	5
Greenwood	415	393	30
Hillside	529	408	28
Parkway	297	350	47
TOTAL	1,879	1,834	120

Source: Clover Park School District No. 400, 1984.

just over 2,000 and rate of 634 per 100,000 residents. Thurston County the same year had one hospital with 207 beds for a rate of 166 per 100,000 residents. The medical facilities in the region have unused capacity while many nursing homes are full or nearly full (U.S. Army Headquarters, 9th Infantry Division and Fort Lewis, 1979).

Fort Lewis, Washington

3.524 Fort Lewis is located in western Washington, approximately 35 miles south of Seattle and 7 miles east of Olympia; the post encompasses 86,770 acres. The facility extends along a 19-mile northeast-to-southwest axis and lies within Pierce and Thurston Counties (Figure 3-12). Urban development, including Steilacoom, Lake City, Tillicum, McChord Air Force Base, and Spanaway borders the Reservation on the north. The eastern and southern edges are bordered by rural area, forested land, and several small communities including Roy, Yelm, McKenna, and Rainier. To the west lies Puget Sound, the Nisqually River delta, the Nisqually Indian Reservation, and the outlying rural areas that surround Olympia (U.S. Army Corps of Engineers, Seattle District, 1984b).

3.525 Fort Lewis is the home of the 9th Infantry Division, recently converted to a High Technology Motorized Division (HTMD), a regional I Corps command, and it is a major military training facility. The objectives of HTMD are to retain the tactical mobility, firepower, and survivability of a heavy (i.e., mechanized) division while at the same time having the rapid mobility and airlift requirements of a light division (U.S. Army Corps of Engineers, Seattle District, 1984b).

3.526 The new High Technology Motorized Division is based on manpower and equipment requirements applicable to the lighter 10,000 troop division. The current organization will be streamlined down to about 14,500 spaces initially, and ultimately reduced to a final design strength of 13,000. It is scheduled to be operational in FY 1986.

3.527 The essential difference between the old 9th Infantry Division and the 9th HTMD is that the latter is fully motorized while the other was a "walking" infantry. The HTLD possesses weapons of greater lethality, range, and mobility and uses light-weight vehicles, such as fast-attack vehicles resembling dune buggies and four-wheel drive troop carriers and multipurpose jeep replacements. New weapons include a versatile new computer-controlled howitzer capable of firing 14 kinds of shells. Aircraft are used for support and rapid airlift capabilities (U.S. Army Corps of Engineers, Seattle District, 1984d).

SUPERSEDED
AUG 1984

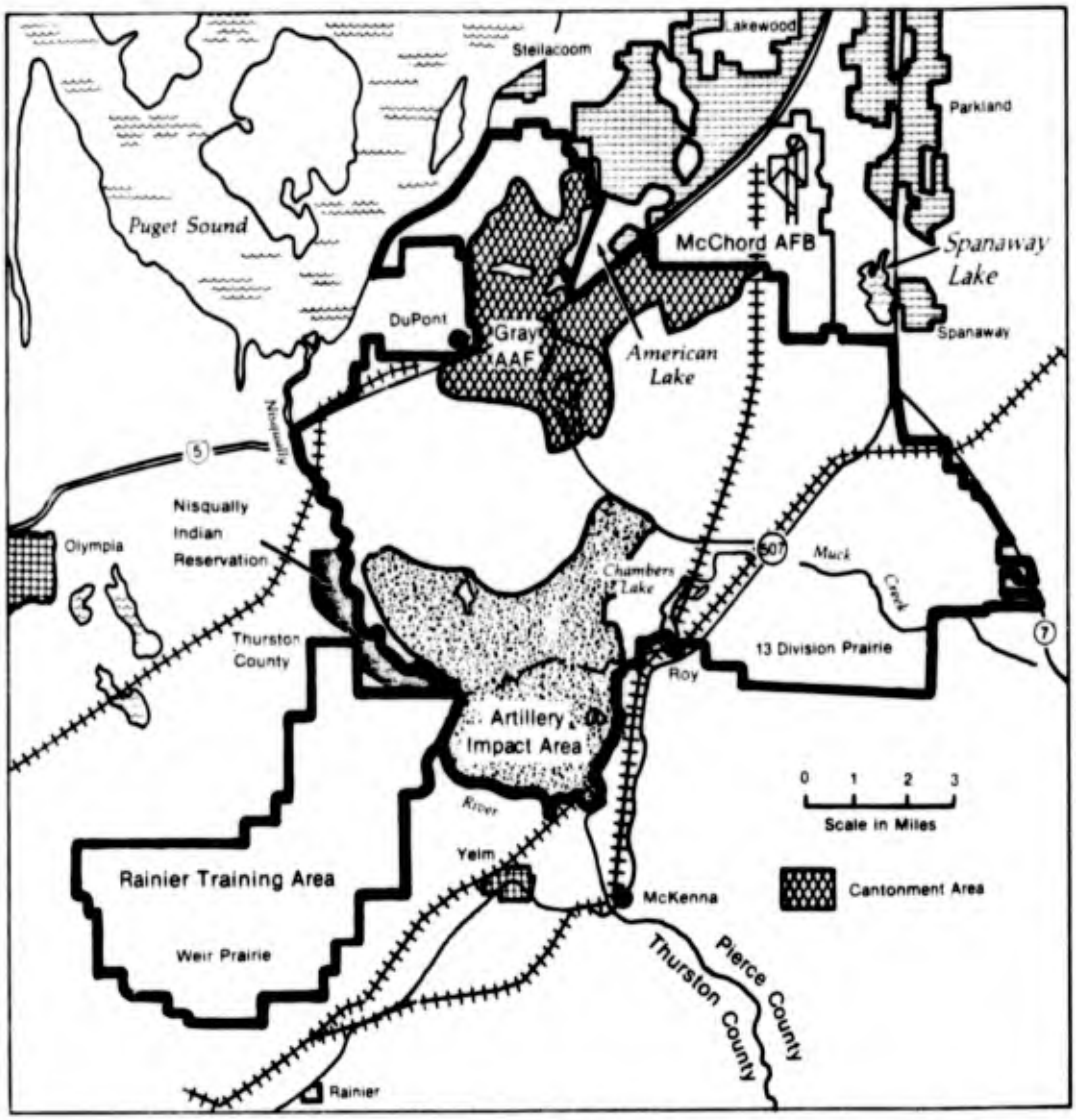


FIGURE 3—12
FORT LEWIS, WASHINGTON

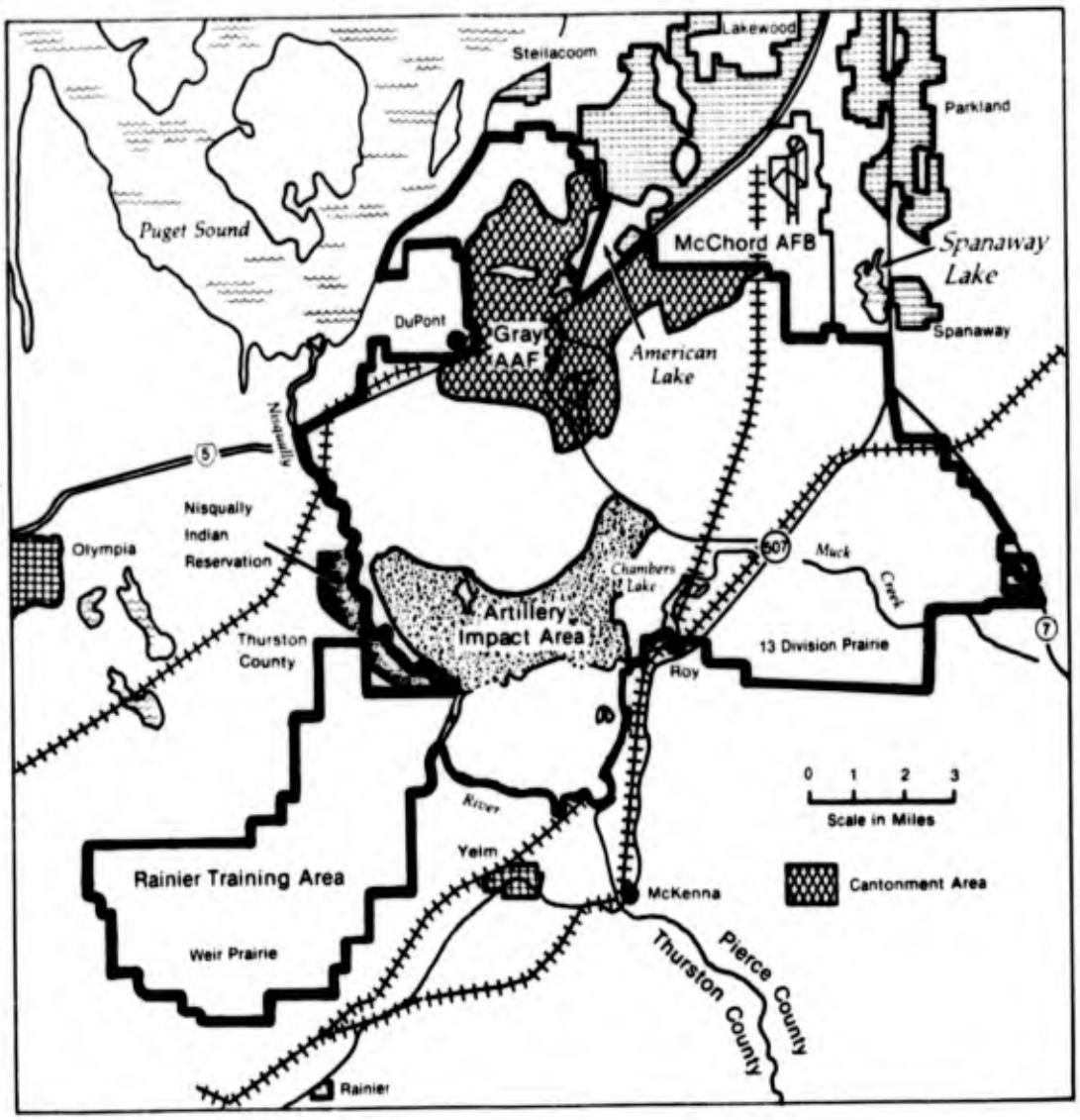


FIGURE 3—12
FORT LEWIS, WASHINGTON

3.528 The Yakima Firing Center is the principal training area for the division. Maneuver areas are necessary for tanks and vehicles and weapons system testing. The tests require coordinated exercises ranging from squad-sized elements to the entire division at the Fort or the Yakima Firing Center. Much of the Fort's 86,770 acres are divided into training areas with specialized uses. The various prairies are used by mechanized and tank battalions for maneuvers while the forested sections of the Fort support infantry field training and numerous small arms ranges. The heavily forested Rainier Training Area is used for tactical training of engineer and infantry units and is managed for timber production (U.S. Army Corps of Engineers, Seattle District, 1984d). Selected aspects of the existing physical, biological and socioeconomic environments on the installation are described below.

Geology, Minerals and Soils

3.529 The terrain of Fort Lewis is characterized by low plains and rolling hills which reflect the extensive influence of ancient (Pleistocene) glaciation and subsequent fluvial action of the Nisqually River, which separates the portions of Fort Lewis in Pierce and Thurston Counties. Elevations range from sea level at Puget Sound to +598 feet in the southwestern corner (Rainier Training Area) of the reservtion. All landforms on the installation are composed of unconsolidated sediments, which range in age from Miocene to Recent, and consist primarily of gravel, sand, silt and clay. Most soils are of moderate to low fertility, with agricultural suitability limited to forage and trees.

3.530 Potential geologic hazards at Fort Lewis include erosion and slope failure in areas with steeper slopes. These include bluffs along Puget Sound and the Nisqually River, areas along the Nisqually floodplain, and the banks of smaller streams. Fort Lewis also lies within a broad region of Washington State which is subject to seismic activity and volcanism. Numerous earthquake epicenters have been located in the vicinity, and geological evidence indicates that at least one epicenter may have been within the reservation boundaries (Environmental Science and Engineering, Inc., 1983).

3.531 Exploitable geologic resources of Fort Lewis and its immediate surroundings are limited to sand and gravel. There are currently eight sand or gravel pits operating on the Fort, three of which are in the Rainier Training Area (Jones and Stokes, 1984). Portions of Pierce and Thurston Counties are currently being leased for potential oil and gas exploration (Williams, 1984), and areas of eastern Pierce County are being assessed for geothermal resource development (Korosec, et al., 1983).

SUPERSEDED
AUG 1984

Biological Environment

3.532 Terrestrial Ecosystems. A variety of vegetation types are present on Fort Lewis in coniferous forests, broadleaf woodlands, prairies, moist and dry thickets, marshes, bogs, lakes, streams, and marine tidelands. Douglas fir is the predominant forest species; it is well adapted to well-drained soils and frequent fires. Prairie grasses resist forest tree invasion but Douglas fir appears to be expanding, and in excessively distrubed areas, scotch broom is invading the prairies. There are approximately 60,000 acreas of forested area that are managed by the reservation forestry program. Timber harvests recently have ranged from 16.8 million board feet in 1978 to 9 million in 1981.

3.533 Weir Prairie, Johnson Prairie, and possibly the Lake Mondress and Madigan east housing areas contain the rigid white topped aster, a candidate for federal listing as an endangered species. It also grows in 13th Division Prairie. In its protected habitat in areas of Weir Prairie and Johnson Prairie, no ground disturbance is allowed.

3.534 The wide diversity of habitats at Fort Lewis contributes to a rich fauna. Common mammals are black-tailed deer, raccoons, coyotes, muskrats, beavers, mice, and voles. Western grey squirrel is found in dense coniferous forests. The diverse bird populations include such raptors as Cooper's hawk, red-tailed hawk, bald eagle, marsh hawk, osprey, merlin, and American kestrel. Song birds are also abundant on Fort Lewis, and some species that are unusual in Washington State west of the Cascades occur on the reservation. These include the western meadowlark, horned lark and vesper sparrow in prairie habitats; house wrens in open forests; and white-breasted nuthatches in oak woodlands. The Nisqually River estuary, adjacent to Fort Lewis, is the major nesting and feeding area for both migratory waterfowl and shorebirds between Skagit Flats and the Columbia River. Important habitats include seven areas (Wier Prairie, Carter Woods, Bower Woods, Fiander Lake, Monette Hill, Nisqually Delta-Inner, and Spurgeon Creek) that are candidates for National Natural Landmark Classification. Spanaway Marsh was recently evaluated for landmark classification, but was reported to be unqualified in spite of its somewhat unique characteristics. Another important habitat is the Nisqually River Delta, which is a National Wildlife Refuge (U.S. Army Corps of Engineers, Seattle District, 1984b).

3.535 Aquatic Ecosystems. The streams, lakes, and rivers on Fort Lewis support a wide variety of native, stocked, and anadromous fish such as pink and chinook salmon and steelhead and cutthroat trout. Most are self propagating and have achieved a stable

Biological Environment

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population even under heavy fishing pressures. Important fishing areas on the fort include: Murray Creek which drains into American Lake, Muck Creek an important salmon area, and Johnson Marsh an impounded creek and salmon spawning area and tributary to Muck Creek. American Lake and Muck Creek support fisheries; American Lake is stocked with sport fish and Murray Creek is an important spawning habitat for native cutthroat trout (U.S. Army Corps of Engineers, Seattle District, 1984c).

3.536 Threatened and Endangered Species. Bald eagles, listed as threatened under the Endangered Species Act, are known to overwinter along the Muck Creek drainage and the Nisqually River (U.S. Army Corps of Engineers, Seattle District, 1984b). Additionally, nests are known to exist on an American Lake peninsula and on an island in the Nisqually River. No infantry training is held on the island, however helicopter overflights have been reported and are potential sources of disturbance. The rigid white topped aster, a candidate for Federal listing also occurs on post. A study mapping the occurence of this plant is currently being conducted by Fort Lewis personnel; some areas are restricted because of the plant.

On-Post Population

3.537 The current military strength of Fort Lewis is authorized at over 24,860 and is projected to increase to about 31,000 (peace time strength) by fiscal year 1989 if the new light infantry division is not stationed (U.S. Army Forces Command, 1983). With dependents, the total military population is currently about 56,000. Although constant fluctuations in personnel occur, available adequate housing stock allows for about 24,000 soldiers and dependents to live on-post. Additionally, about 17,600 army-retired reside in the Fort Lewis area (Fort Lewis Office of Public Affairs, 1984).

3.538 Military personnel plus dependents constitute about 9 percent of the total estimated population of the surrounding communities (U.S. Army Corps of Engineers, Seattle District 1984b).

Land Use

3.539 Major land uses within the 86,770-acre Fort Lewis include the cantonment or built-up area, artillery impact area and buffer zone, and training areas. The existing cantonment or built-up area at Fort Lewis comprises 6,980 acres and is divided by Interstate Highway 5 (I-5) into North and Main Fort areas. North of the freeway are the Beachwood and Lakeside family housing areas and recreational areas adjacent to American Lake. To the south of the freeway are Gray Army Airfield, the main garrison, and family quarters. Northeast of the main garrison is Madigan Hospital and

the logistics center. The ammunition supply point is located about 4 miles east of the cantonment area. The close-in operational areas provide training, including small arms firing and other training zones, for which safety hazard zones have been established. Land use conflicts with these zones limit the the expansion of the cantonment area in certain directions. the cantonment area has 2,648 permanent buildings and 2,048 temporary structures (U.S. Army Corps of Engineers, Seattle District, 1984c). The open operational area of Fort Lewis comprise about 10,000 acreas north of I-5 and 34,000 acreas to the south. Recreation is a major use and includes both developed facilities and extensive areas for fishing and hunting, some of which are available to the public. Major land use changes proposed in the current Fort Lewis Master Plan Revision include family housing expansion, troop housing, maintenance area expansion, the new Madigan Army Medical Center (MAMC), new training ranges, and expanded facilities at Gray and Solo Point (SRG Partnership 1982). This will result in conversion of undeveloped land and increased building density within the developed area.

3.540 The Fort Lewis Master Plan Update (U.S. Army DFAE, Fort Lewis, 1983a) identifies two major changes in mission since 1977 which have influenced long range land use planning: the arrival of I Corps Headquarters and the conversion of the 9th Infantry Division to a High Technology Motorized Division. Several major areas of land use change were recognized:

- o Family Housing
- o New Madigan Army Medical Center
- o Tactical Vehicle Maintenance facilities

3.541 One hundred fifteen family housing units are currently being constructed and the medical center is proposed to be 1.17 million square feet (U.S. Army DFAE, Fort Lewis, 1983a). Available land for training is limited and ranges are close (U.S. DFAE, Fort Lewis, 1983a).

3.542 Land use conflicts within and adjacent to the Fort include range encroachment into developed and nonintensively used military lands, noise and safety complaints, public trespass, poaching, and destruction or theft of Fort resources. Artillery hazards, disputes over boundaries and land ownership, mutual trespass, and protection of fishery resources are continuing areas of contention between Fort Lewis and the Nisqually Indians (U.S. Army, Headquarters, 9th Infantry Division, 1979).

3.543 Prime and Unique Farm Land. In Pierce County, approximately 900 acres of Fort Lewis could classify as prime farmland. Most of these soils are muck soils and would require drainage prior to tillage. These are approximately 120 acres of land in the Rainier training area that would classify as prime farmland (U.S. Army Corps of Engineers, Seattle District, 1984b).

Noise

3.544 Urban areas border Fort Lewis on the North, and rural areas and small towns occupy the remaining boundaries. All of these areas include noise-sensitive uses; however the rural areas are particularly subject to noise impact because of their low background noise levels. Major noise sources in the vicinity of Fort Lewis include airfields, highways, railroad lines, and artillery training. Highest noise levels associated with the airfields result from flyovers of jets (McChord) and helicopters (Gray Army Airfield).

3.545 Aircraft operations at Gray Army Airfield on Fort Lewis average 400 operations (take-offs and landings) per day. The majority of these (85-90 percent) are rotary wing aircraft. Operations at nearby McChord AFB average over 100 per day; 70 percent of these operations are by jets (U.S. Army DFAE, Fort Lewis, 1982). Operations at both airfields are minimized after 10 p.m. Noise contours for McChord AFB, prepared in 1975, indicate that the 65 dBA contour extends approximately 7 1/2 miles into Fort Lewis, and the 70 dBA contour about five miles across the eastern areas of the reservation (USAF, McChord AFB, 1975). The 1975 noise contours for McChord AFB are being revised to reflect planned and proposed stationing actions at McChord (Krance, 1984).

3.546 Highway noise from Interstate 5 is fairly constant due to heavy truck traffic at night. Average noise levels generated by peak traffic on Fort Lewis roads ranges from 57 to 66 dBA (U.S. Army DFAE, Fort Lewis, 1982).

3.547 Several rail lines pass by or through Fort Lewis. Noise levels produced by passing trains probably reach 88-98 dBA.

3.548 Use of training ranges and firing of artillery produce large amounts of impact noise. Limitations on night firing are imposed to reduce impacts.

3.549 The Department of Defense has established as generally acceptable for most residential, recreational, educational, medical and religious facilities a noise level lower than 65 dBA. To meet this criterion, several areas within Fort Lewis must be provided

SUPERSEDED
AUG 1984

with acoustical shielding. Areas outside Fort Lewis experiencing high noise levels due to artillery fire and military overflights include the Yelm Prairie, Roy, Nisqually, DuPont, the Nisqually Indian Reservation, and areas along the southern and western boundaries (U.S. Army DFAE, 1982).

Air Quality

3.550 The Environmental Protection Agency has designated Fort Lewis and its immediate environs as a Class II (Prevention of Significant Deterioration) area. Ambient air quality standards are therefore intermediate between Class I (cleanest air, with least acceptable degradation) and Class III (an industrial category, with greatest amounts of air pollutants allowed).

3.551 The ambient air quality standards for carbon monoxide, sulfur dioxide, nitrous oxides, and hydrocarbons are probably not exceeded on the reservation. However, the 1- to 8-hour standards for carbon monoxide may be exceeded during the rush hour near I-5. The major atmospheric pollutants generated on Fort Lewis are suspended particulates from tracked and wheeled vehicles travelling dusty, unimproved roads or travelling offroad during exercises. The daily standard for suspended particulates (37 micrograms per cubic meter) has been exceeded, but the annual standards have not. Fort Lewis activities, such as slash burning and fire-fighting training, that contribute to particulates and to gas concentrations have been coordinated with Puget Sound Air Pollution Control Agency (APCA). Stationary source fuel combustion, mostly in steam plants around the reservation, accounts for a substantial portion of the emission of hydrocarbons, sulfur dioxide and nitrous oxides. Carbon monoxide generation from private vehicles, base vehicles, and fuel combustion for heating is largely concentrated in the cantonment area (U.S. Army Corps of Engineers, Seattle District, 1984a).

3.552 Thirty-six potential air pollution sources on the post are registered with the Puget Sound APCA. Most of these point sources are heating plant boilers, underground storage tanks, or paint spray booths.

3.553 Fort Lewis has obtained three variances to standards from the Puget Sound APCA, and one variance from the Olympic APCA. Variances are required for smoke training, and for the contaminated fuel burning pit at Gray Army Airfield (U.S. Army DFAE, Fort Lewis, 1982).

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Water Supply

3.554 Potable water for Fort Lewis is supplied by a spring at Lake Sequalitchew and eight wells located on the post. Five additional wells supply non-potable water for irrigation purposes and potable water for remote locations on-post.

3.555 Potable water is supplied and distributed on the post by a single grid system of water mains. Treatment consists of chlorination and fluoridation. Storage facilities consist of covered concrete reservoirs, covered steel reservoirs and a single elevated tank. Combined storage capacity is 7,342,000 gallons. The principal water system has a maximum supply capacity of approximately 22 million gallons per day (GPD). Normal consumption is 5.5 million GPD in winter and 14.3 million GPD in summer (Jones and Stokes, 1984). Current plans call for construction of a new water treatment plant in FY 1988 to reduce corrosivity of the water. An additional 1.9 million gallons of storage capacity is also required to meet full mobilization requirements.

Wastewater Disposal

3.556 The wastewater disposal system for Fort Lewis also serves the City of DuPont, McChord Air Force Base, American Lake Veterans Medical Center and Camp Murray. The treatment plant, located on a bluff overlooking Puget Sound at the northern end of Fort Lewis, provides primary and secondary treatment and discharges through a deep water outfall into Puget Sound. The plant has an operating capacity of 7.7 million gallons per day and a peak hydraulic capacity of 15 million gallons per day (U.S. Army DFAE, Fort Lewis, 1982; U.S. Army Corps of Engineers, Seattle District, 1984d). The average daily flow is between 3.5 and 6.8 million GPD, with the higher figure occurring in the winter when high infiltration into collection mains can cause peak flows of as much as 9 to 10 million GPD. During these peak flow periods, discharge volumes have exceeded National Pollutant Discharge Elimination System (NPDES) permit requirements, but effluent quality has remained within requirements (Jones and Stokes, 1984). Reduction of infiltration is being accomplished through reconditioning of collection mains (Jones and Stokes, 1984).

3.557 Stormwater is collected in storm sewers and discharges through an open channel into Puget Sound. Facilities on Fort Lewis have been upgraded to NPDES requirements, and additional spill containment areas and oil-water separators are either planned or are being constructed in equipment maintenance areas.

SUPERSEDED
AUG 1984

Solid and Hazardous Waste Disposal

3.558 Fort Lewis has operated a 180-acre sanitary landfill on land leased from Weyerhauser Corporation adjacent to the northern boundary of the post in the City of DuPont. This facility is the sole landfill for nonhazardous wastes from Fort Lewis and McChord AFB. Although the landfill meets U.S. Environmental Protection Agency (EPA) criteria, Pierce County has denied a solid waste disposal site permit due to actual impacts on groundwater quality. Under an interim permit, closed portions of the existing landfill are being capped, trenches are being lined and a leachate collection and treatment system is being installed (Jones and Stokes, 1984). Through a land exchange agreement with Weyerhauser, Fort Lewis is acquiring ownership of the landfill area. With current and planned upgrading, the landfill is considered to have a twenty year life (Flood, 1984). Additionally, a refuse incinerator is planned for construction at Fort Lewis in 1987. With the volume reduction provided by the incinerator, landfill life will be extended significantly.

3.559 Several industrial operations at Fort Lewis produce hazardous wastes. These include vehicle and aircraft maintenance and weapons repair and reconditioning. Also, the Defense Property Disposal Office (DPDO) operates a facility at Fort Lewis which receives, stores and makes proper disposition of all excess property. Hazardous wastes resulting from all operations at Fort Lewis are segregated and stored according to type. Contract services are utilized to collect and dispose of wastes off site. Additionally, an industrial wastewater treatment plant located adjacent to the Logistics Center is used to treat waste streams from the center. Treatment consists of grit removal, air flotation for oil and grease removal, sedimentation and discharge into a no-discharge evaporation/percolation lagoon (Environmental Science and Engineering, Inc., 1983).

Housing

3.560 Adequate available onpost housing includes bachelor officer quarters for 89 persons, 3,394 family units (758 officer; 2,636 eligible enlisted) adequate barracks capable of housing 11,744 enlisted men and 12,400 substandard barracks which cannot be made adequate, but could be upgraded and used as temporary shelters (Russell, 1984) (Fort Lewis Housing Referral Office, 1984c). Due to a shortage of on-post housing an estimated 9390 military families live in local communities (Fort Lewis Office of Public Affairs, 1984).

REVISED 1984

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3.561 Family houses on-post are situated in the following areas: Broadmoor, Clarkdale, Beachwood, Madigan, Greenwood, Parkway, old and new Hillside and Lakeside areas. Construction of 115 family units is currently underway on Fort Lewis. In addition, new barracks are planned for construction in Fiscal years 1984 and 1986 for an additional 726 units (Glover, 1984). By FY 1987 adequate space for about 12,470 enlisted troops and 3,509 families would be available on-post. No new construction of bachelors officer quarters is currently planned.

Schools

3.562 In addition to the five elementary schools on-post, a number of voluntary, off-duty educational programs and on-duty remedial programs are provided for Fort Lewis personnel through the Army Continuing Education System. Current plans call for an addition of 4 classrooms at the Hillside School and 6 at Beechwood. A possibility exists that a new elementary school would also be built on post (Watson, 1984).

3.563 The Education Services Division on-post meets the educational needs of over 24,000 soldiers and families. Seven educational centers, on-post, offer counseling and testing services in addition to academic programs. A total of 34 buildings are operated by the service; building maintenance, supply and distribution tasks are achieved by one supply clerk and voluntary assistance from the staff (Fort Lewis Educational Services Division, 1984).

Health Care

3.564 Health services provided at Fort Lewis include medical and dental care at Madigan Hospital for active and retired military and their dependents, emergency ambulance service for residents of nearby areas, and medical air evacuation services and search and rescue services to the region (U.S. Army Headquarters, 9th Infantry Division and Fort Lewis, 1979). Annually Madigan Army Hospital provides care to about 152,000 (U.S. Army Corps of Engineers, Seattle District, 198[illegible]). On an average day about 295 out of 1,000 licensed beds are in use (U.S. Army Headquarters, 9th Infantry Division and Fort Lewis, 1979). The new Madigan Hospital Medical Center is due to begin construction in 1984 and be completed by 1990 or 1991. The facility will be a major teaching hospital and outpatient care facility in the Northwest. It would serve the 5 northwestern states with the immediate service area including Fort Lewis, McChord Air Force Base, and retired military personnel. The center is designed for 478 beds, with the ability to expand to 722

beds in the event of an emergency. A nursing tower expansion could accomodate an additional 200 beds. The existing Madigan complex would be used for temporary troop housing or other transitory uses, but it could be made active again if necessary (U.S. Army Corps of Engineers, Seattle District 1984c).

Public Safety

3.565 Safety hazards exist at Fort Lewis due to past and present activities. Hazards include: unfilled fox holes that are obscured by vegetation; abandoned barbed wire in training areas; artillery fire; flight hazards, including unauthorized aircraft over military training areas; uncontrolled access, and public trespass, including in off-limit areas; industrial hazards; explosives; and fire hazards (U.S. Army Headquarters 9th Infantry Division and Fort Lewis, 1979). The Nisqually Indians have recently filed complaints about artillery shells richocheting across the Nisqually River onto reservation lands. Safety hazards are mitigated by a number of regulations and strict monitoring and enforcement by Airspace Control and Range Control (U.S. Army Corps of Engineers, Seattle District, 1984b).

Traffic and Transportation

3.566 The major highway corridor serving Fort Lewis as well as the general region is Interstate 5. Access to Fort Lewis from I-5 is by seven gates.

3.567 The Fort Lewis road network consists of nine miles of concrete-surfaced roads, 172 miles of asphalt roads, 522 miles of unimproved roads, representing a total of 703 miles. Of this total, 523 miles provide access to the various training sites (U.S. Army DFAE, Fort Lewis, 1982). Primary arterial routes on-post are 41st Division Drive (north-south), Pendleton, and Jackson Avenues (east-west). Main gates from I-5 to Fort Lewis are at the Logistics Center (Lexington Avenue), Madigan Army Medical Center (5th St., Blaine Ave.), 41st Division Drive and DuPont (Hanna Drive, Clark Rd., Steilacoom Rd.). A 1981 study conducted by the Military Traffic Management Command-Transport Engineering Agency (MTMCTEA) (Hendrix and Brickhouse, 1982) indicated that the 24-hour traffic volume entering the post was in excess of 35,000 vehicles. The study concluded that both short-term and long term changes are necessary at Fort Lewis to improve traffic flow and eliminate congestion at major intersections, especially during peak hours (morning, afternoon rush hours; noon). Included among the recommended changes are widening, access control and realignment of post arterial roads.

3.568 Railroad service to Fort Lewis is provided by the Burlington Northern Railway through two branch lines which serve the main post area and the Madigan Army Medical Center and Fort Lewis Logistics Center. Railroad facilities at Fort Lewis consist of 30 miles of running track and siding. Transport of armor, mechanized or other types of vehicles from Fort Lewis to Yakima Firing Center is accomplished by Burlington Northern Railroad (U.S. Army DFAE, Fort Lewis, 1982).

Energy Usage

3.569 The total on-post energy usage at Fort Lewis for FY 83 was 5.53 trillion Btu, obtained from the following sources:

Fuel Oil	1,425,900 MBtu
Natural Gas	1,359,300 MBtu
Propane	2,500 MBtu
Gasoline	296,700 MBtu
Diesel Fuel	283,800 MBtu
Aviation Fuel	350,500 MBtu
Electricity	1,810,300 MBtu

Based on an effective population of 29,000 residents derived using the methodology described in Appendix H, on-post energy consumption is approximately 190 MBtu per resident per year.

3.570 The majority of on-post energy usage is for heating; 2.8 trillion Btu were consumed in FY 83. Natural gas and fuel oil are the main heating fuels, each accounting for approximately 50 percent of annual heating energy consumption. Natural gas is supplied by the Washington Natural Gas Company. Because natural gas is in short supply nationally, future use of natural gas is expected to decrease due to the use of alternative fuels for new construction and for retrofit of existing facilities. Fuel oil is obtained from local distributors. There are 19 central heating plants on Fort Lewis. Most of the electrical power is supplied by the City of Tacoma. The southern part of the Reservation is supplied by the Puget Sound Power and Light Company.

3.571 On-post energy consumption by military vehicles was 930 billion Btu in FY 83. Military vehicles located on-post in 1984 include 6,000 tactical vehicles such as jeeps and trucks, 264 tracked vehicles including 54 tanks, and 665 automobiles and light trucks. In 1982 there were 242 helicopters and four fixed wing aircraft located on-post.

3.572 Gasoline consumption by private vehicles owned by military personnel is estimated at 9 million gallons (1,100 billion Btu) per year based on estimated ownership of 15,300 cars driven an average of 9,026 miles per year at a mileage of 15.53 miles per gallon. Present energy use for personal transportation by military personnel is approximately 4 percent of that of civilian personnel in counties adjacent to the fort.

3.573 Estimated energy consumption for off-post housing of military personnel and their dependents is 4.2 trillion Btu per year based on an average per capita residential energy consumption of 132.1 MBtu per year. Residential energy consumption in the counties adjacent to the fort is approximately 80,600 billion Btu per year. Military personnel consume approximately 5 percent of the total residential energy used in the area.

3.574 Total energy consumption for Fort Lewis in 1983 was approximately 10.9 trillion Btu, including on-post energy usage, military vehicles, private vehicles owned by military personnel and off-post housing requirements of military personnel. Total energy usage is approximately 437 MBtu per troop per year.

Cultural Resources

3.575 Cultural resources investigations on Fort Lewis have been mostly reconnaissance surveys. Finds have been primarily historic, but the area is believed to contain many prehistoric sites as well (U.S. Army Corps of Engineers, Seattle District, 1984b). In all 86 historic and prehistoric sites have been reported; surveys have been conducted on about 30 percent of surveyable acreage. Some discovered sites may be eligible for inclusion on the National Register of Historic Places, but to date only one site, the Fort Lewis Museum, has been included on the National Register. An update of the Fort Lewis historic property survey is needed before historic structures on the Fort are given further consideration for protection. The Environmental Office, at the Fort, also intends to contract for preparation of a Nisqually Tribe oral history to better indentify potential resources areas on the Fort (U.S. Army Corps of Engineers, Seattle District, 1984b), and a cultural resources predictive model is currently being developed for the installation.

3.576 The Fort Lewis area has been permanently inhabited by humans for about 12,000 years. The principal Native Americans residing in the area were the Nisqually Tribe, with the Puyallup and Steilacoom groups also frequenting the region. The native language was Salish. Today a Nisqually Indian Reservation occupies a narrow edge of land, about 2 square miles, along the western bank of the

SUPERSEDED
AUG 1984

Nisqually River adjacent to Fort Lewis. Since the establishment of the Fort in 1917, several issues have developed concerning the tribe and the Army stationed at the post. The issues are pincipally territorial; army activities are seen by the tribe to interfere with their legal rights. Some of the issues and the tribal position on them are listed in Appendix L of the FEIS for the Fort Lewis Military Installation and Yakima Firing Center (U.S. Army Headquarters, 9th Infantry Division and Fort Lewis, 1979). Because of the extensive military activities on Fort Lewis, the immediate area is no longer available to the Nisqually Indians to be used in traditional ways (U.S. Army Corps of Engineers, 1983b).

Fort Lewis Subinstallations

3.577 The Yakima Firing Center (YFC) is the major subinstallation of Fort Lewis and is described in some detail in this section (Figure 3-13). However there are other subinstallations which could be affected by the proposed action. These are: Vancouver Barracks and its subinstallation, Camp Bonneville; and Huckleberry Creek Mountain Training Center. Vancouver Barracks' Camp Bonneville is in the western foothills of the Cascade Mountains about 23 km east of Vancouver. It furnishes year round training facilities for active Army units, units of the National Guard, Marine Corps, Navy and Coast Guard Reserves and other Department of Defense personnel in areas of Washington and Oregon. Vancouver Barracks serves as a reserve component center for the 104th Infantry Division (training) and 2nd Battalion 146th Artillery and Washington National Guard (Environmental Science and Engineering, Inc., 1983).

Yakima Firing Center

3.578 The Yakima Firing Center (YFC) (Figure 3-13) occupies 263,130 acres in Yakima and Kittitas counties, Washington, 7 miles north of the city of Yakima. The Center has been used as a military training center whose mission is to provide training facilities and logistical support for assigned units and operational live-fire training for the resident 9th Infantry Division and reserve components. Tank gunnery, artillery firing, close-in aerial support, combined firing exercises for various weapon systems, and large-scale troop maneuvers occur at the firing center. The location, size, and terrain characteristics provide a highly suitable land area for advanced unit training, field exercises and maneuvers, and operational readiness training as implemented by the Army Training Program. The Fort Lewis installation is about 160 miles by road from the Center (U.S. Army Corps of Engineers, Seattle District, 1984c).

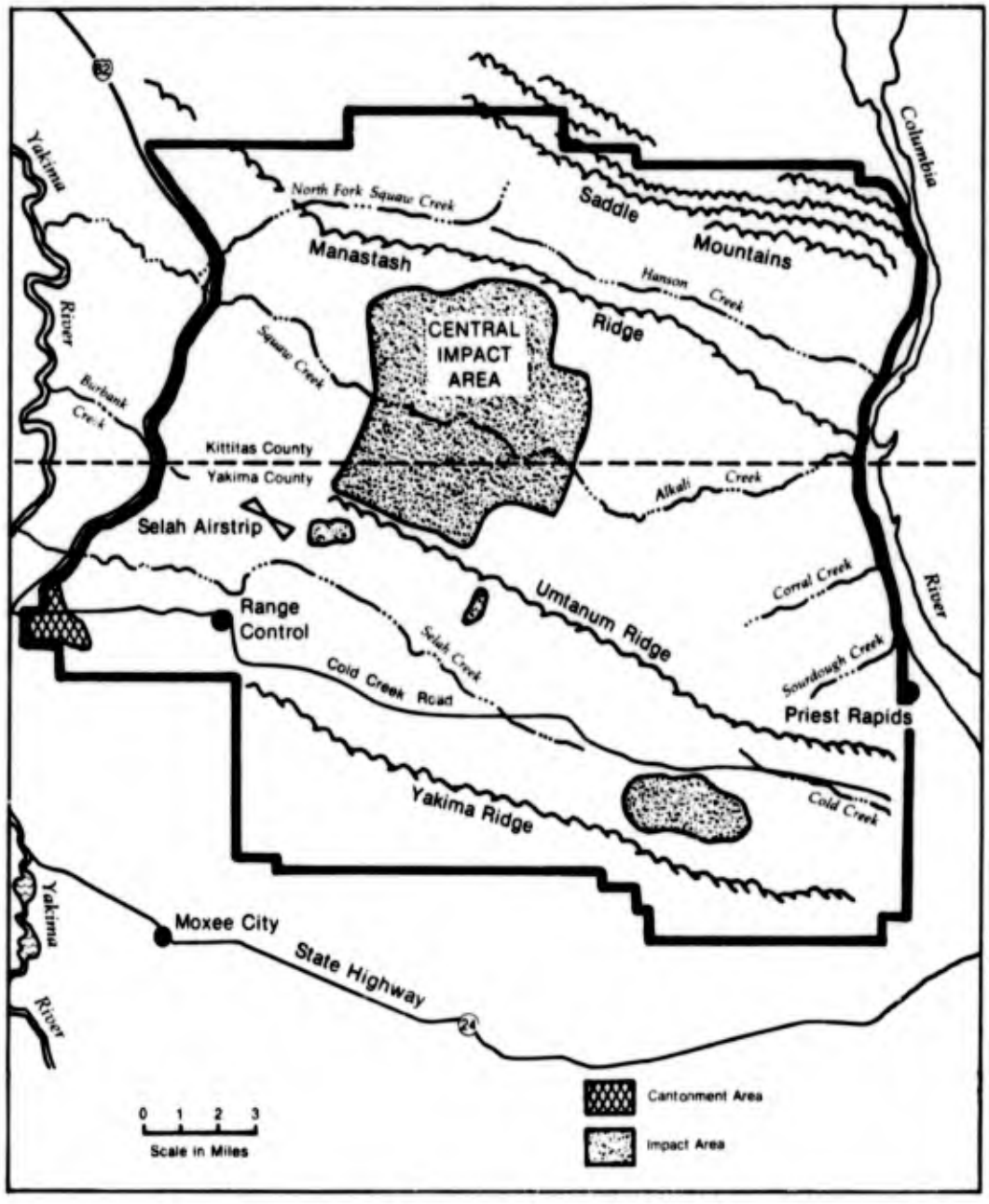


FIGURE 3—13
YAKIMA FIRING CENTER, WASHINGTON

Nisqually River adjacent to Fort Lewis. Since the establishment of the Fort in 1917, several issues have developed concerning the tribe and the Army stationed at the post. The issues are principally territorial; army activities are seen by the tribe to interfere with their rights under the Treaty of Medicine Creek, 10 Stat .1132 (1854). The Nisqually Tribe asserts that the Army has a trust responsibility to protect those treaty rights. Some of the issues and the tribal position on them are listed in Appendix L of the FEIS for the Fort Lewis Military Installation and Yakima Firing Center (U.S. Army Headquarters, 9th Infantry Division and Fort Lewis, 1979). Because of the extensive military activities on Fort Lewis, the immediate impact area is no longer available to the Nisqually Indians to be used in traditional ways (U.S. Army Corps of Engineers, 1983b).

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SUPERSEDED
AUG 1984

3.579 The Yakima Firing Center is an open, predominantly undeveloped area of shrub-steppe vegetation on the western boundary of the Columbia Basin. Major topographic features are three parallel ridges with narrow canyons and valleys between. The climate is characteristically dry year-round, with warm summers and cool winters. Rainfall averages less than seven inches per year, with the majority occurring from fall to spring. Precipitation is so light that most runoff is absorbed by the soil, leaving only a minimal flow into the streams. Soils range from deep alluvial loams to shallow, stony soils overlying basalt (Environmental Science and Engineering, Inc., 1983; Jones and Stokes, 1984).

3.580 Geologic hazards include seismic events, volcanism and soil erosion, of which soil erosion is considered the most significant (Jones and Stokes, 1984). Wind and water continually erode soils at YFC, particularly in areas devoid of vegetation. The erosion potential for many soils is quite high (Jones and Stokes, 1984).

3.581 Suspended particulates constitute the most serious air quality problem in the general area, particularly in the dry summer months, with wind and military vehicle movements as the primary sources on the reservation itself (Jones and Stokes, 1984).

3.582 Yakima Firing Center has seen recent dramatic changes in use. Training strength in the 1-year period from October 1981 to October 1982 showed a 15-percent increase over the previous comparable period, while the 1977 Master Plan and Tabulation of Existing and Required Facilities predicted only a 36-percent increase in a 5-year period. Accordingly, real growth is expected to exceed anticipated growth on the subinstallation (U.S. Army Corps of Engineers, Seattle District, 1984e).

3.583 Current long range planning strength includes average daily assigned training personnel of 2,452 military. Permanent Party Troops amount to 154, Augmentation Troops are 41, and average assigned training troops are 2,257 (U.S. Army DFAE, Fort Lewis, 1983b).

3.584 The major activities at Yakima that have altered the biological and physical landscape are military use, range fires, and grazing. Military training activities, including tracked vehicles, troop maneuvers, construction, and demolition have affected much of the natural environment by disturbing watercourses, eradicating vegetation, and causing range fires. These activities, combined with some loss of vegetation by grazing, have markedly increased the potential for loss of the often thin soil surface by wind and water

erosion. Since establishment of the Center, a range management program has been instituted to prevent overgrazing, allow forage grasses to recover, and reduce adverse impacts to the range from military activities.

3.585 The western portion of the firing center is where most maneuvers are conducted, and is the most disturbed on the reservation. The central impact area and scattered dud ammunition areas are significantly disturbed by weapons firing and ordnance disposal activities. In contrast to the western and central areas, to date the eastern portion has been much less affected by these activities. The washes or stream valleys, especially the perennial Alkali and Hanson Creeks and Borden Springs at the eastern edge provide important habitat for a wide variety of vegetation and wildlife. Many plant and animal species of concern identified by the Washington Natural Heritage Program have been reported in the eastern portion of the center (U.S. Army Corps of Engineers, Seattle District, 1984c).

3.586 The eastern portion of the firing center is less disturbed because of its topography and limited access. The primary roads are the Cold Creek Road to the south and the Hanson Creek Road to the north. The ruggedness and steepness of the terrain, especially in the area of Alkali Canyon, indicates a fragile, erosion-prone condition.

3.587 Biological Environment. The Yakima Firing Center occupies the steppe region in the Columbia River Basin and has a climatically-determined flora comprised of bunchgrasses and low shrubs in an arid to semi-arid condition with cold winters. The climax association is big sage/wheatgrass. The following five habitat types have been found in the firing center (U.S. Army Corps of Engineers, Seattle District, 1984c):

- o Sandy loam habitat
- o Lithosol habitat
- o Wash habitat
- o Spring habit
- o Talus habitat

3.588 The vegetation at the Center is extremely sensitive to soil disturbance. Very thin soils are sensitive to soil breaking activities which promote erosion (U.S. Army Corps of Engineers, Seattle District, 1984a).

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3.589 Wildlife sampling at the Center has been limited, however, numerous species have recently been identified (U.S. Corps of Engineers, Seattle District, 1984a,c). Particularly important as hunting resources are the chukar and mule deer. Washes and springs are important to many species in this dry climate; to those living in the surrounding desert as well as those dependent on the riparian habitat. Golden eagles, the rare prairie falcon and ferruginous hawk have been observed to nest along streams. Nearby Yakima Canyon is a prime nesting area for these birds as well as ospreys and Bald Eagles. These raptors and others indicate sizeable rodent populations (U.S. Corps of Engineers, Seattle District, 1984a,c).

3.590 Aquatic habitats at the firing center have been observed to contain rainbow trout, salmonids, salamanders, toads, frogs, and turtle (U.S. Corps of Engineers, Seattle District, 1984a).

3.591 Plant and Animal Species of Concern. The bald eagle (Haliaeetus levcocephalus), listed as threatened under the Federal Endangered Species Act, is known to inhabit areas along the Columbia River and Selah Canyon. Additionally, a candidate species for federal listing, the Columbia milk-vetch (Astragalus columbianus), has been reported in Yakima County and at the firing center. There is an informal agreement between the Army and U.S. Fish and Wildlife Service to conduct a study of the species for its protection (U.S. Corps of Engineers, Seattle District, 1984c). Formal consultation between the U.S. Fish and Wildlife Service and the U.S. Army has been initiated concerning potential impacts to the bald eagles. Yakima Firing Center is also an important breeding area for the Sage Grouse. They rely on local sage brush for food and cover. The birds are monitored closely by the State Game and Fish Department and the Yakima Firing Center range manager particularly during strutting season.

3.592 Cultural Resources. Yakima Firing Center is part of the mid-Columbia region of the Interior Plateau, an area which human populations have occupied for at least 11,000 years. Sites and objects representing this long-term human presence are found at the center.

3.593 About 12 percent (29,680 acres) of the accessible acreage at the center has been field surveyed. To date, 7 historic and 209 prehistoric sites have been identified. The locations are maintained on maps at Fort Lewis. Most of the hinterland sites are small ranging from open camps and work areas to rock shelters, pictographs, petroglyphs, cairns, trails and burials. None of the few historic sites have been identified as significant to date. The Wa-pai-xie Prehistoric Archeological District, a rock shelter cave complex near Hanson is the only area at the center listed in the National Register of Historic Places (U.S. Corps of Engineers, Seattle District, 1984a). Other sites are considered potentially eligible.

3.594 Ethnography/Ethnohistory. Yakima Firing Center is included as a portion of the traditional territory of the Wanapum Tribe. The Wanapums are one of the 14 loosely confederated groups who comprise the Yakima Nation. At the time of historic contact in the early 19th Century, the Wanapums occupied several semipermanent winter villages along the Columbia River between Hanford and Sentinal Gap (U.S. Corps of Engineers, Seattle District, 1984c). The small number of Wanapums that remain in the area, reside in a small enclave adjacent to Priest Rapids Dam near the southeastern corner of the firing center. Contemporary Wanapums use the firing center's interior areas in traditional ways for gathering ceremonial roots and hunting. The area is also known to contain many locations of traditional and ceremonial value to the Wanapums. Continued access and freedom to use the resources at Yakima is important to the Native American population (U.S. Corps of Engineers, Seattle District, 1984a).

3.595 Socioeconomic Environment. The most significant socioeconomic feature of the firing center is its use for military training and subsequent contribution to the combat readiness of the 9th Infantry. Of the 263,130 acres that comprise the Yakima Firing Center, 1,010 acres are within the cantonment area, 30,300 acres are the existing artillery impact and dud areas, and 231,820 acres are used for general field training.

3.596 The population of the subinstallation fluctuates markedly as units from the 9th Infantry, other Army commands, U.S. Air Force, Washington National Guard, Marine Corps, and Navy rotate through the center. The greatest military activity is during the period from March to November; the average training session is from 6 to 12 weeks. The average troop training strength is 2,257 troops per day, 365 days per year. In addition to activities directly related to training, administrative support and facilities, quarters, and a limited post exchange for military personnel exist at the center. Of the 134 current permanent military personnel, about 95 live on-post. There is no family housing on-post and the center has contributed only slightly to civilian employment in recent years. Medical and dental clinics are provided for personnel on-post, while education for offspring is provided by local school districts.

3.597 Safety is a major concern at the center as a result of activities related to artillery firing, aircraft operations, industrial materials, ammunition storage, dud ammunition disposal, and hunting. As a result, careful coordination of activities is conducted through Range Control to avoid possible conflicts between maneuver training, artillery firing, and hunting. The only economic effect on the surrounding communities is from some procurements and personal consumption expenditures of personnel (U.S. Corps of Engineers, Seattle District, 1984c).

3.598 Domestic and fire protection water in the cantonment area at Yakima Firing Center are obtained from a 60,000 gallon storage tank. Water is provided in the training areas by four wells, each with a 12,000 gallon potable water storage tank. Taylor Pond is also used for fire fighting. An analysis of the water supply system based on a design population of 6,000 recommended doubling existing storage and adding new wells (Jones and Stokes, 1984).

3.599 YFC has a secondary wastewater treatment plant with a hydraulic capacity of 720,000 gallons per day and a design operating capacity of 500,000 gallons per day. The current plant is adequate for present demands, and discharges are in compliance with the NPDES permit (Jones and Stokes, 1984). A study of YFC facilities indicated that the wastewater treatment system must be increased in capacity to meet projected future demands (U.S. Army Corps of Engineers, Seattle District, 1984c).

3.600 Yakima Firing Center maintains a landfill site about 2 miles east of the cantonment area. There is existing capacity, but expansion is limited based on the need for impermeable soils.

Huckleberry Creek Mountain Training Center (HCMTC)

3.601 Huckleberry Creek Mountain Training Center (HCMTC) is located on 5,000 acres of land leased from the U.S. Forest Service in the Snoqualmie National Forest near the northeast corner of Mount Rainier National Park. The reservation includes the lower portion of Huckleberry Creek as well as its confluence with the White River. The terrain is rugged, forested mountain ridges and a single deep valley, which is drained by Huckleberry Creek.

3.602 HCMTC is utilized by various units attached to Fort Lewis for winter survival and mountaineering training activities (U.S. Army Headquarters, 9th Infantry Division, Fort Lewis, 1979). No permanent facilities exist at HCMTC, although a few temporary barracks to house troops and training personnel exist on the reservation. (Most training staff quarter in a nearby community.) Water supply is provided from Huckleberry Creek. No treatment is necessary since water quality is high. A system of portable latrines and holding tanks is temporarily being used HCMTC while a new collection and septic tank system is being installed. Sanitary wastes are collected by a contractor and disposed of off-site. Solid waste is containerized and removed periodically by a contractor. No landfill facilities currently exist at HCMTC (Lanning, 1984).

3.603 HCMTC is currently fully utilized, almost 52 weeks per year. Units training at HCMTC are transported to the reservation on buses and trucks (Lanning, 1984).

Camp Bonneville (CPB)

3.604 Camp Bonneville (CPB) is located in the western foothills of the Cascade Mountains in southwestern Washington, approximately 15 miles east of Vancouver, and 95 (air) miles south of Fort Lewis. The camp contains approximately 3,840 acres in the midst of rural and forested land situated in the upper valley of Lackamas Creek. CPB currently functions as a training installation for Active Army, Army National Guard and Reserve units. CPB contains areas designated for infantry and vehicle training and weapons firing. Eleven ranges on Camp Bonneville are listed as currently active, and include ranges for small arms, demolition (explosives), mortar (training shell only) and artillery training.

3.605 The topography of Camp Bonneville consists of low plains and hills with elevations ranging from 289 feet to 1640 above sea level. The camp is drained entirely by the southwesterly-flowing Lackamas Creek and its tributaries. Soils are predominantly clay and non-porous, so there is considerable runoff after storms. The climate of Camp Bonneville is characteristic of western Washington, with rainfall averaging about 48 inches, most of which occurs between fall and spring.

3.606 Water supply at Camp Bonneville is provided by two wells, one of which provides approximately 115,000 gallons per day. (No data are available for the second well.) Domestic wastewater treatment at CPB consists of an aerated lagoon with effluent discharged through spray irrigation. No NPDES permit is required for this operation (Environmental Science and Engineering, Inc., 1983). No landfill currently exists at CPB (Environmental Science and Engineering, Inc., 1983).

3.607 Air emissions and noise sources at CPB include vehicles, training activities and weapons firing. No problems have been reported regarding air pollution or noise (Environmental Science and Engineering, Inc., 1983).

Vancouver Barracks

3.608 Vancouver Barracks (VB) is an installation comprised of approximately 62 acres of land located in the south-central section of the City of Vancouver, Washington, along the north bank of the Columbia River. The post is used to support training activities for the 104th Division and units of the Reserve and National Guard (Environmental Science and Engineering, Inc., 1983). Due to the urban location of VB, no training areas or activities exist on the post. Training activities are conducted at Camp Bonneville. Services to Vancouver Barracks (water, wastewater, solid waste) are provided by the City of Vancouver.

SUPERSEDED
AUG 1984

3.609 Expansion of facilities and activities at VB is severely limited by surrounding land use and planned changes to Interstate 5. Portions of VB along the proposed route may be excessed, and several buildings at VB may be removed (Environmental Science and Engineering, Inc., 1983).

FORT ORD, CALIFORNIA, AND SURROUNDING REGION

3.610 Fort Ord is located on the coast of central California near Monterey (Figure 3-14). The Post currently has a population of 16,264 military, 26,300 dependents and 3,721 civilian employees associated with it.

Monterey Bay Region

3.611 Background information is provided for Monterey County or for the parts of the county around Fort Ord and Fort Hunter Liggett. The following discussions focus on those areas most likely to be affected by the proposed activity.

Climate

3.612 The Monterey Bay region is located in a Mediterranean subhumid climatic zone which is characterized by cool, dry summers, mild winters, and light annual precipitation. Climatic conditions are dominated by the proximity of the Pacific Ocean which causes air temperatures to remain within a few degrees of the water temperature and a high relative humidity. In general, only two seasons are apparent. The annual mean temperature at Monterey is 56.6°F. Relative humidities commonly average 75 percent.

3.613 The sea breeze-land breeze regime is the prevailing climatic characteristic. During spring and summer months, a strong on-shore sea breeze develops during the day (often exceeding 10 mph) with weaker breezes at night. Precipitation during these months, if it occurs, is usually thunderstorm activity. Cold water upwelling offshore, however, cools the air offshore and causes frequent low clouds and fog over the region. Fog is usually observed 18 to 22 days per month in July, August and September.

3.614 In the fall months, the sea breeze condition weakens allowing land areas near the ocean to heat up for a longer period during the day. Hence the warmest days and lightest surface winds are usually observed during September and October. About 90 percent of the mean total precipitation (approximately 14 inches at Monterey) occurs during the winter and early spring months (November through April). Inland areas usually experience less preciptiation than coastal areas.

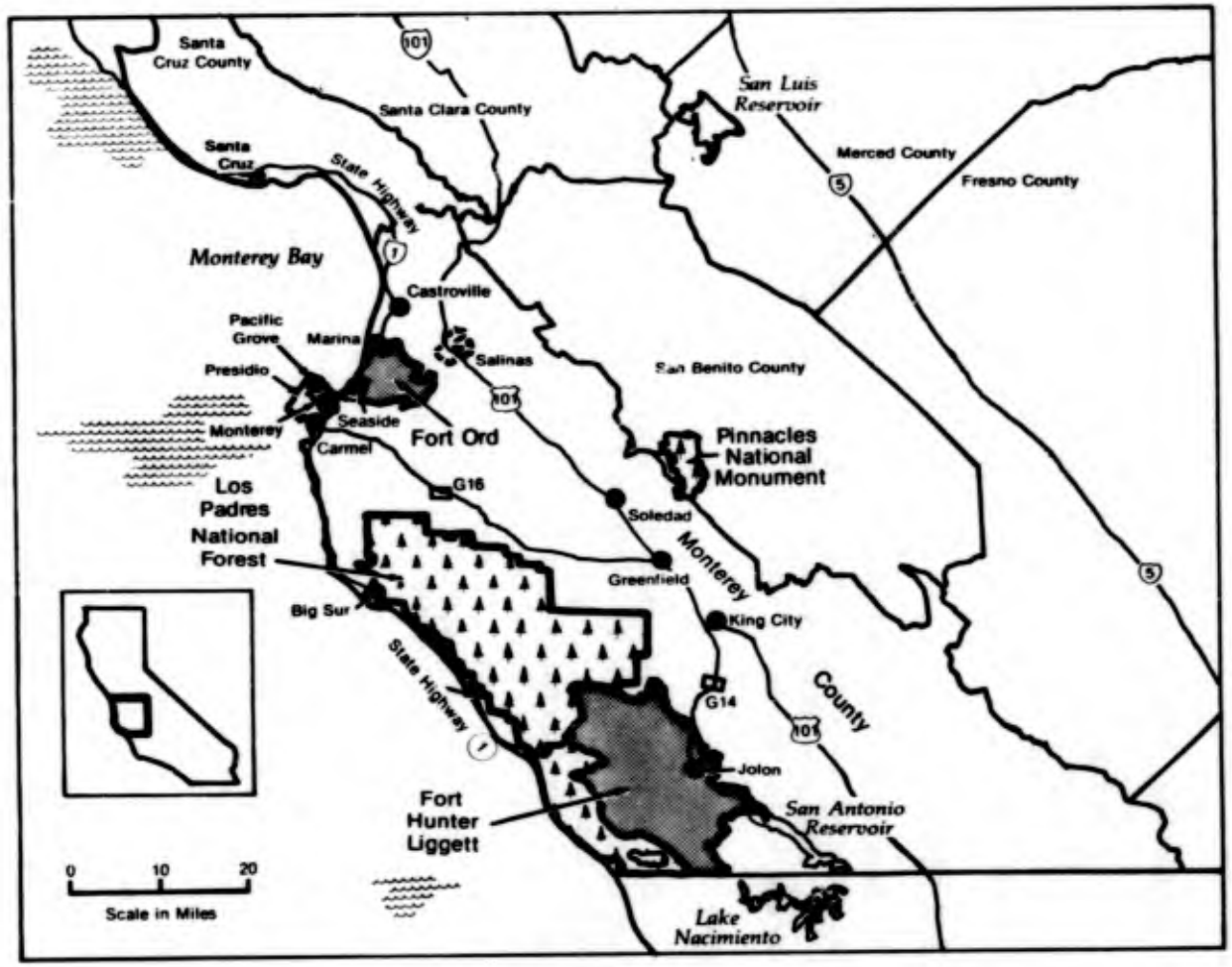


FIGURE 3—14
THE MONTEREY BAY, CALIFORNIA REGION

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Biological Environment

3.615 The biological environment of the region is strongly influenced by the Pacific Ocean, the Santa Lucia Range and the valley of the Salinas River. Based on plant communities, there are 8 major ecosystems in Monterey County: coastal strand, wetlands (both fresh and marine), riparian woodlands, grassland, coastal scrub (coastal sage scrub and north coastal scrub), chapparral, broadleaf evergreen, and coniferous forest, including redwood, closed cone pine and mixed conifer (Monterey County Planning Department, 1982). The diverse plant communities provide habitat for equally diverse wildlife communities ranging from sea lions, sea otters and cormorants along the coast to the deer, wild pig, hawks and eagles of the interior. Further information on the wild pig and other introduced species is provided in the environmental description of Fort Hunter Liggett, below.

Demography

3.616 Based on the 1980 Census, Monterey County has a population of 290,444, just over one percent of the state population and ranking 18th of the state's 58 counties (U.S. Department of Commerce, 1982b). Within the Greater Monterey Peninsula Planning Area, Fort Ord represents about 17 percent of the populaton. Most of the population (about 85 percent) is concentrated in the cities and adjacent areas in the northern part of the county and around Fort Ord. These cities include Carmel-by-the-Sea, Marina, Monterey, Pacific Grove, Salinas and Seaside. Populations in these cities range from about 4700 in Carmel to 28,000 in Monterey and 80,500 in Salinas. The median age for the county as a whole is 27.7, while the median age for the cities around Fort Ord ranges from 23.2 (Marina) to 50 (Carmel). The cities of Marina and Seaside, adjoining Fort Ord to the north and south, respectively, have the lowest median age in the area (23.2 and 23.4), reflecting the lower ages of the military families living in the two cities.

3.617 Although several population projections for the region have been made, the critical factors of housing availability and water supply will be the prime determiners of future population levels. Projected average annual growth rates have been estimated at one to two percent, with population for the year 2000 being estimated at 385,000 to 420,000 (Gage, 1983; Monterey County Planning Department, 1982; Association of Monterey Bay Area Governments, 1984; Mounday, 1984). There is ia greater range of growth rate projections for individual cities: Monterey estimates an average annual growth rate of one-half of one percent (City of Monterey, 1983) while Marina estimates an average annual growth rate of four percent (City of Marina, 1982).

Land Use

3.618 Monterey County covers more than 2 million acres or about 3300 square miles of coastal California. The major land use categories, in descending order of extent, are agriculture, public and quasi-public, unimproved land/watershed areas, residential, transportation, major water bodies, industrial, and commercial (Monterey County Planning Department, 1982).

3.619 Agricultural use is the largest category and includes the 57 percent of the county devoted to irrigated cropland, dry farming, grazing, animal husbandry and related agricultural services. The public and quasi-public category (28 percent of the county) includes a variety of uses but is primarily the various military installations and the Los Padres National Forest. The unimproved lands/watershed areas (about 11 percent of the county) includes lands which are vacant and may serve as valuable watershed areas. Residential, commercial and industrial uses are very small, containing slightly more than 1 percent of the county. In the planning areas around Fort Ord, incorporated cities account for from 10 to 15 percent of the planning areas. Major factors influencing what land use changes might occur (particularly the expansion of residential areas) include preservation of major agricultural lands and the preservation and enhancement of the county's scenic qualities.

Noise

3.620 Principal noise sources in the Monterey Bay area, aside from that which may be associated with operations at Fort Ord, relate to transportation facilities. These sources consist of roadways, railroads, and airports, but for the most part, these sources are isolated from noise sensitive areas (primarily parks, beaches, and reserves).

3.621 The Monterey Peninsula Airport, located just southwest of Fort Ord, is the largest airport in the region and the only one served by major commercial air carriers (Association of Monterey Bay Area Governments, 1979b). Currently, about 170 general aviation and corporate aircraft are based at the airport. Five commercial carriers serve the airport, and scheduled flights by these carriers average 32 per day between the hours of 7 a.m. and 11 p.m. Total military use of the airport (including that by the Army, Navy, Coast Guard and Air Force) averages 1,200 operations (take-off or landing) or 600 flights per year. Fort Ord currently accounts for approximately 800 of the 1,200 operations, which includes use by C-130, C-141, C-5A, and rotary-wing aircraft (Monterey Peninsula Airport District Management, 1984). Most of these operations are

for transport of battalions for training missions, which concentrates 10 to 50 operations over a two-day period. However, this activity rarely occurs more than twice a month.

3.622 There are plans to lengthen the existing 6600-foot runway at Monterey Peninsula Airport by extending it 1000 feet to the east. The runway extension is necessary for safety and noise abatement associated with existing airport service. As of January 1, 1986, the airport must conform with specific noise levels set by the State of California. With the existing runway, noise levels set by the State of California could be exceeded on those occasions when warmer air temperatures require additional runway length for take-off abort of heavier aircraft. Extension of the runway is a controversial issue, and an injunction to stop the construction has been filed by a coalition of individuals in the region. The Monterey Peninsula Airport District currently does not intend to increase the air traffic at the airport, and the Board of Directors has adopted a resolution which states that "the airport retain its character as a small hub airport primarily serving San Francisco and Los Angeles" (Association of Monterey Bay Area Governments, 1979b).

3.623 Vehicular traffic on major highways in the region constitutes another source of noise. State Highway 1 is a major freeway which crosses through Fort Ord on the western side. The county planning process cannot materially affect expected increases in noise levels on this highway, but the plan does show sensitivity to the problem by siting new facilities which might be affected by high-speed traffic behind a buffer zone (Resource Planning Consultants, 1980b).

3.624 Regarding military operations at Fort Ord, noise levels in excess of 65 dBA from aircraft maneuvers at Fritzsche Army Airfield currently do not occur in residential areas of Marina (Beach-Philpot Associates, 1983; City of Marina, 1982). Weapons and small-arms firing is audible (depending upon weather conditions) to residents of Del Monte Heights and Seaside (Resource Planning Consultants, 1980d).

Regional Economic Activity

3.625 The major industries in the county are agriculture, tourism, the military and manufacturing with agriculture being the county's greatest single source of income and one of the largest employers (Monterey County Planning Department, 1982). Agriculture is the prime factor in the county's economic health and in 1983 had a gross value of $940 million, with lettuce alone accounting for 30 percent of this value (Hulanicki, 1984). Tourism has tremendous direct and indirect impact on employment and income, accounting for

more than half of all restaurant sales and one-third of all retail sales. Fifteen percent of total county employment and nearly one-half of service and trade industry employment is supported by the visitor sector. The military sector accounts for about 20 percent of county employment and about 15 percent of county income with many businesses, banks and services around the Monterey Peninsula heavily dependent on military personnel and their families. The manufacturing sector has a much smaller share of the county's economy, with the main component being food processing linked to the productivity of the agriculture sector.

3.626 Per capita income in the county is $7495 and near Fort Ord ranges from about $5600 in Seaside and Marina to about $13,500 in Carmel (U.S. Department of Commerce, 1982b). Median family income for the county is about $20,000 and near Fort Ord ranges from about $15,500 to $24,500.

3.627 In Monterey County, the extremely seasonal nature of employment is its predominant characteristic, with unemployment highest in the winter and lowest in the summer in direct response to employment of needs the agriculture and visitor sectors during these seasons. In 1980, the average annual unemployment rate was 9.2 percent, well above the state average of 6.8 percent (Monterey County Planning Department, 1982). The unemployment rate rose to 11.6 percent in 1982 and was forecast at 11.3 percent for 1984 (California State Employment Development Department, 1983).

Air Quality

3.628 Monterey County, in addition to Santa Cruz and San Benito counties, constitute the North Central Coast Air Basin or Air Quality Control Region (AQCR) 25. Two agencies share the responsibility for ensuring that all Federal and State ambient air quality standards (AAQS) are achieved and maintained in this region; the California Air Resources Board and the Monterey Bay Unified Air Pollution Control District. The latter agency is responsible for day-to-day monitoring activities which includes the inspection of stationary sources.

3.629 The North Central Coast Air Basin is officially designated by Region IX, U.S. Environmental Protection Agency as a non-attainment area for photochemical oxidants (ozone). The specific air quality of the Monterey Bay area is particularly susceptible to high levels of oxidants during periods of natural fog-bank conditions, high relative humidity, uniform temperature, and minimum air motion (Resource Planning Consultants, 1980b). During 1983, however, there were no exceedances of the federal

oxidant AAQS (0.12 ppm) within AQCR 25 and so there exists the basis for a change to a maintenance area for oxidants with respect to the federal designation. Although the California oxidant standard (0.10 ppm) was not exceeded during 1983 at the Monterey or Salinas monitoring stations within the air basin, it was exceeded at the Carmel, Hollister, and Aptos (in Santa Cruz) stations on a few occasions (Hillman, 1984). Other than the slightly elevated oxidant levels in some parts of the basin, ambient air quality in this AQCR is generally good.

Water Supply

3.630 The Monterey Bay Region relies almost entirely upon ground-water resources to supply water for agricultural, industrial, and municipal uses. Agricultural use accounts for about 90 percent of all withdrawals. Although sufficient quantities of ground water exist in the region to meet current demand (when natural recharge of aquifers is supplemented by releases from several reservoirs), economic problems of storage and allocation require careful management of available water resources. The Monterey Peninsula Water Management District is responsible for setting priorities of water use and alloting existing water supplies to various users. Six priorities of use have been defined by the District so that managed allocation of water supplies will decrease localized problems of overpumping and inadequate well yields.

3.631 Concurrent with the water supply problems in the region are various ground-water quality issues. Regionally, ground-water pumpage in excess of average yearly recharge causes declining water levels and salt-water intrusion. The effect of sea water intrusion is to increase chloride, calcium, magnesium and total dissolved solids. Static water levels in the major shallow aquifer (termed the "180-foot aquifer") are currently below sea level, and the wedge of salt water (determined from the 250 ppm chloride limit) is moving inland at a rate of about 500 feet per year (U.S. Army Corps of Engineers, Sacramento District, 1975). Migration of salt water into the deeper "400-foot aquifer" is not as serious at present, although degradation of its quality will undoubtedly become an issue in the future unless overpumping is halted. On a more localized scale, degradation of ground-water quality results from various agricultural and residential practices, such as improper fertilizer application and failed or improperly-sited septic systems. High nitrate levels result from these sources.

3.632 In this area, two agencies share the enforcement responsibilities with respect to water-quality issues. The Monterey County Health Department has authority for the public health aspects of water supply, wastewater disposal, and protection of recreational

SUPERSEDED
AUG 1984

water resources. The Monterey County Flood Control and Water Conservation District is concerned with water quality as related to agricultural production. A water quality managment plan for the region has been prepared by the Association of Monterey Bay Area Governments (1978d).

Wastewater Disposal

3.633 The responsibility for wastewater treatment and disposal in the Monterey Bay region currently rests with either a regional authority, the city, or the individual homeowner having a private septic system. The latter method of sewage disposal is used by approximately 20 percent of the region's population, who primarily reside in low-density developments. The Monterey Regional Water Pollution Control Agency is the regional authority which was formed in 1971 to develop a consolidated approach to wastewater treatment for the area. Its membership currently includes the cities of Monterey, Seaside, Del Rey Oaks, Sand City, Salinas, the County of Monterey, the Castroville and Moss Landing County Sanitation Districts, and Fort Ord (as an ex-officio member). The regional plan for wastewater disposal currently involves the interconnection of existing treatment plants in the service area to a long ocean outfall, construction of a regional treatment plant, and the possible reuse of reclaimed wastewater for crop irrigation.

3.634 Stage II of the regional system, which connects five existing treatment plants and the Fort Ord facility and allows for discharge of all treated effluent from one ocean outfall, is nearly complete. The next stage of the regional system involves construction of single 20.9 million gallon per day treatment plant to replace the five plants and the Fort Ord plant. Recent planning projections indicate that full capacity could be reached in 10 years, so the regional facility has been designed so that it can be expanded as necessary. The regional treatment plant should be in operation by the end of the decade.

Solid Waste Disposal

3.635 There are five major sanitary landfills in the region. The Monterey Peninsula Garbage and Refuse Disposal District operates a site approximately two miles north of Marina. This is a 570-acre site with a remaining life of 92 years. During 1983, 171,300 tons of solid waste were disposed of at this landfill (Meyers, 1984). The City of Salinas operates the Crazy Horse Canyon Road site, which is six miles north of Salinas. The County of Monterey operates three of the sites; one on Johnson Canyon Road near Gonzales, one on Jolon Road near King City, and one on Lewis Road near Prunedale. During 1983, these sites collected approximately 4500, 8500, and

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3.634 Stage II of the regional system, which connects four existing treatment plants and the Fort Ord facility and allows for discharge of all treated effluent from one ocean outfall, is complete and fully operational. The next stage of the regional system involves construction of single 20.9 million gallon per day treatment plant to replace the five plants and the Fort Ord plant. Recent planning projections indicate that full capacity could be reached in 10 years, so the regional facility has been designed so that it can be expanded as necessary. The regional treatment plant should be in operation by the end of the decade.

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4800 tons of solid waste, respectively. The Jolon and Lewis Road sites have between five and ten years of remaining space, while the Johnson Canyon Road site has a longer estimated remaining life (Yoshimaru, 1984). Total municipal solid waste produced in the Monterey County during 1983 was approximateliy 456,400 tons (Jennings, 1984).

Housing

3.636 The great scenic attractiveness of the region and the limited growth of the area have produced a very tight residential market with very high-cost housing. As reported in the 1980 Census, the median value of a house in Monterey County was $86,500, with median values in the areas around Fort Ord ranging from about $68,000 to $156,000 (U.S. Department of Commerce, 1982b). In a 1982 review, the average home in the Monterey Peninsula area was worth over $100,000 (Fort Ord Directorate of Engineering and Housing, 1983). Most new construction is for condominium for sale and rental units are scarce and expensive, with rental vacancy rates being less than one percent. Currently, the monthly rental rates for family housing in the cities near Fort Ord are as follows: one bedroom, $307-570; two bedroom, $500-875; three and four bedroom, $605-1100; an additional $60 to $90 per month is required for utilities. In addition to the very high monthly rates, the advance payment required before moving into a unt is also quite high, usually requiring prepayment of the first and last month rent in addition to a security deposit. All of the prices combine to create conditions where military personnel are forced to spend large amounts of their income in family housing while many lower rank elisted personnel are obliged to live in barracks and become involuntarily separated from their families. Those lower rank enlisted personnel who do have families in the area are required to pay from 50 to 85 percent per month above their basic housing allowance. Between April and November 1983, rental costs increased almost 9 percent (Fort Ord Directorate of Engineering and Housing, 1983). Affordable military family housing is well recognized as a critical problem in the region around Fort Ord.

Schools

3.637 Monterey County provides public educational services through 22 elementary school districts, 7 high school districts and 2 community college districts (Monterey County Planning Department, 1982). There are also over 30 private primary, secondary and post-secondary facilities in the county. Although expansion is planned in some districts, the urban areas in the county often exhibit the population shifts resulting in school closings. For example, within the City of Monterey, decreasing enrollments have

led to the closing of 2 schools (Fell, 1984). Another indication of shifting or declining enrollments is the inclusion in area planning efforts of the need for coordination between cities and school districts regarding the adaptive reuse of surplus school facilities or of school sites that are no longer needed (City of Seaside, 1980; City of Monterey, 1983). Recent data in the Monterey Peninsula Unified School District indicate that the decline in school age children has bottomed out and is even rising, with probable increased stresses on the system due to the locational differences between the existing schools and the new population (Malone, 1984).

Health Care

3.638 Within the region, comprehensive health care is provided to area residents through about 10 hospitals with approximately 1100 beds. When the medical facilities on Fort Ord cannot provide the required levels of service, civilian health care facilities are used through the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS) cost sharing, health care delivery system.

Cultural Resources

3.639 See on-post cultural resources description.

Fort Ord, California

3.640 Fort Ord is located on the Monterey Bay portion of the California coast just north of the Monterey Peninsula and approximately 120 miles south of San Francisco. The post covers approximately 28,000 acres, about 60 percent of which is used for firing ranges, impact areas and maneuvering and field exercises. Figure 3-15 illustrates the location of the post and general land-use categories on the post.

Geology, Minerals, and Soils

3.641 Mostly weakly consolidated sediments and older dunes of Pleistocene, Pliocene and Miocene age comprise the geologic materials beneath Fort Ord and the surrounding area. These sediments, which have an aggregate maximum thickness of 1000 feet, overlie the Monterey Shale (of Miocene age) and granitic rocks. Two important geologic formations are known as the Paso Robles Formation and the Aromas Sand. These units are significant in this area and in the Salinas Valley because they contain most of the ground-water resources on which the region currently depends for water supply. The Paso Robles Formation consists of alluvial fan, and lagoonal or bay type deposits of sand, gravel, and clay. The overlying Aromas

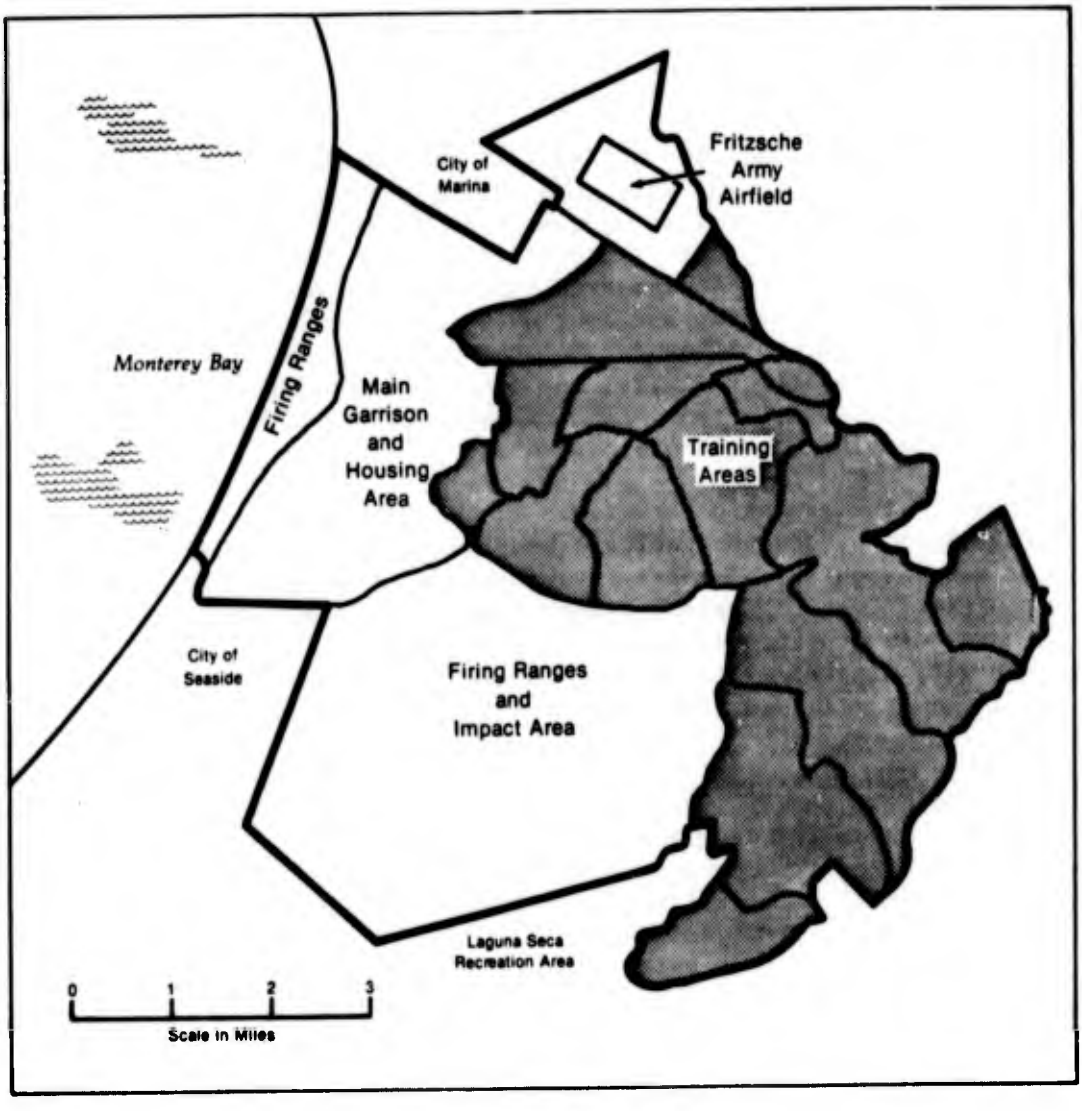


FIGURE 3—15
FORT ORD, CALIFORNIA AND SURROUNDING AREAS

Sand of Pleistocene age consists of horizontally bedded, water-laid brown to red sand with some gravelly units and clay (U.S. Army Corps of Engineers, Sacramento District, 1975; Muir, 1982).

3.642 The area is seismically active, although most disturbance can be related to the main zone of the San Andreas fault, located 25 miles east of Fort Ord, and the Palo Colorado-San Gregorio fault, located 14 miles to the southwest (U.S. Army Corps of Engineers, 1979). It has been inferred that the Ord Terrace Fault, which is currently dormant but considered potentially active, passes through the southernmost boundary of the post. Regardless of the absence of recent seismic activity, the potential for damage to on-post buildings is great due to the general instability of the region (Resource Planning Consultants, 1980d).

3.643 Many of the geologic formations in the Fort Ord vicinity contain useful minerals, however geologic complexity limits the size and extent of many deposits and makes investigations expensive and often inconclusive. Despite these problems, more than 20 mineral commodities have been produced economically in Monterey County. Presently, however, mineral extraction is mainly limited to oil, dolomite, sand and gravel, and limestone (Monterey County Planning Department, 1982).

3.644 Surficial materials at Fort Ord are primarily infertile alluvial deposits, which are weakly acidic and highly permeable. Soil areas are dominated by deep and very deep, coarse to moderately coarse textured material on stabilized sand dunes and soft sandstones. The most prevalent soil type is the Marina sand, which contains a low amount of organic material, has low fertility, and a low water-holding capacity. All soil types tend to be highly erodable, but the high rate of percolation lessens runoff (Resource Planning Consultants, 1980d). According to the Soil Conservation Service, there are no prime farmlands within the boundaries of Fort Ord.

Biological Environment

3.645 The following sections present a brief overview of the major biological environments on the post and a discussion of the threatened and endangered species to be found there. Hunting and fishing activities are discussed under the land use section. Expanded discussions of the biological environment including lists of the species on the post can be found in several documents, including Resource Planning Consultants, 1980c; and Fort Ord Directorate of Facilities Engineering, 1975.

3.646 Terrestrial Environment. Coastal California displays a wide variety of terrestrial habitats as a result of the region's local variation in topography and the proximity to the influence of the Pacific Ocean. The topography, underlying geology, and onshore winds from the ocean combine to create conditions which result in habitat variability. On post, 4 distinct terrestrial habitats have been identified; a coastal strand, brushlands, oak woodland, and grassland. The coastal strand area encompasses approximately 1050 acres on post and includes the sand dunes along the coast and their associated biota. The native dune vegetation consists primarily of plants with a low profile and extensive root system resistant to dessication and the effect of winds. Characteristic vegetation of the coastal dunes include the iceplants, verbenas, and the beach sagewort. The brushlands occupy approximately 10,760 acres of the reservation and consist of more level ground and fertile soil than the coastal strand. Plants typical of this community include the coyote-bush, the California sagebrush, and various species of manzanita. The brushlands support blacktail deer, brush rabbit, coyote, fox, rodents, quail, dove, scrubjay, and various songbird species. Approximately 4,600 acres of Fort Ord are oak woodland located in the north and west portions of the post. This woodland is dominated by the coast live oak and is interspersed with flora characteristic of the brushlands and grassland. Dominant animal species include the blacktailed deer, wild pig, and grey squirrel as well as numerous birds. The extreme southeast section of the installation is a grassland, which comprises approximately 3,800 acreas of the post. Grasslands are found in the higher elevations of the reservation where the climatic effect of the ocean is less prevalent. Fort Ord's grasslands contain one of the largest stands of the native bunchgrass, purple needlegrass left in coastal California.

3.647 Aquatic Ecosystems. Fort Ord contains 1,230 acres of riparian woodland and 280 acres of freshwater marshes. Most of the wetlands on Fort Ord are freshwater marshes and much of the area is only seasonally inundated. The wetland vegetation is dominated by herbaceous species including the cattail rushes and sedges. In the drier areas on the fringes of the wetlands, willows and blackberry vines predominate. This habitat provides food and shelter for a variety of animals including frogs, rodents, rabbits and songbirds. The riparian habitats along the Salinas River and Toro Creek are dominated by broad-leaved deciduous tree species in contrast to the flora of the more arid zones of the post. Typical riparian vegetation includes willows, cottonwood, and sycamore. These tree species provide food and shelter for squirrels, various species of songbrids, and raptors. Freshwater ecosystems on Fort Ord consist of the Salinas River, Mudhen and East Garrison Lakes, and nine small ponds. The Salinas River borders Fort Ord to the north and

SUPERSEDED
AUG 1984

northeast. Although much of the Salinas River flows underground for most of the year, it still supports anadromous steelhead trout, which migrate upstream during the winter rains. Fort Ord borders Monterey Bay for four miles on its western boundary. Here, the most evident forms of life are the birds associated with the coast: gulls, wading birds, murres, and cormorants. Marine mammals which abound in the coastal waters include the sea lion and the southern sea otter. The fish populations in the bay are abundant and include flounder, skates, sharks and rays, surfperches, and striped bass.

3.648 Threatened and Endangered Species. The only endangered species found on Fort Ord is the Smith's blue butterfly (Euphilotes enoptes smithi). For the Smith's blue butterfly, a 4-acre preserve has been set aside on the beach firing range. There are several additional candidate species under consideration for possible listing as threatened or endangered. These species are listed in Appendix G.

On-Post Population

3.649 The current population includes 16,264 military personnel and 3721 civilian employees. Approximately 55 percent of the military personnel (about 9,000) together with about 11,400 dependents live on post. The civilian employees and 45 percent of the military and their families are part of the daytime population only, since they reside off post. The present 7th Infantry Division accounts for over 75 percent of the military population. The largest part of the civilian employees are those directly supporting the garrison.

Land Use

3.650 Fort Ord is an installation of approximately 28,000 acres with 4 miles of frontage on Monterey Bay. The main garrison includes 4191 acres (15 percent of the reservation) and consists of family housing and operational facilities. Fritzsche Army Airfield is located at the northern portion of the post and occupies 1524 acres (5.4 percent of the total area). Approximately 16,000 acres (57 percent) of the reservation are used for infantry training and small arms practice. The installation can accomodate training maneuvers up to battalion level with larger size maneuvers using Fort Hunter Liggett (Gardella, 1984). The main firing ranges and the impact area make up the remainder of the post. Public hunting and fishing are allowed on the post with a total of 16,000 acres available for weekend or holiday hunting. The areas actually open depend on training activities with generally more than half of the available area open on any weekend or holiday. During 1983, approximately 75 percent of the available area was open.

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Noise

3.651 The post is currently subject to potentially excessive noise levels from four major sources: Fritzsche Army Airfield operations, weapons and small-arms fire, vehicular on-post traffic, and vehicular traffic on State Highway 1. These sources are discussed in the following paragraphs.

3.652 Fritzsche Army Airfield. Existing noise-level contours associated with Fritzsche Army Airfield at Fort Ord are shown in the Air Installation Compatible Use Zone study (Beach-Philpot Associates, 1983). This study was prepared to assess the noise impact of planned C-130 operations at the airfield, but does not include changes in airfield operations resulting from conversion of the 7th Infantry Division to a light configuration. Currently, 171 aircraft are based at Fritzsche Army Airfield. Of this number, 156 are rotary-wing aircraft which belong to the 7th. Only 2 of the remaining 15 aircraft, which belong to other groups at Fort Ord, are fixed wing. The new 7th is expected to base 100 aircraft (all rotary-wing) at Fritzsche. Several new utility-type rotary-wing aircraft (UH-60) will be included among the 7th Division aircraft, and these are bigger but quieter than the UH-1 utility rotary-wing aircraft currently in use.

3.653 Weapons and Small-Arms Fire. Weapons training and small-arms proficiency testing primarily occurs along the beach at Fort Ord and in the southern portion of the post adjacent to the Laguna Seca Recreation Area. High impulse noise is produced in these areas, both from the firing point of small arms and mortars and from the resultant detonations of high explosive shells in the impact areas (U.S. Army Corps of Engineers, 1979). Artillery exercises currently cease at 4:30 p.m. for 105 mm howitzers and at 10 p.m. for mortars. The most recent noise analysis from weapons firing at Fort Ord was prepared in 1976 by the U.S. Army Construction Engineering Research Laboratory. Contours were prepared for on-post areas only, but noise levels in excess of 80 Ldn (day/night average sound level) occurred to the north of the primary impact area. It is likely that noise from weapons firing is irritating to persons in the southern part of the housing area at Fort Ord and to residents of Del Monte Heights and Seaside (Resource Planning Consultants, 1980d).

3.654 Vehicular On-Post Traffic. Principal traffic arteries have been isolated from on-post family housing and other sensitive land uses by buffer zones where possible to insure minimum impact from noise (Resource Planning Consultants, 1980b).

3.655 Vehicular Traffic on State Highway 1. Traffic on this high-speed thoroughfare is a major source of noise near the western boundary of Fort Ord. Buffer zones between the highway and the most sensitive on-post areas provide some protection from increasing traffic noises.

Air Emissions

3.656 Because Fort Ord is defined as one industrial group in the Standard Industrial Classification Manual, the Monterey Bay Unified Air Pollution Control District classifies the facility as a single stationary source. As a single point source, cumulative emissions from various on-post sources must remain below certain levels in order not to trigger the new source review provision of the District's rules. The emission limits for the five criteria pollutants are as follows:

Pollutant	Limit (lbs/day)
Particulates	4.7
Sulfur Dioxide	150.0
Carbon Monoxide	11.7
Hydrocarbons	2.3
Nitrogen Oxides	62.7

The installation currently has between 75 and 100 high- and/or low-pressure boilers permitted by the District (Thoits, 1984). Recent applications (February 1984) for permits for new boilers will result in a net emission increase from the Fort Ord facility of 150 pounds of sulfur dioxide per day. Therefore, the District will require an assessment of the application of best available control technology and of legally enforceable emissions offsets, and a determination that the increments of allowable air quality degradation have not been exceeded.

3.657 Total emissions of the criteria pollutants from Fort Ord account for only a small percentage of all air pollutants emitted from stationary sources in Monterey County (see Table 4B-8).

Water Supply

3.658 Water for Fort Ord is supplied from wells located on the post; the system being owned and maintained by the government. The primary well field is located in the Main Garrison area along the northwest post boundary near Marina. The wells tap the 180-foot aquifer, although this water-bearing unit is at an approximate depth of 350 to 400 feet below the surface in this part of the region. Eleven wells are currently operational, although 4 of these are not

in use as a result of high chloride levels in water produced from them. Pumping from the remaining 7 wells is rotated to provide a blended water supply which averages 350 to 400 ppm chloride depending on the season and quantities withdrawn. Chloride levels in the water supply first exceeded the Federal standard of 250 ppm in 1980. Flouride and chlorine are added to the potable water supply. Consumption at Fort Ord currently averages 4.6 million gallons per day with a range of from 3.5 to nearly 11 million gallons per day based on monthly water use (Cochran, 1984).

3.659 In response to the increasing chloride levels in water pumped from the Main Garrison wells, Fort Ord intends to begin construction of a replacement well field in 1984. Consisting of two to four wells, the field will be located in the East Garrison area approximately 1.5 miles east of the existing well field. The existing well field will be abandoned when the new field is developed. The transmission system is designed to carry up to 2,000 gallons per minute from each of four wells. The supply would meet the recorded peak 24-hour demand of approximately 12 million gallons per day (U.S. Army Corps of Engineers, Sacramento District, 1976). The project is viewed as an interim measu. which will supply the post with water for approximately 20 years. For the long term, Fort Ord is working with regional water management districts to develop surface-water resources as a solution to the regional water shortage and salt-water intrusion problems.

3.660 In addition to the existing Main Garrison well field, there are two operating wells in the East Garrison area which supply potable water for the activities in that area. Total pumpage from these wells averages less than 200,000 gallons per month. There is also an Ord Village well and a golf course well which are used seasonally for production of non-potable irrigation water. These wells can pump 1 million gallons per day during the summer (Johnson, 1984). As defined by the Safe Drinking Water Act, there are no sole source aquifers within the boundaries of Fort Ord.

Wastewater Disposal

3.661 At the present time, wastewater from Fort Ord's Main Garrison is treated at a high rate trickling filter facility located at Indian Head Beach just north of Stilwell Recreation Hall. The facility has a design capacity of 4.25 million gallons per day, but wastewater loads averaged 2.3 million gallons per day during FY 1983 (Fields, 1984). Treated effluent is discharged directly on the beach and into a prohibited zone of Monterey Bay as established by the California Regional Water Quality Control Board. The post has received a cease-discharge order from this agency, but the order has been extended until the treated effluent can be transferred to

interceptor lines of the proposed regional wastewater treatment system. Fort Ord is an ex-officio member of the Monterey Regional Water Pollution Control Agency which is managing wastewater disposal in the region. Interception lines have been constructed to transfer treated effluent to the main ocean outfall line for discharge outside the prohibition zone. The system is expected to be operational soon.

3.662 Wastewater generated at Fritzsche Airfield is treated at a plant which consists of a manually-cleaned bar screen, comminutor and Imhoff tank. Digested sludge from the tank is dewatered in lined evaporation ponds and then hauled to the landfill as necessary. This facility has a rated capacity of 50,000 gallons per day (Resource Planning Consultants, 1980b).

3.663 East Garrison has a treatment plant which serves the activities in that area and consists of a Doten tank and percolation ponds. This system is not suitable for expansion.

3.664 Once the regional treatment facility is constructed, untreated effluent from Fort Ord will be transferred to this facility via the interception lines, and the Main Garrison and Fritzsche Airfield treatment plants will cease operations. Fort Ord has a reserved capacity of 3.3 million gallons per day in the planned regional facility.

Solid and Hazardous Waste Disposal

3.665 The Fort Ord Refuse Section currently operates two landfills within the post. A 13.7 acre sanitary landfill is permitted by the Monterey County Health Department as a Class II site (for disposal of garbage and household refuse). Since this site is at capacity, Fort Ord has contracted with a consulting firm to prepare an economic analysis of siting a new on-post sanitary landfill versus establishing a transfer station for off-post waste disposal at the Marina landfill. If the latter option is selected, Fort Ord would become a member of the Monterey Peninsula Garbage and Refuse Disposal District which operates the Marina site. A capital equalization fee based on anticipated waste tonnage would be collected by the District from Fort Ord to cover a percentage of the original purchase and development cost of the landfill (Meyers, 1984).

3.666 An on-post demolition landfill is also permitted by the Monterey County Health Department as a Class III site (for disposal of inert material). During 1983, this site was in violation of waste discharge requirements for a landfill of this type, which states that wood and metal materials should not exceed 10 percent by

volume of the incoming waste load. Fort Ord frequently disposes of greater than 10 percent wood by volume at the demolition landfill. Therefore, the consultants' study will also consider the problem of excess wood waste.

3.667 A decision regarding future solid waste disposal practices at Fort Ord should be made by mid-1984.

3.668 Regarding hazardous waste disposal, the post currently has a 120 by 300-foot yard located in the East Garrison area which has interim status under the Resource Conservation and Recovery Act (RCRA) as a storage facility. The interim status permit is from the California Department of Health Services. The storage yard is operated by an on-post tenant, the Defense Property Disposal Office (DPDO). All excess hazardous materials and hazardous waste generated by on-post activities are received by the DPDO in non-leaking and safe-to-handle containers with required documentation for temporary storage in the yard or in a 10-foot square CONEX (metal shed). The DPDO arranges for quarterly removal of the hazardous waste (or recycle of hazardous material, if possible) by a licensed waste contractor/transporter for eventual disposal in a Class I landfill.

3.669 There are plans for the construction of a 6000-foot square storage facility at the East Garrison in 1985. Submittal of the RCRA Part B permit for the existing storage facility is anticipated to be in June 1984 (Murdo, 1984).

3.670 The Spill Prevention Control and Countermeasure (SPCC) Plan for 7th Infantry Division and Fort Ord, California (Fort Ord Directorate of Facilities Engineering, 1979) is currently undergoing revision. The updated version is expected to be completed by July 1984.

Housing

3.671 At present, there are 4678 family housing units located within seven family housing areas on Fort Ord (Fort Ord Directorate of Engineering and Housing, 1983). These units include 16 percent for officers and 84 percent for enlisted families with a utilization rate exceeding 98 percent. As of March 31, 1984, there were 2402 military on the waiting list for family housing with 88 percent of these being junior NCO and enlisted personnel (Petersen, 1984). The lack of available family housing, is the critical element in the present conditions at Fort Ord. Minimum waiting times for family housing range from 30 days to over 12 months.

SUPERSEDED
AUG 1984

3.672 In addition to family housing, there are about 16,200 barrack spaces, 365 bachelor officer quarters spaces and 269 guest house spaces (Montanye, 1984). Approximately 1230 bachelor personnel live off post, of which about 65 percent are enlisted and 35 percent are officers.

3.673 As stated in the regional description, available family housing is very limited and units are often not affordable by military personnel without payment of from 50 to 90 percent above the available housing allowances. Based on an April 1984 printout from the Fort Ord Housing Referral Office, only 175 units were available in the greater region around the post. About half of these were two-bedroom units, with the remainder split about evenly between one-bedroom and three or four-bedroom units. Prices for the two bedroom units ranged from $400 to $1200 a month. Even if all of the units were affordable by military personnel, it would only account for about 7 percent of those presently on the waiting lists. These conditions have resulted in lengthy periods of involuntary separation for military families.

Schools

3.674 Most of the dependents of Fort Ord personnel attend classes at schools in one of four school districts: Monterey Peninsula Unified, Pacific Grove Unified, Salinas Union and Salinas City School District. The Monterey Peninsula Unified School District operates four elementary schools and one junior high school at Fort Ord while high school students living on post attend Seaside High School, located just south of the reservation (Montanye, 1984). The elementary schools have a capacity of about 2835 students with a present enrollment of 2280, while the junior high school is presently operating at approximately 90 percent capacity with 897 students. Seaside High School has about 1,265 students, about 80 percent its capacity (Malone, 1984).

Health Care

3.675 The Silas B. Hays Army Hospital at Fort Ord is a general medical and surgical facility providing comprehensive health care to all active duty personnel and other eligible beneficiaries. It has an operating level of 169 beds with a current inpatient census of about 130 per day and outpatient outpatient clinic visits averaged 1450 and 1560 per day for 1982 and 1983, respectively (Dean, 1984). Approximately 260 statements of non-availability were issued for referrals to community health care facilities during all of 1983 (Rawson, 1984). It should be noted that approximately 45 percent of the statements issued were for retired military or their dependents from the area. The hospital has expansion capabilities of up to 660

SUPERSEDED
AUG 1984

Fort Ord, California

4B.130 This section summarizes the impacts specific to Fort Ord due to the stationing action. Both the mission change, with its resultant training change, and the construction required, are analyzed.

Geology, Minerals and Soils

4B.131 Construction of new roads associated with required housing developments for new on-post military personnel and dependents would result in a need for a small volume of sand and gravel and crushed stone.

4B.132 No additional land would be required for the installation, but a slight increase in the use of training areas over the 25 percent increase in activities associated with reconfiguration of the 7th to a light division is anticipated. This would result in an increase in vegetation removal, and hence wind erosion of the post's predominantly sandy soil in training areas. Another area of potential soil impact due to erosion could occur in the areas of construction for new housing and roads. However, construction activities requirements (32 C.F.R. 263.3) would provide the requisite measures necessary to minimize soil erosion and other attendant problems.

Biological Environment

4B.133 The two portions of the proposed action which could produce impacts on the biological environment on the post are the new construction required and the increases in the amount of training. The new construction required could affect from 100 to 150 acres on the post. About 90 to 95 percent of this area would be for family housing, bachelor officer quarters and barracks. The acreage would represent about one half a percent of the post. Although the exact location of new construction is not known, it is possible the construction could result in the loss of 150 acres of wildlife habitat. This would not be a significant portion of the installation. Additionally, it is expected that the Wildlife Management Plan to be published in June 1984 would contain guidelines for the location and development of new construction so as to minimize impacts to wildlife habitat.

4B.134 The net result of all stationing activities is a 25 to 35 percent increase in training (Stickler, 1984). This increase would not require new training areas but would make more efficient use of existing areas. Because of the tactical requirements of a Light Infantry Division, night maneuvering activities would

increase. (However, due to its isolation from light and electromagnetic pollution, Fort Hunter Liggett has more areas favorable to night training). The maneuvering of men and vehicles off of existing roads or trails can disrupt vegetation and if new pathways or routes are used by subsequent groups of trainees, erosion can occur and thus disrupt an area much larger than the original pathway. Certain training activities such as foxhole digging and camouflage training can be directly destructive. The foxholes are usually located behind trees and are typically 1-1/2 feet by 4 feet in area and dug to a depth of 5 feet with the excavated dirt heaped in front of the foxholes and covered with brush. Although the foxholes are usually filled in after an exercise, such digging can be harmful to the root system of trees, particularly if the same areas are repeatedly dug and filled during the course of several training sessions. Camouflage of wheeled vehicles is generally accomplished by tying on branches cut from trees. While such cutting may act as pruning and stimulate new growth, extensive cutting or overuse of a particular area could destroy the trees directly, and thereby alter the habitat in an area.

4B.135 The Smith's blue butterfly is the only endangered species on Fort Ord and the proposed activity would not affect the habitat reserve set aside for it.

On-Post Population

4B.136 The net result of all activities would lead to an increase in population, over the present authorized military strength level, of approximately 1,770 military and 2,250 dependents for a total population change of about 4,000 (about 13 percent). The military increase would include 240 officers and 1,530 enlisted personnel. About 900 would be married and of their 2,250 dependents, about 810 would be school-age children. In addition to military increases, about 135 civilian employees would be added. The military increase is about 10 percent of the present authorized strength while the civilian employee increase is about 3-1/2 percent.

Land Use

4B.137 The major changes in land use due to the action are based on construction and training. The required construction, primarily for various types of housing, would convert open, undeveloped land into a housing area or areas. Because of the nature of such a change, this would constitute a permanent change of status. Approximately 150 acres would be thus affected. The increased levels of training would not change the type of land use but, rather, would produce a more intensive level of existing uses in the training areas. No new firing ranges are required to be

Fort Ord, California

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4B.134 The net result of all stationing activities is a 25 to 35 percent increase in training (Stickler, 1984). This increase would not require new training areas but would make more efficient use of existing areas. Because of the tactical requirements of a Light Infantry Division, night maneuvering activities would

established or training areas to be acquired as a result of this action. Even with the increases in the amount of training, such activities would not generally require more than the present five-day week (Gardella, 1984). Therefore, the weekends would be open for public hunting in the same frequency as at present. Although there are no rotary wing aircraft with the proposed brigade, the conversion of the 7th Infantry Division to a Light Division would result in a decrease of about 35 percent of such aircraft currently at Fort Ord and a resultant decrease in the use of Fritzsche Army Airfield.

Noise

4B.138 Noise sources originating on Fort Ord that may be changed by implementation of the proposed stationing alternative are rotary-wing aircraft use of Fritzsche Airfield, weapons and small-arms firing, and vehicular traffic. The impact of the proposed change on each of these sources is discussed below.

4B.139 Fritzsche Army Airfield. The impact of the proposed stationing alternative is considered on amended baseline conditions which include any changes occurring as a result of conversion of the 7th to a light configuration. The new 7th is expected to base 100 rotary-wing aircraft at Fritzsche, which reduces the total number of 7th Division aircraft by about 36 percent. Some of these aircraft (utility type) will be larger, but quieter than aircraft currently in use. Thus, noise levels associated with amended baseline conditions are expected to be lower than present levels.

4B.140 The infantry brigade of the new 17th would not base any rotary-wing aircraft at Fritzsche. No increase in the frequency or time of use of existing aircraft at Fritzsche is anticipated by personnel of the 17th. Therefore, implementation of the proposed alternative would not have an impact with respect to noise from Fritzsche Airfield.

4B.141 Weapons and Small Arms Fire. The impact of weapons and small-arms firing by the new infantry brigade must be determined upon amended baseline conditions as well. Those conditions will include the use of lighter weapons and training vehicles overall by the 7th light division. The primary noise-producing weapons of a light infantry battalion are 105 mm howitzers and 107 mm mortars, both of which can be fired at Fort Ord. These are the heaviest weapons currently in use, and hours of firing are restricted to 4:30 p.m. for the howitzer and 10:00 p.m. for the mortar. Thus, little change in frequency or time of use of weapons or the type of weapons fired would be expected following conversion of the 7th. The stationing alternative would mean the addition of some light

weaponry at Fort Ord, but none larger than that which is currently in use. Although there are 18 105 mm howitzers within a battalion, only three firing points are set in the firing range at one time to limit the use of the weapons to six. Therefore, no significant increase in the noise level of weapons and small-arms fire is anticipated at Fort Ord as a result of the proposed stationing alternative. Actual noise levels cannot be made at this time because no training schedule has been established for a light infantry brigade. Should the brigade be stationed at Fort Ord, simulation modeling would be conducted as part of the Army's ongoing noise assessment program.

4B.142 Vehicular On-Post Traffic. Approximately 2,850 automobiles would be added to the total number of vehicles currently registered on-post (at 1.6 vehicles per 1,771 new military personnel) with implementation of the proposed alternative. This would undoubtedly increase on-post noise levels at congested areas (primarily the Main Gate).

Air Quality

4B.143 Pollutant emissions from Fort Ord would increase with implementation of the proposed alternative as a result of the increase in the number of both stationary and mobile sources on the post. Emissions from stationary sources would increase as a result of fuel combustion for heating of new required housing and facilities for the new infantry brigade, while greater mobile source emissions would result from the increase in the number of military and privately-owned vehicles.

4B.144 With respect to emissions from stationary sources, energy usage for heating and, proportionally, emissions from fuel combustion would increase nearly 17 percent over FY 1983 energy usage levels. This assumes the current energy consumption for Fort Ord remains constant at 140.5 KBTU/sq. ft./yr. for the new required facilities and housing. Requests for permits for new boilers are submitted to the Monterey Bay Unified Air Pollution Control District and recent applications have triggered the new source review provision with respect to sulfur dioxide emissions. As a result, best availble control technology and offsets for SO_2 emissions must be reviewed for Fort Ord before new permits can be granted. This issue is complicated by the fact that emissions must be determined for the "worst-case" condition where the back-up fuel (#2 fuel oil) is used. Actual emissions are less since natural gas is the primary fuel source at Fort Ord. A preliminary summary of total emissions in 1982 from major stationary sources is presented in Table 4B-8.

TABLE 4B-8

TOTAL EMISSIONS FROM MAJOR STATIONARY SOURCES
(Preliminary 1982 Data)
(Tons per Year)

Criteria Pollutant	North Central Coast Air Basin[a]	Contribution from Monterey County[a]	Contribution from Ford Ord	Contribution from Fort Ord (including projected increase)
Particulates	3,100	2,770	--	1.1
Nitrogen Oxides	17,700	17,390	17	20
Sulfur Dioxides	5,200	5,135	Negligible	Negligible
Carbon Monoxide	1,000	972	3	3.5
Total Organics	600	197	1	1.2

[a]Source: R. Grewal, California Air Resources Board, Sacramento, CA.

SUPERSEDED
AUG 1984

4B.145 Privately-owned vehicles registered on the post would increase by nearly 11 percent, which would increase emissions from mobile sources by a proportional amount.

Water Supply

4B.146 The effective population is defined as the total 24-hour population of Fort Ord in addition to 33 percent of the total off-post military personnel and dependents and 33 percent of the extra 8-hour civilian population. This figure is currently 23,736 for Fort Ord. The stationing action would increase this value by 4093 or about 17 percent. This would increase the average daily water consumption by approximately 17 percent over FY 1983 levels. This increase in water demand would necessitate increased pumping at the new well field, but no additional wells (over the four planned for eventual construction and utilization) would be required. Increased pumpage could aggravate the existing sea water intrusion problem and possibly shorten the life of the new well field to less than 20 years.

Wastewater Disposal

4B.147 Implementation of the proposed alternative would increase the average daily wastewater load by approximately 17 percent or 400,000 gallons per day. Total average daily wastewater loads to be treated at the Main Garrison facility with implementation of the proposed stationing alternative would be nearly 2.7 million gallons per day. The existing facility has a design capacity of 4.25 million gallons and so is adequate for treatment of this wastewater load. This plant will be used until the regional wastewater treatment facility is constructed (estimated completion by the end of the decade). Fort Ord has a reserved capacity of 3.3 million gallons per day in this facility, which is adequate to treat the increased daily average wastewater load. However, the increased load under the proposed stationing alternative would use up 40 percent of the post's excess reserve capacity at the new facility.

Solid and Hazardous Waste Disposal

4B.148 Solid waste generated at Fort Ord would increase approximately 15 tons per day or nearly 18 percent over the daily (5-day) solid waste load of 85 tons. This increase would reduce the estimated life of any new sanitary landfill sited on the post (should this option be selected). If a decision is made to use the Marina landfill, there would be no on-post impact with respect to solid waste disposal as a result of the proposed stationing action.

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Solid and Hazardous Waste Disposal

4B.148 Solid waste generated at Fort Ord would increase approximately 15 tons per day or nearly 18 percent over the daily (5-day) solid waste load of 85 tons. This increase would reduce the estimated life of any new sanitary landfill sited on the post (should this option be selected). If a decision is made to use the Marina landfill, there would be no on-post impact with respect to solid waste disposal as a result of the proposed stationing action.

4B.149 No significant increase in the amount of hazardous waste generated at Ford Ord is anticipated as a result of the proposed stationing alternative.

Housing

4B.150 The proposed stationing action includes the construction of family housing, bachelor officer's quarters (BOQ) and barracks. Family housing is a critical problem in the Fort Ord area and the number of family housing units planned would be sufficient so as not to add to the presently very long waiting list for family housing. (It would be expected that any new family housing would be filled by those from the top of the waiting list and the incoming married personnel would be added to the bottom of the existing list.) A major potential impact involves the phasing of personnel arriving and of the family housing construction. The schedule for the brigade would have about 95 percent arriving by the end of Fiscal Year (FY) 1986 with the remainder coming in FY 1987. However, the family housing is planned for a FY 1987 construction and would probably not be completed until FY 1989 (or perhaps even later). This would cause a gap of about two years when extra family housing was not available and the existing 2,000-family waiting list would be increased 45 percent by the estimated 900 incoming families. Because of the unavailability of affordable housing off-post, this would force most married personnel to live on post in bachelor quarters and would result in a greatly increased number of personnel being involuntarily separated from their families or result in families paying a substantial portion of their income on off-post housing.

Schools

4B.151 The net increase in new personnel would be accompanied by an estimated 810 school-age children: 405 elementary level, 245 junior high level and 160 high school level. The Fitch Junior High School and Seaside High School capacities would be sufficient to accommodate the extra pupils at this level (Malone, 1984). However, there would be a problem at the elementary school level. Although from a total capacity outlook there would appear to be sufficient excess capacity to accommodate the 400 elementary schoolers, the problem is in the location of the excess capacity in relation to the location of the new housing. It is expected new housing would be located in the northern part of the installation near the Patton Elementary School. However, this school is already crowded and students from the nearby family housing area being bused across post to Hayes Elementary School on the southern edge of the installation. Although the three schools in the southern portion of the installation could accommodate a portion of the new children, they could not handle over 400. Similarly, the nearby schools in Marina (J. C. Crumpton and Marine Vista) are split schools, with one

handling kindergarten, first and second grades and the other handling third, fourth and fifth grades for the whole area (Malone, 1984). Again, these schools have some excess capacity that could be used by busing students from the new housing. However, there does not appear to be sufficient capacity available to handle the new student load and this would require construction of a new schoool at a time when the local school district is already facing pressures from population shifts and student increases.

Health Care

4B.152 The proposed stationing alternative would increase the post population eligible for military health care by about 10 percent. Although this increase should be able to be handled by the installation health care facilities, these facilities would have little excess capacity remaining.

Public Safety

4B.153 The increases due the stationing action would not affect the present levels of law enforcement provided by the Provost Marshall's office. At present, the post serves not only its direct population but an additional large population (about 43,000 people) of retired military and their dependents who live in the area and make use of the facilities on the installation, thus increasing the work load of the Provost Marshall's office, particularly relating to the increased traffic.

4B.153a As described in Appendix M, most crimes committed by Army personnel in the continental United States are confined to the installation. Further, Army crime rates in general have been declining. Between 1980 and 1983 the most common offenses committed by Army personnel, those against property, declined by 26 percent. Marijuana use and possession, the second most common offense declined by 64 percent, while crimes of violence, ranking third dropped 42 percent (U.S. Army Office of the Deputy Chief of Staff for Personnel, 1984). Although Army crime rates are not directly comparable to national trends, more arrests per 1000 of U.S. males 18 to 22 years versus Army personnel were made for crimes against property, drug offenses and crimes of violence in 1982. In the event of troop stationing, the actual number of crimes could increase, yet as detailed in Appendix M most of the increase probably would be concentrated on post.

Traffic and Transportation

4B.154 The increase in on-post vehicles would increase rush-hour traffic at congested areas (primarily at the Main Gate where access is controlled) and would increase the potential for vehicular accidents. There would be a nearly 11 percent increase in the number of privately-owned vehicles registered on the post. Traffic problems and accidents would increase proportionately.

4B.155 Off-post traffic would not substantially increase since it is assumed that all new personnel would live on-post. Military use of highways between Fort Ord and the Monterey Peninsula Airport would increase proportionately with anticipated use of the airport, but traffic would be primarily confined to major roadways. It is doubtful that the infrequent increase in traffic would alter the character of the main highways near the post. The number of military convoys on local highways may also increase. These are discussed under impacts at Fort Hunter Liggett.

Cultural Resources

4B.156 Significant historic archeological sites and structures have been identified at Fort Ord. Several specific areas within the post are felt to possess a high potential for containing prehistoric and historic archeological sites. Given the nature of archeological

resources previously identified and the nature of Fort Ord, it is anticipated that impacts to significant cultural resources under this alternative will be minimal if any.

4B.157 Although the exact location and nature of many possible cultural resources, particularly archeological resources, is unknown, the potential impacts of the proposed action can be generally discussed. Basically, any action which produces ground disturbances in any form would have a potential for disturbing an archeological resource, thereby destroying data. Construction of new buildings and facilities, and establishment of roads include such elements as excavation, grading, filling or stockpiling of materials. All of these elements have a potential for disturbance or destruction of archeological materials. Renovation of existing buildings or demolition can damage and destroy significant historic structures.

4B.158 Many training activities, including maneuvering of vehicles and digging of foxholes, cause ground disturbances that have a potential for damaging or destroying an archaeological resource. Establishment of new training areas or increases in land utilization frequency for training over current levels can increase the potential for impacts to undisturbed cultural resources.

4B.159 Considerations will be given to identifying potential cultural resources, as well as protecting those known to exist. Authority and procedures for these actions are found in Army Regulation AR-420-40, Facilities Engineering, Historic Preservation (April 15, 1984) effective 15 May 1984. Further details for accomplishing these measures are detailed in the Army Technical Manual TM-5-801-1, Historic Preservation-Administrative Procedures and TM-5-801-2, Historic Preservation-Maintenance Procedures. In regard to the installation, the prime limitation would be to prohibit any destruction or alteration of all or part of any significant site through whatever measures are necessary (e.g., establishment of limited-use areas). It should be noted that it is always possible for studies to miss an archaeological site, particularly one which shows little or no surface evidence of its presence. Because of this, all construction contracts must allow for this possibility by specifying that, in the event that a suspected archaeological site is encountered during construction or some other form of activity, operations in the area would be suspended until the site is investigated by a professional archaeologist. This construction contract provision is required by 32 CFR 650.192, Department of the Army, Environmental Protection and Enhancement, Peacetime Responsibilities, Historic Preservation, Archaeological Sites (March 15, 1978). Similarly, training activities that involve the use of new areas or the increased use of

areas presently used may uncover evidence of archaeological sites that was not uncovered by prior studies. Officers in charge of field activities should be made aware of this possibility and procedures should be established whereby the officer could inform the installation's Historic Preservation Committee of any finds so that the committee may take appropriate measures to avoid the accidental destruction of a site. Additionally, since the looting of sites by irresponsible persons can be a problem, security measures should be instituted to prevent destruction of archaeological data in this manner.

Fort Hunter Liggett, California

4B.160 Fort Hunter Liggett would be an integral part of the training activities associated with the stationing of a brigade at Fort Ord. However, there would be no change in the permanent population on the installation, no construction and no additional demands on services in the surrounding areas. Therefore, the following analysis includes only those topics associated with training activities.

Geology, Minerals, and Soils

4B.161 The proposed stationing alternative would not require the construction of new facilities at Fort Hunter Liggett nor the acquisition of new land for the installation. Because some land at the installation has been classified as prime farmland, military training and grazing activities must be managed so as not to increase the potential for erosion.

Biological Environment

4B.162 The potential impacts would be basically the same as those described for training activities at Fort Ord: foxhole digging, brush and tree limb cutting for camouflage, increased maneuvers of men and wheeled vehicles and increased night maneuvers. These activities would cause some increase in vegetation loss and possible increased erosion hazards. The Wildlife Management Plan for Fort Hunter Liggett is due in 1985 (before the proposed stationing) and would include elements on the mitigation of potential training impacts.

4B.163 The San Joaquin kit fox should not be significantly affected. The major impact to this animal in the region has been the conversion of its habitat to agricultural land with the resultant loss of both habitat and food species. Such land conversion would not occur on Fort Hunter Liggett. It should be noted that the greatest concentration of kit fox in the region is on

Camp Roberts to the southeast and that Camp Roberts has large amounts of artillery practice, including eight-inch guns. Bald eagles roost on trees along the San Antonio River in the southeastern portion of the installation, an area of restricted access. Part of this area has been used as a firing range and eagles have been observed roosting during artillery exercises. No eagle nesting areas have been discovered on the installation. Although the installation is in the historical range of the American penegrine falcon and the California condor, there have been no recent sightings of these species nor are any breeding areas known on the installation.

Land Use

4B.164 The basic impact of the stationing action would be a higher level of use of the 29 training areas. There would be no requirement to acquire new training areas and increased training would still be primarily accomplished on a five-day week schedule (Gardella, 1984; Walkley, 1984). The areas available for weekend hunting and daily fishing would not significantly change over present availability nor would there be a significant change over the present levels of leasing for cattle grazing.

Noise

4B.165 The increased training activities at Fort Hunter Liggett serves to increase the value of this installation with respect to its mission. Training activities involve weapons and demolition exercises, aircraft utilization, and tactical vehicle use, each of which generate noise. Noise levels have not been extensively recorded for activities at the post, but the acceptable level (65 Ldn contour) probably falls well within the installation boundary (Beach-Philpot Associates, 1984). The remote location, low population density, large available acreage and terrain shielding usually provide adequate attenuation of noise.

Air Emissions

4B.166 An increase in air pollutant emissions from mobile sources (training vehicles and convoy operations) would occur at Fort Hunter Liggett. No estimate of vehicular emissions or existing vehicular movement is available. The closest air monitoring stations (in Monterey County) to the installation are over 40 miles east and south (Beach-Philpot Associates, 1984).

Water Supply

4B.167 No change in the permanent population at Fort Hunter Liggett would occur as a result of the proposed stationing

alternative. Ample ground-water supplies for residential use are available for temporary population increases which occur as a result of training activities.

Traffic and Transportation

4B.168 There would be no impact upon traffic in the area of Fort Hunter Liggett since no increase in privately-owned vehicles is proposed. There may be an increase in the number of military convoys between Fort Ord and Fort Hunter Liggett, but these operations will continue to conform with State regulations regarding length and time of convoys.

Cultural Resources

4B.169 The proposed use of Fort Hunter Liggett includes no major construction and the greatest potential for cultural resource impacts would be foxhole digging and vehicle travel. The installation contains a large number of archaeological sites (Swernoff, 1982b) and the Cultural Resources Management Plan would include elements designed to protect those valuable resources, such as a limitation on the use of off-road vehicles in areas designated as archaeologically sensitive. The historical resources on the installation have been and will continue to be protected. The Mission San Antonio de Padua is privately maintained and will continue as such. The Hacienda, built in the style of the local mission, is part of the installation (used as officers mess and guest house) and is not only protected as a structure, but the more recent buildings on the installation have been built in the same mission architecture style. Impacts, if any, to significant cultural resources at Fort Hunter Liggett under this alternative are anticipated to be minimal.

ENERGY AND FUELS ANALYSIS

4B.170 The anticipated changes in energy and fuel consumption at each of the forts involved in this alternative are summarized in Table 4B-9. The methodology for the derivation of these estimates is presented in Appendix H.

4B.171 Increased gasoline consumption for private vehicles owned by military personnel is based on 18,850 additional vehicles at the forts, each driven an average of 9,026 miles per year with a mileage of 15.53 miles per gallon (Motor Vehicle Manufacturers Association, 1983). The resulting estimated increase in fuel consumption is 16 million gallons of gasoline per year. This consumption is an increase of 1,350 billion Btu per year, or 105 percent more fuel than is presently being consumed in the private

TABLE 4B-9

INCREASED ENERGY REQUIREMENTS UNDER THE
FORT LEWIS-FORT ORD STATIONING ALTERNATIVE

	Fort Lewis	Fort Ord
Personal Vehicles		
Increase, 10^9 Btu/yr	1,150	200
Percent[1]	105	11
Off-Post Housing		
Increase, 10^9 Btu/yr	1,360	0
Percent[1]	32	0
Military Vehicles		
Increase, 10^9 Btu/yr	950	100
Percent[1]	100	14
On-Post Usage		
Increase, 10^9 Btu/yr	2,200	660
Percent[1]	48	17
Total Energy Use		
Increase, 10^9 Btu/yr	3,200	780
Percent[1]	57	9
Total Annual Use, 10^9 Btu/yr	3,800	9,100
Energy Requirement per Troop 10^6 Btu/yr	402	498

[1]Percent Increase = Increased Energy Requirement x 100/Present Consumption.

SUPERSEDED

vehicles of military personnel at the forts. The estimated number of motor vehicles and corresponding gasoline consumption in the counties adjacent to Fort Lewis are 381,300 vehicles consuming 29 trillion Btu per year. The implementation of this alternative would increase local gasoline consumption by 4 percent. The corresponding estimates for Fort Ord are 185,700 vehicles consuming 17 trillion Btu per year. The increase in local gasoline consumption near Fort Ord is 1 percent.

4B.172 The increase in energy consumption for off-post housing is based on an increase of 10,300 military personnel and dependents living off-post at Fort Lewis and none living off-post at Fort Ord. The resulting fuel requirement of 1,400 billion Btu at Fort Lewis represents a 2 percent increase in the present residential consumption of 81 trillion Btu in the counties adjacent to the installation. At Fort Ord there is no impact on the present residential consumption of 28 trillion Btu in the counties adjacent to the installation.

4B.173 The increased requirement for on-post heating and associated energy usage is a linear extrapolation of the per capita on-post energy usage based on the effective population on-post as defined in TB ENG 354. The projected increase of 2,190 billion Btu per year at Fort Lewis is 48 percent of the current energy usage. At Fort Ord, the projected increase of 660 billion Btu per year is 17 percent of the present energy usage. Assuming the relative proportions of fuels used at the installations remain unchanged, implementation of this alternative require the following additional amounts of fuels and energy:

	Fort Lewis	Fort Ord
Fuel Oil, million gallons	4.84	0.08
Natural Gas, million therms	0.65	0.49
Propane, gallons	12,400	0
Gasoline, million gallons	1.47	0.21
Diesel Fuel, million gallons	1.55	0.32
Aviation Fuel, million gallons	4.31	0.23
Electricity, TKWH	75,800	15,000

4B.174 The 1,500 additional vehicles at Fort Lewis would use 328,000 gallons of gasoline and 567,000 gallons of diesel fuel. The 220 additional vehicles at Fort Ord would use 65,000 gallons of gasoline and 114,000 gallons of diesel fuel.

vehicles of military personnel at the forts. The estimated number of motor vehicles and corresponding gasoline consumption in the counties adjacent to Fort Lewis are 381,300 vehicles consuming 29 trillion Btu per year. The implementation of this alternative would increase local gasoline consumption by 4 percent. The corresponding estimates for Fort Ord are 185,700 vehicles consuming 17 trillion Btu per year. The increase in local gasoline consumption near Fort Ord is 1 percent.

4B.172 The increase in energy consumption for off-post housing is based on an increase of 10,300 military personnel and dependents living off-post at Fort Lewis and none living off-post at Fort Ord. The resulting fuel requirement of 1,400 billion Btu at Fort Lewis repre- sents a 2 percent increase in the present residential consumption of 81 trillion Btu in the counties adjacent to the installation. At Fort Ord there is no impact on the present residential consumption of 28 trillion Btu in the counties adjacent to the installation.

4B.173 The increased requirement for on-post heating and associated energy usage is a linear extrapolation of the per capita on-post energy usage based on the effective population on-post as defined in TB ENG 354. The projected increase of 2,190 billion Btu per year at Fort Lewis is 48 percent of the current energy usage. At Fort Ord, the projected increase of 660 billion Btu per year is 17 percent of the present energy usage. Assuming the relative proportions of fuels used at the installations remain unchanged, implementation of this alterna- tive require the following additional amounts of fuels and energy:

	Fort Lewis	Fort Ord
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Propane, gallons	12,400	0
Gasoline, million gallons	1.47	0.21
Diesel Fuel, million gallons	1.55	0.32
Aviation Fuel, million gallons	4.31	0.23
Electricity, MWH	75,800	15,000

4B.174 The 1,500 additional vehicles at Fort Lewis would use 328,000 gallons of gasoline and 567,000 gallons of diesel fuel. The 220 additional vehicles at Fort Ord would use 65,000 gallons of gasoline and 114,000 gallons of diesel fuel.

4B.175 The consumption of aviation fuel includes transport of the infantry brigade to Fort Lewis once a year. The travel distance is 890 miles, requiring 70,000 gallons of JP 4. The number of additional helicopters at Fort Lewis would be 100. Based on flight time of 300 hours per year and fuel consumption of 100 gallons per hour, the helicopters account for 3 million gallons of the increase in aviation fuel use at Fort Lewis.

4B.176 The total additional energy requirements resulting from implementation of this alternative are 3.15 trillion Btu at Fort Lewis and 0.77 trillion Btu at Fort Ord. These requirements are 57 percent of present energy consumption at Fort Lewis and 9 percent of that at Fort Ord. The total fuel consumption per troop would change from 437 MBtu to 402 MBtu at Fort Lewis, and from 508 MBtu to 498 MBtu at Fort Ord.

4B.177 Although there would be some impact on local energy use due to implementation of this alternative, the impact on national energy use would be negligible. Personnel of the light infantry division are to be drawn from existing Army units. Therefore, there would be a decrease in energy use in the localities where the troops are presently stationed approximately equal to the impacts described here. Similarly, many of the vehicles for the light infantry division are to be obtained from existing inventory. The only new vehicles to be added to the Army would be light trucks.

MITIGATING MEASURES

4B.178 Mitigating measures are defined as those actions that can be taken to lessen the adverse impacts resulting from implementation of the proposed action. Mitigating measures can be taken in anticipation of, concurrently with, or subsequent to the proposed action to minimize or offset undesirable impacts. Tables 4B-10 and 4B-11 describe generic mitigation measures available to the government. The measures described are potential only. No commitment is intended that these will be chosen at any specific installation. There are many variables influencing actual mitigation, including funding, timing, other Army actions, and specific environmental conditions found while the Army implements actions described here.

ADVERSE IMPACTS THAT CANNOT BE AVOIDED

4B.179 Some effects of the proposed stationing action cannot be mitigated. Those residual adverse impacts that cannot be avoided even if the measures given in the Mitigating Measures tables are used, are summarized in Table 4B-12.

TABLE 4B-10

SUMMARY OF MITIGATING MEASURES FOR REGIONAL EFFECTS OF THE FORT LEWIS-FORT ORD STATIONING ALTERNATIVE

Category	Fort Lewis, Washington	Fort Ord, California
Biological Environment	Habitat disturbance by construction could be reduced through accelerated housing construction on post, or delaying the action. Reduction of silt in area waters could be accomplished by avoiding disturbance to areas most susceptible to soil loss. Training activities might be modified to reduce the frequency of river crossings, or be concentrated in dry weather. Additional physical erosion control devices should be considered at crossing sites. Noise producing activities could be scheduled to avoid breeding and rearing seasons. Emphasis on existing natural resources education programs.	No mitigating measures required because no significant impacts have been identified.
Demography	Accelerated construction of on-post housing or a delay of the stationing activity to reduce the potential stress due to the time lag between troops assignments and on-post housing construction.	No mitigating measures required because no significant impacts have been identified.
Land Use	Provision of more on-post housing units when the stationing is completed in 1987 could reduce land conversion from undeveloped to developed.	No mitigating measures required because no significant impacts have been identified.
Noise	Re-evaluate Fort Lewis Installation Compatible Use Zones (ICUZ) noise contours based on future noise levels and source locations to identify conflicts with nearby noise sensitive areas. Restrict or adjust activities with potential for community impacts (artillery firing, aircraft operations). Develop new training ranges and facilities in accordance with ICUZ noise impact projections to minimize noise levels in nearby communities. Coordinate night training activities with nearby communities, provide advance public notice of planned activities. Minimize high-noise artillery training activities through substitution of alternate, quieter ordinance (especially during night exercises) or use of simulators (for anti-armor weapons).	
Regional Economic Activity	No mitigating measures required because no significant impacts have been identified.	No mitigating measures required because no significant impacts have been identified.
Air Quality	Continue program of fuel switching (fuel oil to natural gas) and upgrading and/or replacement of inefficient combustion systems. Develop and promote carpooling and ridesharing programs.	Encourage carpooling, ridesharing, and other transportation programs according to regional air quality management plan.

SUPERSEDED
AUG 1984

TABLE 4B-10

SUMMARY OF MITIGATING MEASURES FOR REGIONAL EFFECTS OF THE FORT LEWIS-FORT ORD STATIONING ALTERNATIVE

Category	Fort Lewis, Washington	Fort Ord, California
Biological Environment	Habitat disturbance by construction could be reduced through accelerated housing construction on post, or delaying the action. Reduction of silt in area waters could be accomplished by avoiding disturbance to areas most susceptible to soil loss. Training activities might be modified to reduce the frequency of river crossings, or be concentrated in dry weather. Physical erosion control devices should be considered at crossing sites. Noise producing activities could be scheduled to avoid breeding and rearing seasons. Emphasis on existing natural resources education programs.	No mitigating measures required because no significant impacts have been identified.
Demography	Accelerated construction of on-post housing or a delay of the stationing activity to reduce the potential stress due to the time lag between troops assignments and on-post housing construction.	No mitigating measures required because no significant impacts have been identified.
Land Use	Provision of more on-post housing units when the stationing is completed in 1987 could reduce land conversion from undeveloped to developed.	No mitigating measures required because no significant impacts have been identified.
Noise	Re-evaluate Fort Lewis Installation Compatible Use Zones (ICUZ) noise contours based on future noise levels and source locations to identify conflicts with nearby noise sensitive areas. Restrict or adjust activities with potential for community impacts (artillery firing, aircraft operations). Develop new training ranges and facilities in accordance with ICUZ noise impact projections to minimize noise levels in nearby communities. Coordinate night training activities with nearby communities, provide advance public notice of planned activities. Minimize high-noise artillery training activities through substitution of alternate, quieter ordinance (especially during night exercises) or use of simulators (for anti-armor weapons).	Re-evaluate Fort Ord Installation Compatible Use Zones (ICUZ) noise contours based on future noise levels to identify conflicts with nearby noise sensitive areas near Fritzche Airfield. Restrict or adjust training exercises involving Monterey Peninsula Airport with potential for community impacts. Provide advance public notice of planned activities at the airport, especially those outside airport curfew.
Regional Economic Activity	No mitigating measures required because no significant impacts have been identified.	No mitigating measures required because no significant impacts have been identified.
Air Quality	Continue program of fuel switching (fuel oil to natural gas) and upgrading and/or replacement of inefficient combustion systems. Develop and promote carpooling and ridesharing programs.	Encourage carpooling, ridesharing, and other transportation programs according to regional air quality management plan.

REVISED 1984

TABLE 4B-10 (Concluded)

SUMMARY OF MITIGATING MEASURES FOR REGIONAL EFFECTS OF THE FORT LEWIS-FORT ORD STATIONING ALTERNATIVE

Category	Fort Lewis, Washington	Fort Ord, California
Water Supply	Coordinate with local and regional governments to determine areas for off-post population where adequate supplies of water are available.	Coordinate with regional agencies regarding management of existing ground-water supplies. Promote accelerated development of surface-water supplies.
Wastewater Disposal	Coordinate with local and regional governments to determine areas for off-post population where adequate wastewater collection and disposal are available, and away from areas where ground-water quality will be threatened. Discharge permits should be within NPDES compliance.	Continue participation in regional agency for management of wastewater treatment.
Solid Waste Disposal	Local/regional governments should develop master plan(s) for solid waste management.	Locate on-post landfill sites in compliance with state solid waste disposal regulations.
Housing	Accelerated construction on post, between 1987 and 1989, or a delay in all or part of the stationing activity could reduce housing competition.	No mitigating measures required because no significant impacts have been identified.
Schools	Early coordination with area school districts, at or above capacity, and the implementation of existing contingency plans to construct more classrooms or schools could mitigate the overcrowding of area schools. Construction of on-post housing could necessitate expanding schools that are part of the Clover Park system. Busing children from overcrowded districts to districts with declining student populations should be investigated.	(See on-post section below.)
Health Care	No mitigating measures required because no significant impacts have been identified.	No mitigating measures required because no significant impacts have been identified.

TABLE 4B-11

SUMMARY OF MITIGATING MEASURES FOR ON-POST EFFECTS

Category	Fort Lewis, Washington	Fort Ord, California
Geology, Minerals and Soils	Restore and replant areas of heavy soil disturbance (training ranges). Erosion barriers in construction areas.	At Fort Ord, control use of erosion-prone training areas which require frequent reseeding. Continue management areas at Fort Hunter Liggett designated as prime farmlands, primarily to improve animal distribution (direct cattle to upland areas) and to reduce grazing intensity on flat lands.
Biological Environment		
Terrestrial Ecosystems	Comprehensive Land Management Plan could coordinate resource management programs, develop new programs for erosion control, vegetation and wildlife habitat improvement and provide baseline surveys (U.S. Army Corps of Engineers, Seattle District, 1984c). Expand the natural resources education program. Inventory the areas most sensitive soils, places to avoid, and seasons which offer the worst problems when some training activities are conducted for erosion control. Schedule noise-producing activities around seasonal habits of sensitive animals.	Implement Wildlife Management Plan, including limit to amount of brush and limb cutting, control of off-road vehicle use and protection of critical habitat and nesting sites.
Aquatic Ecosystems	Marching and wheeled vehicle use could be restricted around water bodies and riparian zones. Consolidation of training routes, restrictions during certain seasons, or construction of a hydrologically-isolated water training facility for river crossing would reduce disturbance (U.S. Army Corps of Engineers, Seattle District, 1984e). Continued monitoring of water quality and sediment buildup.	Control stream crossing exercises, particularly during spawning season.
Threatened and Endangered Species	Restrict activities in rare plant and animal habitats. Prohibit training at certain times and/or places, particularly at Yakima where there is the potential for disturbance to bald eagles. Follow management guidelines developed to protect bald eagles in Washington. Regulatory coordination between the U.S. Army and the U.S. Fish and Wildlife Service regarding the bald eagle and the potential stationing activity has been initiated and is in progress.	Maintain Smith's blue butterfly preserve on Fort Ord; investigate potential for night maneuver disturbance to San Joaquin kit fox and bald eagle on Fort Hunter Liggett.

SUPERSEDED
AUG 1984

TABLE 4B-11

SUMMARY OF MITIGATING MEASURES FOR ON-POST EFFECTS

Category	Fort Lewis, Washington	Fort Ord, California
Geology, Minerals and Soils	Restore and replant areas of heavy soil disturbance (training ranges). Erosion barriers in construction areas.	At Fort Ord, control use of erosion-prone training areas which require frequent reseeding. Continue management of areas at Fort Hunter Liggett designated as prime farmlands, primarily to improve animal distribution (direct cattle to upland areas) and to reduce grazing intensity on flat lands.
Biological Environment		
Terrestrial Ecosystems	Comprehensive Land Management Plan could coordinate resource management programs, develop new programs for erosion control, vegetation and wildlife habitat improvement and provide baseline surveys (U.S. Army Corps of Engineers, Seattle District, 1984c). Expand the natural resources education program. Inventory the areas most sensitive soils, places to avoid, and seasons which offer the worst problems when some training activities are conducted for erosion control. Schedule noise-producing activities around seasonal habits of sensitive animals.	Implement Wildlife Management Plan, including limit to amount of brush and limb cutting, control of off-road vehicle use and protection of critical habitat and nesting sites.
Aquatic Ecosystems	Marching and wheeled vehicle use could be restricted around water bodies and riparian zones. Consolidation of training routes, restrictions during certain seasons, or construction of a hydrologically-isolated water training facility for river crossing would reduce disturbance (U.S. Army Corps of Engineers, Seattle District, 1984e). Monitoring of water quality and sediment buildup.	Control stream crossing exercises, particularly during spawning season.
Threatened and Endangered Species	Restrict activities in rare plant and animal habitats. Prohibit training at certain times and/or places, particularly at Yakima where there is the potential for disturbance to bald eagles. Follow management guidelines developed to protect bald eagles in Washington. Regulatory coordination between the U.S. Army and the U.S. Fish and Wildlife Service regarding the bald eagle and the potential stationing activity has been initiated and is in progress.	Maintain Smith's blue butterfly preserve on Fort Ord; investigate potential for night maneuver disturbance to San Joaquin kit fox and bald eagle on Fort Hunter Liggett.

REVISED 1934

TABLE 4B-11 (Continued)

SUMMARY OF MITIGATING MEASURES FOR ON-POST EFFECTS

Category	Fort Lewis, Washington	Fort Ord, California
On-Post Population	On-post population pressures in barracks could result by year end FY 1987. Immediate renovation of substandard barracks could prevent overcrowding in adequate space. The stationing activity could be phased until adequate quarters could be provided.	No mitigating measures required because no significant impacts have been identified.
Land Use	Emphasis placed on replacing existing substandard buildings with the new facilities would reduce new disturbance. New or altered range management techniques designed to maximize use at minimum expense of resource deterioration could mitigate results from increased training.	No mitigating measures required because no significant impacts have been identified.
Noise	Reevaluate Fort Lewis Installation Compatible Use Zone (ICUZ) noise contours based on projected noise levels and source locations to identify conflicts with cantonment and other on-post noise-sensitive usage areas. Restrict or adjust activities with potential for on-post impacts (artillery firing, aircraft operations). Develop new training ranges and facilities in accordance with ICUZ noise impact projections to minimize on-post noise levels in sensitive areas. Minimize high-noise artillery training activities through substitution of alternate, quieter ordinance (especially during night exercises) or use of simulators (for anti-armor weapons). Incorporate acoustic barriers in future post buildings and facilities. Conduct flight operations away from cantonment and other noise-sensitive use areas.	Continue use of curfews at Fort Ord with respect to artillery firing.
Air Emissions	Application for stationary source permits subject to Significant Deterioration review by PSAPCA. Continue program of fuel switching (fuel oil to natural gas) and upgrading and/or replacement of inefficient combustion systems. Develop and promote carpooling and ridesharing program. Utilize community transit systems (buses, vans) on post to minimize private vehicle use.	Application for stationary source permits are subject to new source review with respect to sulfur dioxide emissions. Encourage carpooling, ridesharing, and use of transit systems to reduce vehicle emissions.
Water Supply	No mitigating measures required because no significant impacts have been identified.	Consider use of treated effluent for golf course irrigation at Fort Ord. Promote water conservation.
Wastewater Disposal	No mitigating measures required because no significant impacts have been identified.	Reconsider on-post land treatment option at Fort Ord.

TABLE 4B-11 (Concluded)

SUMMARY OF MITIGATING MEASURES FOR ON-POST EFFECTS

Category	Fort Lewis, Washington	Fort Ord, California
Solid and Hazardous Waste Disposal	Continue program to upgrade landfill and treat leachates. Implement incineration/resource recovery volume reduction program. Implement program to monitor and audit on-post and off-post (contractor) hazardous waste disposition (adequate landfill, recycling).	Promote recycling and resource recovery.
Housing	New housing construction could be accelerated to reduce possible overcrowding, and use of substandard barracks. If construction cannot be accelerated, a revised phasing schedule could be developed to time troop arrival with housing completions.	In order to eliminate short-term increases in married personnel involuntarily separated from families, the housing construction could be accelerated or the stationing action deferred until housing is available.
Schools	Implementation of currently planned additions to existing on post elementary schools or building a new school could be needed to relieve stress. If warranted, the new school should be open by the time family housing is first occupied.	To accommodate the potential excess of elementary school students, government funds could be made available for construction of a school or for temporary buildings to be used until local school capacity was available.
Health Care	Accelerated development of the new Madigan Medical Center could reduce the staffing and support problems perceived to result More community referrels could reduce the potential stress.	No mitigating measures required because no significant impacts have been identified.
Public Safety	Safety training could reduce the number of and severity of accidents during training. Increased maintenance could ensure properly filled foxholes, wire disposal and retrieval and a reduction in other hazards resulting from training.	No mitigating measures required because no significant impacts have been identified.
Traffic and Transportation	Implement recommended improvements at major gates, intersections and cross-post arterial routes to expedite traffic flow. Develop and promote carpooling and ridesharing programs. Utilize community transit systems (buses, vans) on post to minimize private vehicle use.	No mitigating measures required because no significant impacts have been identified.
Cultural Resources	Consideration of potential cultural resources, including necessary identification and evaluation. Protection of sufficient cultural resources. Continued coordination with affected Native Americans is necessary to mitigate potential effects from increases in training activities.	Consideration of potential cultural resources, including necessary identification and evaluation. Protection of sufficient cultural resources.

SUPERSEDED
AUG 1984

TABLE 4B-11 (Concluded)

SUMMARY OF MITIGATING MEASURES FOR ON-POST EFFECTS

Category	Fort Lewis, Washington	Fort Ord, California
Solid and Hazardous Waste Disposal	Continue program to upgrade landfill and treat leachates. Implement incineration/resource recovery volume reduction program. Implement program to monitor and audit on-post and off-post (contractor) hazardous waste disposition (adequate landfill, recycling).	Promote recycling and resource recovery.
Housing	New housing construction could be accelerated to reduce possible overcrowding, and use of substandard barracks. If construction cannot be accelerated, a revised phasing schedule could be developed to time troop arrival with housing completions.	In order to eliminate short-term increases in married personnel involuntarily separated from families, the housing construction could be accelerated or the stationing action deferred until housing is available.
Schools	Implementation of currently planned additions to existing on post elementary schools or building a new school could be needed to relieve stress. If warranted, the new school should be open by the time family housing is first occupied.	To accommodate the potential excess of elementary school students, government funds could be made available for construction of a school or for temporary buildings to be used until local school capacity was available.
Health Care	Accelerated development of the new Madigan Medical Center could reduce the staffing and support problems perceived to result More community referrels could reduce the potential stress.	No mitigating measures required because no significant impacts have been identified.
Public Safety	Safety training could reduce the number of and severity of accidents during training. Increased maintenance could ensure properly filled foxholes, wire disposal and retrieval and a reduction in other hazards resulting from training.	No mitigating measures required because no significant impacts have been identified.
Traffic and Transportation	Implement recommended improvements at major gates, intersections and cross-post arterial routes to expedite traffic flow. Develop and promote carpooling and ridesharing programs. Utilize community transit systems (buses, vans) on post to minimize private vehicle use.	No mitigating measures required because no significant impacts have been identified.
Cultural Resources	Consideration of potential cultural resources, including necessary identification and evaluation. Protection of significant cultural resources. Continued coordination with affected Native Americans is necessary to mitigate potential effects from increases in training activities.	Consideration of potential cultural resources, including necessary identification and evaluation. Protection of significant cultural resources.

REVISED 1984

TABLE 4B-12

SUMMARY OF ADVERSE IMPACTS THAT CANNOT BE AVOIDED UNDER THE FORT LEWIS-FORT ORD STATIONING ALTERNATIVE

Category	Fort Lewis and Surrounding Region	Ford Ord and Surrounding Region
Geology, Minerals and Soils	Soil disturbance, and resultant erosion loss from increased construction and training activities.	Erosion of soil from construction and increased training activities.
Biological Environment	Some terrestrial habitat could be lost from construction activities, and increased training.	Construction would displace about 500 acres of habitat on Fort Ord.
Demography	None.	None.
Land Use	None.	Prime farmland areas of Fort Hunter Liggett would continue to be used at less than full productivity.
Noise	Increased noise levels from increased vehicular traffic, aircraft operations and training range uses.	Increased noise levels from vehicular and air traffic.
Air Quality	Increased emissions resulting from increased use of mobility and stationary fuels, increased dust particulate loading from training activities.	Aggravation of air quality problems as a result of increase in emissions from additional stationary and mobile sources.
Water Supply	Increased utilization of regional groundwater resources.	Continued encroachment of salt-water into ground water.
Wastewater Disposal	Increased potential for groundwater pollution from septic systems.	None.
Solid and Hazardous Waste Disposal	None.	None.
Housing	None.	None.
Schools	None.	None.
Health Care	None.	None.
Public Safety	None.	None.

TABLE 4B-12 (concluded)

SUMMARY OF ADVERSE IMPACTS THAT CANNOT BE AVOIDED UNDER THE FORT LEWIS-FORT ORD STATIONING ALTERNATIVE

Category	Fort Lewis and Surrounding Region	Ford Ord and Surrounding Region
Traffic and Transportation	None.	None.
Cultural Resources	Potential loss or disturbance of significant cultural resources.	Potential loss or disturbance of significant cultural resources.
Relationship Between Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity	Peripheral construction activity, and various training exercises could disturb terrestrial wildlife. Land conversion would preclude its use for other purposes.	Construction of family housing and other facilities would preclude the use of the land for other purposes by the Army. Natural resource and wildlife management program would continue to enhance the long-term productivity of both Forts Ord and Hunter Liggett.
Irreversible and Irretrievable Commitment of Resources	Increased consumption of petroleum distillates for vehicle, aircraft and stationary thermal uses. Commitment of materials for construction and all capital expenditures. Archeological sites could be accidently lost or damaged by construction or training activities.	Commitment of materials for construction, increased consumption of fuel for vehicles and heating, and capital expenditures. Archeological sites could be accidently lost or damaged by construction or training activities.

TABLE 4A-10

SUMMARY OF MITIGATING MEASURES FOR ON-POST EFFECTS OF THE FORT WAINWRIGHT-FORT LEWIS STATIONING ALTERNATIVE

Category	Fort Richardson, Alaska	Fort Wainwright, Alaska	Fort Lewis
Geology, Minerals and Soils	Avoid permafrost areas with tracked vehicles.	Restrict the amount of area in which off-road vehicles and excavation activities would be permitted.	Restore and replant areas of heavy soil disturbance (training ranges). Utilize Erosion barriers in construction areas.
Biological Environment			
Terrestrial Ecosystems	Minimize land clearing and brush cutting.	Restrict training activities in places, or times, when sensitive species could be affected. Remove trees used for log cribs and camouflage only from areas designated by the natural resources personnel.	Design and implementation of a Comprehensive Land Management Plan to coordinate existing resource management programs, develop new programs for erosion control, revegetation and wildlife habitat improvement and provide baseline surveys (U.S. Army Corps of Engineers, Seattle District, 1984e). Continuation of the Natural Resources Education Program would inform more potential problems, and mitigation techniques. An inventory of the area's sensitive soils, places to avoid, and seasons which offer the worst problems could reduce erosion. Use erosion control devices. Noise could be reduced by scheduling noise-producing activities to reduce interference with wildlife.
Aquatic Ecosystems	Avoid salmon spawning creeks, omit dirt bridges over ice.	Restrict activity to times when sensitive species would not be adversely affected by increased silt loading, activities to areas where construction or traffic on the banks would result in a minimum of erosion, and activity along streams where sensitive areas are not located.	Marching activities and wheeled vehicle use could be restricted around water bodies and riparian zones with signs and fences. Consolidation of training routes, restrictions during certain seasons, or construction of a hydrologically-isolated water training facility to reduce river crossings (U.S. Army Corps of Engineers, Seattle District, 1984e). Continued monitoring of water quality and sediment buildup could enhance mitigation.
Threatened and Endangered Species	No mitigating measures required because none of these species are present.	No mitigating measures are required because none of these species are present.	Military activities could be restricted in rare plant and animal habitats. Training activities with the greatest potential of disrupting these species' should be prohibited at certain times and/or places. U.S. Fish and Wildlife Service Management Guide developed to protect bald eagles in Washington, should be strictly followed. Regulatory coordination between the U.S. Army and the U.S. Fish and Wildlife Service regarding the bald eagle and the potential stationing activity has been initiated and is in progress.
On-Post Population	No mitigating measures required because no significant impacts were identified.	Phase the stationing action along with additional facilities construction.	No mitigating measures required because no significant impacts have been identified.

REVISED 1984

TABLE 4A-10 (Concluded)

SUMMARY OF MITIGATING MEASURES FOR ON-POST EFFECTS OF THE FORT WAINWRIGHT-FORT LEWIS STATIONING ALTERNATIVE

Category	Fort Richardson, Alaska	Fort Wainwright, Alaska	Fort Lewis
Solid and Hazardous Waste Disposal	When existing capacity is gone, combine use with proposed Highland Landfill; follow RCRA regulations and spill control plan.	No mitigating measures are required. No impact is expected on solid waste disposal facilities.	Continue program to upgrade landfill and treat leachates. Implement incineration resource recovery volume. Implement program to monitor and audit on-post and off-post (contractor) hazardous waste disposition (adequate landfill, recycling).
Housing	Construct bachelor enlisted quarters (See No. 10 for family housing).	Implement a long-term lease/sale agreement with private contractors.	On-post housing for enlisted troops and bachelor officers should be planned to coincide with troop arrival.
Schools	No mitigation required since families will live off-post.	No mitigation required since families would live off-post.	Implementation of currently planned additions to existing on-post elementary schools would be needed to relieve overcrowding.
Health Care	Add new dental clinic on-post. Upgrade clinic to full-health clinic.	Increased demands on health care and social services could be mitigated by measures discussed for regional health care and would be ameliorated by increased facilities on-post.	Increased use of community referrals, until new facilities are available, would reduce any potential stress on health care facilities.
Public Safety	No mitigating measures required because no significant impacts were identified.	No mitigating measures required because no significant impacts were identified.	More safety training could reduce the number or severity of accidents occurring during training. Increased maintenance would ensure properly filled foxholes, wire disposal, dud retrieval and a reduction in other hazards resulting from training.
Traffic and Transportation	Cooperation with Alaska Department of Transportation for temporary construction routing 1987-1989.	Open up one or more additional gates and improve access to the gate on Richardson Highway.	Implement recommended improvements at major gates, intersections, and cross-post arterial routes to expedite traffic flow. Develop and promote carpooling and ridesharing programs. Utilize community transit systems (buses, vans) on-post to minimize private vehicle use.
Cultural Resources	Field inspections prior to land clearing and construction for artifacts.	Field inspections prior to land clearing and construction for artifacts.	Consideration of potential cultural resources including, if necessary, the identification and evaluation of significant cultural resources. Continued coordination with affected Native Americans.

TABLE 4A-11

SUMMARY OF ADVERSE IMPACTS THAT CANNOT BE AVOIDED UNDER THE FORT WAINWRIGHT-FORT LEWIS STATIONING ALTERNATIVE

Category	Fort Wainwright and Surrounding Region	Fort Richardson and Surrounding Region	Fort Lewis and Surrounding Region
Geology, Minerals and Soils	Sensitive soils and permafrost will be damaged to the extent that mitigative measures are not totally effective.	Training areas with permafrost could be degraded by tracked vehicles and snowmobiles.	Soil disturbance and resultant erosion loss from increased construction and training activities.
Biological Environment	Increased numbers of wildlife will be affected by training activities and increased hunting pressures.	300-350 acres habitat loss to housing construction minimal disturbance to field training areas.	Some terrestrial habitat could be lost from construction activities and increased training.
Demography	The population of both Fort Wainwright and the Fairbanks North Star Borough would increase due to direct effects of the proposed action by 1608 and by 20.3%, respectively.	None.	None.
Land Use	Land development for residential, commercial, and industrial uses would be rapidly accelerated to accommodate the influx of new personnel.	More urbanization in Eagle River area.	None.
Noise	None.	None.	Increased noise levels from increased vehicular traffic, aircraft operations and training range uses.
Air Quality	The increased motor vehicles in the region would contribute more emissions, particularly carbon monoxide and water vapor resulting in ice fog.	20% increase carbon monoxide on post due to vehicles.	Increased emissions resulting from increased use of mobility and stationary fuels. Increased dust particulate loading from training activities.
Water Supply	Slightly increased regional ground water resource utilization.	Temporary use of wells on post until Eklutna project complete.	None.
Wastewater Disposal	Slightly increased potential for ground water pollution from septic systems.	Two years over-capacity of Anchorage plant; additional sewage to Cook Inlet.	None.
Solid and Hazardous Waste Disposal	Shortened lifetime of existing landfills.	Shortened lifetime of existing landfills.	None.
Housing	None.	None.	None.
Schools	None.	None.	None.
Health Care	None.	None.	None.

TABLE 4A-11 (concluded)

SUMMARY OF ADVERSE IMPACTS THAT CANNOT BE AVOIDED UNDER THE FORT WAINWRIGHT-FORT LEWIS STATIONING ALTERNATIVE

Category	Fort Wainwright and Surrounding Region	Fort Richardson and Surrounding Region	For Lewis and Surrounding Region
Public Safety	None.	None.	None.
Traffic and Transportation	None.	None.	Increased levels of military and privately-owned vehicle traffic.
Cultural Resources	Potential loss or disturbance of significant cultural resources.	Potential loss or disturbance of significant cultural resources.	Potential loss or disturbance of significant cultural resources.
Relationship Between Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity	Increased use of the military lands will conflict with recreational uses, such as hunting, trapping, and fishing; with commercial uses of timber; and with mining activities.	Unexploded ordinance permanently closes land to future uses (7,000 acres already impacted).	Peripheral construction activity, and various training exercises could disturb terrestrial wildlife. Land conversion would preclude its use for other purposes.
Irreversible and Irretrievable Commitment of Resources	Resources such as capital for construction, motor fuels, diesel fuel, JP-4, and components of masonry-type building materials will be irreversibly committed to project. Archeological sites could be accidentaly damaged or lost by construction and training activities.	Loss of impact areas due to ordinance; loss of gas/coal fuels; loss of rural areas to housing; loss of military lands to housing, landfill, schools or other "excessed" properties if given to Anchorage to mitigate. Archeological sites could be accidently damaged or lost by construction and training activities.	Increased consumption of petroleum distillates for vehicle, aircraft and stationary thermal uses. Commitment of materials for construction and all capital expenditures. Archeological sites could be accidently damaged or lost by construction and training activities.

CHAPTER 4B

ENVIRONMENTAL CONSEQUENCES OF THE FORT LEWIS, WASHINGTON - FORT ORD, CALIFORNIA STATIONING ALTERNATIVE

INTRODUCTION

4B.1 Under this stationing alternative, the new light infantry division would be split among two installations. The division minus one infantry brigade (division minus) would be stationed at Fort Lewis, Washington along with some support elements. The remaining infantry brigade plus some support elements would be stationed at Fort Ord, California. Civilian employees would also be added at each installation to support the new troops.

4B.2 Stationing of the division minus at Fort Lewis would begin in Fiscal Year (FY) 1984 and be completed in FY 1987. Most of the troops would arrive during FY 1985, FY 1986 and FY 1987. Stationing of the infantry brigade at Fort Ord would take place during FY 86 and FY 87.

4B.3 At Fort Lewis, several other events will also occur during the FY 1983 through FY 1989 period. The 9th Infantry Divison, currently at Fort Lewis, is being reorganized into a High Technology Motorized Division. This action, to be completed during FY 1986, includes the reduction of division personnel to about 13,000. If the new light infantry division is stationed at the fort, much of the 9th Infantry's training would be shifted to the Yakima Firing Center. Also in progress is the expansion of the Madigan Army Medical Center. Construction will begin during 1984 and be completed by 1990 or 1991.

4B.4 At Fort Ord the 7th Infantry Division currently stationed there is being reorganized into a light infantry division like the proposed new division. This reorganization, to be completed during FY 1985, will reduce authorized troop strength of the 7th Infantry Division to about 10,200.

4B.5 Net changes in military and civilian personnel associated with the Fort Lewis-Fort Ord stationing alternative are given in Table 4B-1. A summary of potential impacts resulting from this alternative is shown in Table 4B-2 and 4B-3. At Fort Lewis, there would be a net increase of 10,640 military and 12,900 dependents for a total 23,540. On-post civilian employment would increase by 640. At Fort Ord, there would be a net increase of

TABLE 4B-1
CHANGES IN MILITARY AND CIVILIAN PERSONNEL FOR
THE FORT LEWIS - FORT ORD STATIONING ALTERNATIVE

Category	Baseline	FY 1984 Strength	FY 1984 Change	FY 1985 Strength	FY 1985 Change	FY 1986 Strength	FY 1986 Change	FY 1987 Strength	FY 1987 Change	FY 1988 Strength	FY 1988 Change	FY 1989 Strength	FY 1989 Change	Total Change
FORT LEWIS														
Officers	2780	3020	240	3430	410	3780	350	4320	540	4370	50	4420	50	1640
Enlisted	22080	23030	950	23100	70	25750	2650	29850	4100	30120	270	30440	320	8360
Total military	24860	26050	1190	26530	480	29530	3000	34170	4640	34490	320	34860	370	10000
Civilian employees	4070	4130	60	4330	200	4500	170	4670	170	4690	20	4710	20	640
Total installation	28930	30180	1250	30860	680	34030	3170	38840	4810	39180	340	39570	390	10640
Families	12460	13090	630	13430	340	14940	1510	17270	2330	17430	160	17620	190	5160
Dependents	31160	32730	1570	33580	850	37350	3770	43180	5830	43590	410	44060	470	12900
School-aged dependents of military	11220	11780	560	12090	310	13440	1360	15540	2100	15690	150	15860	170	4640
FORT ORD														
Officers	1940	1940	0	1930	-10	2150	220	2170	30	2180	10	2180	0	240
Enlisted	15670	15670	0	13800	-1780	16650	2770	16990	330	17200	210	17200	0	1530
Total military	17610	17610	0	15810	-1800	18800	2990	19160	360	19380	220	19380	0	1770
Civilian employees	3720	3720	0	3850	130	3960	110	3860	-90	3860	0	3860	0	130
Total installation	21330	21330	0	19650	-1670	22750	3100	23020	270	23240	210	23230	0	1910
Families	8820	8820	0	7970	-850	9440	1470	9610	180	9720	100	9720	0	900
Dependents	22050	22050	0	19920	-2120	23590	3670	24040	450	24300	260	24300	0	2250
School-aged dependents of military	7940	7940	0	7170	-760	8490	1320	8650	160	8750	90	8750	0	810

Note: Strength = authorized positions at end of fiscal year
Change = personnel change during fiscal year
Numbers may not add exactly because of rounding
Families and Dependents are for military personnel only.

TABLE 4B-2

SUMMARY OF THE REGIONAL ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE FORT LEWIS-FORT ORD STATIONING ALTERNATIVE

Category	Fort Lewis, Washington	Fort Ord, California
Biological Environment	Habitat disturbance could result from housing construction. Added silt from crossing practices could adversely affect aquatic biota down stream. Neither the rigid white topped aster, candidate for federal listing, or threatened bald eagle would likely be disturbed on Fort Lewis; but effects could occur to bald eagles at the Yakima Firing Center. Official consultation with FWS is initiated.	No significant impacts.
Demography	A time lag between troop arrival and housing completion - (FY 1987 and 1988). In FY 1987, 13,700 military families could be off post (48,000 with dependents). Number would decline to 12,500 (44,000 with dependents) by 1989. About 10,600 families (85%) could reside in Pierce County in FY 1989, an increase of 2,620; and 1,250 could live in Thurston (10%), an increase of 310.	No substantial inmigration is expected.
Land Use	Direct change could result from housing construction. Increases in off-post families could require about 13% of projected housing needs 1985-1990. Most construction would be likely in Pierce, where vacant areas are available.	Expansion of the existing boundaries of Forts Ord or Hunter Liggett would not be required nor would there be any significant land use change in the region.
Noise	Increases in noise levels on roadways associated with increased traffic volumes. Increases in noise levels associated with increased rotary wing flight operations (Fort Lewis) and fixed wing flight operations (McChord AFB).	Slight increase in noise levels associated with increased vehicular traffic on roadways and additional military aircraft use of Monterey Peninsula Airport.
Regional Economic Activity	Beneficial economic influence includes total business volume of about $945 million, local personal income of about $630 million.	The increases for construction would be: total business volume, $68 million; local personal income, $27 million. The increases for mission change would be: total business volume, $37 million; local personal income, $54 million.
Air Quality	Increased emission loadings from vehicular traffic, aircraft operations. Slight increase or no change in stationary source emissions.	Increase in emissions from vehicular traffic, which may aggravate existing air quality problem.
Water Supply	Increased demand on community and private (well) supplies.	Increase in demand for water (on post) increases regional demand for water which may cause a worsening of the salt water intrusion problem.
Wastewater Disposal	Increased demand on community and increased numbers of private (septic field) wastewater management systems. Deterioriation of ground-water quality possible in some rural areas.	Increased demand on regional wastewater treatment system, however, projected demand is less than reserved capacity.
Solid Waste Disposal	Increased demands on regional landfill capacity.	Increased demand on capacity at Marina landfill (if decision is made to dispose of solid waste off post) which decreases remaining life of landfill about one year.

SUPERSEDED AUG 1984

TABLE 4B-2 (concluded)

SUMMARY OF THE REGIONAL ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE FORT LEWIS-FORT ORD STATIONING ALTERNATIVE

Category	Fort Lewis, Washington	Fort Ord, California
Housing	With time lag between stationing and housing completion (1987 to 1988), competition for affordable off-post family housing could be high in 1987. Some troops could come unaccompanied, others would choose to live farther away from the Fort. By 1990 adequate housing would be likely. Increases in off-post families would represent about 13% of projected housing needs in Pierce and Thurston counties. 2,620 additional military families could live in Pierce, 311 in Thurston.	Housing would be provided on post and new housing in the surrounding communities would not be required.
Schools	Some nearby school districts are operating at or near capacity, particularly elementary levels. Plans are prepared to accommodate a general population growth in the region. If stationing occurs, preliminary plans for additions and/or expansions could be activated and the student population could be accommodated.	See on-post impacts summary for Fort Ord.
Health Care	Area hospitals are currently operating under capacity, population growth from the stationing could be accommodated.	Increase in personnel would produce an increase of about 4 percent in use of regional health care facilities through increased statements of non-availability of services on post.
Cultural Resources	Potential for disturbance or destruction by private residential-commercial development.	Potential for disturbance or destruction by private residential-commercial development.
Energy and Fuels	2% increase in residential fuel use. 4% increase in gasoline consumption.	No impact on residential fuel use. 1% increase in gasoline consumption.

TABLE 4B-2

SUMMARY OF THE REGIONAL ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE FORT LEWIS-FORT ORD STATIONING ALTERNATIVE

Category	Fort Lewis, Washington	Fort Ord, California
Biological Environment	Habitat disturbance could result from housing construction. Added silt from crossing practices could adversely affect aquatic biota down stream. The rigid white topped aster, candidate for federal listing, would not likely be disturbed on Fort Lewis. Effects could occur to bald eagles. Official consultation with FWS is initiated for bald eagle issues at Yakima and Fort Lewis.	No significant impacts.
Demography	A time lag between troop arrival and housing completion - (FY 1987 and 1988). In FY 1987, 13,700 military families could be off post (48,000 with dependents). Number would decline to 12,500 (44,000 with dependents) by 1989. About 10,600 families (85%) could reside in Pierce County in FY 1989, an increase of 2,620; and 1,250 could live in Thurston (10%), an increase of 310.	No substantial inmigration is expected.
Land Use	Direct change could result from housing construction. Increases in off-post families could require about 13% of projected housing needs 1985-1990. Most construction would be likely in Pierce, where vacant areas are available.	Expansion of the existing boundaries of Forts Ord or Hunter Liggett would not be required nor would there be any significant land use change in the region.
Noise	Increases in noise levels on roadways associated with increased traffic volumes. Increases in noise levels associated with increased rotary wing flight operations (Fort Lewis) and fixed wing flight operations (McChord AFB).	Slight increase in noise levels associated with increased vehicular traffic on roadways and additional military aircraft use of Monterey Peninsula Airport.
Regional Economic Activity	Beneficial economic influence for construction includes total business volume of about $200 million, local personal income of about $63 million for mission change, the increases would would be a total business volume of $342 million and local personal income of $306 million.	The increases for construction would be: total business volume, $68 million; local personal income, $27 million. The increases for mission change would be: total business volume, $37 million; local personal income, $54 million.
Air Quality	Increased emission loadings from vehicular traffic, aircraft operations. Slight increase or no change in stationary source emissions.	Increase in emissions from vehicular traffic, which may aggravate existing air quality problem.
Water Supply	Increased demand on community and private (well) supplies.	Increase in demand for water (on post) increases regional demand for water which may cause a worsening of the salt water intrusion problem.
Wastewater Disposal	Increased demand on community and increased numbers of private (septic field) wastewater management systems. Deterioriation of ground-water quality possible in some rural areas.	Increased demand on regional wastewater treatment system, however, projected demand is less than reserved capacity.
Solid Waste Disposal	Increased demands on regional landfill capacity.	Increased demand on capacity at Marina landfill (if decision is made to dispose of solid waste off post) which decreases remaining life of landfill about one year.

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TABLE 4B-3

SUMMARY OF THE ON-POST ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE LEWIS-ORD STATIONING ALTERNATIVE

Category	Fort Lewis, Washington	Fort Ord, California
Geology, Minerals and Soils	Soil disturbance and erosion associated with construction and training activities.	Soil disturbance and erosion associated with construction and training activities and Fort Ord and training and maneuvering at Fort Hunter Liggett.
Biological Environment	Construction and training could adversely affect on post habitats; less than 1% of fort property. Noise and silt from river crossing practice could disturb terrestrial and aquatic species. No adverse effects to candidate or threatened species are expected at Fort Lewis. 50% more battalion trips to Yakima could increase erosion by training, produce more silt in rivers and potentially affect aquatic biota. Potential adverse effects to bald eagles along the Columbia River. Formal consultation process with FWS has been initiated.	New construction on Fort Ord could affect about 500 acres of habitat; increased maneuvering by men and vehicles on Forts Ord and Hunter Liggett would disrupt vegetation and potentially cause erosion that would disrupt an even larger area; foxhole digging and cutting of brush and tree limbs for camouflage could cause destruction of vegetation in areas of intensive use.
On-Post Population	A 40% increase in military personnel would result (from 24,858 FY 1983 to 34,870 FY 1989); about 22% would be directly assigned to the LID (-). A time lag in troop arrival and housing completion would cause the installation population (military and dependents) to fluctuate from 28,100 in 1987 to 34,200 in 1989. 5,109 family households would be on post by 1989, as would about 16,000 enlisted in barracks and 300 bachelor officers. Temporary increases at Yakima Firing Center would occur.	On-post population net increases would include about 1770 military personnel and 2245 dependents (including about 810 school-age children). Civilian employee net increase would be about 135.
Land Use	630 acres of land would change; less than 1% of total post acreage. 60% increase in frequency of training could adversely affect the condition of existing ranges and maneuver areas. With increases, conflicts could arise over recreational access to the fort. Increased use at Yakima Firing Center ranges and maneuver areas would result, as would 10% increase in the use of Camp Bonneville.	Approximately 500 acres on Fort Ord would be converted to housing areas; there would be a more intensive use of the on both Forts Ord and Hunter Liggett with a significant increase in night training, particularly on Fort Hunter Liggett; access for public hunting and fishing and for cattle grazing (on Fort Hunter Liggett) would not be affected.

SUPERSEDED AUG 1984

TABLE 4B-3 (continued)

SUMMARY OF THE ON-POST ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE LEWIS-ORD STATIONING ALTERNATIVE

Category	Fort Lewis, Washington	Fort Ord, California
Noise	Increase in noise levels from aircraft operations, wheeled vehicle use, training activities. Reduction of artillery impact noise intensity.	Increase in noise levels at Fort Ord resulting from increased number of vehicles on post roads. No significant increase in noise at Fort Hunter Liggett.
Air Quality	Increase in emissions loadings resulting from increased vehicular traffic levels, rotary wing aircraft use. Slight increases or no change in emissions from stationary sources.	Increase in emissions from additional stationary sources and from additional vehicles at Fort Ord. These may aggrevate existing regional air quality problems. Increase in emissions from increased use of military vehicles and number of convoys to Fort Hunter Liggett.
Water Supply	Slight curtailment of irrigation water use during summer months.	Increased demand for water which may increase pumping rate at Fort Ord wells and aggrevate encroachment of sea water into ground water. No significant impact on water supply at Fort Hunter Liggett.
Wastewater Disposal	No significant impacts.	Increased wastewater loads to Main Garrison treatment plant until regional facility is operational but projected loads are less than capacity. No significant impact on wastewater disposal at Fort Hunter Liggett.
Solid and Hazardous Waste Disposal	No significant impacts.	Increased demand on capacity of Fort Ord landfills (if on-post site is located) which necessitates use of additional post acreage for solid waste disposal. No significant increase in solid or hazardous waste at Fort Hunter Liggett.
Housing	Troops arrive by 1987. Adequate on post housing not available until 1988. By 1987 adequate housing would exist for 3,509 families, 12,473 enlisted, and 89 bachelor officers. About 3,350 enlisted may have to live in some 12,400 moderately converted substandard barracks; 13,700 families would live off post Total on post units would exist for 5,109 families, 16,040 enlisted and 213 bachelor officers. Housing would not be affected at the subinstallation.	Sufficient housing, including family housing, would be supplied on post. However, a possible 2 or 3 year gap between the staging of incoming personnel and construction would significantly increase an already long waiting list for family housing and would create even greater pressures on surrounding communities for available and affordable family housing.

TABLE 4B-3

SUMMARY OF THE ON-POST ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE LEWIS-ORD STATIONING ALTERNATIVE

Category	Fort Lewis, Washington	Fort Ord, California
Geology, Minerals and Soils	Soil disturbance and erosion associated with construction and training activities.	Soil disturbance and erosion associated with construction and training activities and Fort Ord and training and maneuvering at Fort Hunter Liggett.
Biological Environment	Construction and training could adversely affect on post habitats; less than 1% of fort property. Noise and silt from river crossing practice could disturb terrestrial and aquatic species. 50% more battalion trips to Yakima could increase erosion by training, produce more silt in rivers and potentially affect aquatic biota. Potential adverse effects to bald eagles. Formal consultation process with FWS has been initiated on bald eagle issues at Yakima and Fort Lewis.	New construction on Fort Ord could affect about 500 acres of habitat; increased maneuvering by men and vehicles on Forts Ord and Hunter Liggett would disrupt vegetation and potentially cause erosion that would disrupt an even larger area; foxhole digging and cutting of brush and tree limbs for camouflage could cause destruction of vegetation in areas of intensive use.
On-Post Population	A 40% increase in military personnel would result (from 24,858 FY 1985 to 34,870 FY 1989); about 22% would be directly assigned to the LID (-). A time lag in troop arrival and housing completion would cause the installation population (military and dependents) to fluctuate from 28,100 in 1987 to 34,200 in 1989. 5,109 family households would be on post by 1989, as would about 16,000 enlisted in barracks and 300 bachelor officers. Temporary increases at Yakima Firing Center would occur.	On-post population net increases would include about 1770 military personnel and 2245 dependents (including about 810 school-age children). Civilian employee net increase would be about 130.
Land Use	630 acres of land would change; less than 1% of total post acreage. 60% increase in frequency of training could adversely affect the condition of existing ranges and maneuver areas. With increases, conflicts could arise over recreational access to the fort. Increased use at Yakima Firing Center ranges and maneuver areas would result, as would 10% increase in the use of Camp Bonneville.	Approximately 500 acres on Fort Ord would be converted to housing areas; there would be a more intensive use of the on both Forts Ord and Hunter Liggett with a significant increase in night training, particularly on Fort Hunter Liggett; access for public hunting and fishing and for cattle grazing (on Fort Hunter Liggett) would not be affected.

REVISED 1984

TABLE 4B-3 (concluded)

SUMMARY OF THE ON-POST ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE LEWIS-ORD STATIONING ALTERNATIVE

Category	Fort Lewis, Washington	Fort Ord, California
Schools	1,600 more on-post family houses would increase school age children by 1,440. 3 of the 5 on post elementary schools are at or exceeding capacity. Plans are to construct 6 additional classrooms to some of the schools. Preliminary consideration to build a new elementary school may warrent action.	The junior and senior high schools could easily accommodate the increased student load; however, a problem would exist at the elementary level. New family housing would probably be built near the one overcrowded elementary school which already buses children to one of the other schools on post. Even with busing, there would not be sufficient capacity to handle the extra load and a new school would be required.
Health Care	The new Madigan Medical Center would not be completed until 1990 or 1991. Additional troops to the post has been evaluated as a potential stress to existing staff and facilities No affect would be at subinstallations. Proposed increases in health services personnel should be adequate.	The approximate 10 percent increase in population eligible for health care should be able to be handled as at present.
Public Safety	Increases in foxholds and other hazardous refuse in training areas would be likely to result, widening the potential for more accidents by military and the public using some areas for recreation.	Present levels of law enforcement and firefighting should not be significantly affected by the increased population.
Traffic and Transportation	Increases in on-post privately-owned and military vehicle traffic.	Increases in privately-owned and military vehicle traffic at Fort Ord. Increase in number of convoys between Fort Ord and Fort Hunter Liggett.
Cultural Resources	Potential for disturbance or destruction by increased training and new construction. Complaints could arise from Native Americans on increased siltation in area waters, and noise from increased artillery fire and helicopter use. More battalion trips to Yakima would increase chances for resource disturbances; new areas would be surveyed. The archaeological Wanapums adjacent to the center ure certain locations for traditional hunting and gathering. Increased use could pose a conflict.	Potential for disturbance or destruction of cultural resource by increased training (particularly on Fort Hunter Liggett) and new construction (on Fort Ord).

1,770 military and 2,250 dependents for a total increase of 4,020. On-post civilian employment would increase by 130.

4B.6 Some construction would be undertaken as part of the stationing alternative. Major construction items are given in Appendix K.

FORT LEWIS AND THE TACOMA-OLYMPIA, WASHINGTON REGION

4B.7 This section is a description of potential impacts on Fort Lewis and its installations in Washington that could result from stationing a light infantry division minus an infantry brigade. The time frame of the analysis begins in 1984 and continues through FY 1989. During this time the 9th Infantry Division, currently at Fort Lewis will continue to undergo changes in the conversion to a High Technology Motorized Division. This and other ongoing personnel changes are included as the basis for the impact analysis; the net result is the focus of assessment.

Tacoma-Olympia, Washington Region

4B.8 Potential effects from Fort Lewis personnel growth and on-post training increases in the Seattle-Tacoma-Olympia region are described below. Construction and training activities could affect the biological environment. Off-post housing and school availability could also pose problems. The current troop phasing schedule has the light division minus assigned to the post prior to housing completions, which could result with increased off-post housing competition. Additionally, some schools in and around the post are at or exceeding capacity; increases could worsen the situation.

Biological Environment

4B.9 Disturbance to the regional biological environment could result from increases in the following activities likely to result from the proposed alternative:

- o Construction of off-post housing
- o Noise associated with increased training activities, and
- o Silt from training in fording streams and assault river crossing practices.

It has been estimated that over 22,400 housing units would be needed in the Fort Lewis region by 1989 (Frerichs, 1982; Thurston Regional

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AUG 1984

Planning Council, 1984). Most of the construction is likely to occur in Pierce County, and habitat loss would result in the conversion of undeveloped lands. Species of particular concern in the area include the rigid white topped aster, a candidate for federal listing as threatened or endangered, and overwintering bald eagle populations. No adverse effect to bald eagles is likely as their locations are relatively isolated from disturbance.

4B.10 Although measures are taken by Fort Lewis to prohibit training uses of the Nisqually river during salmon spawning season (a major food source for the eagles), an increase in these exercises, preliminarily estimated at 60 percent, could increase the likelihood of disturbance. Impacts on aquatic biota could occur during the seasons in which assault river crossings are permitted, and other biota downstream could be adversely affected.

Demography

4B.11 By 1989 there would be a 40 percent increase (over FY 1983) in military personnel at Fort Lewis from the proposed stationing activity and other ongoing personnel changes; from 24,858 in FY 1983 to 34,867 in FY 1989 (U.S. Forces Command, 1984b). There would be a corresponding 16 percent increase in civilian personnel which is expected to come from existing labor pools (Table 4B-4) (Crane, 1984). Total authorized military and dependent population associated with the fort would increase from 58,775 in FY 1983 to about 78,900 in FY 1989. During the same period military families would increase from about 12,400 to 17,600, single enlisted would grown from 11,700 to about 16,100 and there would be about 1,100 bachelor officers up from about 700 (U.S. Forces Command, 1984b). Total manpower authorized for Fiscal Years 1984-1989 is shown for all activities on the post (Table 4B-4); actual manpower is generally about 80 percent of that authorized (Giambruno, 1984).

4B.12 As indicated by Table 4B-4 military personnel directly assigned to the new division minus would all be on post by the end of FY 1987. Since housing units planned for the activity would not be completed until FY 1989 (U.S. Forces Command, 1984b), off-post military population would be higher between 1987 and 1988 than in 1989 but would decline once on post accommodations were available. By the end of FY 1987 over 13,700 military families could require off-post housing for a total off-post military and dependent population of almost 48,000, an increase of about 45 percent over 1983. On post there would also be a shortage of 3,350 adequate barracks space for the enlisted but it is likely that they would remain on post in some of the 12,400 substandard units (which cannot be made adequate) which could be upgraded and used as temporary shelters for single enlisted and officers (Russell, 1984). Some of

Planning Council, 1984). Most of the construction is likely to occur in Pierce County, and habitat loss would result in the conversion of undeveloped lands. Species of particular concern in the area include the rigid white topped aster, a candidate for federal listing as threatened or endangered, and overwintering bald eagle populations. Possible adverse effect to bald eagles would be identified through Section 7 consultation with the U.S. Fish and Wildlife Service.

4B.10 An increase in river exercises, preliminarily estimated at 60 percent, would increase the likelihood of habitat disturbance. Adverse impacts on aquatic biota could occur from increased sediment. Further, an increased risk of fuel spills or leaks would be likely, possibly resulting in adverse effects to the aquatic environment. Although sediment traps, hatchery maintenance and scheduling activities as identified in the DEIS are not currently employed, the measures could be used to offset potential adverse effects.

Demography

4B.11 By 1989 there would be a 40 percent increase (over FY 1983) in military personnel at Fort Lewis from the proposed stationing activity and other ongoing personnel changes; from 24,858 in FY 1983 to 34,867 in FY 1989 (U.S. Forces Command, 1984b). There would be a corresponding 16 percent increase in civilian personnel which is expected to come from existing labor pools (Table 4B-4) (Crane, 1984). Total authorized military and dependent population associated with the fort would increase from 58,775 in FY 1983 to about 78,900 in FY 1989. During the same period military families would increase from about 12,400 to 17,600, single enlisted would grown from 11,700 to about 16,100 and there would be about 1,100 bachelor officers up from about 700 (U.S. Forces Command, 1984b). Total manpower authorized for Fiscal Years 1984-1989 is shown for all activities on the post (Table 4B-4); actual manpower is generally about 80 percent of that authorized (Giambruno, 1984).

4B.12 As indicated by Table 4B-4 military personnel directly assigned to the new division minus would all be on post by the end of FY 1987. Since housing units planned for the activity would not be completed until FY 1989 (U.S. Forces Command, 1984b), off-post military population would be higher between 1987 and 1988 than in 1989 but would decline once on post accommodations were available. By the end of FY 1987 over 13,700 military families could require off-post housing for a total off-post military and dependent population of almost 48,000, an increase of about 45 percent over

1983. On post there would also be a shortage of 3,350 adequate barracks space for the enlisted but it is likely that they would remain on post in some of the 12,400 substandard units (which cannot be made adequate) which could be upgraded and used as temporary shelters for single enlisted and officers (Russell, 1984). Some of

TABLE 4B-4

MANPOWER PHASING AT FORT LEWIS WITH A LIGHT DIVISION MINUS AN INFANTRY BRIGADE AND OTHER ONGOING PERSONNEL CHANGES FISCAL YEAR 1983 THROUGH 1989

Fiscal Year (End)	Total Personnel			Direct Light Infantry Division (-) Personnel	
	Officers	Enlisted	Civilians	Officers	Enlisted
1983	2,782	22,076	4,067	---	---
1984	3,025	23,023	4,132	18	33
1985	3,434	23,097	4,320	232	1,087
1986	3,786	25,746	4,485	412	3,355
1987	4,325	29,850	4,656	876	6,773
1988	4,378	30,123	4,676	---	---
1989	4,428	30,439	4,699	---	---

Source: U.S. Forces Command, 1984b.

SUPERSEDED
AUG 1984

the E7 and above ranks, though, would be likely to choose off-post housing in the face of available but substandard units on post. By the end of FY 1989 a total of almost 79,000 military plus dependents would reside on and off post. Off-post families would decline to about 12,500 or about 44,000 individuals, an increase of about 33 percent over FY 1983 (as reported by the Fort Lewis Office of Public Affairs, 1984). Approximately 22 percent of the Fort Lewis associated population would directly result from the new light infantry division minus.

4B.13 Projections for Pierce and Thurston counties for 1990 yield a combined population of almost 759,000 (Tacoma-Pierce Co. Chamber of Commerce, 1981; Thurston Regional Planning Council, 1984) (Table 4B-5). Fort Lewis military personnel and dependents would constitute about 10 percent of the two county population by 1990, an increase of 1 percent over the current level.

4B.14 Based on the current distribution of off-post personnel the 12,500 families that may have to reside off post by year end FY 1989 under the proposed alternative would mostly reside in Pierce County. If adequate, affordable housing were available, an estimated 10,600 families might live in Pierce, 1,275 families in Thurston and the remaining would live elsewhere. It is likely that communities currently occupied by Fort Lewis families would experience growth first. These major communities are: Spanaway-Parkland, Lakewood-Steilacoom, and Tacoma in Pierce County and the Lacey, Olympia, Tumwater area in Thurston County. To the south of the fort, in Thurston, Yelm and Rainier would also be likely areas for military families to settle, particularly as they are seen by local planners to be growth spots (U.S. Army Corps of Engineers, Seattle District, 1984b.)

4B.15 Other activities in the region that could add to the area's population growth would include a proposed stationing activity by the U.S. Navy. Under consideration is the stationing of up to 16 ships. The preferred alternative would be to base the operation out of Everett, Washington, about 65 miles north of Fort Lewis. However, other choices also being considered are Seattle and Bremerton. The number of military personnel would be about 10,000. By early 1988, 5 to 6 ships would be stationed, by 1991 the phasing would be complete (Doughty, 1984). If the stationing occurs in Everett it is unlikely that the population or housing around Fort Lewis would be affected, but if Bremerton or Seattle are chosen housing competition as a result of the population growth could increase.

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4B.13 Projections for Pierce and Thurston counties for 1990 yield a combined population of almost 759,000 (Tacoma-Pierce Co. Chamber of Commerce, 1981; Thurston Regional Planning Council, 1984) (Table 4B-5). Fort Lewis military personnel and dependents would constitute about 11 percent of the two county population by 1990 an increase of 2 percent over the current level.

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SUPERSEDED
AUG 1984

TABLE 4B-5

POPULATION PROJECTIONS FOR PIERCE AND THURSTON COUNTIES AND FORT LEWIS MILITARY PERSONNEL

Population	Population Projections by 1990	Percent Change Over 1983
Pierce County	599,895[a]	+18
Thurston County	158,700[b]	+19
Fort Lewis Military[c]	34,867	+40
Officers	4,428	+59
Enlisted	30,439	+38
Fort Lewis Military[d] Plus Dependents	78,930	+40

[a]Source: Tacoma-Pierce County Chamber of Commerce, 1981.

[b]Source: Thurston County Regional Planning Council, 1984.

[c]Source: U.S. Forces Command, 1984b.

[d]Derived from U.S. Forces Command, 1984b.

Land Use

4B.16 Regional land use changes that could result directly from the proposed stationing alternative would be restricted to the construction of housing units. In Pierce County alone the construction of over 20,400 units is seen to be needed by 1990 (Frerichs, 1982). If 20 percent of the off-post families in Pierce County are affiliated with the light division, then some land use changes could be attributed to the proposed activity in Pierce. An updated land use inventory is currently being prepared by Pierce County, there is no available estimate on the quantity of land for residential construction; however, an estimated 6,550 acres for commercial-industrial development was identified as vacant in 1982 (Frerichs, 1982) suggesting adequate acreage for residential development also exists.

4B.17 Zoning in the area immediately to the north of the post has been adjusted to promote construction of apartments to accommodate off-post military personnel. Similar additional development in the area could result by 1989. Zoning along the eastern and southern borders of the Fort in Pierce County is for general use; few restrictions apply (U.S. Army Headquarters, 9th Infantry and Fort Lewis, 1979).

4B.18 There are more restrictions to development in Thurston County, and land use changes due to residential development is likely to be less than in Pierce County. Minimum and maximum housing density standards for high density, medium density suburban and rural areas are established for the Lacey-Olympia areas in Thurston County where most new development associated with the fort could occur (Thurston Regional Planning Council, 1981). The northeast Thurston Sub-area is recommended to remain primarily rural. With development limitations to residential buildup in the region, it is more likely that housing construction and land use gains in residential properties would occur in the Lacey-Olympia region of Thurston. Since many areas along the military boundary in Thurston are classified as rural, not suitable to high density development, (U.S. Army Headquarters 9th Infantry and Fort Lewis, 1979) it is likely the bulk of direct land use changes would occur in Pierce County where increased development could be better accommodated.

4B.19 Indirect land use change could result in the increased development of commercial lands as the population and thus consumer needs increase. Land for commercial development is more readily available in Pierce County as the area is more conducive to high density development than in regions to the south. Over 6,550 vacant

REVISED 1984

TABLE 4B-5

POPULATION PROJECTIONS FOR PIERCE AND THURSTON COUNTIES AND FORT LEWIS MILITARY PERSONNEL

Population	Population Projections by 1990	Percent Change Over 1983
Pierce County	543,608[a]	+ 7
Thurston County	158,700[b]	+19
Fort Lewis Military[c]	34,867	+40
Officers	4,428	+59
Enlisted	30,439	+38
Fort Lewis Military[d] Plus Dependents	78,930	+40

[a]Source: Puget Sound Council of Governments 1984.

[b]Source: Thurston County Regional Planning Council, 1984.

[c]Source: U.S. Forces Command, 1984b.

[d]Derived from U.S. Forces Command, 1984b.

acres capable of commercial or industrial development were identified as available in Pierce County in 1982 (Frerichs, 1982).

Noise

4B.20 Major sources of noise in the Tacoma-Olympia area are vehicular traffic on regional highways and aircraft operations and overflights associated both with military installations (McChord Air Force Base, Fort Lewis) and commercial airports (Seattle-Tacoma). Under the proposed stationing alternative, automobile traffic noise, especially in the vicinity of Fort Lewis during peak commuting periods, will increase. Aircraft operations at McChord AFB associated with this stationing option may experience an increase of about 10 percent. Flight operations involving rotary wing aircraft may increase by 35 percent in the vicinity of Fort Lewis (Lanning, 1984).

Regional Economic Activity

4B.21 The regional economic environment extends beyond the immediate Seattle-Tacoma-Olympia area which is principally influenced by population changes, housing needs and infrastructure requirements of Fort Lewis personnel. For analysis, the following Washington State counties within a 50 miles radius of Fort Lewis have been included as the economic region: Grays Harbor, King, Kitsap, Lewis, Mason, Pierce and Thurston.

4B.22 The proposed stationing alternative would have a direct effect upon the 7 county regional economy through a net increase in on-post military and civilian employment of about 10,600 and an annual increase in purchases by the installation of $3.1 million in regionally supplied goods and services. Additional economic benefits would accrue to the region through indirect economic activity resulting from multiplier effects.

4B.23 The Economic Impact Forecast System (EIFS) has been used to estimate changes in total business volume and personal income within the region. Model outputs for these parameters associated with mission change and construction resulting from the stationing alternative are displayed in Table 4B-6. Model outputs for mission change are expressed as permanent increases which reoccur on an annual basis over the life of the stationing alternative. Outputs associated with construction are the highest estimated values which would occur for the parameters in a single year over an expected five year construction period (FY85-FY89).

4B.24 Interpretation of changes in these parameters is possible through comparison of the percent change values associated

TABLE 4B-6

ECONOMIC EFFECT OF THE PROPOSED STATIONING ALTERNATIVE ON THE SEATTLE-TACOMA-OLYMPIA REGION[a]

Category	Highest One-Time Annual Change Due to Construction		Recurring Annual Change Due to Proposed Stationing		Rational Threshold Value	
	Amount of Change	Percent Change	Amount of Change	Percent Change	Negative	Positive
Total business volume	$200,182,000	+.55	$341,868,000	+.94	-8.5	8.6
Local personal income	$ 62,497,000	+.28	$305,833,000	+1.39	-5.4	5.3
Employee equivalent[b]	2,581	+.33	13,753	+1.75	-5.2	5.8

[a]All changes in 1984 dollars.

[b]Added personal income is equivalent to the average annual salaries of the number of persons shown.

SUPERSEDED
AUG 1984

with each parameter and the rational threshold value (RTV). Percent change value is that fraction of the regional total for a parameter that is attributable to the stationing alternative. The RTV is the maximum historical percentage fluctuation from yearly average change rates for each parameter. Percent change values which approach or exceed RTV values for one or more parameters may be considered as regional stress equal to or greater than that experienced over the period for whch the RTV has been calculated (1965-1978). Comparison of the percent change and RTV values in Table 4B-6 shows that under the worst case of stationing a division minus at Fort Lewis no significant impact would be likely because the Rational Threshold Values are well within historical fluctuation. A printout of the EIFS model inputs and outputs and a brief explanation of the model is found in Appendix F.

Air Quality

4B.25 Impacts to regional air quality associated with this stationing alternative would result primarily from vehicular traffic, both on and off post, and increased stationary combustion source emissions. The Tacoma-Olympia area is generally considered a Class II Prevention of Significant Deterioration (PSD) area. Licensing of stationary emission sources will therefore be required, and air quality standards must be met. As fuels use increases, conversion of existing stationary thermal plant capacity to natural gas and/or replacement of some older facilities with new units would help assure that the ambient air quality of the region would not be significantly impacted.

Water Supply

4B.26 In the predominantly developed areas of Pierce County, water is provided principally from wells through community distribution systems. Only the City of Tacoma utilizes surface water as its principal water source. Most community water supplies in Pierce County are considered adequate to support the expected growth in regional population through the year 1990 (U.S. Army Headquarters, 9th Infantry Division; Fort Lewis, 1979). Water supply in Thurston County is totally dependent on ground-water sources, with community distribution systems in Olympia, Lacey and Tumwater only. In the remaining rural areas, private wells supply individual dwellings and a few small community areas (trailer parks). Although ground-water supplies in these areas of Thurston County are generally considered adequate for present demand levels, increases in residential and commercial development, including increases in population associated with actions at Fort Lewis, may be limited by water supply. Increased population density in rural areas of Thurston County may also impact ground-water quality since

these areas utilize septic field systems exclusively for wastewater management (U.S. Army Headquarters, 9th Infantry Division, Fort Lewis, 1979).

Wastewater Disposal

4B.27 The developed areas of Pierce County are served by community wastewater collection systems. Recent expansion of the Lakewood/Spanaway area system will provide collection capacity in excess of expected growth. Also, the City of Tacoma treatment system has excess capacity. Growth in regional population associated with the proposed stationing alternative at Fort Lewis may be expected to reduce the excess capacity of regional systems at a slightly higher rate than presently projected. Wastewater management in northeastern Thurston County is accomplished entirely through septic field systems. Increased population density in this area would increase wastewater loadings and could potentially threaten ground-water quality.

Solid Waste Disposal

4B.28 Solid waste in the southeastern Puget Sound area is generally collected by private collection companies and disposed of at community-owned or private landfills. Capacities and design lifetimes of these regional landfills vary widely. As existing landfills reach their limits, some are being expanded and other alternative sites are being developed. Increases in regional population associated with the proposed stationing alternative at Fort Lewis can be expected to increase the rate of landfill capacity usage and accelerate the need for new facilities.

Housing

4B.29 By year end FY 1987 over 13,700 Fort Lewis military families could require off-post housing; an increase of 4,300 over the 1983 levels reported by the Fort Lewis Office of Public Affairs (1984). By FY 1989, the number of families would decrease to about 12,500; 3,100 more than in 1983. Affordable housing vacancies in the 50 mile radius of the Fort could fall short of the 1987 demand. In practice when these situations occur in developed, urban-suburban settings such as the Seattle-Tacoma area, some troops would arrive temporarily unaccompanied by their families or families would accompany the soldier and affordable housing would be sought farther away from the military installation (Russell, 1984). The current housing inventory of available units in the Fort Lewis region excludes consideration of housing in the immediate vicinity of Seattle. It is likely that many families choosing to accompany the married troops by year end FY 1987 would choose to reside farther

with each parameter and the rational threshold value (RTV). Percent change value is that fraction of the regional total for a parameter that is attributable to the stationing alternative. The RTV is the maximum historical percentage fluctuation from yearly average change rates for each parameter. Percent change values which approach or exceed RTV values for one or more parameters may be considered as regional stress equal to or greater than that experienced over the period for whch the RTV has been calculated (1965-1978). Comparison of the percent change and RTV values in Table 4B-6 shows that under the worst case of stationing a division minus at Fort Lewis no significant impact would be likely because the Rational Threshold Values are well within historical fluctuation. A printout of the EIFS model inputs and outputs and a brief explanation of the model is found in Appendix I.

4B.24a It is likely that some of the civilian jobs created as a result of the stationing activity could be filled be spouses of incoming military personnel. As described in Appendix L about 36 percent of the spouses of Army enlisted men and 35 percent of Army officer spouses are members of the civilian workforce (Doering and Hutzler, 1982).

Air Quality

4B.25 Impacts to regional air quality associated with this stationing alternative would result primarily from vehicular traffic, both on and off post, and increased stationary combustion source emissions. The Tacoma-Olympia area is generally considered a Class II Prevention of Significant Deterioration (PSD) area. Licensing of stationary emission sources will therefore be required, and air quality standards must be met. As fuels use increases, conversion of existing stationary thermal plant capacity to natural gas and/or replacement of some older facilities with new units would help assure that the ambient air quality of the region would not be significantly impacted.

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remaining rural areas, private wells supply individual dwellings and a few small community areas (trailer parks). Although ground-water supplies in these areas of Thurston County are generally considered adequate for present demand levels, increases in residential and commercial development, including increases in population associated with actions at Fort Lewis, may be limited by water supply. Increased population density in rural areas of Thurston County may also impact ground-water quality since

away from the post either in the Seattle vicinity, or in the rural areas to the south and west of the fort. Individuals moving into the area who would not be connected to stationing alternative could find a tight affordable housing market in which to compete. Once the 1,600 family housing units are completed on post, the supply within the standard radius considered should be adequate.

4B.30 Pierce County Housing Projections. Long range housing demand estimates have been developed by Pierce County planning officials. Total year round housing units in 1983 amounted to about 124,300 in Pierce (U.S. Army Headquarters I Corps and Fort Lewis, 1984) while a projected need for 144,700 units has been established for the year 1990 by county planners (Frerichs, 1982). About 20,400 units would have to be constructed by 1990 to meet the expected demands in the county. If 85 percent of the 3,100 additional families that could reside off post followed current patterns and lived in Pierce County, by FY 1989 they would represent about 13 percent of the project housing needs that year. The influence on housing from the light infantry division would be about two percent of that which is needed by 1990. Pierce County is currently upgrading the sewer system in the dense area around Fort Lewis, and adequate utilities would be likely for new housing construction (Woutila, 1984).

4B.31 Thurston County Housing Projections. Thurston County planners have projected an additional housing need of about 2,300 units between 1983 and 1985 (Thurston Regional Planning Council, 1984). If the current pattern of military family residency continues about 10 percent or 310 additional military families by year end FY 1989 could locate in Thurston County. This would represent about 13 percent of the projected units needed by 1985. Residential development in some areas of Thurston County would be more restricted than those in Pierce, because residences rely more on well water and septic fields which is less condusive to large scale residential development than the existing utility systems available in Pierce.

4B.32 Other activities in the region that could add to housing competition for affordable units would be the proposed stationing of up to 16 Navy ships with about 10,000 military personnel phased in by 1991. The bulk would arrive in 1988 (Doughty, 1984). The preferred location is Everett Washington about 65 miles north of Fort Lewis. If this alternative is chosen it is unlikely that the area around Fort Lewis would be affected. However, two other alternatives include Seattle and Bremerton. If the choice is made to base the ships out of the latter locations increased competition for affordable housing, particularly in 1988 is possible.

Schools

4B.33 If the light infantry division minus were stationed at Fort Lewis about 15,800 school age children could be affiliated with military personnel living in and around the post by FY 1989; a 40 percent increase over FY 1983. The projected 1989, student population, with the stationing activity represents about 14 percent of the current combined student enrollment in Pierce and Thurston counties. Presently, several school districts around the fort are operating at or exceeding capacity, particularly at elementary schools. They include the following: Bethel, Clover Park, Tacoma, and North Thurston. The Bethel district is at or exceeding capacity at the elementary and junior high levels; Clover Park and the Tacoma districts have capacity problems at the elementary level, while the North Thurston district is tight at all levels. Any additional student enrollment at these overburdened facilities could further stress educational resources. However, individuals at the North Thurston district believe that classroom space for students affiliated with the light infantry division minus could be accommodated given adequate warning of an increase in personnel (Moffatt, 1984).

4B.34 The Clover Park and North Thurston districts, with a combined enrollment of about 20,600, are particularly influenced by Fort Lewis population and students (U.S. Army Headquarters 9th Infantry Division and Fort Lewis, 1979). Clover Park is also responsible for administering the 5 on-post elementary schools. Both of these school districts have plans to expand or construct more educational space, if needed, (see Chapter 3) over the next few years. Clover Park, currently plans to add 10 more elementary classrooms at 2 schools on post and Instructional Material Centers at all on-post schools. There is a long range possibility that a new elementary school could also be constructed on the installation (Watson, 1984).

4B.35 The North Thurston district has recently submitted a funding request to construct a new elementary and new high school for a total of 1,800 more students. A determination for the need of new facilities would be based on a consideration of all growth projections in the area including stationing activities. Plans to construct new facilities could be activated if the growth projections warrant the action. Although few capacity problems currently exist at the Junior High and High School levels, problems may arise in the long term as the elementary school age children advance to the higher levels.

Health Care

4B.36 The increase in personnel expected at Fort Lewis by FY 1989 would not be likely to stress existing health care facilities since many hospitals in the region have adequate unused capacity.

Cultural Resources

4B.37 There is a potential for disturbance or destruction of cultural resources due to private residential or commercial development resulting from the stationing alternative.

Fort Lewis Washington

4B.38 Potential effects from stationing a light infantry division minus at Fort Lewis are described below. Effects on the biological and physical environment could result from a significant increase in a variety of training activities. Preliminary estimates indicate many training exercises could increase by as much as 60 percent (Lanning 1984). Effects on housing and on-post schools would also be likely. Currently under this alternative all the troops associated with the division minus would be on post by year end FY 1987 while housing accommodations would not be available until FY 1988 (U.S. Forces Command, 1984b).

Geology, Minerals, and Soils

4B.39 Impacts at Fort Lewis would be limited to soil disturbance and erosion associated with construction activities and increased training area utilization. Construction impacts would most likely be centered at North Fort Lewis, the Gray Army Airfield and, to a lesser extent, in the training range areas of the post. At North Fort Lewis, construction impacts would result from removal of some existing structures and construction of new barracks. Approximately 1,600 units of family housing are also estimated for construction, and these most likely would be built on previously undeveloped land. It is estimated that construction at Gray Army Airfield could include 216,1000 sq. ft. of aviation hangars and 43 acres of aviation parking aprons. The aviation parking aprons may be constructed on previously undeveloped lands (Fort Lewis, Office of Comptroller, 1984; Glover, 1984). Additional training ranges planned under this stationing action could encompass approximately 184 acres (Daniels, 1984).

4B.40 With the stationing of the light infantry division minus an infantry brigade at Fort Lewis, training activities are estimated to increase overall by about 60 percent. Specific training

activities which can result in soil disturbance include fording of streams and assault river crossings, barrier construction and removal, foxhole digging and vehicle (tracked, wheeled) use. Under this proposed alternative, assault river crossings, barrier construction and foxhole excavation could increase by 60 percent. An existing policy at Fort Lewis requires that foxholes and other excavations be refilled on completion of training exercises. Tracked vehicle use at Fort Lewis would remain the same. Wheeled vehicle use would increase, but soil disturbance would be minimal since these vehicles principally use existing roads on the post (Lanning, 1984).

Biological Environment

4B.41 The major sources of potential disturbance to the biological environment of Fort Lewis would include facility construction (Appendix F), increases in training involving river crossings, wheeled vehicle use, camouflage use, foxhole and latrine digging, pyrotechnic ammunition use, barrier preparation and demolition, airmobile operations, artillery practice (night and day) and increases in standard training exercises. Preliminary estimates indicate that many of these activities could increase by 60 percent, however, there would be no increase in tracked vehicle use (Lanning, 1984).

4B.42 Terrestrial Ecosystems. Depending on the location of construction that could occur on previously undeveloped land, portions of the following types of habitats could be altered or lost, however, estimates indicate less than 1 percent of the fort's area would be affected:

- o forests of variable density, dominated by Douglas fir,
- o prairies and grasslands, and
- o open fields or previously harvested forest land.

Forest areas that could be cleared might include portions of new Beachwood in the North Fort, and potential expansion areas could be to the north of the Gray Army Airfield.

4B.43 Disturbance to terrestrial fauna could result from construction activities particularly in undeveloped areas. Increases in the activities listed above could interfere with existing flora and fauna. New construction could result in the loss of varied habitats; up to 630 acres of previously undeveloped property could be altered (Appendix F), less than 1 percent of fort property. Disturbance due to construction noise and increases in artillery and small arms firing would occur during the day and at night.

SUPERSEDED
AUG 1984

4B.44 Aquatic Ecosystems. Siltation from construction site erosion and increased training in assualt river crossings could affect aquatic biota on and off post. River crossings are prohibited during salmon spawning, but during periods when crossings would occur, turbulance-producing activities could increase by an estimated 60 percent (Lanning, 1984). Sediment traps are currently used as a mitigative measure.

4B.45 Threatened and Endangered Species. Vegetation of particular concern at the fort is the rigid white topped aster a candidate for federal listing under the Endangered Species Act. The threatened bald eagle is also found on post; however, due to the relatively isolated location of eagle nests and overwintering sites, no adverse effects to this species are likely on Fort Lewis, but potential adverse effects to bald eagles are possible at the Yakima Firing Center if the 9th Infantry Division training is displaced from the fort.

On-Post Population

4B.46 By 1990, under the proposed alternative, there would be a 40 percent increase (over FY 1983) in military personnel at Fort Lewis from 24,858 in FY 1983 to 34,867 in FY 1989. The number of officers would increase by 59 percent, enlisted by 38 percent (Table 4B-5). Of the total personnel in 1990 about 20 percent of the officers would be assigned to the new light infantry division minus as would about 22 percent of the enlisted troops. Although personnel assigned to the division minus would be on post by the end of FY 1987, housing accomodations for them would not be available until FY 1989. Based on available housing, the on-post population (military and dependents) would thus increase from about 28,100 in 1987 (assuming about 3,300 spaces in substandard barracks are made livable, and are used) to about 34,200 by 1989 (based on U.S. Forces Command, 1984b). During the day time, with the 4,700 civilian employees the working population would be about 39,570.

4B.47 By FY 1989, adequate family housing would be available for 5,109 households, leaving 12,500 families living off post in the surrounding area.

Land Use

4B.48 Land use changes in acreage and in frequency of use would result under the proposed alternative. Construction of new facilities and intensified use of training areas could increase erosion, disturb wildlife, interfere with recreational activities and disturb cultural resources. The type and magnitude of land use changes are described below.

4B.49 Construction of new facilities needed for a light infantry division minus would result in the conversion of previously undeveloped land on Fort Lewis (Appendix F), but it would be less than 1 percent of the total installation acreage. Major projects that could be constructed on undeveloped property and the approximate acreage needed includes the following:

- o 1,600 family housing units - 380 acres (Glover, 1984)
- o Aviation Parking Apron - 43 acres
  Adjacent to currently existing Gray Army Airfield
- o Vehicle Maintenance Shops - 23 acres
- o Training facilities - 184 acres
  Mostly small arms ranges (Daniels, 1984)

4B.50 Many of the structural additions listed in Appendix F would be constructed in currently developed areas, in some cases on sites now occupied by dilapidated buildings (Glover, 1984). Any additions to schools on post that may be required could affect adjacent land use. If a new school is constructed, several acres would be converted. Although construction sites have not been determined, new large scale facilities such as housing and training areas would probably be concentrated in the North Fort; the area north of Interstate 5 (Glover, 1984; Daniels, 1984). It is likely that most family housing units, for instance, would be built in the Beechwood area (Glover, 1984). New enlisted barracks would also be placed in the North Fort except much of the construction would take the place of existing, inferior buildings.

4B.51 Expansion of the Gray Army Airfield could require a realignment of Pendleton Avenue (Glover, 1984). Any new areas disturbed by the expansion activities would be adjacent to existing development.

4B.52 Effects of Increased Training on Land Use. Training areas would continue to be used for most of the same activities now practiced by the 9th Infantry Division. If the new light infantry division minus is stationed at Fort Lewis most if not all of the training exercises currently performed by the 9th Infantry Division would be displaced to the Yakima Firing Center (U.S. Forces Command, 1984b). The new light division principally would use training facilities at the Fort, but would also travel to Yakima regularly for certain exercises. It has been estimated that most regularly conducted exercises at Fort Lewis could increase in frequency (not area) by as much as 60 percent; examples of these exercises are listed below (Lanning, 1984):

4B.44 Aquatic Ecosystems. Siltation from construction site erosion and increased training in assualt river crossings could affect aquatic biota on and off post. During periods when river crossings would occur, turbulance-producing activities could increase by an estimated 60 percent resulting in increased sedimentation (Lanning, 1984). Further, an increased risk of fuel spills or leaks would be likely, possibly resulting in adverse effects to the aquatic environment. Although sediment traps, hatchery maintenance and scheduling activities as identified in the DEIS are not currently employed, use of such measures could reduce potential adverse effects.

4B.45 Threatened and Endangered Species. Vegetation of particular concern at the fort is the rigid white topped aster a candidate for federal listing under the Endangered Species Act. The threatened bald eagle is also found on post. Identification of potential impacts to the eagles will be made during consultation with the U.S. Fish and Wildlife Service. Potential adverse effects to bald eagles are possible at the Yakima Firing Center if the 9th Infantry Division training is displaced from the fort.

On-Post Population

4B.46 By 1990, under the proposed alternative, there would be a 40 percent increase (over FY 1983) in military personnel at Fort Lewis from 24,858 in FY 1983 to 34,867 in FY 1989. The number of officers would increase by 59 percent, enlisted by 38 percent (Table 4B-5). Of the total personnel in 1990 about 20 percent of the officers would be assigned to the new light infantry division minus as would about 22 percent of the enlisted troops. Although personnel assigned to the division minus would be on post by the end of FY 1987, housing accommodations for them would not be available until FY 1989. Based on available housing, the on-post population (military and dependents) would thus increase from about 28,100 in 1987 (assuming about 3,300 spaces in substandard barracks are made livable, and are used) to about 34,200 by 1989 (based on U.S. Forces Command, 1984b). During the day time, with the 4,700 civilian employees the working population would be about 39,570.

4B.47 By FY 1989, adequate family housing would be available for 5,109 households, leaving 12,500 families living off post in the surrounding area.

Land Use

4B.48 Land use changes in acreage and in frequency of use would result under the proposed alternative. Construction of new facilities and intensified use of training areas could increase erosion, disturb wildlife, interfere with recreational activities and disturb cultural resources. The type and magnitude of land use changes are described below.

- o Army Training and Evaluation Program (ARTEP)
- o Field Training Exercises (FTX)
- o Command Post Exercices (CPX)
- o Combined Arms Live Fire Exercises (CALFEX)

Increases in some specific activities could contribute to problems of erosion, wildlife distrubance, and destruction of potential cultural resources. Some of the potentially disruptive activities expected include the following:

- o Camouflage use - (current policy prohibits cutting trees except the lower branches of some conifers)
- o Foxhole/Latrine digging
- o Pyrotechnic Ammunition use
- o Wheeled Vehicle Use
- o Barrier Preparation/Demolition
- o Fording Streams/Assault River Crossings

There would be no increase in tracked vehicle use (Lanning, 1984).

4B.53 An increase in training activities and development of new areas could curb some current recreational uses of the fort enjoyed by off duty military and area wide civilians. Extensive areas are currently used for hunting and fishing.

4B.54 Conflicts and/or Inconsistent Land Use Plans. Existing land use conflicts described in Chapter 3 would be likely to continue under the proposed alternative. However, there are no land use plans at Fort Lewis inconsistent with local, state or national plans (U.S. Army Headquarters, 9th Infantry Division and Fort Lewis, 1979).

Noise

4B.55 Primary noise impacts associated with this stationing alternative would result from artillery training and air mobile exercises (involving helicopters), and secondary noise impacts from increased small arms firing on existing and new training ranges.

4B.56 Artillery-related noise impacts are expected to change considerably at Fort Lewis as a result of the proposed action. Presently, virtually all artillery training on the post is conducted by units of the 9th Infantry. The primary artillery weapon used by the 9th is the M198, 155mm howitzer, which has recently displaced

the smaller M-102, 105mm howitzer. The proposed light infantry division utilizes the 105mm howitzer as its primary artillery weapon. To accommodate the light infantry division minus an infantry brigade at Fort Lewis, units of the 9th Infantry Division will train increasingly at Yakima Firing Center (YFC). Firing of the M198 at Fort Lewis would, therefore, decrease significantly, or could be eliminated entirely. A recent study prepared by the U.S. Army Environmental Hygiene Agency which compared noise effects of the two weapons stated that each 155mm high explosive (HE) round will have the same effect, on average, as three 105mm HE rounds. Considering this three to one ratio of the 105-mm to 155-mm rounds, artillery impact noise intensity could be significantly reduced at Fort Lewis as units of the 9th Infantry train increasingly at Yakima Firing Center. Most noise complaints at Fort Lewis have been as a result of 155mm howitzer firing (Lanning, 1984).

4B.57 In addition to the 105mm howitzer, the light infantry division would use and train with a 4.2-inch mortar. This weapon is considerably quieter than the 105mm howitzer, so increased use would have minimal impacts (Lanning, 1984).

4B.58 Under this alternative, use of rotary wing aircraft is expected to increase by about 35 percent. This factor would be applied to all rotary wing operations including those at Gray Army Airfield. Transport aircraft (C-130, C-141) are seldom if ever used at Fort Lewis. Troops usually go to nearby McChord Air Force Base (AFB) for exercises involving transport aircraft, or utilize an on-post fuselage simulator for training. For those exercises which will require flight operations with transport aircraft, an increase of 10 percent is estimated for this alternative. This increase in flight operations would occur at McChord AFB (Lanning, 1984).

4B.59 Other training activities, principally those involving small arms, demolition and grenade training on both existing and new ranges, are also expected to increase by about 60 percent (Lanning, 1984). Increases in both off-post and on-post noise levels as a result of this stationing alternative cannot be determined until a detailed training schedule has been established for the light infantry division minus an infantry brigade. Should the light division minus the infantry brigade be stationed at Fort Lewis, simulation modeling of noise effects would be conducted as part of the Army's ongoing noise assessment program.

Air Quality

4B.60 Air emissions at Fort Lewis would be affected under this stationing alternative primarily from increases in automobile and military vehicle traffic, flight operations and training activity.

4B.61 Vehicular occupancy rate data collected in 1981 and reported in the Military Traffic Management Command (MTMC) Traffic Engineering Study for Fort Lewis (Hendrix and Brickhouse, 1982) indicate that the vehicle occupancy ratio (VO) for Fort Lewis was 1.24 as compared to the national average 1.37 for army posts. Using these two vehicle occupancy ratios and applying them to the projected net totals of off-post personnel commuting to Fort Lewis by 1989 (4,700 civilians; 12,500 off-post military family personnel) results in a total of about 13,900 vehicles (1.24 VO) at the present rate, or 12,500 vehicles (1.37 VO) based on the national average rate for military posts. These estimates represent increases of about 27 percent (1.24 VO) and 15 percent (1.37 VO) over current FY 1983 levels. Emissions loading at Fort Lewis resulting from community vehicles would, therefore, increase proportionately.

4B.62 Air emissions loading increases from on-post activities would result primarily form increased flight operations, military vehicle use and increases in the number of automobiles owned by personnel on post. Rotary wing aircraft operations are estimated to increase by approximately 35 percent. Military vehicles (wheeled) on-post would increase in number by 1,334, or about 20 percent. Privately owned vehicles on post resulting from increases in resident population are more difficult to estimate since vehicle ownership rates differ significantly according to population segment (enlisted, officers, married, families). All married military personnel are assumed to have 1.6 cars per family, bachelor officers are assumed to own one car, and half of the unmarried enlisted personnel are assumed to own one car (U.S. Army Corps of Engineers, 1978). Under this stationing alternative, 5,109 families, 302 bachelor officers and 16,007 enlisted men would be on post by 1989. A total of approximately 16,000 privately owned automobiles are anticipated at Fort Lewis. Emissions loadings (carbon monoxide, nitrogen oxide) would, therefore, increase in proportion to this addition.

4B.63 Stationary emissions at Fort Lewis arise principally from oil and gas-fired boilers which are used for space heating and hot water supply. Based on the present (FY 1983) fuel mix at Fort Lewis, fuel oil consumption could increase by 6.5 million gallons, natural gas by 0.8 million therms and propane by 16,614 gallons. Overall fuel use would increase by about 64 percent over present levels. Emission loadings from stationary sources on-post could, therefore, increase proportionately.

4B.64 Presently, Fort Lewis is undertaking a fuel switching program to decrease use of liquid fuels (numbers 2, 4, 6 fuel oil) and replace them with natural gas for stationary use. Increased use of natural gas would contribute to a decrease in emissions from

existing stationary facilities. Also, some older boiler capacity is being replaced with newer, more efficient units (Flood, 1984).

Water Supply

4B.65 Supplies of potable and irrigation water at Fort Lewis are considered adequate for all planned and proposed stationing actions through 1990. The only anticipated impact on water usage is some curtailment of irrigation during the summer months to assure that water supplies are adequate for fire protection purposes (Flood, 1984). Current plans call for construction of a new water treatment plant in 1988 to reduce corrosivity of water, and addition of 1.9 million gallons of storage capacity to meet full mobilization requirements.

Wastewater Disposal

4B.66 The wastewater treatment system at Fort Lewis includes a primary and secondary treatment plant with sufficient capacity to serve a community of 75,000 people (Flood, 1984). The system serves Fort Lewis, DuPont, Camp Murray and McChord AFB. Current projections for on-post population growth by 1990 indicate a total on-post daytime working population at Fort Lewis of 39,570 plus a potential maximum number of dependents of 12,800 (U.S. Army Forces Command, 1984b). The present on-post daytime population of McChord AFB is 7,492, and no significant net change in population is expected at McChord (Stokes, 1984). The population of DuPont is 599 (Pierce County Planning Department, 1983). With a total projected population of approximately 60,000, treatment capacity would be adequate. Reduction of infiltration, which is presently being accomplished through repair and replacement of existing collector lines, would help assure that plant hydraulic capacity will not be exceeded (Jones and Stokes, 1984).

Solid and Hazardous Waste Disposal

4B.67 Non-hazardous solid waste from Fort Lewis and McChord AFB are landfilled on a 180-acre site at the northern boundary of the post near the City of DuPont. Upon completion of an upgrading program to provide improved ground-water management (lining, leachate collection and treatment), the facility will have a design life of 20 years with all projected population changes (Flood, 1984). Also, a refuse incinerator planned for construction at Fort Lewis in 1987 will extend the landfill life over 50 years through volume reduction of landfilled wastes (Flood, 1984).

4B.68 Generation of hazardous wastes associated with the proposed stationing alternative would occur primarily from vehicle

and aircraft maintenance activities. Wastes would, therefore, generally consist of lubricants, fuel, painting wastes, battery wastes, and solvents associated with these maintenance activities. Hazardous wastes at Fort Lewis are currently segregated and stored according to type. Contract services are utilized to collect, recycle and/or dispose of hazardous wastes off-site. A 1983 study prepared for the U.S. Army Toxic and Hazardous Materials Agency (Environmental Science and Engineering, Inc. 1983) concluded that hazardous material problems at Fort Lewis pertain primarily to improper storage of pesticides and potential problems associated with earlier operations on-post. No difficulties with current vehicle and aircraft maintenance activities were cited.

Housing

4B.69 If the new light infantry division minus is stationed at Fort Lewis, the 7,649 troops assigned to it would be on post by the end of FY 1987, while housing to accomodate them would not be available until FY 1989. Total troop strength at the end of 1987 would be 4,325 officers and 29,850 enlisted (U.S. Forces Command, 1984b). Housing for the following military personnel would be availabe by year end FY 1987:

- o Family units - 3,509
- o Adequate Barracks for the Enlisted - 12,473
  Substandard (cannot be made adequate) - 12,400
- o Bachelor Officer Quarters - 89

As a result of the time lag between troop arrival and housing completions, about 13,700 families, 3,350 enlisted soldiers and 990 bachelor officers would not be accomodated by adequate on post housing. The 13,700 families would have to live off post and competition for affordable housing could be high.

4B.70 By year end 1987 over 3,350 single enlisted troops and over 990 bachelor officers would not be able to live in adequate on post housing. In cases such as this some of the 12,400 substandard (unable to be made adequate) barrack spaces would probably be renovated moderately to accomodate the overflow (Russell, 1984). Currently almost 500 E1's through E3's live in unsuitable housing (Fort Lewis Housing Refferal Office, 1984).

4B.71 Competition for off-post housing could be high for any authorized enlisted and bachelor officers who would be allowed to live off post by 1987, and it is likely that the choice to remain in the substandard units temporarily would be made by many. Those who

chose to live off post might reside farther away, or pay higher costs for accommodations closer to Fort Lewis.

4B.72 New construction and renovation of barracks that would result if the new light infantry division minus a brigade were stationed at Fort Lewis would primarily take place at the North Fort; that part of the installation on the north side of Interstate 5. Prime locations for family housing units include Madigan East and Greenwood in the main fort south of I-5 and the Beechwood area in the North Fort. Most new construction is likely to occur in the North Fort area (Glover, 1984). Any construction in Greenwood would have to consider possible impacts to a potential historic district.

4B.73 Existing housing units, those currently planned for construction in the absence of the proposed activity, and construction plans with the proposed activity are listed below:

- Family Units:
  Existing and Being Constructed - 3,509
  Planned Construction for the new division - 1,600

- Barracks:
  Adequate - 11,744
  Substandard (cannot be made adequate) - 12,444
  Planned construction without the action - 726
  (Glover, 1984)
  Planned construction with the action - 3,570
  (McMenamin, 1984)

- Bachelor Officer Quarters:
  Current, adequate - 89
  Planned construction without the action - 0
  Planned construction with the action - 213
  (McMenamin, 1984)

In the event the new light infantry divison minus were stationed at Fort Lewis by FY 1989 adequate housing would be available for the following number of military plus dependents:

- 17,880 in family housing
- 16,040 enlisted troops in adequate barracks
- 302 officers in bachelor quarters

Total military strength by the end of FY 1989 is expected to total about 34,800 (U.S. Forces Command, 1984b); 17,600 which would be married personnel, 16,100 single enlisted and about 1,100 bachelor officers. By 1989, housing deficits on post would exist for 12,500 families, about 60 single enlisted troops and about 800 bachelor officers. Off-post

SUPERSEDED
AUG 1984

families would live in the surrounding communities, excess enlisted troops would probably reside on post in some converted substandard units (Russell, 1984) or in space adapted for more than one. Bachelor officers would be likely to reside off post. Competition for affordable family housing between FY 1987 and 1988 could be high; however, once on-post housing is available, the current status quo would likely be reached.

Schools

4B.74 With the addition of 1,600 family units on post due to the stationing of the light infantry division, the number of school age children would increase by 1,440. Currently, 3 of the 5 on-post elementary schools are at or over capacity; the other two schools have space for almost 100 students. Current plans call for the renovation of several buildings and 10 additional classrooms at two of the schools. Preliminary consideration is also being given for the construction of a new elementary school on post (Watson, 1984). The increase of elementary school age children would further tax existing resources, and the construction of a new elementary school under the administration of the Clover Park district could be warranted.

4B.75 It has been estimated by the Educational Services Division on the post (Vance, 1984) that in addition to the 34 buildings currently operated by the service 10 to 12 more classrooms could be required to teach troops under the proposed stationing alternative.

Health Care

4B.76 The new Madigan Army Medical Center should have adequate space and personnel to accommodate Fort Lewis personnel when complete in 1990 or 1991. It has been determined that the present staffing and budget, though, would not be able to support workload increases associated with the stationing activity (Fort Lewis Office of the Comptroller, 1984). The addition of about 290 health services and other support personnel (U.S. Forces Command, 1984b) that would accompany the stationing should, however, be adequate for workload increases.

Public Safety

4B.77 An increase in personnel could result in an increase in area crime. Several existing safety hazards at Fort Lewis could increase under the proposed alternative. Many unfilled foxholes partially overgrown by vegetation are present in the training areas; these constitute a hazard to hunters and other members of the public walking through, as well as to troops, particularly during night exercises. The public and troops are also imperiled by abandoned barbed wire throughout

the training area; much of this barbed wire is hidden by vegetation, increasing the hazard.

4B.78 It has been estimated that there could be an increase of over 100 accidents with the stationing of the light infantry division minus at Fort Lewis, an increase of over 80 lost time injuries and an increased workload of at least 2400 manhours (Fort Lewis, Office of the Comptroller, 1984).

Traffic and Transportation

4B.79 The principal impact on transportation at Fort Lewis associated with this stationing alternative would be on vehicular traffic levels and patterns. Both on-post and off-post traffic volumes will affected.

4B.80 In terms of regional (off-post) vehicle volumes, a maximum of about 20,000 vehicles would be associated with off-post military families by 1989. This represents an increase of about 33 percent over the number of vehicles currently estimated for off-post military families (assuming 1.6 vehicles per family) (Fort Lewis Office of Public Affairs, 1984). Privately-owned vehicles on-post would total approximately 16,000 based on projected populations of families, bachelor officers and enlisted personnel in 1989. An overall total (on-post and off-post) of about 36,000 privately owned vehicles would be associated with Fort Lewis by 1989. Military vehicles (wheeled) associated with this stationing action will total about 1334.

4B.81 Peak traffic impacts can be expected during times of maximum commuter traffic. Vehicle occupancy rate data collected in 1981 and reported in the MTMC Traffic Engineering Study for Fort Lewis (Hendrix and Brickhouse, 1982) indicate that the vehicle occupancy ratio (VO) for Fort Lewis was 1.24 occupants per vehicle as compared to the national average of 1.37 for army posts. Using these vehicle occupancy ratios and applying them to estimated numbers of personnel (military and civilian) commuting to Fort Lewis, at total of about 13,900 vehicles (1.24 VO) at the present rate or 12,500 vehicles (1.37 VO) based on the national average would result. These estimates represent increases of about 27 percent (1.24 VO) and 15 percent (1.37 VO) over current (FY 1983) traffic levels. Traffic congestion at major entrances to the post (principally from Interstate 5) and on cross-post arterials would therefore increase from 15 to 27 percent from commuter traffic alone. Additional increases could also be expected from on-post vehicles moving around the post and commuting off-post.

4B.82 Recent traffic surveys (Hendrix and Brickhouse, 1982) have indicated the need for traffic pattern improvements on and around Fort

families would live in the surrounding communities, excess enlisted troops would probably reside on post in some converted substandard units (Russell, 1984) or in space adapted for more than one. Bachelor officers would be likely to reside off post. Competition for affordable family housing between FY 1987 and 1988 could be high; however, once on-post housing is available, the current status quo would likely be reached.

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Public Safety

4B.77 An increase in personnel could result in an increase in area crime. As described in Appendix M, most crimes committed by Army personnel in the continental United States are confined to the installation. Further, Army crime rates in general have been

REVISED 1984

declining. Between 1980 and 1983 the most common offenses committed by Army personnel, those against property, declined by 26 percent. Marijuana use and possession, the second most common offense declined by 64 percent, while crimes of violence, ranking third dropped 42 percent (U.S. Army Office of the Deputy Chief of Staff for Personnel, 1984). Although Army crime rates are not directly comparable to national trends, more arrests per 1000 of U.S. males 18 to 22 years versus Army personnel were made for crimes against property, drug offenses and crimes of violence in 1982. In the event of troop stationing, the actual number of crimes could increase, yet as detailed in Appendix M most of the increase probably would be concentrated on post.

4B.77a Several existing safety hazards at Fort Lewis could increase under the proposed alternative. Many unfilled foxholes partially overgrown by vegetation are present in the training areas; these constitute a hazard to hunters and other members of the public walking through, as well as to troops, particularly during night exercises. The public and troops are also imperiled by abandoned barbed wire throughout

Lewis. The proposed stationing action could accelerate the need to make these improvements.

Cultural Resources

4B.83 Numerous significant archeological resources and a National Register property have been identified at Fort Lewis and the post is considered to have a high potential for the existance of additional, as yet undiscovered, resources. Given the increased training and construction proposed under this alternative at Fort Lewis, there is a potential for impacts on significant cultural resources as well as protecting those known to exist. Authority for these actions are found in Army Regulation AR-420-40, Facilities Engineering, Historic Preservation (April 15, 1984) effective 15 May 1984. The procedures for accomplishing these measures are detailed in the Army Technical Manual TM-5-801-1, Historic Preservation-Administrative Procedures and TM-5-801-2, Historic Preservation-Maintenance Procedures. In regard to the installation, the prime limitation would be to prohibit any destruction or alteration of all or part of any significant site through whatever measures are necessary (e.g., establishment of limited-use areas). It should be noted that it is always possible for studies to miss an archaeological site, particularly one which shows little or no surface evidence of its presence. Because of this, all construction contracts must allow for this possibility by specifying that, in the event that a suspected archaeological site is encountered during construction or some other form of activity, operations in the area would be suspended until the site is investigated by a professional archaeologist. This construction contract provision is required by 32 CFR 650.192, Department of the Army, Environmental Protection and Enhancement, Peacetime Responsibilities, Historic Preservation, Archaeological Sites (March 15, 1978). Similarly, training activities that involve the use of new areas or the increased use of areas presently used may uncover evidence of archaeological sites that was not uncovered by prior studies. Officers in charge of field activities should be made aware of this possibility and inform the installation's Historic Preservation Committee of any finds so that the committee may take appropriate measures to avoid the accidental destruction of a site. Additionally, since the looting of sites by irresponsible persons can be a problem, security measures should be instituted to prevent destruction of archaeological data in this manner.

Native American Concerns

4B.84 The Nisqually Indian Reservation is adjacent to Fort Lewis along the western bank of the Nisqually River. Some homes and fishing camps are near the artillery impact area. Native American concerns have included fishing rights in the Nisqually River, and noise from practice artillery fire and helicopter flights over the Reservation

(U.S. Army Corps of Engineers, Seattle District, 1984). The Nisqually River is the principal location of assault rivers crossing exercises. There would be a substantial increase of these exercises (Lanning, 1984) possibly by as much as 60 percent. Aquatic biota in the area could be adversely affected, increasing the concern of the Nisqually.

4B.85 Other issues between Fort Lewis and the Nisqually Indians have centered around artillery fire during training. Firing into the Harden Hill/Muck Creek area concerns the Native Americans because it is a major spawning location. Resistance could be made by the group if any effort is made by the Army to enlarge the impact area or increase artillery practice (U.S. Army Headquarters, 9th Infantry Division and Fort Lewis, 1979).

4B.86 The noise and vibrations from artillery fire near the Reservation from the Ranier Training area has been objectional to the Nisqually in the past. Any additional artillery fire in the area that could arise as part of a 60 percent increase in weapons firing frequency would be likely to cause complaints. Although the frequency of artillery would increase, smaller guns would be used, lowering the noise level. The Nisqually have also objected to helicopter flights over the Reservation (U.S. Army Headquarters, 9th Infantry Division and Fort Lewis, 1979). Additional flights over the Reservation could result from a potential 35 percent increase in helicopter use fort wide.

Fort Lewis Subinstallations

4B.87 If the new light infantry division minus is stationed at Fort Lewis, most if not all of the training activities currently conducted by the 9th Infantry Division would be displaced to the Yakima Firing Center. Increased uses at the other subinstallations affiliated with Fort Lewis would also result as a consequence of this stationing alternative. Potential effects at each of the areas are described below.

Yakima Firing Center (YFC)

4B.88 Preliminary estimates indicate that under the proposed alternative, the number of battalion trips to Yakima could increase from the current level of 30 to 45 trips per year to between 45 and 68 trips per year (Lanning, 1984). Although no new training activities are likely to occur on the reservation, the frequency of existing activities would increase proportionately to the increased number of battalion trips and other on-going training exercises. Although there would be no increases in the number of tracked vehicle maneuvers, preliminary estimates indicate that artillery firing, close-in aerial support, combined firing exercises for various weapons systems, and large-scale troop

•SUPERSEDED
AUG 1984

maneuvers involving wheeled vehicles and the construction and demolition of structures would increase substantially (Lanning, 1984). The potential effects from these increases, on the biological, physical and socioeconomic/cultural environment are treated below.

4B.89 Biological Environment. The western portion of the center is the site of most maneuvers and most disturbance (U.S. Army Corps of Engineers, Seattle District, 1984c). Under the proposed alternative, disturbance could increase proportionately with a potential 50 percent increase in battalion trips. Increased erosion of the very thin soils characteristic of YFC could result from increased wheeled and foot maneuvers, vegetation destruction and from fording tributaries during exercises. The large increase in training activities would worsen problems already experienced at the installation.

4B.90 Silty runoff that would be likely to result from more frequent training could increase sedimentation of washes and streams adversely affecting aquatic biota. The principal concern here would be the potential adverse impacts on salmon and the resulting impacts on the food for bald eagles and fisheries they support.

4B.91 The bald eagle, threatened under the Endangered Species Act, and the columbia milk vetch candidate for federal listing, are the species of concern at Yakima. Vetch habitat extends along the eastern boundary of the Columbia River. It has been determined that bald eagles along the Columbia could be adversely affected with increases in training. Formal consultation with the U.S. Fish and Wildlife Service Office of Endangered Species has been initiated to further investigate the potential for disturbance. A plan to avoid significant adverse impacts to the eagles would be developed prior to troop stationing.

4B.92 The trend toward increasing military use of Yakima could lead to a general degradation of wetland areas (U.S. Army Corps of Engineers, Seattle District, 1983a). Borden Springs and areas along Hanson and Alkali Creeks are the key wetlands at the center, and are oases for wildlife in this arid region.

4B.93 In the event there is increased military use of the eastern portion of the Yakima Firing Center interference with the area's wildlife could be particularly detrimental. The eastern section is isolated and only moderate military use has occurred to date so wildlife congregates in this somewhat protected and relatively undisturbed area (U.S. Army Corps of Engineers, Seattle District, 1983a). Increased disturbance could affect a large number of plant and animal species.

4B.94 Physical Environment. Physical impacts on the environment at Yakima Firing Center under this stationing alternative would be likely from increased levels of training activity. With the light

infantry division principally using training ranges at Fort Lewis, units of the 9th Infantry Division would make increasing use of Yakima Firing Center for many of their training exercises. An increase of about 60 percent in the overall training activity levels at Yakima Firing Center is estimated under this stationing alternative. Included with this overall change are increased levels of artillery firing, particularly with the M198, 155-mm horwitzer (Lanning, 1984). Increases in noise impacts associated with these training activity levels are expected to be minimal due to the size of the reservation (263,130 acres), distances to nearby population centers and particular geographic features (U.S. Army Corps of Engineers, Seattle District, 1984c). Nevertheless, changes to the physical arrangement of facilities at Yakima Firing Center (moving the Yakima Airfield) and increases in noise-producing activities may result in changes to noise levels and areas affected around Yakima Firing Center (U.S. Army Corps of Engineers, Seattle District, 1984c).

4B.95 Soil and geologic effects would be limited to surface disturbance resulting from increased levels of vehicle activity. This disturbance, in turn, would increase exposure of the area's dry, erosion-prone soils to increased wind and water erosion effects (U.S. Army Corps of Engineers, Seattle District, 1984c).

4B.96 Air quality impacts would result from increased vehicular traffic associated with training activities. Exhaust emission and increases in suspended particulates, especially during the dry summer months, would be the principal sources. Wind and vehicle movements are the primary sources of dust at Yakima Firing Center, although it is unlikely that military exercises are responsible for overstandard particulate levels measured at adjacent monitoring stations (U.S. Army Corps of Engineers, Seattle District, 1984c).

4B.97 Potable and fire service water at Yakima Firing Center is supplied from wells. System capacity is adequate for current levels of utilization, but a recent study recommended upgrading of system capacity to a design population capacity of 6,000. Yakima Firing Center has a secondary wastewater treatment facility of sufficient capacity for current operations, but future expansion would be required to support increased troop numbers. Solid waste management at Yakima Firing Center may become a problem with the proposed stationing alternative as the expansion capability of the site is limited by high levels of soils permeability (U.S. Army Corps of Engineers, Seattle District, 1984c).

4B.98 Socioeconomic/Cultural Resources. The military effect on the socioeconomic environment around Yakima is minimal. No increases in permanent military personnel stationed at Yakima have been identified under the proposed stationing alternative. Without additional permanent personnel there would be little if any change in housing, schools and

maneuvers involving wheeled vehicles would increase substantially (Lanning, 1984). The potential effects from these increases, on the biological, physical and socioeconomic/cultural environment are treated below.

4B.89 Biological Environment. The western portion of the center is the site of most maneuvers and most disturbance (U.S. Army Corps of Engineers, Seattle District, 1984c). Under the proposed alternative, disturbance could increase proportionately with a potential 50 percent increase in battalion trips. Increased erosion of the very thin soils characteristic of YFC could result from increased wheeled and foot maneuvers, vegetation destruction and from fording tributaries during exercises. The large increase in training activities would worsen problems already experienced at the installation.

4B.90 Silty runoff that would be likely to result from more frequent training could increase sedimentation of washes and streams adversely affecting aquatic biota. Potential adverse impacts on aquatic biota could result.

4B.91 The bald eagle, threatened under the Endangered Species Act, and the columbia milk vetch candidate for federal listing, are the species of concern at Yakima. Vetch habitat extends along the eastern boundary of the Columbia River. It has been determined that bald eagles along the Columbia could be adversely affected with increases in training. Formal consultation with the U.S. Fish and Wildlife Service Office of Endangered Species has been initiated to further investigate the potential for disturbance. A plan to avoid significant adverse impacts to the eagles would be developed prior to troop stationing. If areas used by the sage grouse are needed for training or development, adverse effects to the birds are possible and a decrease in the number of birds could result. Further, training fights over Yakima Canyon could displace eagles, osprey and falcons known to nest and hunt in the region.

4B.92 The trend toward increasing military use of Yakima could lead to a general degradation of wetland areas (U.S. Army Corps of Engineers, Seattle District, 1983a). Borden Springs and areas along Hanson and Alkali Creeks are the key wetlands at the center, and are oases for wildlife in this arid region.

4B.93 In the event there is increased military use of the eastern portion of the Yakima Firing Center interference with the area's wildlife could be particularly detrimental. The eastern section is isolated and only moderate military use has occurred to date so wildlife congregates in this somewhat protected and relatively undisturbed area (U.S. Army Corps of Engineers, Seattle District, 1983a). Increased disturbance could affect a large number of plant and animal species.

4B.94 Physical Environment. Physical impacts on the environment at Yakima Firing Center under this stationing alternative would be likely from increased levels of training activity. With the light

SUPERSEDED
AUG 1984

health care needs from the existing condition described in Chapter 3. The center contributes only minimally to civilian employment in the region. Since off-post limits are imposed on military personnel in training (U.S. Army Corps of Engineers, Seattle District, 1983a) no appreciable increases in consumer purchases within the region would be likely.

4B.99 Area land use changes have not been identified at Yakima under the proposed alternative. However, if battalion trips increase by as much as 50 percent, and the frequency of training possibly up by 60 percent, effects on the condition of existing land used for training purposes and thus the resources dependent on those conditions would be likely.

4B.100 The military and general public can hunt on some 200,000 acres and fish at two ponds on Yakima (U.S. Army Corps of Engineers, Seattle District, 1983a). Conflict could arise between the military and sportsmen over access to recreation with substantial increases in training exercises.

4B.101 Cultural resources at the center include: an area which is part of the traditional territory of the Wanapum Indian Tribe used for hunting and gathering purposes an Indian burial ground; the Wa-pai-xie Archaeological District, on the National Register, and numerous other cultural resources sites (U.S. Army Corps of Engineers, Seattle District, 1983a). Increased use of training, maneuvers and impact areas would add to the potential for impact on significant archeological resources.

4B.102 Native Americans. Native American concerns focus on several traditional Wanapum villages, cemetaries and root digging grounds located on or near Yakima. Some traditional activities are conducted in the eastern portion of the center. Increased use of this area could interfere with some traditional practices. The contemporary Indians are very concerned about the preservation of their cultural activities and meaningful places (U.S. Army Corps of Engineers, Seattle District, 1983a).

4B.103 Public Safety. Public safety, a major concern at Yakima could be influenced by the estimated increases in training activities. Increases in exercises related to artillery firing, aircraft operations, industrial material use, ammunition storage, dud disposal and hunting would increase the chances of accidents. Coordination of activities to prevent conflicts is carefully controlled (U.S. Army Corps of Engineers, Seattle District, 1983a), but an increase in hazards would likely result.

Vancouver Barracks

4B.104 Vancouver Barracks, located within the City of Vancouver, Washington, is a small installation used primarily to house military reserve, National Guard and active Army Units engaged in training activities at Camp Bonneville. Due to the limited size and potential for further reduction in size, no major impacts are expected as a result of the proposed stationing alternative.

Camp Bonneville (CPB)

4B.105 Camp Bonneville, located in southwest Washington, is used by military reserve, National Guard and Active Army units for training exercises, including artillery firing, small arms, demolition and grenade training. Although it is unlikely that units of the new light infantry division proposed for stationing at Fort Lewis will train at Camp Bonneville, activities at CPB are estimated to increase by about 10 percent as various units are displaced from Fort Lewis. All impacts at CPB can therefore be expected to increase in proportion in this new activity level.

Huckleberry Creek Mountain Training Center

4B.106 This facility, located northeast of Mount Rainier National Park, is currently fully utilized, and no changes to this situation are envisioned. No impacts are expected to result from the proposed stationing alternative (Lanning, 1984).

FORT ORD AND THE MONTEREY BAY, CALIFORNIA REGION

4B.107 This section summarizes the effect that the stationing of a light infantry brigade would have on the Monterey Bay region, on Fort Ord and on Fort Hunter Liggett, a sub-installation of Ford Ord. The time frame for the environmental analysis is the period from the present (May 1984) through Fiscal Year (FY) 1989. During this time frame, another change is occurring at Ford Ord. By the end of FY 1985, the present 7th Infantry Division at Fort Ord will be converted into the first light infantry division. Many of the specific details regarding the stationing of a new light infantry division (the subject of this environmental analysis) will be developed during the conversion of the 7th at Fort Ord. For several of the impact areas described below, the basis for impact analysis is the net result or net change of all activities occuring over the time frame covered by the environmental analysis. This net change of personnel would include 1,770 military and 2,245 dependents with an addition of 130 civilian jobs on Fort Ord.

health care needs from the existing condition described in Chapter 3. The center contributes only minimally to civilian employment in the region. Since off-post limits are imposed on military personnel in training (U.S. Army Corps of Engineers, Seattle District, 1983a) no appreciable increases in consumer purchases within the region would be likely.

4B.99 Area land use changes have not been identified at Yakima under the proposed alternative. However, if battalion trips increase by as much as 50 percent, and the frequency of training possibly up by 60 percent, effects on the condition of existing land used for training purposes and thus the resources dependent on those conditions would be likely.

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4B.103 Public Safety. Public safety, a major concern at Yakima could be influenced by the estimated increases in training activities. Increases in exercises related to artillery firing, aircraft operations, industrial material use, ammunition storage, dud disposal and hunting would increase the chances of accidents. Coordination of activities to prevent conflicts is carefully controlled (U.S. Army Corps of Engineers, Seattle District, 1983a), but an increase in hazards would likely result.

Monterey Bay, California Region

4B.108 The following sections summarize the regional impacts due to the stationing of a light infantry brigade at Fort Ord. Since this alternative includes the construction of new housing on post to accommodate the additional personnel, many of the regional impacts are greatly decreased.

Biological Environment

4B.109 It is not expected that the stationing action would affect the biological environment of the Monterey Bay region. Except for the transport of troops between installations, all of the training activities would occur within the confines of the installations. The only basic change would be that troops would be marching more frequently on the roads between Fort Ord and Fort Hunter Liggett. However, this activity would occur on existing roads and not across country and would not affect the biological environment.

Demography

4B.110 Although the stationing action would produce a net population increase of approximately 10 percent on post (over present authorized strength), the additional military and their dependents would produce about a 3 percent increase in the Greater Monterey Peninsula Planning Area in which Fort Ord is located. It is expected that the net increase of permanent civilian jobs on post of about 130 would be filled primarily from the local labor pool and not result in significant inmigration. Similarly, the construction activities would produce a temporary increase in labor requirements but this also would be filled by the local labor pool or by the labor pool of a broader region. The agriculture and visitor section employment is highly seasonal and it is likely that part of the construction labor requirements could come from this source. It is also common for construction labor personnel to commute long distances to and from jobs. It is not expected that the proposed construction activities would produce any substantial inmigration of personnel.

Land Use

4B.111 The stationing action does not include any activities that would substantially affect regional land use. There would be no need to expand the present boundaries of Fort Ord or Fort Hunter Liggett and the projected new housing is to be built on post. Similarly, the air transport requirements of Fort Ord would not require any expansion or runway extension at Monterey Peninsula Airport.

SUPERSEDED
AUG 1984

Noise

4B.112 The proposed stationing alternative would potentially affect noise levels produced by two sources in the region: military aircraft use of Monterey Peninsula Airport (MPA) and vehicular traffic on major roadways. Regarding changes in use of MPA by Fort Ord units for tactical training, it is anticipated that use would increase in proportion with the increase in number of military personnel. Thus stationing of a new infantry brigade at Fort Ord would increase the brigades levels from 4 (3 infantry brigades and 1 aviation brigade for the 7th light division) to 5. Use of MPA by Fort Ord units would increase 25 percent. However, in comparison with commerical air carrier use of MPA, all military use would remain at about 1 percent of total air traffic and would not represent a significant increase in noise levels.

4B.113 Some increase in the noise level due to additional vehicular traffic on major highways in the region would be produced. The overall impact, especially on freeways such as State Highway 1, would be slight given the existing use of this road. It is doubtful that the change in noise level would alter the character of the vicinity near the post, nor would serious complaints be expected.

Regional Economic Activity

4B.114 The proposed stationing alternative would have a direct effect upon the Monterey Bay regional economy thorugh a net increase in on-post military and civilian employment of 1900 and an annual increase in purchases by the installation of about $1 million in regionally supplied goods and services. Additional economic benefits would accrue to the region through indirect economic activity resulting from multiplier effects.

4B.115 The Economic Impact Forecast System (EIFS) has been used to estimate changes in total business volume and personal income within the region. Model outputs for these parameters associated with mission change and construction resulting from the stationing alternative are displayed in Table 4B-7. Model outputs for mission change are expressed as permanent increases which reoccur on an annual basis over the life of the stationing alternative. Outputs associated with construction are the highest estimated values which would occur for the parameters in a single year over an expected five year construction period (FY85-FY89).

4B.116 Interpretation of changes in these parameters is possible through comparison of the percent change values associated with each parameter and the rational threshold value (RTV). Percent change value is that fraction of the regional total for a parameter that is attributable to the stationing alternative. The RTV is the maximum

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4B.114a It is likely that some of the civilian jobs created as a result of the stationing activity could be filled be spouses of incoming military personnel. As described in Appendix L about 36 percent of the spouses of Army enlisted men and 35 percent of Army officer spouses are members of the civilian workforce (Doering and Hutzler, 1982).

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TABLE 4B-7

ECONOMIC EFFECT OF THE PROPOSED STATIONING ALTERNATIVE ON THE MONTEREY BAY REGION[a]

Category	Highest One-Time Annual Change Due to Construction		Rational Threshold Value[c]		Recurring Annual Change due to Proposed Stationing		Rational Threshold Value[c]	
	Amount of Change	Percent Change	Negative	Positive	Amount of Change	Percent Change	Negative	Positive
Total business volume	$68,365,000	+0.3	-5.6	2.7	$37,442,000	+0.8	-5.8	4.9
Local personal income	$27,052,000	+0.1	-3.8	2.3	$53,914,000	+1.1	-5.5	4.6
Employee equivalent[b]	1,042	+0.2	-2.5	4.0	2,411	+1.1	-2.1	6.6

[a]All changes in 1984 dollars.

[b]Added personal income is equivalent to the average annual salaries of the number of persons shown.

[c]Different RTV values are presented for construction and for stationing. The economic analysis area for construction included four counties (Monterey, San Benito, Santa Cruz and Santa Clara). The analysis for stationing included three counties with Santa Clara omitted since it was assumed that the three remaining counties would be the primary economic area for the increases in business volume and personal income from stationing activities other than construction.

REVISED 1984

historical percentage fluctuation from yearly average change rates for each parameter. Percent change values which approach or exceed RTV values for one or more parameters may be considered as regional stress equal to or greater than that experienced over the period for which the RTV has been calculated (1965-1978). Comparison of the percent change and RTV values in Table 4B-7 shows that the economic effects for the parameters listed are all within the range of RTV values and would not be considered a significant effect.

4B.117 A printout of the EIFS model inputs and outputs is found in Appendix G and a brief explanation of the model is found in Appendix I.

Air Quality

4B.118 The North Central Coast Air Basin, in which Fort Ord is located, is designated as non-attainment for ozone. The Monterey Bay Unified Air Pollution Control District is responsible for ensuring that all Federal and State ambient air quality standards are achieved and maintained in this basin. The district currently has several air quality programs to maintain the generally good air quality in the region and to meet the standard for ozone by 1987. The most effective programs are those which have placed controls on emissions from stationary sources and mobile sources. Transportation and land use programs, although not conducted with the express purpose of controlling air pollution, have also had some beneficial impact on the region's air quality (Association of Monterey Bay Area Governments, 1982).

4B.119 Implementation of the proposed action would increase the number of mobile sources on the post, as well as within the region. The number of privately-owned vehicles would increase by approximately 2850 or about 11 percent over the number of vehicles presently registered on the post. These additional vehicles will emit pollutants (primarily nitrogen oxides and carbon monoxide which would increase the potential for higher ozone levels. Thus, the post's contribution to the region's total emissions by mobile sources would increase by approximately 11 percent.

Water Supply

4B.120 The general use of ground water as a water supply for the region is a major concern in the region since withdrawals have, for years, exceeded the rate at which aquifers were naturally replenished by rainfall. This overpumpage allows sea water to flow into the ground-water reservoir which causes high levels of chloride (most importantly) in the water supply. A drinking water supply is considered contaminated when chloride concentrations exceed the

primary federal water-quality standard of 250 ppm. As a result of increasingly high chloride levels, well fields are abandoned and a new water supply is located further inland. The lack of new, economical ground-water supplies is currently a limiting factor with respect to growth of the region. High water demands by the prosperous agricultural sector also complicate the issue. Approximately 90 percent of all withdrawals in the region are for irrigation in the Salinas Valley.

4B.121 Fort Ord is scheduled to develop a new well field in the East Garrison area during 1984 because of high chloride levels (presently 350 to 400 ppm) in the existing water supply. This relocation will occur whether or not the proposed action is implemented. A maximum of four new wells are planned in order to provide water supplies for approximately 20 years. In that time, it is expected that surface water supplies would be developed on a regional scale to meet projected demands.

4B.122 Average daily water consumption at Fort Ord would increase approximately 17 percent with implementation of the proposed stationing alternative. Pumping at the new well field would have to be increased slightly, thus shortening the projected life of the supply, but no additional wells would be necessary.

4B.123 Undoubtedly, the increased pumpage would aggrevate the already recognized short-term water supply problems in the region, but no new issues would be expected to develop.

Wastewater Disposal

4B.124 With respect to wastewater disposal, interception lines are currently in place for Fort Ord to begin sending treated effluent from the Main Garrison treatment plant to the regional discharge outfall. Fort Ord will continue to treat wastewater until the regional treatment facility is operational (by the end of the decade). Thereafter, the interception lines will be used for transfer of Fort Ord's untreated wastewater. The Corps of Engineers will be negotiating with the Monterey Regional Water Pollution Control Agency on behalf of Fort Ord for purposes of acquiring capacity rights within the regional treatment plant. It is not anticipated that Fort Ord would need to request additional capacity as a result of the increase in the daily wastewater load which would occur if the proposed stationing alter- native is implemented.

Solid Waste Disposal

4B.125 Implementation of the proposed alternative would have a regional impact in terms of solid waste disposal only if Fort Ord decides to use the Marina landfill rather than siting a new on-post landfill. Fort Ord is currently considering the feasibility of delivering an estimated 30,000 tons per year solid waste consisting

of 85 tons per day household refuse and 30 tons per day demolition material (both on 5-day week basis) to the Marina landfill (Meyers, 1984). This would increase the annual amount of solid waste disposed of at that location (171,286 tons during 1983) by approximately 15 percent, and would in turn, decrease the remaining life of the site by about 13.5 years (to about 78 years). The additional solid waste generated by new military personnel and their dependents as a result of the proposed alternative at Fort Ord would be about 3,900 tons per year. The actual impact on solid waste capacity at the Marina landfill would be about 0.02 percent of total tonnage (including the estimated increase from Fort Ord), which would decrease the life of the landfill by slightly more than one year.

Housing

4B.126 Since the proposed stationing action includes the construction of on-post housing for both families and single military personnel, there would be no substantial pressure for housing units, particularly family housing units, in the surrounding communities. Regardless of the availability of on-post housing, some small portion of the incoming personnel may elect to live off post, even with the very high rental rates. It is not expected that the action would produce any significant inmigration of civilian personnel into the region.

Schools

4B.127 Since the new military families would be living on-post, the children would be attending the on-post schools or the high school adjacent to the post. The potential impact on these schools is described in the Fort Ord discussion, below.

Health Care

4B.128 It is not expected that the new personnel would produce any significant strain on regional medical facilities. It would be expected that statements of non-availability of services on the post would increase about only 4 percent over the present level (an annual increase of 11 statements), but providing these services could easily be accommodated by health care facilities in the region.

Traffic and Transport

4B.128a The increase in personnel would produce an increase in vehicular travel on neighboring streets. This increase would be about 10 percent above the present levels due to military personnel and could be a factor in street maintenance costs.

Cultural Resources

4B.129 There is a potential for disturbance or destruction of cultural resources due to private residential or commercial development that could occur as a result of the stationing action.

dependents of 8,770 (U.S. Army Forces Command, 1984b). The present on-post daytime population of McChord Air Force Base is 7,492, and no signficant net changes in population are expected at McChord (Stokes, 1984).

4A.193 The population of DuPont is 599 (Pierce County Planning Department, 1983). With a combined projected population of approximately 50,000, treatment capacity would be more than adequate. Reduction of infiltration, which is presently being accomplished through repair and replacement of existing collector lines, would help assure that plant hydraulic capacity will not be exceeded (Jones and Stokes, 1984).

Solid and Hazardous Waste Disposal

4A.194 Non-hazardous solid waste from Fort Lewis and McChord Air Force Base are landfilled on a 180 acre site at the northern boundary of the post within the City of DuPont. Upon completion of an upgrading program to provide improved groundwater management (lining, leachate collection and treatement), the facility will have a design life of 20 years with all projected population changes (Flood, 1984). Also, a refuse incinerator planned for construction at Fort Lewis in 1987 will extend the landfill life to over 50 years through volume reduction of landfilled wastes (Flood, 1984).

4A.195 Generation of hazardous wastes associated with stationing of a light infantry brigade would occur primarily from vehicle maintenance. Wastes will therefore generally consist of lubricants, fuel, battery wastes, paint wastes and cleaning solvents associated with these maintenance activities. Hazardous wastes at Fort Lewis are currently segregated and stored according to type. Contract services are utilized to collect, recycle and/or dispose of hazardous wastes off-site. A 1983 study prepared for the U.S. Army Toxic and Hazardous Materials Agency (Environmental Science and Engineering, Inc., 1983) concluded that hazardous material problems at Fort Lewis pertain primarily to improper storage of pesticides and potential problems associated with earlier operations on post. No difficulties with current vehicle maintenance activities were cited.

Housing

4A.196 The proposed additions to the current housing facilities at Fort Lewis would include 1,323 more barrack spaces and 50 new bachelor officer quarters. No new family housing units are proposed. Without the proposed additions adequate on-post housing would be provided for the following:

SUPERSEDED
AUG 19

- o 12,473 enlisted troops in barracks
- o 3,509 families, and
- o 89 bachelor officers.

Total housing units with the proposed activity would include:

- o 13,796 barracks
- o 3,509 family units, and
- o 139 bachelor officer quarters.

Adequate barracks space would be provided for single enlisted while an estimated 11,000 families and 820 bachelor officers would live off post.

Schools

4A.197 About a 16 percent increase in total school age children between FY 1983 and 1989 would be likely under the proposed alternative. However, without more family units constructed on post, no substantial increased need above present on-post needs would be likely.

4A.198 Currently three of the five on-post elementary schools are at or exceeding capacity. Current plans call for the addition of 4 classrooms at Hillside school, 6 at Beechwood, and an Instructional Material Center at all on-post schools. Preliminary consideration is also being given to constructing a new elementary school on post. The addition of new classrooms and possible construction of a new school could thus alleviate existing problems those that could result by 1990.

Health Care

4A.199 No significant adverse effects to the Madagin Army Medical Center have been identified with the stationing of a light infantry brigade.

Public Safety

4A.200 With an increase in personnel, potential increases in crime could result. Additionally, several existing safety hazards at Fort Lewis could increase under the proposed alternative. Many unfilled foxholes, partially overgrown by vegetation, are present in the training areas; these constitute a hazard to hunters and other members of the public walking through, as well as to troops, particularly during night exercises. The public and troops are also

imperiled by abandoned barbed wire throughout the training area; much of this barbed wire is hidden by vegetation, increasing the hazard.

4A.201 There could be an increase of accidents with the stationing of the light infantry brigade at Fort Lewis as well as increases of lost time injuries and workloads of safety personnel proportionate to the estimated 15 to 16 percent increase in military personnel and the potential 20 to 25 percent increase of many training activities (Fort Lewis, Office of the Comptroller, 1984).

Traffic and Transportation

4A.202 The principal impact on transportation at Fort Lewis associated with the proposed stationing alternative would be on vehicular traffic levels and patterns. Both on-post and off-post traffic volumes will be affected.

4A.203 In terms of regional (off-post) vehicle volumes, a maximum of about 17,600 vehicles would be associated with off-post military families by 1989. This represents an increase of about 17 percent over the number of vehicles currently estimated for off-post military families (assuming 1.6 vehicles per family) (Fort Lewis Office of Pubic Affairs, 1984). Privately-owned vehicles on post would total approximately 12,600 based on projected populations of families in 1989. An overall total (on post and off post) of about 30,200 privately-owned vehicles would be associated with Fort Lewis by 1989. Military vehicles (wheeled) associated with this stationing action would total about 269. Peak traffic impacts can be expected during times of maximum commuter traffic. Vehicle occupancy rate data collected in 1981 and reported in the MTMC Traffic Engineering Study for Fort Lewis (Hendrix and Brickhouse, 1982) indicate that the vehicle occupancy ratio (VO) for Fort Lewis was 1.24 occupants per vehicle as compared to the national average of 1.37 for army posts. Using these vehicle occupancy ratios and applying them to estimated numbers of personnel (military and civilian) commuting to Fort Lewis, at total of about 12,400 vehicles (1.24 VO) at the present rate or 11,200 vehicles (1.37 VO) based on the national average would result. These estimates represent increases of about 14 percent (1.24 VO) and 3 percent (1.37 VO) over current (FY 83) traffic levels. Traffic congestion at major entrances to the post (principally from Interstate 5) and on cross-post arterials would therefore increase from 3 to 14 percent from commuter traffic alone. Additional increases could also be expected from on-post vehicles moving around the post and commuting off-post.

- o 12,473 enlisted troops in barracks
- o 3,509 families, and
- o 89 bachelor officers.

Total housing units with the proposed activity would include:

- o 13,796 barracks
- o 3,509 family units, and
- o 139 bachelor officer quarters.

Adequate barracks space would be provided for single enlisted while an estimated 11,000 families and 770 bachelor officers would live off post.

Schools

4A.197 About a 16 percent increase in total school age children between FY 1983 and 1989 would be likely under the proposed alternative. However, without more family units constructed on post as a direct result of the stationing, no substantial increased need above projections without the activity would be likely.

4A.198 Currently three of the five on-post elementary schools are at or exceeding capacity. Current plans call for the addition of 4 classrooms at Hillside school, 6 at Beechwood, and an Instructional Material Center at all on-post schools. Preliminary consideration is also being given to constructing a new elementary school on post. The addition of new classrooms and possible construction of a new school could thus alleviate existing problems those that could result by 1990.

Health Care

4A.199 No significant adverse effects to the Madagin Army Medical Center have been identified with the stationing of a light infantry brigade.

Public Safety

4A.200 With an increase in personnel, potential increases in crime could result. As described in Appendix M, most crimes committed by Army personnel in the continental United States are confined to the installation. Further, Army crime rates in general have been declining. Between 1980 and 1983 the most common offenses committed by Army personnel, those against property, declined by 26 percent. Marijuana use and possession, the second most common offense declined by 64 percent, while crimes of violence, ranking third dropped 42 percent (U.S. Army Office of the Deputy Chief of Staff for Personnel, 1984). Although Army crime rates are not

directly comparable to national trends, more arrests per 1000 of U.S. males 18 to 22 years versus Army personnel were made for crimes against property, drug offenses and crimes of violence in 1982. In the event of troop stationing, the actual number of crimes could increase, yet as detailed in Appendix M most of the increase probably would be concentrated on post.

4A.200a Several existing safety hazards at Fort Lewis could increase under the proposed alternative. Many unfilled foxholes, partially overgrown by vegetation, are present in the training areas; these constitute a hazard to hunters and other members of the public walking through, as well as to troops, particularly during night exercises. The public and troops are also

4A.204 Recent traffic surveys (Hendrix and Brickhouse, 1982) have indicated the need for traffic pattern improvements on and around Fort Lewis. The proposed alternative could accelerate the need to make these improvements.

Cultural Resources

4A.205 Numerous significant archeological resources and a National Register property have been identified at Fort Lewis and the post is considered to have a high potential for the existance of additional, as yet, undiscovered resources. Given the increased training and construction proposed under this alternatave at Fort Lewis, there is a potential for impacts on significant cultural resources.

4A.206 Although the exact location and nature of many possible cultural resources, particularly archeological resources, is unknown, the potential impacts of the proposed action can be generally discussed. Basically, any action which produces ground disturbances in any form would have a potential for disturbing an archeological resource, thereby destroying data. Construction of new buildings and facilities, and establishment of roads include such elements as excavation, grading, filling or stockpiling of materials. All of these elements have a potential for disturbance or destruction of archeological materials. Renovation of existing buildings or demolition can damage and destroy significant historic structures.

4A.207 Many training activities, including maneuvering of vehicles and digging of foxholes, cause ground disturbances that have a potential for damaging or destroying an archaeological resource. Establishment of new training areas or increases in land utilization frequency for training over current levels can increase the potential for impacts to undisturbed cultural resources.

4A.208 Considerations will be given to identifying potential cultural resources, as well as protecting those known to exist. Authority for these actions are found in Army Regulation AR-420-40, Facilities Engineering, Historic Preservation (April 15, 1984) effective 15 May 1984. The procedures for accomplishing these measures are detailed in the Army Technical Manual TM-5-801-1, Historic Preservation-Administrative Procedures and TM-5-801-2, Historic Preservation-Maintenance Procedures. In regard to the installation, the prime limitation would be to prohibit any destruction or alteration of all or part of any significant site through whatever measures are necessary (e.g., establishment of limited-use areas). It should be noted that it is always possible for studies to miss an archaeological site, particularly one which

SUPERSEDED
AUG 1984

shows little or no surface evidence of its presence. Because of this, all construction contracts must allow for this possibility by specifying that, in the event that a suspected archaeological site is encountered during construction or some other form of activity, operations in the area would be suspended until the site is investigated by a professional archaeologist. This construction contract provision is required by 32 CFR 650.192, Department of the Army, Environmental Protection and Enhancement, Peacetime Responsibilities, Historic Preservation, Archaeological Sites (March 15, 1978). Similarly, training activities that involve the use of new areas or the increased use of areas presently used may uncover evidence of archaeological sites that was not uncovered by prior studies. Officers in charge of field activities should be made aware of this possibility and procedures should be established whereby the officer could inform the installation's Historic Preservation Committee of any finds so that the committee may take appropriate measures to avoid the accidental destruction of a site. Additionally, since the looting of sites by irresponsible persons can be a problem, security measures should be instituted to prevent destruction of archaeological data in this manner.

Native American Concerns

4A.209 A Nisqually Indian Reservation is adjacent to the fort. In the past, Native American concerns have included fishing (U.S. Army Corps of Engineers, Seattle District, 1984c) rights in the Nisqually River, and noise from practice artillery fire and helicopter flights over the reservation. The Nisqually River is the principal location of assault river crossing exercises. Although there could be an estimated increase of these exercises by 30 percent (Lanning, 1984), the river area is off limits during the salmon spawning season, a major interest to the Nisqually. Also, measures are taken by Fort Lewis to reduce potential impacts to these resources by the maintenance of a hatchery, and the installation of sediment traps (Lanning, 1984).

4A.210 Other issues between Fort Lewis and the Nisqually Indians have centered around artillery fire during training. Firing into the Harden Hill/Muck Creek area concerns the Native Americans because it is a major spawning location. Resistance could be made by the group if any effort is made by the Army to increase the impact areas.

4A.211 The noise and vibrations from artillery fire near the Reservation from the Rainier Training area also has been objectional to the Nisqually in the past. Any additional artillery that could arise as part of the increase in weapons firing would be likely to

shows little or no surface evidence of its presence. Because of this, all construction contracts must allow for this possibility by specifying that, in the event that a suspected archaeological site is encountered during construction or some other form of activity, operations in the area would be suspended until the site is investigated by a professional archaeologist. This construction contract provision is required by 32 CFR 650.192, Department of the Army, Environmental Protection and Enhancement, Peacetime Responsibilities, Historic Preservation, Archaeological Sites (March 15, 1978). Similarly, training activities that involve the use of new areas or the increased use of areas presently used may uncover evidence of archaeological sites that was not uncovered by prior studies. Officers in charge of field activities should be made aware of this possibility and inform the installation's Historic Preservation Committee of any finds so that the committee may take appropriate measures to avoid the accidental destruction of a site. Additionally, since the looting of sites by irresponsible persons can be a problem, security measures should be instituted to prevent destruction of archaeo- logical data in this manner.

Native American Concerns

4A.209 A Nisqually Indian Reservation is adjacent to the fort; some houses and fishing camps are near the artillery impact area. In the past, Native American concerns have included fishing (U.S. Army Corps of Engineers, Seattle District, 1984c) rights in the Nisqually River, and noise from practice artillery fire and helicopter flights over the reservation. The Nisqually River is the principal location of assault river crossing exercises. With an estimated increase of these exercises by 30 percent aquatic biota could be affected and the Nisqually concerns could increase (Lanning, 1984).

4A.210 Other issues between Fort Lewis and the Nisqually Indians have centered around artillery fire during training. Firing into the Harden Hill/Muck Creek area concerns the Native Americans because it is a major spawning location. Resistance could be made by the group if any effort is made by the Army to increase the use of impact areas.

4A.211 The noise and vibrations from artillery fire near the Reservation from the Rainier Training area also has been objectional to the Nisqually in the past. Any additional artillery that could arise as part of the increase in weapons firing would be likely to

arose complaints. The Nisqually have also objected to helicopter flights over the reservation (U.S. Army Headquarters, 9th Infantry Division and Fort Lewis, 1979). Additional flights over the territory could result from a potential 10 percent increase in helicopter use fort-wide.

Fort Lewis Subinstallations

4A.212 If the new light infantry brigade is stationed at Fort Lewis, much of the training activities currently conducted by the 9th Infantry Division would be displaced to the Yakima Firing Center (YFC). Increased uses at the other subinstallations affiliated with Fort Lewis would also result as a consequence of this stationing alternative; potential effects at each of the areas are described below.

Yakima Firing Center

4A.213 Preliminary estimates indicate that under the proposed alternative, the number of battalion trips to Yakima would increase from the current level of 30 to 45 trips per year to between 35 and 52 trips per year (Lanning, 1984). Although no new training activities are likely to occur on the reservation, the frequency of existing activities would increase. It is likely that there would be no additional tracked vehicle maneuvers on the reservation. Preliminary estimates indicate that artillery firing, close in aerial support, combined firing exercises for various weapons systems, large-scale troop maneuvers involving wheeled vehicles, and the construction and demolition of structures could increase by about 25 percent (Lanning, 1984). The potential effects from these increases on the biological, physical and socioeconomic/cultural environment are treated below.

4A.214 Biological Environment. The western portion of the center is the site of most maneuvers and most disturbances (U.S. Army Corps of Engineers, Seattle District, 1984). Under the proposed alternative with a potential 25 percent increase in training activities, disturbance would increase. Increased erosion of the very thin soils characteristic of Yakima would result from increased wheeled and foot maneuvers, vegetation destruction and from the fording of tributaries during exercises. The expected increase in training activities could worsen the problems already experienced at the installation.

4A.215 Silty runoff that would likely result from more frequent training could increase sedimentation of washes and streams adversely affecting aquatic biota. A concern here would

be the potential adverse impacts on local aquatic biota, area salmon and an indirect impact on bald eagles feeding on them.

4A.216 The bald eagle, threatened under the Endangered Species Act and the columbia milk vetch, candidate for federal listing, are species of concern at Yakima. The vetch's habitat extends along the boundary of the Columbia River. There is a potential that the bald eagle population along the Columbia River and Selah Canyon could be disturbed under this alternative by training increases. The U.S. Army and U.S. Fish and Wildlife Service are, therefore, coordinating an investigation of the potential for disturbance. Formal consultation was initiated with the U.S. Fish and Wildlife Service, Office of Endangered Species in April 1984. A plan to prevent significant adverse impacts on the eagles will be developed before any troop increase is implemented at the Yakima Firing Center. If training activities increase or new construction is initiated in areas used by the sage grouse, adverse effects are possible and a decrease in numbers could result. Further, training flights over Yakima Canyon could displace eagles, osprey and falcon known to nest and hunt in the region.

4A.217 The trend toward increasing military use of Yakima could lead to a general degradation of wetland areas (U.S. Army Corps of Engineers, Seattle District, 1983a). Borden Springs, and along Hanson and Alkali creeks are the key wetlands at the center. These are oases for wildlife in the arid region. In the event there is increased military use of the eastern portion of Yakima Firing Center, interference with the area's wildlife could be particularly detrimental. The eastern section is isolated and only moderate military use has occurred to date, so wildlife has congregated there (U.S. Army Corps of Engineers, Seattle District, 1983a). Increased disturbance could affect a large number of plant and animal species in this relatively undisturbed area.

4A.218 Socioeconomic/Cultural Resources. The military effect on the socioeconomic environment around Yakima is minimal. No increases in the permanent military personnel stationed at Yakima have been identified under the proposed stationing alternative. Without additional permanent personnel, there would be little if any change in housing, schools and health care needs from the existing condition described in Chapter 3. The center contributes only minimally to civilian employment in the region. Since off-post limits are imposed on military personnel in training (U.S. Army Corps of Engineers, Seattle District, 1983a). no appreciable increases in consumer purchases within the region would be likely.

4A.219 Area land use changes, such as new range development at Yakima, have not been identified under the proposed alternative. However, the increased frequency of training could affect the condition of existing land used for training purposes and thus the resources dependent on these conditions.

4A.220 The military and general public can hunt on some 200,000 acres, and fish at two ponds at Yakima (U.S. Army Corps of Engineers, Seattle District 1983a). Conflict could arise between the military and sportsmen over access to recreation with training exercise increases.

4A.221 Cultural resources at the center include: area which is part of the traditional territory of the Wanapum Indian Tribe used for traditional hunting and gathering purposes; an Indian burial ground; the Wa-pai-xie Archaeological District, on the National Register, and numerous other cultural resources sites (U.S. Army Corps of Engineers, Seattle District, 1983a). Increased use of training, maneuver, and impact areas would add to the potential for impact on significant archaeological resources.

4A.222 Native American concerns focus on several traditional Wanapum villages, cemeteries and root digging grounds located on or near the center. Some traditional activities are conducted in the eastern portion of the center . Increased use of this area could interfer with some traditional practices. The contemporary Indians are very concerned about the preservation of their cultural activities and meaningful places (U.S. Army Corps of Engineers, Seattle District, 1983a).

4A.223 Public safety, a major concern at Yakima, could be influenced by an increase in training activities associated with more battalion trips. Increases in exercises related to artillery firing, aircraft operations, industrial material use, ammunition storage and dud ammunition disposal would increase the chances of accidents particularly to civilian trespassers. Coordination of activities to prevent conflicts is carefully controlled (U.S. Army Corps of Engineers, Seattle District, 1983a), but an increase in hazard would likely result.

4A.224 Physical Environment. Overall utilization of the Yakima Firing Center is estimated to increase by about 25 percent with the stationing of a light infantry brigade at Fort Lewis. (Lanning, 1984). Most of this increase would result from displacement of units of the 9th Infantry Division from Fort Lewis to Yakima to accommodate training activities of the brigade (Lanning, 1984).

4A.225 Impacts to the physical environment at Yakima under this stationing alternative would result primarily from increases in noise levels, air emissions (mostly suspended particulates) and secondarily from some increase in service use (water, wastewater, solid waste). Noise impacts from artillery firing at Yakima are estimated to increase by about 20 percent under this stationing alternative. Air emission impacts would result principally from

exhaust emissions and dust associated with higher levels of vehicle activity. Suspended particulates would be a more obvious problem during the dry summer months. Soil impacts could arise from increased vehicular activities and related surface disturbances. These disturbances, in turn, would increase exposure of the area's dry, erosion-prone soils to increased wind and water erosion effects (U.S. Army Corps of Engineers, Seattle District, 1984c). Present utilities and services at Yakima (water, wastewater, solid waste) are limited in capacity for large-scale increases, but are generally considered adequate for moderate levels of growth (U.S. Army Corps of Engineers, Seattle District, 1984c).

Vancouver Barracks (VB)

4A.226 Vancouver Barracks, eligible as a historic district located within the City of Vancouver, Washington, is a small installation used primarily to house military reserve, National Guard and active Army units engaged in training activities at Camp Bonneville. Due to its limited size and potential for further reduction, no major impacts are expected as a result of the proposed stationing alternative.

Camp Bonneville (CPB)

4A.227 Camp Bonneville, (CPB) located in southwest Washington, is used by military reserve, National Guard and Active Army units for training exercises, including artillery firing, small arms, demolition and grenade training. Although it is unlikely that units of the new light infantry brigade proposed for stationing at Fort Lewis would train at Camp Bonneville, activities at CPB are estimated to increase by about 5 percent as the various units are displaced from Fort Lewis. All impacts at CPB can therefore be expected to increase in proportion to this new activity level.

Huckleberry Creek Mountain Training Center (HCMTC)

4A.228 This facility, located northeast of Mount Rainier National Park, is currently fully utilized and no changes to this situation are envisioned. No impacts are expected to result from the proposed stationing alternative (Lanning, 1984).

ENERGY AND FUELS ANALYSIS

4A.229 The anticipated changes in energy and fuel consumption at each of the forts involved in this alternative are summarized in Table 4A-8. The methodology for the derivation of these estimates is presented in Appendix H.

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TABLE 4A-8

INCREASED ENERGY REQUIREMENTS FOR
WAINRIGHT-FORT LEWIS STATIONING ALTERNATIVE

	Fort Lewis	Fort Wainwright	Fort Richardson
Personal Vehicles			
Increase, 10^9 Btu/yr	450	940	130
Percent[1]	41	306	21
Off-Post Housing			
Increase, 10^9 Btu/yr	1,020	2,200	330
Percent[1]	24	404	18
Military Vehicles			
Increase, 10^9 Btu/yr	170	760	70
Percent[1]	18	305	26
On-Post Usage			
Increase, 10^9 Btu/yr	360	3,720	240
Percent[1]	13	121	11
Total Energy Use			
Increase, 10^9 Btu/yr	2,000	5,300	300
Percent[1]	21	133	6
Total Annual Use, 10^9 Btu/yr	11,730	9,500	5,300
Energy Requirement per Troop 10^6 Btu/yr	408	880	971

[1]Percent Increase = Increased Energy Requirement x 100/Present Consumption.

4A.230 Increased gasoline consumption for private vehicles owned by military personnel is based on 19,900 additional vehicles at the forts, each driven an average of 9,026 miles per year with a mileage of 15.53 miles per gallon (Motor Vehicle Manufacturers Association, 1983). The resulting estimated increase in fuel consumption is 12 million gallons of gasoline per year. This consumption is an increase of 1,450 billion Btu per year, or 38 percent more fuel than is presently being consumed in the private vehicles of military personnel at the forts. The estimated number of motor vehicles and corresponding gasoline consumption in the counties adjacent to Fort Lewis are 381,300 vehicles consuming 29 trillion Btu per year. The implementation of this alternative would increase local gasoline consumption by 2 percent. The corresponding estimates for Fort Richardson are 106,300 vehicles consuming 11 trillion Btu per year. The increase in local gasoline consumption would be 1 percent. Surrounding Fort Wainwright 32,100 vehicles consume 4 trillion Btu. The increase in local gasoline consumption would be 25 percent.

4A.231 The increase in energy consumption for off-post housing is based on an increase of 7,700 military personnel and dependents living off-post at Fort Lewis, 12,800 military personnel and dependents living off-post at Fort Wainwright and 1,900 living off-post at Fort Richardson. The resulting fuel requirement of 1,020 billion Btu at Fort Lewis represents a 1 percent increase in the present residential consumption of 81 trillion Btu in the counties adjacent to the installation. At Fort Wainwright, the resulting fuel requirement of 2,200 billion Btu represents a 9 percent increase in the present residential consumption of 25 trillion Btu in the counties adjacent to the installation. At Fort Richardson, the fuel requirement of 330 billion Btu represents a 1 percent increase in the present residential consumption of 40 trillion Btu in adjacent communities.

4A.232 The increased requirement for on-post heating and associated energy usage is a linear extrapolation of the per resident on-post energy usage based on the effective population on-post as defined in TB ENG 354. The projected increase of 360 billion Btu per year at Fort Lewis is 13 percent of the current energy usage. At Fort Wainwright, the projected increase of 3,700 billion Btu per year is 121 percent of the present energy usage, and at Fort Richardson the projected increase of 240 billion Btu per year is 11 percent of present usage. Assuming the relative proportions of fuels used at the installations remain unchanged, implementation of this alternative require the following additional annual amounts of fuels and energy:

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	Fort Lewis	Fort Wainwright	Fort Richardson
Coal, tons	0	204,100	210
Fuel Oil, million gallons	6.50	0.15	0.01
Natural Gas, million therms	0.87	0	0.22
Propane, gallons	16,600	0	0
Gasoline, million gallons	1.60	0.62	0.20
Diesel Fuel, million gallons	1.40	0.69	0.25
Aviation Fuel, million gallons	1.90	4.60	0.10
Electricity, TKWH	101,700	25,300	830

4A.233 The 530 additional vehicles at Fort Richardson would use 118,000 gallons of gasoline and 204,000 gallons of diesel fuel. The 950 additional vehicles at Fort Wainwright would use 210,000 gallons of gasoline and 363,000 gallons of diesel fuel. The 220 additional trucks at Fort Lewis would use 65,000 gallons of gasoline and 114,000 gallons of diesel fuel.

4A.234 The consumption of aviation fuel includes transport of the infantry brigade to Forts Wainwright and Richardson once a year. The travel distance is 1,500 miles, requiring 117,000 gallons of JP 4. The number of additional helicopters at Fort Wainwright would be 100. Based on flight time of 300 hours per year and fuel consumption of 100 gallons per hour, the helicopters account for 3 million gallons of the increase in aviation fuel use at Fort Wainwright.

4A.235 The total energy requirements resulting from implementation of this alternative are 3.60 trillion Btu at Fort Lewis, 5.57 trillion Btu at Fort Wainwright, and 0.31 trillion Btu at Fort Richardson. These requirements are 33 percent of present energy consumption at Fort Lewis, 142 percent of that at Fort Wainwright, and 6 percent of that at Fort Richardson. The total fuel consumption per troop would change from 437 MBtu to 415 MBtu at Fort Lewis, from 1,156 MBtu to 880 MBtu at Fort Wainwright, and from 1,120 MBtu to 971 MBtu at Fort Richardson.

4A.236 Although there would be some impact on local energy use due to implementation of this alternative, the impact on national energy use would be negligible. Personnel of the light infantry division are to be drawn from existing Army units. Therefore, there would be a decrease in energy use in the localities where the troops are presently stationed approximately equal to the impacts described here. Similarly, many of the vehicles for the light infantry division are to be obtained from existing inventory. The only new vehicles to be added to the Army would be light trucks.

MITIGATING MEASURES

4A.237 Mitigating measures are defined as those actions that can be taken to lessen the adverse impacts resulting from implementation of the proposed action. Mitigating measures can be taken in anticipation of, concurrently with, or subsequent to the proposed action to minimize or offset undesirable impacts. Tables 4A-9 and 4A-10 describe generic mitigation measures available to the government. The measures described are potential only. No commitment is intended that these will be chosen at any specific installation. There are many variables influencing actual mitigation, including funding, timing, other Army actions, and specific environmental conditions found while the Army implements actions described here.

ADVERSE IMPACTS THAT CANNOT BE AVOIDED

4A.238 Some effects of the proposed stationing action cannot be mitigated. Those residual adverse impacts that cannot be avoided even after using the mitigating measures given in the Mitigating Measures tables are summarized in Table 4A-11.

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	Fort Lewis	Fort Wainwright	Fort Richardson
Coal, tons	0	204,100	210
Fuel Oil, million gallons	3.60	0.15	0.01
Natural Gas, million therms	0.48	0	0.22
Propane, gallons	9,200	0	0
Gasoline, million gallons	0.90	0.62	0.20
Diesel Fuel, million gallons	0.80	0.69	0.25
Aviation Fuel, million gallons	1.10	4.60	0.10
Electricity, MWH	56,500	25,300	830

4A.233 The 530 additional vehicles at Fort Richardson would use 118,000 gallons of gasoline and 204,000 gallons of diesel fuel. The 950 additional vehicles at Fort Wainwright would use 210,000 gallons of gasoline and 363,000 gallons of diesel fuel. The 270 additional trucks at Fort Lewis would use 63,000 gallons of gasoline and 111,900 gallons of diesel fuel.

4A.234 The consumption of aviation fuel includes transport of the infantry brigade to Forts Wainwright and Richardson once a year. The travel distance is 1,500 miles, requiring 117,000 gallons of JP 4. The number of additional helicopters at Fort Wainwright would be 100. Based on flight time of 300 hours per year and fuel consumption of 100 gallons per hour, the helicopters account for 3 million gallons of the increase in aviation fuel use at Fort Wainwright.

4A.235 The total energy requirements resulting from implementation of this alternative are 2.00 trillion Btu at Fort Lewis, 5.57 trillion Btu at Fort Wainwright, and 0.31 trillion Btu at Fort Richardson. These requirements are 21 percent of present energy consumption at Fort Lewis, 142 percent of that at Fort Wainwright, and 6 percent of that at Fort Richardson. The total fuel consumption per troop would change from 437 MBtu to 408 MBtu at Fort Lewis, from 1,156 MBtu to 880 MBtu at Fort Wainwright, and from 1,120 MBtu to 971 MBtu at Fort Richardson.

4A.236 Although there would be some impact on local energy use due to implementation of this alternative, the impact on national energy use would be negligible. Personnel of the light infantry division are to be drawn from existing Army units. Therefore, there would be a decrease in energy use in the localities where the troops are presently stationed approximately equal to the impacts described here. Similarly, many of the vehicles for the light infantry division are to be obtained from existing inventory. The only new vehicles to be added to the Army would be light trucks.

TABLE 4A-9

SUMMARY OF MITIGATING MEASURES FOR REGIONAL EFFECTS OF THE FORT WAINWRIGHT-FORT LEWIS STATIONING ALTERNATIVE

Category	Fort Richardson, Alaska	Fort Wainwright, Alaska	Fort Lewis
Biological Environment	No mitigating measures required because no significant impacts were identified.	Require helicopters to fly at higher altitudes and restrict off road vehicular traffic and helicopter operations during seasons critical to wildlife. Decrease the length of hunting, trapping and fishing seasons in affected areas.	Avoid disturbance to areas most susceptible to erosion. Modify training activities to reduce the frequency of river crossings. Use additional erosion control devices at crossing sites. Schedule noise-producing activities to avoid breeding and rearing seasons. Continue existing natural resources education programs to teach trainees how to implement mitigation measures and inform them of federal regulations.
Demography	No mitigating measures required because no significant impacts were identified.	Phase the stationing over a period of years.	No mitigations measures required because no significant impacts have been identified.
Land Use	Continue military cooperation with the Municipality of Anchorage in planning; provide assistance to Eagle River in locating	Provide on-post family quarters for married personnel. Implement stricter land-use planning regulations.	Provide on-post housing to reduce changes in off-post land use.
Noise	Place limits on low flying helicopters. Relocate Eagle River artillery range.	Increase the altitude and restrict the corridors of helicopter flight paths. Relocate the munitions demolition site remote from residential areas.	Revaluate Fort Lewis Installation Compatible Use Zones (ICUZ) noise contours based on future noise levels and source locations to identify conflicts with nearby noise sensitive areas. Restrict or adjust activities with potential for community impacts (artillery firing, aircraft operations). Develop new training ranges and facilities in accordance with ICUZ noise impact projections to minimize noise levels in nearby communities. Coordinate night training activities with nearby communities, provide advance public notice of planned activities. Minimize high-noise artillery training activities through substitution of alternate, quieter ordinance (especially during night exercises) or use of simulators (for anti-armor weapons)
Regional Economic tivity	No mitigating measures required beyond rent plus for housing, and low interest rates.	Phase the stationing over a period of years.	No mitigating measures required because no significant impacts have been identified.
Air Quality	Encourage military car pools and the use of engine block heaters for winter cold start below 20°F.	Comply with the borough emissions inspection program. Encourage the use of engine-block heaters at 20°F or less to eliminate the higher emissions resulting from cold starts. Replace the cooling pond on-post with enclosed cooling condensers or by use of alternating ponds resulting in at least one pond with ice cover for warm water injection at any given time.	Applications for stationary source permits subject to Significant Deterioration review by Puget Sound Air Pollution Control Agency. Continue program of fuel switching (fuel oil to natural gas) and upgrading and/or replacement of inefficient combustion systems. Develop and promote carpooling and ridesharing programs.

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TABLE 4A-9 (Concluded)

SUMMARY OF MITIGATING MEASURES FOR REGIONAL EFFECTS OF THE FORT WAINWRIGHT-FORT LEWIS STATIONING ALTERNATIVE

Category	Fort Richardson, Alaska	Fort Wainwright, Alaska	Fort Lewis
Water Supply	Utilize groundwater sources until Eklutna project completed.	Increase capacity of local water supply system.	Coordinate with local and regional governments to determine areas for off-post population where adequate supplies of water are available.
Wastewater Disposal	Consider a military sewage treatment plant for combined Elmendorf/Richardson.	Design corrections to achieve full capacity of 8 mgd.	Coordinate with local and regional governments to determine where adequate wastewater collection and disposal are available, and away from areas where groundwater quality would be threatened. Monitor dischargers to assure compliance with NPDES requirements.
Solid Waste Disposal	Assist Anchorage with Highland Landfill by making land available to municipality.	Encourage recycling, build a solid-waste disposal system such as incineration, and/or expand the present facility.	Local/regional governments could develop master plans for solid waste management.
Housing	Make land available to Anchorage or to private developers to provide off-post housing.	Implement a long-term lease/sale agreement with private contractors.	Construct more on-post family housing to reduce competition for off-post family housing.
Schools	Increase federal aid to cover actual costs incurred to educate dependents.	Coordinated planning activities between school district and Army personnel.	Undertake early coordination with area school districts that are at or about capacity, Implement contingency plans to construct more classrooms or schools to reduce overcrowding of area schools. Adjust school district boundaries to reduce overcrowding.
Health Care	No mitigating measures required because no significant impacts were identified.	Transfer dependents in the spring to allow easier acclimation to Alaska, by providing indoctrination sessions for dependents to prepare them for Alaska, and by providing continuing post support groups as needed.	No mitigating measures required because no significant impacts have been identified.

TABLE 4A-9

SUMMARY OF MITIGATING MEASURES FOR REGIONAL EFFECTS OF THE FORT WAINWRIGHT-FORT LEWIS STATIONING ALTERNATIVE

Category	Fort Richardson, Alaska	Fort Wainwright, Alaska	Fort Lewis
Biological Environment	No mitigating measures required because no significant impacts were identified.	Require helicopters to fly at higher altitudes and restrict off road vehicular traffic and helicopter operations during seasons critical to wildlife. Decrease the length of hunting, trapping and fishing seasons in affected areas.	Avoid disturbance to areas most susceptible to erosion. Modify training activities to reduce the frequency of river crossings. Use erosion control devices at crossing sites. Schedule noise-producing activities to avoid breeding and rearing seasons. Continue existing natural resources education programs to teach trainees how to implement mitigation measures and inform them of federal regulations.
Demography	No mitigating measures required because no significant impacts were identified.	Phase the stationing over a period of years.	No mitigations measures required because no significant impacts have been identified.
Land Use	Continue military cooperation with the Municipality of Anchorage in planning; provide assistance to Eagle River in locating new housing to areas not effected by noise	Provide on-post family quarters for married personnel. Implement stricter land-use planning regulations.	Provide on-post housing to reduce changes in off-post land use.
Noise	Place limits on low flying helicopters. Relocate Eagle River artillery range.	Increase the altitude and restrict the corridors of helicopter flight paths. Relocate the munitions demolition site remote from residential areas.	Revaluate Fort Lewis Installation Compatible Use Zones (ICUZ) noise contours based on future noise levels and source locations to identify conflicts with nearby noise sensitive areas. Restrict or adjust activities with potential for community impacts (artillery firing, aircraft operations). Develop new training ranges and facilities in accordance with ICUZ noise impact projections to minimize noise levels in nearby communities. Coordinate night training activities with nearby communities, provide advance public notice of planned activities. Minimize high-noise artillery training activities through substitution of alternate, quieter ordinance (especially during night exercises) or use of simulators (for anti-armor weapons).
Regional Economic Activity	No mitigating measures required beyond rent plus for housing, and low interest rates.	Phase the stationing over a period of years.	No mitigating measures required because no significant impacts have been identified.
Air Quality	Encourage military car pools and the use of engine block heaters for winter cold start below 20°F.	Comply with the borough emissions inspection program. Encourage the use of engine-block heaters at 20°F or less to eliminate the higher emissions resulting from cold starts. Replace the cooling pond on-post with enclosed cooling condensers or by use of alternating ponds resulting in at least one pond with ice cover for warm water injection at any given time.	Applications for stationary source permits subject to Significant Deterioration review by Puget Sound Air Pollution Control Agency. Continue program of fuel switching (fuel oil to natural gas) and upgrading and/or replacement of inefficient combustion systems. Develop and promote carpooling and ridesharing programs.

TABLE 4A-10

SUMMARY OF MITIGATING MEASURES FOR ON-POST EFFECTS OF THE FORT WAINWRIGHT-FORT LEWIS STATIONING ALTERNATIVE

Category	Fort Richardson, Alaska	Fort Wainwright, Alaska	Fort Lewis
Geology, Minerals and Soils	Avoid permafrost areas with tracked vehicles.	Restrict the amount of area in which off-road vehicles and excavation activities would be permitted.	Restore and replant areas of heavy soil disturbance (training ranges). Utilize erosion barriers in construction areas.
Biological Environment			
Terrestrial Ecosystems	Minimize land clearing and brush cutting.	Restrict training activities in places, or times, when sensitive species could be affected. Remove trees used for log cribs and camouflage only from areas designated by the natural resources personnel.	Design and implementation of a Comprehensive Land Management Plan to coordinate existing resource management programs, develop new programs for erosion control, revegetation and wildlife habitat improvement and provide baseline surveys (U.S. Army Corps of Engineers, Seattle District, 1984a). Continuation of the Natural Resources Education Program would inform more potential problems, and mitigation techniques. An inventory of the area's sensitive soils, places to avoid, and seasons which offer the worst problems could reduce erosion. Use additional erosion control devices. Noise could be reduced by scheduling noise-producing activities to reduce interference with wildlife.
Aquatic Ecosystems	Avoid salmon spawning creeks, omit dirt bridges over ice.	Restrict activity to times when sensitive species would not be adversely affected by increased silt loading, activities to areas where construction or traffic on the banks would result in a minimum of erosion, and activity along streams where sensitive areas are not located.	Marching activities and wheeled vehicle use could be restricted around water bodies and riparian zones with signs and fences. Consolidation of training routes, restrictions during certain seasons, or construction of a hydrologically-isolated water training facility to reduce river crossings (U.S. Army Corps of Engineers, Seattle District, 1984a). Continued monitoring of water quality and sediment buildup could enhance mitigation.
Threatened and Endangered Species	No mitigating measures required because none of these species are present.	No mitigating measures are required because none of these species are present.	Military activities could be restricted in rare plant and animal habitats. Training activities with the greatest potential of disrupting these species' should be prohibited at certain times and/or places. U.S. Fish and Wildlife Service Management Guide developed to protect bald eagles in Washington, should be strictly followed. Regulatory coordination between the U.S. Army and the U.S. Fish and Wildlife Service regarding the bald eagle and the potential stationing activity has been initiated and is in progress.
On-Post Population	No mitigating measures required because no significant impacts were identified.	Phase the stationing action along with additional facilities construction.	No mitigating measures required because no significant impacts have been identified.

SUPERSEDED AUG 1984

TABLE 4A-10 (Continued)

SUMMARY OF MITIGATING MEASURES FOR ON-POST EFFECTS OF THE FORT WAINWRIGHT-FORT LEWIS STATIONING ALTERNATIVE

Category	Fort Richardson, Alaska /	Fort Wainwright, Alaska	Fort Lewis
Land Use	No mitigating measures required if the Master Plan is followed, because no significant impacts were identified.	Plan land use so as to consolidate activities (administration, recreation, residential areas, etc.) and landscape to improve the aesthetic quality of the post.	Replace existing substandard buildings with the new facilities. Reduce land conversion. New or altered range management techniques could reduce possible damage from increased training. Rotate areas.
Noise	Relocate Eagle River range.	Increase the altitude and restrict the corridors of helicopter flight paths. Relocate of the munition demolition site remote from residential areas.	Re-evaluate Fort Lewis Installation Compatible Use Zone (ICUZ) noise contours based on projected noise levels and source locations to identify conflicts with contonment and other on-post noise-sensitive usage areas. Restrict or adjust activities with potential for on-post impacts (artillery firing, aircraft operations). Develop new training ranges and facilities in accordance with with ICUZ noise impact projections to minimize on-post noise levels in sensitive areas. Minimize high-noise artillery training activities through substitution of alternate, quieter ordinance (especially during night exercises) or use of simulation (for anti-armor weapons). Incorporate acoustic barriers in future post buildings and facilities. Conduct flight operations away from contonment and other noise-sensitive areas.
Air Quality	Encourage car pools; participate in vehicle inspection, and encourage plug ins and motor block heaters for winter starts.	Implement vehicle emissions inspection program for military vehicles. Encourage the use of engine-block heaters at 20°F or less to eliminate the higher emissions resulting from cold starts. Replace the cooling pond with enclosed cooling condensers or use alternating ponds, resulting in at least one pond with ice cover for warm water injection at any given time.	Applications for stationary source permits subject to Significant Deterioration review by PSAPCA. Continue program of fuel switching (fuel oil to natural gas) and upgrading and/or replacement of inefficient combustion systems. Develop and promote carpooling and ridesharing programs. Utilize community transit systems (buses, vans) on-post to minimize private vehicle use.
Water Supply	Utilize groundwater. Upgrade pipes on Fort Richardson.	Increase the capacity of the water treatment plant.	No mitigating measures required because no significant impacts have been identified.
Wastewater Disposal	Fort Richardson/Elmendorf could construct their own secondary treatment plant or assist in upgrading Anchorage's.	Renegote with the Municipal Utilities System for added flow from post accompanied by an increased plant capacity, o. upgrade and reactivate a facility on-post.	No mitigating measures required because no significant impacts have been identified.

per day additional use is projected from Ship Creek. This is 9 percent more than the current military water use from Ship Creek, but well within their legal allotment of 7 MGD. By 1987, the Eklutna Water Project (Phase I) should alleviate any water shortages.

Wastewater Disposal

4A.97 Both onand off-post sewage is treated by the Anchorage sewage treatment plant. By 1987 when troops arrive, there would be an overload on that plant for about 2 years. By 1989, however, the new expansion should be completed and the problem solved. In the meantime, poor treatment and Cook Inlet disposal only 800 feet from shore, into as little as 10 feet of water, results in poor disposal of human wastes and subsequent coliform contamination at Point Woronzof (U.S. Army Corps of Engineers, 1983a).

4A.98 Based on a population increase of 2600 persons and an average wastewater output of 100 gpd per person, a total of 260,000 gpd would be added to the Anchorage sewage treatment plant. This would result in a less than one percent increase over the capacity of the existing plant, or a 17 percent addition over the existing Fort Richardson contribution to that plant (See U.S. Army Corps of Engineers, 1983, Emergency Expansion Plan for detailed sewage analysis).

Solid Waste Disposal

4A.99 Assuming that 2080 new people live off-post, they would generate 7 tons of solid waste per day. This would increase the burden on Anchorage to locate a new sanitary landfill. If the new Highland Road landfill, which would use some acreage from Fort Richardson, is approved, then this would mitigate the problem.

Housing

4A.100 Since the existing housing on Fort Richardson is full, assume all new families would reside off-post. Bachelor enlisted quarters would be provided on-post. Then 510 family housing units would be needed off-post. In 1984, at least 1,000 new homes are currently under construction, most in the over $100,000 category. Thus, in terms of numbers of houses, for the civilians and the officers, there would be available housing to purchase. In the "medium" rent category ($650 - $800 per month) there is also no problem (nine percent vacancy rate) (U.S. Department of Housing and Urban Development, 1984).

Officers pay scale averages $43,800 to $51,700, and therefore, these personnel could afford rentals in the "high" category or homes of $100,000 or more. Enlisted personnel, on the other hand have salaries in the range of $23,300 to $24,800, and therefore must seek the lower cost housing (Anderson, 1984).

4A.101 The real housing problem would be for the lower grade, enlisted married persons who want to live off-post. These people could not afford to buy homes in Anchorage. There are, however, some one and two bedroom condominiums available for under $100,000. Low-rent units ($500-$650 per month) are not available for this group; those apartments have a three percent vacancy rate. "Rent plus" of $720 to $1075 per month for military personnel is available, and low interest rates to military persons help to mitigate the problem.

Schools

4A.102 With 510 new families, assume 0.9 children of school age per family, then 460 children would be added to the local school population. (This is about the equivalent of one new elementary school). This is about 44 percent of the existing school enrollment on Fort Richardson. The federal payment to local schools is inadequate to cover the costs to educate these students (Schaedel, 1984).

4A.103 Assume these new students are divided as follows:

o elementary	50%	=	230
o jr. High	30%	=	140
o sr. High	20%	=	90

4A.104 Then 12 new elementary classrooms, 4 new junior high classrooms, and 3 new high school classrooms would be needed, using Anchorage School District standards (Schaedel, 1984).

4A.105 The greatest impact would be in the Chugiak-Eagle River area, where schools are already overcrowded; West High School is also overcrowded. Many of the new high school students could therefore attend Bartlett High, which has a 60 percent utilization rate (Schaedel, 1984).

Health Care

4A.106 Off-post dependents could easily be handled by the planned expansions of the two large Anchorage hospitals. The Air Force Hospital on Elmendorf would provide Army active duty health services. The clinic on Fort Richardson could be expanded to a full health clinic. Plans for this have been drawn up, but currently there is no need for the existing population health care (Bratcher, 1984).

SUPERSEDED
AUG 1984

Cultural Resources

4A.107 There is a potential for disturbance or destruction of cultural resources due to the private residential or commercial development that could occur as a result of the stationing action.

Fort Richardson, Alaska

4A.108 The impacts on Fort Richardson from a 25 percent increase in military strength would be minimal. The mission of the 172nd Brigade would not change. However, many of the facilities built in the 1950's and 1960's would have to be upgraded on-post.

4A.109 The Analysis of Existing Facilities Environmental Assessment Report has just been published (U.S. Army Corps of Engineers, 1983a). The Fort Richardson Emergency Expansion Capability Plan and costs are detailed in U.S. Army Corps of Engineers (1983c). The impacts from the current mission are described in U.S. Army Corps of Engineers (1979).

Geology, Minerals and Soils

4A.110 For actions which dig into the earth (i.e. log cribs and anti-tank ditches) the permafrost would be impacted. These are filled in after the action takes place. Subsidence and snow melt ponds could increase in years following the disturbance (Franklin et al., 1976). Movement of tracked vehicles and snowmobiles would have similar impacts, and tracks would be seen for 10 to 15 years after the action. These activities have already occurred in manuever areas and would be projected to increase by 25 percent with the addition of 1130 troops.

Biological Environment

4A.111 Terrestrial. The negative impacts associated with training in Alaska would be in conjunction with land clearing and construction on permafrost soils. Secondary and lesser impacts would be from noise, as it disturbs wildlife. These activities are ongoing at Fort Richardson, but would increase due to increased troop activity.

4A.112 Noise may be continuous during construction and excavation and from low-level helicopter flights and sporadic from weapons and mortar. Wildlife would be disturbed, perhaps stop eating or move away from the source. The most sensitive species on Fort Richardson are the Dall sheep in the mountains and the few brown (or grizzly) bears present. Since moose are hunted, they would generally avoid the weapons areas.

4A.113 Land clearing would take place in activities such as construction of temporary landing fields, bivouac areas, and cutting brush for camouflage activities. Removal of vegetation and the moss groundcover exposes the soils to melting erosion, and ecosystem degradation. If the heavy equipment only mows or crushes vegetation, plants may regenerate the next season from sprouting and suckers. However, if caterpillar blades dig down to destroy the root system, recovery would be longer, perhaps 20 to 40 years (Wolff, 1976). However, clearing may increase the moose browse availability.

4A.114 Aquatic Ecosystems. Impacts on aquatic systems are described for the existing training in U.S. Army Corps of Engineers (1979), Environmental Impact Statement. These impacts would continue, but due to the increased troop activity, field manuevers might increase in frequency. For example, the Eagle Flats area is important to nesting swans. Any increase in firing or vehicles in this area might disturb the swans or other waterfowl. Any stream crossing by trucks or tracked vehicles would cause siltation of streams. Vehicles around Otter Lake or other wetlands would cause an impact by disturbance and compaction. Secondary pollution from Cook Inlet disposal of sewage could be considered as an indirect impact on marine/estuarine communities.

4A.115 Threatened and Endangered Species. No impacts are anticipated, since the U.S. Fish and Wildlife Service's Office of Endangered Species has stated that none of these species are present on Fort Richardson (Mallory, 1984).

On-Post Population

4A.116 New troops to be moved to Fort Richardson are shown below:

	Year				
	1984	1985	1986	1987	1988
Officers	524	529	565	641	641
Enlisted	3964	4071	4679	4972	4972
Civilians	1387	1394	1440	1504	1508
Support	NA	-26	8	+25	NA
HSC	NA	15	24	22	0
TSA	NA	+8	-14	-20	-2

4A.117 This represents a 25 percent increase in military, 12 percent increase in civilian jobs and an additional 1270 dependents to Anchorage.

Cultural Resources

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Geology, Minerals and Soils

4A.110 Increased training would likely cause a minor increase in erosion on manuever areas. Some of the alpine tundra (e.g. near Temptation Peak) would be impacted.

Biological Environment

4A.111 Terrestrial. The negative impacts associated with training in Alaska would be in conjunction with land clearing and construction on permafrost soils. Secondary and lesser impacts would be from noise, as it disturbs wildlife. These activities are ongoing at Fort Richardson, but would increase due to increased troop activity.

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Land Use

4A.118 Land use changes would be primarily in the area of the main garrison. These facilities would have to be upgraded:

- o Airport apron area
- o Gas station
- o Oil and fuel storage
- o Administrative buildings
- o Vehicle storage
- o Dining facility
- o Auditorium
- o Rec-center and fields

4A.119 Most of this construction would be to rehabilitate the existing facilities (U.S. Army Corps of Engineers, 1983c). New battalion blocks would be built north or south of the Davis Highway near Camp Carrol.

4A.120 A new enlisted bachelor's quarters to house 530 troops would be constructed or modernized, since those on-post facilities are already full. In addition, the 172nd Brigade forecasted a need for a new dental clinic (30 chairs) and a child care center (Anderson, 1984). It is assumed that these facilities would be on the main cantonment area, and therefore, would not affect on-post land use.

Noise

4A.121 Temporary noise would result from construction activities from the above activities, plus from equipment clearing those sites. For example, a bulldozer at 100 feet has noise levels about 80 dBA.

4A.122 Noise would be increased on Elmendorf Air Force Base as troops and supply cargo planes fly in. Helicopters flying low and at landing would contribute noise in the range of 70-80 dBA.

4A.123 Assuming that 1290 new automobiles arrive on-post, then vehicular noise levels on Davis and Richardson Drives would increase by a minor amount. Noise from the Eagle River ranges would affect the off-post community up to 10 km away. (See Anchorage region description).

SUPERSEDED
AUG 1984

Air Quality

4A.124 The addition of 1290 private vehicles and supporting trucks would add to local automobile emissions by about 20 percent. This would add to the existing winter carbon monoxide problem.

4A.125 Some of the existing boilers on-post are being rehabilitated to coal. If the supplemental energy supply is coal, then there would be an increased output of SO_x and NO_x as a result of heating the additional barracks (MacGlence, 1984).

Water Supply

4A.126 While the military only uses 3.8 of its allotted 7.1 MGD from Ship Creek, the surface water availability may be limited in the winter. Therefore, the existing wells on Fort Richardson may have to be used as an interim groundwater supply for a few years.

4A.127 To operate the three groundwater wells at one time, some new pipes would be required. No further intake from Ship Creek would be anticipated until the Eklutna Water Project is completed, since Ship Creek must supply Anchorage with interim water.

Wastewater Disposal

4A.128 As discussed previously, sewage treatment is a limiting factor. Fort Richardson should investigate the potential for building its own sewage treatment plant to provide at least secondary levels of treatment. Currently the military is connected to the regional system which only has primary treatment.

Solid and Hazardous Waste

4A.129 Since most housing would be off post, the impacts would be on the community of Anchorage. On post the new enlisted troops would generate 3,600 pounds of solid waste per day. The existing Fort Richardson landfill would last nine years.

4A.130 A 1983 Installation Assessment Report on Fort Richardson Contaminated Areas (draft in press, 1984) states that there are 9 dump areas and one previous PCB spill area, which was sealed with concrete. Hazardous wastes will be handled in accordance with USATHAMA and USAEHA guidelines, federal and state rules and regulations.

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SUPERSEDED
AUG 1984

Housing

4A.131 Barracks for 530 enlisted bachelors would have to be constructed. Under current conditions on-post, the square foot per troop allotment would be reduced to 72 ft^2/troop, until new bachelor enlisted quarters are built. The current housing shortfall for families on Fort Richardson is projected as follows (Wade, 1984):

- o Officers (296 in 1988)
- o Enlisted (1640 in 1987)

Schools

4A.132 Assuming that new families live off-post, there would be no on-post school impacts.

Health Care

4A.133 Elmendorf Hospital would continue to provide active duty Army health care. A dental clinic may be needed for Fort Richardson, and the troop medical clinic could be upgraded to a full health care clinic.

Public Safety

4A.134 See previous discussion under Anchorage region. The Provost Marshall and military police will enforce laws on Fort Richardson.

Traffic and Transportation

4A.135 More cars on Glenn Highway would add a 10 percent increase in daily traffic, resulting in one more accident per year. The increased traffic would be from 530 troops on-post with vehicles and 840 commuters to the post from their homes. In the 1986-1987 timeframe, traffic flow could disrupted by several construction projects (e.g. Knik Arm Crossing, widening Glenn, Highland Drive exchange, Bonaface intersection).

4A.136 On Fort Richardson there are 60 miles of surfaced, 90 miles of unsurfaced road, and 30 miles of railroad, which are adequate to handle the proposed new traffic on-post. Davis Highway may experience heavy morning and afternoon traffic.

4A.137 The Anchorage area experiences heavy air traffic, because one in five families has an airplane. On Elemendorf and Fort Richardson, these airfields tie down numerous private and club-owned small planes. The incoming troops may increase the local

air traffic. Increased air traffic may be a problem, because the air traffic in Anchorage is already significant. Apron areas may have to be expanded.

Cultural Resources

4A.138 Previous cultural resource studies of Fort Richardson have indicated that the past overall has a very low potenntial for the presence of significant cultural resources. Several specific areas within the post, however, were indicated having a higher potential, but for various reasons these areas have not been examined. It is anticipated that the potential for impacts, if any, to significant cultural resources at Fort Richardson under this alternative would be minimal.

4A.139 Although the exact location and nature of many possible cultural resources, particularly archeological resources, is unknown, the potential impacts of the proposed action can be generally discussed. Basically, any action which produces ground disturbances in any form would have a potential for disturbing an archeological resource, thereby destroying data. Construction of new buildings and facilities, and establishment of roads include such elements as excavation, grading, filling or stockpiling of materials. All of these elements have a potential for disturbance or destruction of archeological materials. Renovation of existing buildings or demolition can damage and destroy significant historic structures.

4A.140 Many training activities, including maneuvering of vehicles and digging of foxholes, cause ground disturbances that have a potential for damaging or destroying an archaeological resource. Establishment of new training areas or increases in land utilization frequency for training over current levels can increase the potential for impacts to undisturbed cultural resources.

4A.141 Considerations will be given to identifying potential cultural resources, as well as protecting those known to exist. Authority for these actions are found in Army Regulation AR-420-40, Facilities Engineering, Historic Preservation (April 15, 1984) effective 15 May 1984. The procedures for accomplishing these measures are detailed in the Army Technical Manual TM-5-801-1, Historic Preservation-Administrative Procedures and TM-5-801-2, Historic Preservation-Maintenance Procedures. In regard to the installation, the prime limitation would be to prohibit any destruction or alteration of all or part of any significant site through whatever measures are necessary (e.g., establishment of limited-use areas). It should be noted that it is always possible for studies to miss an archaeological site, particularly one which

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- o Officers (296 in 1988)
- o Enlisted (1640 in 1987)

These numbers are for personnel who are eligible for quarters, and include the 1984 shortfall for Fort Richardson.

Schools

4A.132 Assuming that new families live off-post, there would be no on-post school impacts.

Health Care

4A.133 Elmendorf Hospital would continue to provide active duty Army health care. A dental clinic may be needed for Fort Richardson, and the troop medical clinic could be upgraded to a full health care clinic.

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4A.134 See previous discussion under Anchorage region. The Provost Marshall and military police will enforce laws on Fort Richardson.

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4A.136 On Fort Richardson there are 60 miles of surfaced, 90 miles of unsurfaced road, and 30 miles of railroad, which are adequate to handle the proposed new traffic on-post. Davis Highway may experience heavy morning and afternoon traffic.

4A.137 The Anchorage area experiences heavy air traffic, because one in five families has an airplane. On Elemendorf and Fort Richardson, these airfields tie down numerous private and club-owned small planes. The incoming troops may increase the local

shows little or no surface evidence of its presence. Because of this, all construction contracts must allow for this possibility by specifying that, in the event that a suspected archaeological site is encountered during construction or some other form of activity, operations in the area would be suspended until the site is investigated by a professional archaeologist. This construction contract provision is required by 32 CFR 650.192, Department of the Army, Environmental Protection and Enhancement, Peacetime Responsibilities, Historic Preservation, Archaeological Sites (March 15, 1978). Similarly, training activities that involve the use of new areas or the increased use of areas presently used may uncover evidence of archaeological sites that was not uncovered by prior studies. Officers in charge of field activities should be made aware of this possibility and procedures should be established whereby the officer could inform the installation's Historic Preservation Committee of any finds so that the committee may take appropriate measures to avoid the accidental destruction of a site. Additionally, since the looting of sites by irresponsible persons can be a problem, security measures should be instituted to prevent destruction of archaeological data in this manner.

FORT LEWIS AND THE TACOMA-OLYMPIA, WASHINGTON REGION

4A.142 This section is a description of potential impacts on Fort Lewis and its subinstallations that could result from stationing a light infantry brigade. The time frame of the analysis begins at present and continues through FY 1989. During this time the 9th Infantry Division, currently at Fort Lewis, will continue to undergo changes in the conversion to a High Technology Motorized Division. This and other ongoing personnel changes are included as the basis for the impact analysis; the net result is the focus for assessment.

Tacoma-Olympia, Washington Region

4A.143 Under the proposed alternative, 2,569 military personnel would be stationed at Fort Lewis directly assigned to the light infantry brigade (Table 4A-6). Most of the troops would arrive on-post by year end FY 1986. The potential effects from this proposed alternative in addition to other on-going personnel changes are described below.

Biological Environment

4A.144 Disturbance to the regional biological environment could result from the following types of activity associated with an increased military population:

TABLE 4A-6

MANPOWER PHASING AT FORT LEWIS WITH A BRIGADE OF THE PROPOSED LIGHT INFANTRY DIVISION AND OTHER ONGOING ACTIVITIES FISCAL YEAR 1983 THROUGH 1989

Fiscal Year (End)	Total Personnel			Direct Light Infantry Division (-) Personnel	
	Officers	Enlisted	Civilians	Officers	Enlisted
1983	2,782	22,076	4,067	---	---
1984	3,007	22,972	4,132	---	---
1985	3,165	21,699	4,127	---	---
1986	3,500	23,882	4,283	187	2,235
1987	3,550	24,607	4,306	199	2,370
1988	3,598	24,760	4,319	---	---
1989	3,648	26,076	4,342	---	---

Source: U.S. Forces Command 1984e.

SUPERSEDED
AUG 1984

- o Housing construction
- o Noise from increased frequency of training activities
- o Silt from river crossing operations.

4A.145 New housing that could be built from the 15 to 16 percent increase in military personnel by 1989, could result in some habitat loss in the conversion of undeveloped lands. Species of concern in the area include the rigid white topped aster, a candidate for federal listing under the Endangered Species Act and the bald eagle. Bald eagles are known to nest in the area and use the Muck Creek drainage and Nisqually River. It is unlikely that adverse effects to these species would result.

4A.146 Preliminary estimates indicate a 20 to 25 percent increase in training activities may result from stationing a light infantry brigade. Noise producing activities such as artillery practice and helicopter use (with about a 10 percent increase) would increase and could disturb area wildlife. Fording streams and river crossing operations may also increase by 30 percent. Added siltation to area streams could occur, although sediment traps are currently employed on the Nisqually (Lanning, 1984). Additionally, care is taken not to disturb the Nisqually habitat during salmon spawning season to avoid potential adverse effects to the fishes food source for bald eagles as well as the basis for a significant fishery. Sediment increases during times when river crossings are allowed, however, could adversely affect aquatic biota downstream.

Demography

4A.147 In all, the off-post military related population (military families and bachelor officers) would reach about 39,300 by year end 1989. By then, there would be between a 15 and 16 percent increase (over year end FY 1983) in military personnel at Fort Lewis from the stationing activity and other ongoing personnel changes; from 24,858 in FY 1983 to 28,724 in FY 1989. An estimated 8 to 9 percent of the 1989 military population would be directly assigned to the light infantry brigade. Civilian personnel at the post would increase by 7 percent by then. Civilian employment is expected to draw on the existing local labor pool (Crane, 1984). As indicated by Table 4A-6, troops directly assigned to the light infantry brigade would arrive on post during FY 1986 and 1987. By year-end 1987 about 14,200 families would be associated with the post; housing could be provided for 3,509 leaving about 10,200 families living in the surrounding area, an increase of 1,310 over 1983 levels (Fort Lewis Office of Public Affairs, 1984). Total off-post military family population would be about 37,400. By 1989 off-post military families would amount to about 11,000, an increase of 1,610 over 1983, for a total related population of 38,500 or

5 percent of 1990 projections for Pierce and Thurston counties combined (Tacoma-Pierce County Chamber of Commerce, 1981; Thurston Regional Planning Council, 1984). All single enlisted troops could be housed on-post in adequate accomodations while a FY 1989 deficit of 770 Bachelor Officer Quarters would leave these individuals seeking off-post housing.

4A.148 Based on the current distribution of off-post personnel, most of the 1989, 11,000, off-post military families would probably live in Pierce County. Currently, about 85 percent of off-post families live in Pierce and 10 percent in Thurston. Assuming this proportion does not change, by 1989 an estimated 9,350 families, (with dependents almost 33,000 people) could reside in Pierce County, an increase of about 1,370 (up 17 percent), while 1,100 could live in Thurston; an increase of about 160 families. The remaining families would live elsewhere. By 1989, the off-post population could increase over all by 17 percent over 1983 levels (as reported by Fort Lewis Office of Public Affairs, 1984).

4A.149 It is probable that communities currently occupied by Fort Lewis families would experience growth first. These communities are: Spanaway-Parkland, Lakewood-Steilacoom, and Tacoma in Pierce County and the Lacey, Olympia, Tumwater area in Thurston County. Some families could move south of the fort around Yelm and Rainier, which are seen as growth areas by local planners (U.S. Army Corps of Engineers, Seattle District, 1984b).

Land Use

4A.150 Regional land use changes directly related to the 1989 military population could result from residential construction and development. Area housing projections indicate a need for about 20,400 units in Pierce County by 1989. If needs result in constructed units, in all likelihood currently undeveloped land would be converted. Some of the converted land could be attributed to the stationing alternative. Areas which could potentially experience the first increases in residential development from the military and other population growth would be near existing, developing and planned utilities (i.e. sewers).

4A.151 Within the Pierce-Thurston area, Pierce County would likely receive the bulk of direct land use changes from residential development and indirect changes in commercial development. Evidence suggests that the area could accommodate housing and related land use needs from the post under the alternative of assigning a light infantry brigade to Fort Lewis (Woutila, 1984).

- o Housing construction
- o Noise from increased frequency of training activities
- o Silt from river crossing operations.

4A.145 New housing that could be built from the 15 to 16 percent increase in military personnel by 1989, could result in some habitat loss in the conversion of undeveloped lands. Species of concern in the area include the rigid white topped aster, a candidate for federal listing under the Endangered Species Act and the bald eagle. Bald eagles are known to nest in the area and use the Muck Creek drainage and Nisqually River. An investigation into potential effects to eagles will be made through Section 7 consultation with the U.S. Fish and Wildlife Service.

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SUPERSEDED
AUG 1984

Noise

4A.152 Major sources of noise in the Tacoma-Olympia area are vehicular traffic on regional highways and aircraft operations and overflights associated both with military installations (McChord AFB, Fort Lewis) and commercial airports (Seattle-Tacoma). Under the proposed stationing alternative, automobile traffic noise, especially in the vicinity of Fort Lewis during peak commuting periods, could increase. Aircraft operations at McChord AFB associated with this stationing alternative may experience an increase of about 5 percent. Flight operations involving rotary wing aircraft may increase by 10 percent in the vicinity of Fort Lewis (Lanning, 1984).

Regional Economic Activity

4A.153 The regional economic environment extends beyond the immediate Seattle-Tacoma-Olympia area which is principally influenced by population changes, housing needs and infrastructure requirements of Fort Lewis personnel. For analysis, the following Washington State counties within a 50 mile radius of Fort Lewis are included as the economic region: Grays Harbor, King, Kitsap, Lewis, Mason, Pierce and Thurston.

4A.154 The Economic Impact Forecast System (EIFS) has been used to estimate changes in total business volume and personal income within the region. Model outputs for these parameters associated with mission change and construction resulting from the stationing of a division minus at Fort Lewis alternative are displayed in Table 4A-7. Model outputs for mission change are expressed as permanent increases which reoccur on an annual basis over the life of the stationing alternative. Outputs associated with construction are the highest estimated values which would occur for the parameters in a single year over an expected five year construction period (FY85-FY89).

4A.155 Interpretation of changes in these parameters is possible through comparison of the percent change values associated with each parameter and the rational threshold value (RTV). Percent change value is that fraction of the regional total for a parameter that is attributable to the stationing of a division minus alternative. The RTV is the maximum historical percentage fluctuation from yearly average change rates for each parameter. Percent change values which approach or exceed RTV values for one or more parameters may be considered as regional stress equal to or greater than that experienced over the period for which the RTV has been calculated (1965-1978). Comparison of the percent change and RTV values in Table 4A-7 shows that under the worst case of

TABLE 4A-7

ECONOMIC EFFECT OF THE PROPOSED STATIONING ALTERNATIVE ON THE SEATTLE-TACOMA-OLYMPIA REGION[a]

Category	Highest One-Time Annual Change Due to Construction		Recurring Annual Change Due to Proposed Stationing		Rational Threshold Value	
	Amount of Change	Percent Change	Amount of Change	Percent Change	Negative	Positive
Total business volume	$200,182,000	+.55	$341,868,000	+.94	-8.5	8.6
Local personal income	$ 62,497,000	+.28	$305,833,000	+1.39	-5.4	5.3
Employee equivalent[b]	2,581	+.33	13,753	+1.75	-5.2	5.8

[a]All changes in 1984 dollars.

[b]Added personal income is equivalent to the average annual salaries of the number of persons shown.

Noise

4A.152 Major sources of noise in the Tacoma-Olympia area are vehicular traffic on regional highways and aircraft operations and overflights associated both with military installations (McChord AFB, Fort Lewis) and commercial airports (Seattle-Tacoma). Under the proposed stationing alternative, automobile traffic noise, especially in the vicinity of Fort Lewis during peak commuting periods, could increase. Aircraft operations at McChord AFB associated with this stationing alternative may experience an increase of about 5 percent. Flight operations involving rotary wing aircraft may increase by 10 percent in the vicinity of Fort Lewis (Lanning, 1984).

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4A.153 The regional economic environment extends beyond the immediate Seattle-Tacoma-Olympia area which is principally influenced by population changes, housing needs and infrastructure requirements of Fort Lewis personnel. For analysis, the following Washington State counties within a 50 mile radius of Fort Lewis are included as the economic region: Grays Harbor, King, Kitsap, Lewis, Mason, Pierce and Thurston.

4A.154 The Economic Impact Forecast System (EIFS) has been used to estimate changes in total business volume and personal income within the region. Model outputs for these parameters associated with mission change and construction resulting from the stationing of a division minus at Fort Lewis alternative are displayed in Table 4A-7. Model outputs for mission change are expressed as permanent increases which reoccur on an annual basis over the life of the stationing alternative. Outputs associated with construction are the highest estimated values which would occur for the parameters in a single year over an expected five year construction period (FY85-FY89).

4A.155 Interpretation of changes in these parameters is possible through comparison of the percent change values associated with each parameter and the rational threshold value (RTV). Percent change value is that fraction of the regional total for a parameter that is attributable to the stationing of a division minus alternative. The RTV is the maximum historical percentage fluctuation from yearly average change rates for each parameter. Percent change values which approach or exceed RTV values for one or more parameters may be considered as regional stress equal to or greater than that experienced over the period for which the RTV has been calculated (1965-1978). Comparison of the percent change and RTV values in Table 4A-7 shows that under the worst case of

stationing a division minus at Fort Lewis no significant impact would be likely because the rational threshold values are well within historical fluctuations. The stationing of brigade under this alternative would have even less of an effect. A printout of the EIFS model inputs and outputs and a brief explanation of the model is found in Appendix 1.

4A.155a It is likely that some of the civilian jobs created as a result of the stationing activity could be filled be spouses of incoming military personnel. As described in Appendix L about 36 percent of the spouses of Army enlisted men and 35 percent of Army officer spouses are members of the civilian workforce (Doering and Hutzler, 1982).

Air Quality

4A.156 Impacts to regional air quality associated with this stationing alternative would result primarily from vehicular traffic, both on- and off-post, and increased stationary combustion source emissions. The Tacoma-Olympia area is generally considered a Class II Prevention of Significant Deterioriation (PSD) area. Licensing of stationary emissions sources will therefore be required, and air quality standards must be met. As fuel use increases, conversion of existing stationary thermal plant capacity to natural gas and/or replacement of some older facilities with new units would help assure that the ambient air quality of the region would not be significantly impacted.

Water Supply

4A.157 In the predominantly developed areas of Pierce County, water is provided principally from wells through community distribution systems. Only the City of Tacoma utilizes surface water as its principal water source. Most community water supplies in Pierce County are considered adequate to support the expected growth in regional population through the year 1990 (U.S. Army Headquarters, 9th Infantry Division, Fort Lewis, 1979). Water supply in Thurston County is totally dependent on groundwater sources, with community distribution systems in Olympia, Lacey and Tumwater only. In the remaining rural areas, private wells supply individual dwellings and a few small community areas (trailer parks). Although groundwater supplies in these areas of Thurston County are generally considered adequate for present demand levels, increases in residential and commercial development, including increases in population associated with actions at Fort Lewis, may be limited by water supply. Increased population growth and development in Thurston County may affect groundwater quality since

these areas utilize septic field systems exclusively for wastewater management (U.S. Army Headquarters, 9th Infantry Division, Fort Lewis, 1979).

Wastewater Disposal

4A.158 The developed areas of Pierce County are served by community wastewater collection systems. Recent expansion of the

Lakewood/Spanaway area system will provide collection capacity in excess of expected growth. Also, the City of Tacoma treatment system has excess capacity. Growth in regional population asssociated with this stationing alternative at Fort Lewis may be expected to reduce the excess capacity of regional systems at a slightly higher rate than presently projected. Wastewater management in northeastern Thurston County is accomplished entirely through septic field systems. Increased population density in this area would increase wastewater loadings and could potentially threaten ground water quality.

Solid Waste Disposal

4A.159 Solid waste in the southeastern Puget Sound area is generally collected by private companies and disposed of at community-owned or private landfills. Capacities and design lifetimes of these regional landfills vary widely. As existing landfills reach their limits, some are being expanded and other alternative sites are being developed. Increases in regional population associated with this stationing alternative at Fort Lewis can be expected to increase the rate of landfill capacity usage and accelerate the need for new facilities.

Housing

4A.160 By year end FY 1987 about 10,700 Fort Lewis military families would require off-post housing; by 1989 this number could increase to about 11,000. Current housing vacancies in the area, as assessed by the Housing Referral Office, now amount to about 13,440 (U.S. Army Headquarters I Corps and Fort Lewis, 1984). The military fair share is 334 rentals and 186 sales. It is likely that the 1987 or 1989 demand from the military population increase, would not stress the available supply. Because of this, construction of new on-post housing is not considered necessary.

4A.161 Pierce County planners have projected that housing needs by 1990 over current stock would require the construction of about 20,400 units (Frerichs, 1982). If current off-post settlement patterns of military families persist, housing for additional military families could represent about 7 percent of total projected needs. Based on the current stock in the area it is likely that the County could accommodate potential requirements.

4A.162 Thurston County planners have projected an additional housing need of about 2,300 by 1985 (Thurston Regional Planning Council, 1984). If 160 additional off-post Fort Lewis families settle in Thurston by 1987 they could require about 7 percent of the 1985 projected need. In general, Pierce County is more conducive to large scale residential development than is Thurston, so it is

likely Pierce County would experience most of the growth and could accomodate it.

4A.163 Another possible stationing activity in the region, a U.S. Navy base, has a potential to increase housing demands in the Fort Lewis region. The stationing would ultimately involve about 16 ships and 10,000 military personnel (Doughty, 1984). The preferred location is Everett, Washington, about 65 miles north of Fort Lewis, which, if chosen, would probably exert little if any effect on the Tacoma area housing supply. However, two other alternative locations include Bremerton and Seattle. If either of these possibilities are chosen, demand for area housing could increase.

Schools

4A.164 By 1989 an estimated 13,000 school age children could be affiliated with Fort Lewis military personnel, 9,900 could live off-post. In 1983, Fort Lewis students represented about 10 percent of the two county enrollment. The estimated number of off-post students, 9,900 by 1989, would be about 9 percent of the counties' current levels.

4A.165 Several school districts presently are operating at or exceeding capacity, particularly at elementary schools including the following: Bethel, Clover Park, Tacoma and North Thurston (Chapter 3). Without expansion, any additional students at overburdened facilities would further stress the educational resources. However plans detailed in Chapter 4B could be activated in Thurston County to construct an elementary and/or high school. Individuals at the school district believe an increase could be accommodated with enough advanced warning (Moffatt, 1984). On-post, the Clover Park district has plans to expand classroom space and possibly construct a new elementary school, either of which would help solve the capacity problems.

Health Care

4A.166 The personnel increases estimated for Fort Lewis with a light infantry brigade would not be likely to stress area-wide health services. Many hospitals in the region currently have adequate, unused capacity.

Cultural Resources

4A.167 There is a potential for disturbance or destruction of cultural resources from private residential or commercial

SUPERSEDED
AUG 1984

development that could occur as a result of the stationing alternative.

Fort Lewis, Washington

4A.168 Potential effects, on post, from stationing a light infantry brigade at Fort Lewis are described below. Some adverse effects could result on the biological environment from increases in training activites. Preliminary estimates indicate wheeled vehicle use, foxhole and latrine digging and other similar activities could increase by 20 to 25 percent. Practice in stream and assault river crossings could increase by 30 percent (Lanning, 1984). Adverse effects on the socioeconomic environment could include capacity problems at schools from an increase in students. The phasing of military personnel would be concentrated in FY 1988 and 1987. Details are provided below.

Geology, Minerals and Soils

4A.169 Impacts at Fort Lewis would be limited to soil disturbance and erosion associated with construction activities and increased training area utilization. Construction impacts would be centered primarily at North Fort Lewis, where some existing structures would be removed, new barracks constructed and utilities installed. With the stationing of an infantry brigade, training activities at Fort Lewis are estimated to increase overall by about 20 percent. Specific training activities which can result in soil erosion, transport and deposition impacts include fording of streams and assault river crossings, barrier construction, foxhole digging and vehicle use (tracked, wheeled). Under this alternative, stream fording and assault river crossings are expected to increase by about 30 percent, barrier construction and foxhole digging by 25 percent. An existing policy at Fort Lewis requires that foxholes and other excavations be refilled on completion of training exercises. Tracked vehicle use at Fort Lewis would remain the same since the light infantry brigade does not utilize them. Wheeled vehicle use would increase, but impacts would be minimum since they principally utilize existing roads on the post (Lanning, 1984).

Biological Environment

4A.170 Major sources of disturbance to the biological environment could result from facility construction and increased training involving river crossings, wheeled vehicle use, camouflage use, foxhole and latrine digging, pyrotechnic ammunition use, barrier preparation and demolition, airmobile operations, artillery practice, night and day and increases in the standard training exercises. There would be no increase in tracked vehicle use

development that could occur as a result of the stationing alternative.

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(Lanning, 1984). Preliminary estimates indicate that most of these activities could increase by 20 to 25 percent (Lanning, 1984).

4A.171 Terrestrial Ecosystems. Depending on the location of construction activities on previously undeveloped land (see Appendix F) portions of the following types of habitats could be altered:

- o Forests of variable density, dominated by Douglas fir
- o Prairies and grasslands
- o Open fields or recently harvested forest land

4A.172 Disturbance to terrestrial fauna could result from construction activities in undeveloped areas. New construction would result in the loss of varied habitats. Up to 200 acres of previously undeveloped property could be altered which is much less than 1 percent of the total fort area. Disturbance due to construction noise and increases in artillery and small arms firing could occur during the day and at night. Habits of numerous birds and small mammals could be disrupted. The training activities outlined in the introduction to this section would all contribute to increased noise and disturbance to the terrestrial fauna at the fort.

4A.173 Aquatic Ecosystems. Siltation from construction site erosion and increased training in assault river crossings could affect aquatic biota on and off post. During periods when crossings would occur turbulance producing activities could increase by an estimated 30 percent potentially affecting area aquatic species adversely (Lanning, 1984). An increased risk of fuel spills or leaks would also be likely, possibly resulting in adverse effects to the aquatic environment. Sediment traps, hatchery maintenance and scheduling activities as identified in the DEIS are not currently employed, but would reduce likely effects if used with increased training activities.

4A.174 Threatened and Endangered Species. Species of concern on Fort Lewis include the rigid white topped aster, a candidate for federal listing under the Endangered Species Act, and the threatened bald eagle. An investigation into potential impacts to the eagles will be made through Section 7 consultation with the U.S. Fish and Wildlife Service.

On-Post Population

4A.175 Under the proposed alternative, by 1990, there would be a 15 to 16 percent increase (over FY 1983) in military personnel at Fort Lewis; from 24,858 in FY 1983 to 28,724 in FY 1989. The number of officers would increase by 31 percent, enlisted by 13 percent. The bulk of troops associated with the light infantry division would be on post by the end of FY 1986. Of the total military population

at Fort Lewis by 1989, about 9 percent would be assigned directly to the light infantry brigade.

4A.176 In all, about 26,200 military plus dependents would live on post by year-end FY 1989. No additional family housing units would be constructed as a result of this alternative, but barrack space would be built for 1,323 enlisted, and 50 bachelor officers. The on-post population would represent about a 6 percent increase over year end 1983.

Land Use Changes

4A.177 Changes in land use on post could result from the construction of training ranges and vehicle maintenance shops and increased use of existing training areas. Preliminary estimates indicate that the frequency of training area use could increase by 20 to 25 percent (Lanning, 1984).

4A.178 Construction of new small arms ranges and vehicle maintenance shops could result in the conversion of previously undeveloped land at the fort. Tentative estimates indicate about 200 acres could be involved in such disturbance, much less than 1 percent of the fort's total area (Appendix F). Numerous additions, renovations and new construction of some structures would occur in previously developed areas. Possible renovations in the original garrison area could affect a potential historic district (Glover, 1984). Although construction sites have not been identified, it is likely that most development for the light infantry brigade would occur in the North Fort area, the portion of the installation north of Interstate 5 (Glover, 1984; Daniels, 1984).

4A.179 Currently used training areas would continue to be used for most of the same activities now practiced by the 9th Infantry Division. It has been estimated that most regularly conducted exercises would increase in frequency by 20 to 25 percent. Increases in some specific activities could contribute to problems of erosion, wildlife disturbance and the possible destruction of cultural resources. Preliminary estimates have been developed for increases of 20 to 25 percent in the following activities (Lanning, 1984):

- Camouflage use - current policy prohibits cutting trees except lower branches of some conifers
- Foxhole/latrine digging
- Pyrotechnics ammunition use

- o Wheeled vehicle use
- o Barrier Preparation/demolition
- o Fording Streams/Assault River Crossings

There would be no increase in tracked vehicle use.

4A.180 An increase in training activities and development of new areas could curb some recreational uses, or conflict with them, particularly hunting and fishing activities. Land use conflicts currently experienced at the fort would be likely to continue under the proposed alternative. However, Fort Lewis does not have any land use plan inconsistent with local, state or national plans (U.S. Army Headquarters, 9th Infantry Division and Fort Lewis, 1979).

Noise

4A.181 Primary noise impacts associated with the stationing of a light infantry brigade would result from artillery training and increased air mobile exercises (involving helicopters) and secondarily from increased small arms firing on existing and new training ranges.

4A.182 Artillery-related noise impacts are expected to change under the proposed stationing alternative. Presently, virtually all training on the post is conducted by the 9th Infantry Division, whose primary artillery weapon is the M-198, 155-mm howitzer. The proposed light infantry brigade will utilize the smaller M-102, 105-mm howitzer. To accommodate the light infantry brigade at Fort Lewis, units of the 9th Infantry Division would train increasingly at Yakima Firing Center. Firing of the 155-mm howitzer at Fort Lewis would, therefore, decrease significantly. Applying a three-to-one equivalence ratio of the 105-mm high explosive (HE) rounds to 155-mm HE rounds (U.S. Army EHA, 1983b), a considerable decrease in artillery impact intensity would occur at Fort Lewis as some training activities of the Ninth Infantry Division are shifted to Yakima Firing Center. Most noise complaints at Fort Lewis have been as a result of 155-mm firing (Lanning, 1984).

4A.183 In addition to the 105-mm howitzer, the light infantry brigade utilizes and trains with the 4.2-inch mortar. This weapon is considerably quieter than the 105-mm howitzer, so increased use at Fort Lewis would have minimal noise impact (Lanning, 1984).

4A.184 Under the light infantry brigade stationing alternative, use of rotary wing aircraft in air mobile training operations is expected to increase by about 10 percent. This factor would be

applied to all rotary wing aircraft operations at Fort Lewis, including the Gray Army Air Field. Transport aircraft (C-130, C-141) are seldom, if ever, used at Fort Lewis. For those operations requiring their use, troops will usually go to nearby McChord Air Force Base, or would utilize an on-post fuselage simulator for training. Increases in flight operations at McChord Air Force Base under this stationing alternative are expected to be less than 5 percent (Lanning, 1984).

4A.185 Other training activities, principally those involving small arms, demolition and grenade training on both existing and new training ranges, are expected to increase by about 20 percent (Lanning, 1984). Increases in noise levels on Fort Lewis and in adjacent areas as a result of this stationing alternative cannot be determined until a detailed training schedule has been established for the light infantry brigade. Should the brigade be stationed at Fort Lewis, simulation modeling of noise effects would be conducted as part of the Army's ongoing noise assessment program.

Air Quality

4A.186 Air emissions at Fort Lewis will be affected under this stationing alternative, primarily from increases in automobile and military vehicle traffic, air operations and training activity.

4A.187 Vehicle occupancy rate data collected in 1981 and reported in the MTMC Traffic Engineering Study for Fort Lewis (Hendrix and Brickhouse, 1982) indicate that the vehicle occupancy ratio (VO) for Fort Lewis was 1.24 as compared to the national average 1.37 for army posts. Using these two vehicle occupancy ratios and applying them to the projected net totals of off-post personnel commuting to Fort Lewis by 1989 (4,412 civilians; 11,000 off-post family military personnel) results in a total of about 12,400 vehicles (1.24 VO) at the present rate, or 11,200 vehicles (1.37 VO) based on the national average rate for military posts. These estimates represent increases of about 14 percent (1.24 VO) and 3 percent (1.37 VO) over current (FY 83) levels. Emissions loading at Fort Lewis resulting from commuting vehicles would, therefore, increase proportionately.

4A.188 Air emissions loading increases from on post activities would result primarily from increased flight operations, military vehicle use and increases in the on-post automobiles owned by personnel on post. Rotary wing aircraft operations are estimated to increase by approximately 10 percent. Military vehicles (wheeled) on post could increase in number by 269, or about 4 percent. Privately-owned vehicles on-post resulting from increases in resident population are more difficult to estimate since vehicle

ownership rates differ significantly according to population segment (enlisted, officers, married, families). All married military personnel are assumed to have 1.6 vehicles per family, bachelor officers are assumed to own one car and half of the unmarried enlisted personnel are assumed to own one car (U.S. Army Corps of Engineers, 1978). Under this stationing alternative, 3,509 families, 139 bachelor officers and 13,796 enlisted men would be on post by 1989. A total of approximately 12,600 privately-owned automobiles is anticipated at Fort Lewis. Emissions loadings (carbon monoxide, nitrogen oxide) would, therefore, increase in proportion to this addition.

4A.189 Stationary emissions at Fort Lewis arise principally from oil and gas-fired boilers which are used for space heating and hot water supply. Based on the present (FY1983) fuel mix at Fort Lewis, fuel oil consumption will increase by 4.84 Million gallons, natural gas by 0.65 million therms and propane by 12,400 gallons. Overall fuel use will increase by about 48 percent over present levels. Emission loadings for stationary sources on post would, therefore, increase proportionately.

4A.190 Presently, Fort Lewis is undertaking a fuel switching program to decrease use of liquid fuels (numbers 2, 4, 6 fuel oil) and replace them with natural gas for stationary use. Increased use of natural gas will contribute to a decrease in emissions from existing stationary facilities. Also, some older boiler capacity is being replaced with newer, more efficient units (Flood, 1984).

Water Supply

4A.191 Supplies of potable and irrigation water at Fort Lewis are considered adequate for all planned and proposed stationing actions through 1990. The only potential impact on water usage may be slight curtailment of irrigation during the summer months for fire protection purposes (Flood, 1984). Projects currently planned for the water supply system are to upgrade water quality (reduce corrosivity) and provide an additional 1.9 million gallons of storage capacity to support full mobilization requirements.

Wastewater Disposal

4A.192 The wastewater treatment system at Fort Lewis includes a primary and secondary treatement plant with sufficient capacity to serve a community of 75,000 people (Flood, 1984). The system serves Fort Lewis, DuPont, Camp Murray and McChord AFB. Current projections for on-post population growth by 1990 under this proposed alternative indicate a total on-post daytime working population at Fort Lewis of 33,000 and a maximum number of

SUPERSEDED
AUG 1984

dependents of 8,770 (U.S. Army Forces Command, 1984b). The present on-post daytime population of McChord Air Force Base is 7,492, and no signficant net changes in population are expected at McChord (Stokes, 1984).

4A.193 The population of DuPont is 599 (Pierce County Planning Department, 1983). With a combined projected population of approximately 50,000, treatment capacity would be more than adequate. Reduction of infiltration, which is presently being accomplished through repair and replacement of existing collector lines, would help assure that plant hydraulic capacity will not be exceeded (Jones and Stokes, 1984).

Solid and Hazardous Waste Disposal

4A.194 Non-hazardous solid waste from Fort Lewis and McChord Air Force Base are landfilled on a 180 acre site at the northern boundary of the post near the City of DuPont. Upon completion of an upgrading program to provide improved groundwater management (lining, leachate collection and treatement), the facility will have a design life of 20 years with all projected population changes (Flood, 1984). Also, a refuse incinerator planned for construction at Fort Lewis in 1987 will extend the landfill life to over 50 years through volume reduction of landfilled wastes (Flood, 1984).

4A.195 Generation of hazardous wastes associated with stationing of a light infantry brigade would occur primarily from vehicle maintenance. Wastes will therefore generally consist of lubricants, fuel, battery wastes, paint wastes and cleaning solvents associated with these maintenance activities. Hazardous wastes at Fort Lewis are currently segregated and stored according to type. Contract services are utilized to collect, recycle and/or dispose of hazardous wastes off-site. A 1983 study prepared for the U.S. Army Toxic and Hazardous Materials Agency (Environmental Science and Engineering, Inc., 1983) concluded that hazardous material problems at Fort Lewis pertain primarily to improper storage of pesticides and potential problems associated with earlier operations on post. No difficulties with current vehicle maintenance activities were cited.

Housing

4A.196 The proposed additions to the current housing facilities at Fort Lewis would include 1,323 more barrack spaces and 50 new bachelor officer quarters. No new family housing units are proposed. Without the proposed additions adequate on-post housing would be provided for the following:

REVISED 1984

TABLE 4A-4

ECONOMIC EFFECT OF THE PROPOSED STATIONING ALTERNATIVE ON THE FAIRBANKS, ALASKA REGION[a]

Category	Highest One-Time Annual Change Due to Construction		Recurring Annual Change Due to Proposed Stationing		Rational Threshold Value	
	Amount of Change	Percent Change	Amount of Change	Percent Change	Negative	Positive
Total business volume	$13,000,000	+2.5	$191,426,000	+36.3	-17.0	66.7
Local personal income	$ 9,800,000	+1.5	$292,118,000	+46.5	-14.7	59.7
Employee equivalent[b]	248	+1.05	9,688	+40.8	-6.7	30.2

[a]All changes in 1984 dollars.

[b]Added personal income is equivalent to the average annual salaries of the number of persons shown.

SUPERSEDED
AUG

4A.18 Interpretation of changes in these parameters is possible through comparison of the percent change values associated with each parameter and the rational threshold value (RTV). Percent parameter that is attributable to the stationing alternative. The RTV is the maximum historical percentage fluctuation from yearly average change rates for each parameter. Percent change values which approach or exceed RTV values for one or more parameters may be considered as regional stress equal to or greater than that experienced over the period for which the RTV has been calculated (1965-1978). Comparison of the percent change and RTV values in Table 4A-4 shows that there would be no change in total business volume or local personal income due to restationing or construction greater than that already experienced in the region. Employee equivalent for restationing indicates a considerable change over historical patterns. However, since the change due to the proposed action is compared to a 1972 economic data base (adjusted for inflation) that does not include the employment changes due to the Trans Alaska Pipeline, the actual increased employee equivalent would be considerably less than the calculated 44.2 percent.

4A.19 A printout of the EIFS model inputs and outputs and a brief explanation of the model is found in Appendix B.

Air Quality

4A.20 The Fairbanks region is a non-attainment area for carbon monoxide. The current problem would be exacerbated by increased emissions. Air quality impacts that would be expected to result from the proposed action are:

- o increases in automobile emissions, particularly carbon monoxide, from the increased number of privately owned vehicles;
- o increases in air emissions, particularly carbon monoxide, from motor vehicles and from aircraft during training exercises and during administrative activity on post;
- o increases in particulate emissions from training activities and construction that involve land clearing or off-road vehicle traffic;
- o increases in hydrocarbon emissions, particularly in winter months, due to heating of residential units off post; and
- o increases in ice fog due to vehicular and aircraft operation and to increased thermal loading at the Fort Wainwright power plant cooling pond.

4A.21 The air pollution contribution of emissions from privately owned vehicles is difficult to predict because it is difficult to ascertain whether automobile use by incoming military would be representative of the rest of the population; because vehicles owned by incoming military appear to be newer than those of residents (D.E. Williams, 1984); and because the borough is implementing, effective 1 July 1985, a mandatory motor vehicle emissions inspection and maintenance program (Fairbanks North Star Borough Ordinance No. 84-24) in response to the regional non-compliance with federal carbon monoxide air quality criteria.

4A.22 However, assuming that each incoming military and civilian personnel and their spouse has an automobile or truck and that 20 percent of the families have a third vehicle, there would be an additional 12,195 motor vehicles in the region as a result of the proposed action. In 1983, there were 61,390 cars and trucks in the Fairbanks North Star Borough (Chapman, 1984). The influx of new personal vehicles estimated to enter the region through 1989 as a result of the proposed project represents a 19.9 percent increase in automobiles over the 1983 inventory. Assuming proportionality of emissions, the direct regional increase in automotive emissions would be 19.9 percent in 1988 over the 1983 level due to the private vehicles associated with incoming personnel.

4A.23 Increases in motor vehicle and aircraft emissions due to military activity are less easy to quantify. Training activities are likely to increase six fold, so it is assumed that similarly, emissions due to training would also increase six fold. Since the on-post military and civilian population is anticipated to increase by a factor of approximately 1.6, emissions due to administrative activities can be assumed to increase also by a factor of up to 1.6 if there is no qualitative change in administration or space utilization that would alter current patterns. The actual contribution of military activities to the regional air quality cannot be quantified with available data, however, since it is unlikely to expect a one-to-one increase in activity with increase in population.

Water Supply

4A.24 Water supply in the immediate region of Fort Wainwright is from the Municipal Utilities System in the City of Fairbanks, from private wells or holding tanks in rural areas and the outskirts of town, and from military facilites on-post. The Municipal Utilities System currently supplies an average daily demand of 2.7 million gallons per day through a treatment facility rated at 3.5 million gallons per day (Wilsey and Ham, Inc., 1983). The 1983 population of the City of Fairbanks was enumerated to be 27,100

4A.18 Interpretation of changes in these parameters is possible through comparison of the percent change values associated with each parameter and the rational threshold value (RTV). Percent change value is that fraction of the regional total for a parameter that is attributable to the stationing alternative. The RTV is the maximum historical percentage fluctuation from yearly average change rates for each parameter. Percent change values which approach or exceed RTV values for one or more parameters may be considered as regional stress equal to or greater than that experienced over the period for which the RTV has been calculated (1965-1978). Comparison of the percent change and RTV values in Table 4A-4 shows that there would be no change in total business volume or local personal income due to restationing or construction greater than that already experienced in the region. Employee equivalent for restationing indicates a considerable change over historical patterns. However, since the change due to the proposed action is compared to a 1972 economic data base (adjusted for inflation) that does not include the employment changes due to the Trans Alaska Pipeline, the actual increased employee equivalent would be considerably less than the calculated 40.8 percent.

4A.18a It is likely that some of the civilian jobs created as a result of the stationing activity could be filled be spouses of incoming military personnel. As described in Appendix L about 36 percent of the spouses of Army enlisted men and 35 percent of Army officer spouses are members of the civilian workforce (Doering and Hutzler, 1982).

4A.19 A printout of the EIFS model inputs and outputs is found in Appendix B and a brief explanation of the model is found in Appendix I.

Air Quality

4A.20 The Fairbanks region is a non-attainment area for carbon monoxide. The current problem would be exacerbated by increased emissions. Air quality impacts that would be expected to result from the proposed action are:

- o increases in automobile emissions, particularly carbon monoxide, from the increased number of privately owned vehicles;
- o increases in air emissions, particularly carbon monoxide, from motor vehicles and from aircraft during training exercises and during administrative activity on post;
- o increases in particulate emissions from training activities and construction that involve land clearing or off-road vehicle traffic;

- o minor increases in hydrocarbon emissions, particularly in winter months, due to heating of residential units off post; and

- o increases in ice fog due to vehicular and aircraft operation and to increased thermal loading at the Fort Wainwright power plant cooling pond.

(Fairbanks North Star Borough, Community Research Center, 1984). The average per capita consumption is, therefore, (2.7×10^6) divided by (2.7×10^4) = 100 gallons per day.

4A.25 Assuming that:

- o all civilians and their dependents would live off-post;
- o of the 142 currently empty married quarters, 120 would be occupied at any one time by the married personnel associated with the incoming units;
- o 20 percent of all bachelor officers and no bachelor enlisted would live off-post; and
- o 50 percent of the off-post population would live in the City of Fairbanks and will be serviced by the Municipal Utilities System for water;

a total of 6,624 additional individuals would be drawing on the Municipal Utilities System for water supplies. At 100 gallons per day per person, this would require 662,000 additional gallons per day, placing an increased demand of 24.5 percent on the utilization of the water treatment plant from the current demand of 2.7 million gallons per day to 3.36 million gallons per day. This demand approaches the plant's current rated capacity of 3.5 million gallons per day. The Municipal Utilities System is currently considering expanding both its facilities and its service area, including the feasibility of supplying water to Fort Wainwright (Wilsey and Ham, Inc., 1983).

Wastewater Disposal

4A.26 Wastewater disposal in the region is handled by a treatment facility operated by the Municipal Utilities System with an 8-million-gallon-per-day rated capacity. Due to design problems, the treatment plant is restricted to 75 percent of operating capacity. This operating capacity of 6 million gallons per day is currently being approached. The treatment facility treats wastewater received from the City of Fairbanks, the area east of town (collected by the College Utilities Corporation), and from Fort Wainwright.

4A.27 Assuming that all of the military and civilians, and their dependents, would utilize the treatment facility at an average loading of 100 gallons per person per day, an increased capacity of 17,188 x 100 gallons, or 1.72 million gallons per day, would be

required due to the proposed action. The wastewater treatment plant would, therefore, have to be upgraded to adequately handle the rated capacity of 8 million gallons per day, or even to a capacity greater than 8 million gallons per day.

Solid and Hazardous Waste

4A.28 Solid waste, including ash from the power plant, is disposed of on post. The post does not handle or produce any industrial or nuclear wastes, chemicals, or biological weapons that might pose an environmental hazard, nor should there be any such material handled or produced as a result of activities of incoming units. Consequently, the only impacts on solid waste disposal would be derived from the solid waste disposal needs of the civilian and military personnel and their dependents that would live off post as a result of the proposed action. There would be 13,248 individuals living off post, assuming no new family housing units would be constructed on post. Since all solid waste in the borough, except that from Fort Wainwright, is consolidated in a central facility, all 13,248 individuals should be assumed to be contributors to the solid waste disposal facility. Assuming a current population of 59,600 (1983 population of 65,300 less 5,700 military and dependents on Fort Wainwright actually on-post), the added population burden to the borough solid waste disposal facility as a result of the proposed project would be 22.2 percent greater than at present. No known waste disposal problems are known that would be exacerbated by the proposed action.

Housing

4A.29 Housing supply has, until recently, been critically short in the Fairbanks North Star Borough. Given the assumptions that:

- o 75 percent of the incoming officers and civilians would be married;
- o 47 percent incoming enlisted would be married;
- o 120 of the current 142 empty housing units on post would be occupied by new personnel;
- o that the private sector in Fairbanks would be expected to provide housing to accommodate the remaining new non-bachelor personnel.

3,725 housing units would be needed in the Fairbanks area to accommodate the influx of married personnel by 1989.

SUPERSEDED
AUG 1984

4A.30 During October 1983, only 457 units were advertized for rent in the Fairbanks newspaper. During the first 10 months of 1983, only 900 housing units were authorized for construction within the borough, approximately half of which were multi-family units. If on-post housing is not provided, the current high rate of new construction in the Fairbanks area would have to be maintained through the year 1988 just to accommodate the direct influx of families due to the proposed action. An even greater rate of construction would be required to accommodate secondary population growth.

4A.31 Housing in the Fairbanks area is expensive, with an average asking price in November 1983 of $117,900 for a single-family home ($89,800 for a 2-bedroom-or-less house). Average advertized rents in October 1983 range from $428 for an efficiency apartment ($298 for a cabin) to $1,105 for a 4-bedroom house (Fairbanks North Star Borough, 1984). Assuming an average annual $9,600 per off-post military person for "rent plus" (Anderson, 1984), 3,590 married families off-post, and 164 bachelor officers off-post, the total rent plus infusion into the Fairbanks area for housing would be $36 million per year if rental units were made available by the private sector.

Schools

4A.32 Schools both on and off-post at Fort Wainwright are operated by the Fairbanks North Star Borough School District. The school system would be affected in terms of both total influx of school-age children and distribution of these children within the region. Assuming 0.9 school-age children per married troop (and civilian), 3,462 new children would be added to the Fairbanks North Star Borough School District by 1989 due to direct effects of the proposed action. In 1980, there were 11,280 children in the 5- to 17-year age group out of a total population of 53,990 (Arradondo, 1984). Assuming the same proportion of school-age children to total population for 1983 in the borough, the 1983 population of 65,300 includes 13,640 school-age children. The anticipated addition of 3,462 school-age children represents 25.4 percent of the current (1983) estimated school-age population of the region. Current plans to increase elementary school capacity by 600 and secondary school capacity by 1000 (Arradondo, 1984) would not accommodate the anticipated influx.

Health Care

4A.33 It is assumed that health care for military and their dependents will be provided for at Bassett Army Hospital. Civilians and their families would utilize the Fairbanks Memorial Hospital.

Planned expansion of facilities in the Fairbanks Memorial Hospital should accommodate this influx of civilians and dependents, which would amount to just over 1 percent of the 1983 regional population by 1988.

4A.34 It is possible that the dependents of both military and civilian personnel, as well as the personnel themselves, may place an added burden on local mental health and social services facilities to assist in coping with the rigors of the Alaskan winter and the isolation from family and friends in the lower-48 states.

Cultural Resources

4A.35 There is a potential for disturbance or destruction of cultural resources due to private residential or commercial development that could occur as a result of the stationing action.

Fort Wainwright, Alaska

4A.36 The environmental impacts on post that would result from the proposed stationing of alternative at Fort Wainwright would result from the increased needs for services required by the added personnel on post, increased air emissions due to training and administrative vehicular traffic and aircraft activity, land use conflicts, increased occurrance frequency of noise events, particularly at night, and overall impacts due to an anticipated six-fold increase in training activities. Many of the facilities on post, particularly bachelor quarters, would have to be renovated. Some facilities construction would be required, but no family housing will be built. However, in the event the private sector proved unable to provide adequate housing facilities, construction of housing will be considered.

4A.37 The proposed action would add approximately 7,400 military and 360 civilian personnel to the Fort Wainwright complement by 1989, resulting in an increase of 163 percent over the current complement of 3,400 military and 1350 civilians (exclusive of military dependents).

4A.38 The proposed action would necessitate some changes in tenant activities and training of non-assigned units. Other facilities would have to be found for Battalion Combat Team Training activities. Building 1555, now used by the Bureau of Land Management, as well as barracks used by the Bureau of Land Management in summer, would revert to the Army for administrative and housing uses.

4A.30 During October 1983, 457 units were advertised for rent in the Fairbanks newspaper. During the first 10 months of 1983, 900 housing units were authorized for construction within the borough, approximately half of which were multi-family units. If on-post housing is not provided, the current high rate of new construction in the Fairbanks area would have to be maintained through the year 1988 to accommodate the direct influx of families due to the proposed action. An even greater rate of construction would be required to accommodate secondary population growth.

4A.31 Housing in the Fairbanks area is expensive, with an average asking price in November 1983 of $117,900 for a single-family home ($89,800 for a 2-bedroom-or-less house). Average advertized rents in October 1983 range from $428 for an efficiency apartment ($298 for a cabin) to $1,105 for a 4-bedroom house (Fairbanks North Star Borough, 1984). Assuming an average annual $9,600 per off-post military person for "rent plus" (Anderson, 1984), 3,590 married families off-post, and 164 bachelor officers off-post, the total rent plus infusion into the Fairbanks area for housing would be $36 million per year if rental units were made available by the private sector.

Schools

4A.32 Schools both on and off-post at Fort Wainwright are operated by the Fairbanks North Star Borough School District. The school system would be affected in terms of both total influx of school-age children and distribution of these children within the region. Assuming 0.9 school-age children per married troop (and civilian), 3,462 new children would be added to the Fairbanks North Star Borough School District by 1989 due to direct effects of the proposed action. In 1980, there were 11,280 children in the 5- to 17-year age group out of a total population of 53,990 (Arradondo, 1984). Assuming the same proportion of school-age children to total population for 1983 in the borough, the 1983 population of 65,300 includes 13,640 school-age children. The anticipated addition of 3,462 school-age children represents 25.4 percent of the current (1983) estimated school-age population of the region. Current plans to increase elementary school capacity by 600 and secondary school capacity by 1000 (Arradondo, 1984) would not accommodate the anticipated influx.

Health Care

4A.33 It is assumed that health care for military and their dependents will be provided for at Bassett Army Hospital. Civilians and their families would utilize the Fairbanks Memorial Hospital.

Geology, Minerals and Soils

4A.39 No impacts on the geological environment of the post are expected as a result of the proposed action, since there are no expected changes in the nature of activities that might affect geological structures. Continued, and more intensive, use of the Yukon Maneuver Area may result in continued conflict with gold mining in that area of the post.

4A.40 Training activities, particularly those that involve digging, off-road vehicular traffic (especially in non-winter months), and possibly ordnance detonation, would continue to disturb permafrost soils and silt loams, which are limiting to off-road vehicular traffic. Digging activitiy (such as for fox holes, anti-tank structures, and log cribs) would disturb permafrost areas, resulting in possible subsidence and snow-melt ponds (Franklin et al., 1976). While current activities at Fort Wainwright are not expected to change qualitatively in terms of training practices, they should increase up to six-fold over current levels, with consequent increases in impacts to sensitive soils and permafrost areas. In addition, approximately 90 motorcycles are scheduled to be used with the light infantry division minus one infantry brigade for communication and mobility activities. These vehicles, to the extent they are used for off-road travel, may cause additional disturbance to sensitive soils and permafrost.

Biological Environment

4A.41 Increased training activities by the light infantry division minus one infantry brigade would result in increased impacts on the biological environments on Fort Wainwright. These impacts would not change in nature from current impacts, since the training activities of the light infantry division minus one infantry brigade would be similar to those carried out by troops presently stationed at Fort Wainwright and by those that come to the post in winter for Battalion Combat Team Training and Brimfrost exercises. Tracked vehicles other than snowmobiles are not used on Fort Wainwright at present.

4A.42 Most of the biological impact on training areas are due to ongoing Air Force bombing and gunnery practice. Activities associated with Army training exercises by troops stationed at Fort Wainwright are expected to increase quantitatively by a factor of up to six since the current brigade on post would be replaced with 6 brigades of the light infantry division minus one infantry brigade due to the proposed action. No artillery larger than 105 mm are currently stationed at Fort Wainwright (6 pieces). The proposed action would result in 12 105 mm howitzers, 90 motorcycles,

100 helicopters, and 1,330 trucks, along with engineering construction equipment (such as 5 full-track tractors) accompanying the light infantry division minus one infantry brigade to Fort Wainwright. This increase would be somewhat offset by equipment and artillery that would be restationed at Fort Richardson, including 6 105 mm howitzers, elements of the 222nd Aviation Battalion, and support vehicles.

4A.43 Biological impacts for Fort Wainwright should be qualitatively the same as those discussed for Fort Richardson. No impacts are expected on threatened and/or endangered species since no threatened or endangered species are located on Fort Wainwright. The Office of Endangered Species of the U.S. Fish and Wildlife Service concurs with this conclusion (Mallory, 1984).

On-Post Population

4A.44 The population of Fort Wainwright will change significantly by 1989 due to the proposed action, in terms of both new troops and civilians. New troops and civilians that would be stationed (net) at Fort Wainwright, compared to current levels are shown in Table 4A-1. The net total increase of 7,750 by FY89 represents an increase of 163 percent over the current authorized strength of 4,750 military and civilians.

4A.45 The following assumptions have been used to estimate the potential of this influx of population on both Fort Wainwright and the surrounding region.

- That 50% of the new civilian employees would come from outside the Fairbanks area.
- That 75% of the officers (and warrant officers) and civilians would be married and 47% of the enlisted men would be married.
- That there would be 2.5 dependents per married troop and civilian.

Based on these numbers and assumptions, net increases on post would, by 1989, be 820 officers and warrant officers, 6,580 enlisted personnel, and 360 civilians.

Land Use

4A.46 General patterns of land use on-post would not change substantially. Building 1555 on the North Post, currently used by the Bureau of Land Management, would be used to house HQ operations

for the light infantry division minus one infantry brigade resulting in some change in the center of activitiy on post. In addition to current construction plans, the proposed action would require:

- o enlargement of Bassett Army Hospital to a capacity of 150 beds;
- o construction of an outpatient clinic;
- o construction of two dental clinics (28 and 34 chairs);

4A.47 Current plans for the proposed project at Fort Wainwright do not include construction of new family housing unless the local community proved unable to supply adequate housing. In the event family housing is constructed on post, however, there would be significant amounts of land converted to residential use. Housing impacts on post are discussed in the section on housing.

Noise

4A.48 Noise levels on post would increase, primarily as a result of increased training activities and consequent increases in military truck traffic, artillery firing, demolition, weapons fire, helicopter and fixed-wing aircraft operations, and temporary construction activities. Most training activities, and accompanying noise, would be located in the Yukon Maneuver Area and the Tanana Flats Area and thus be confined within the boundaries of the post in areas remote from residential areas. Noise that could result in complaints from residents could be expected from aircraft activitiy, artillery, and demolition of munitions, all of which would increase. Since artillery (105 mm) pieces would double from six to twelve, it is assumed that noise from artillery would double in number of occurances but not change in intensity. Demolition activity and aircraft activity may increase up to a factor of six, reflecting an anticipated six-fold increase in training activities, although the noise intensity should not increase. The incoming units are expected to carry out increased night-time exercises with resulting increases in noise levels and the potential for complaint.

4A.49 However, increases in the on-post noise levels as a result of this stationing alternative cannot be determined until a training schedule has been established for the light infantry divisin minus one brigade. Should these units be stationed at Fort Wainwright, simulation modeling of noise effects would be conducted as part of the Army's ongoing noise assessment program.

Air Quality

4A.50 Heating systems and the power plant on post are not anticipated to add significant emissions to the ambient air. The power plant (Boiler Number Six), operating at 83 percent capacity, met Alaska state air emission standards. Some increase in ice fog, either in its intensity or frequency, may result from the power plant cooling pond as a result of a higher heat burden due to generating requirements for the proposed action. The current ice fog problem on Richardson Highway would be exacerbated in wintertime.

4A.51 Other emissions, such as from private and military vehicle activity and fugitive dust from training activities, would also increase. Such emissions in training areas outside of the cantonment area should not be significant because they would be dispersed over a wide area on the installation and would be intermittent in frequency. Air emissions, particularly carbon monoxide, from traffic on post would increase as a direct consequence of automobiles, trucks, and military vehicles. Increased regional emissions are discussed along with the discussion of regional impacts.

Water Supply

4A.52 The proposed stationing action at Fort Wainwright would place an added burden on the water supply system of the post. The current water treatment facility on post has a design capacity of 2.5 million gallons per day and has historically operated at 1.0 to 2.0 million gallons per day. Additional loadings to the water supply system would be 0.648 million gallons per day. These figures assume linearity between population and water consumption, that individuals living on post would consume 120 gallons (based on current levels of consumption on post) of water per day, and that commuters, on post for 8 hours a day, would consume 40 gallons per day. The added water supply needs would result in use of the water treatment at full rated capacity.

Wastewater Disposal

4A.53 Wastewater treatment at Fort Wainwright is handled via a contractual arrangement with the Municipal Utilities System that allows 1.2 million gallons per day flow from the post. The Municipal Utilities System treatment plant has an effective operating capacity of 6 million gallons per day and the interceptor on post can handle a full capacity of 4.8 million gallons per day. These increased loadings are discussed previously in discussions of the regional aspects of the impact of the proposed action. Impacts on post at Fort Wainwright would result from wastewater flow in

excess of the maximum flow rate currently contracted for (1.2 million gallons per day). At an estimated 100 gallons of wastewater per person per day, added loadings to the wastewater treatment plant would be approximately 0.54 million gallons per day. Since the post currently produces 1.1 to 1.2 million gallons of wastewater per day, the contractual arrangement with the Municipal Utilities System would require renegotiation, and as discussed in regional impacts, capacity at the Municipal Utilities System treatment plant will have to be enlarged.

Solid and Hazardous Waste Disposal

4A.54 Solid waste is disposed of on post in a landfill. No qualitative changes would occur as a result of the proposed action. However, the effective life of the landfill facility would decrease.

4A.55 Fort Wainwright does not handle or produce any industrial or nuclear waste, chemicals, or biological weapons that might pose an environmental problem. The proposed stationing action would increase the amount of defective ammunition which is disposed of by demolition. Petroleum product spills would increase in frequency due to increased activity and would be disposed of in accord with the post's Pollution Spill Control Plans (U.S. Army Corps of Engineers, 1983d).

Housing

4A.56 Wade (1984) estimates a housing shortfall at Fort Wainwright of 4,956 units for the proposed stationing action. In addition, 2,606 bachelor housing units would require renovation.

4A.57 Estimates of family housing needs used for analysis in this document are based on a net increase of 3,710 military families. Assuming 120 of the 142 vacant units would be occupied by incoming married troops, a housing shortfall of 3,590 married units would be required. AR 5-10 directs that no family housing will be constructed in metropolitan areas unless conclusive justification of inability of the local area to satisfy the requirement is provided.

Schools

4A.58 Both on-post and off-post schools are run by the Fairbanks North Star Borough School District. Impacts on the school district are discussed in the section of regional impacts.

SUPERSEDED
AUG 1984

Health Care

4A.59 Military personnel and their dependents are serviced by the Bassett Army Hospital on post. The proposed project will increase demands on post for both medical and dental care facilities.

4A.60 As part of the proposed project, the hospital would require expansion from 40 beds to a maximum of 150 beds by FY 1987. A free-standing outpatient clinic would be needed by FY 1987 since hospital expansion would require removal of outpatient clincs and administrative facilities currently housed in the hospital building (Lam, 1984), Dental facilities expansion would require two clinics totalling 62 chairs plus staff.

4A.61 The Veterinarian Services currently on post would be inadequate to handle the added duties in terms of food inspection (mess halls and commissary) and animal care services (Smith, 1984). Mental health facilities may be stressed due to the increased population, particularly dependents, on post or stationed with troops in the immediate region. Although mental health and social service needs would be exacerbated by the isolation and severe climate of interior Alaska, the increased population and consequent diversity and increase in facilities (social services, recreation, etc.) may well significantly ameliorate the problem.

Public Safety

4A.62 The increased population on and off post as a result of the proposed action would result in increased demands upon local law enforcement agencies, the Provost Marshal's office, and fire protection facilities. The need for fire protection on post would be increased if new housing were constructed for married troops, although other facilities, which would be renovated and modernized, may require proportionately less protection, offsetting some increased demands. Increased personnel, however, along with more motor vehicles (both military and personal vehicles) would place added pressure on law enforcement facilities and personnel to handle vehicle inspection, traffic, and various infractions of law and order.

Traffic and Transportation

4A.63 Aircraft and vehicular traffic on-post would increase as a result of the proposed action. Aircraft operations will increase to support training activity and could increase up to six fold. Military traffic related to training may increase up to six fold and administrative activity may increase by a factor of 1.6. Traffic due to personal vehicles would be expected to increase by a factor of at least 1.6.

Health Care

4A.59 Military personnel and their dependents are serviced by the Bassett Army Hospital on post. The proposed project will increase demands on post for both medical and dental care facilities.

4A.60 As part of the proposed project, the hospital would require expansion from 40 beds to a maximum of 150 beds by FY 1987. A free-standing outpatient clinic would be needed by FY 1987 since hospital expansion would require removal of outpatient clincs and administrative facilities currently housed in the hospital building (Lam, 1984), Dental facilities expansion would require two clinics totalling 62 chairs plus staff.

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Public Safety

4A.62 The increased population on and off post as a result of the proposed action would result in increased demands upon local law enforcement agencies, the Provost Marshal's office, and fire protection facilities. As described in Appendix M, most crimes committed by Army personnel in the continental United States are confined to the installation. Further, Army crime rates in general have been declining. Between 1980 and 1983 the most common offenses committed by Army personnel, those against property, declined by 26 percent. Marijuana use and possession, the second most common offense declined by 64 percent, while crimes of violence, ranking third dropped 42 percent (U.S. Army Office of the Deputy Chief of Staff for Personnel, 1984). Although Army crime rates are not directly comparable to national trends, more arrests per 1000 of U.S. males 18 to 22 years versus Army personnel were made for crimes against property, drug offenses and crimes of violence in 1982. In the event of troop stationing, the actual number of crimes could increase, yet as detailed in Appendix M most of the increase probably would be concentrated on post.

4A.62a The need for fire protection on post would be increased if new housing were constructed for married troops, although other facilities, which would be renovated and modernized, may require

proportionately less protection, offsetting some increased demands. Increased personnel, however, along with more motor vehicles (both military and personal vehicles) would place added pressure on law enforcement facilities and personnel to handle vehicle inspection, traffic, and various infractions of law and order.

Traffic and Transportation

4A.63 Aircraft and vehicular traffic on-post would increase as a result of the proposed action. Aircraft operations will increase to support training activity and could increase up to six fold. Military traffic related to training may increase up to six fold and administrative activity may increase by a factor of 1.6. Traffic due to personal vehicles would be expected to increase by a factor of at least 1.6.

Cultural Resources

4A.64 Fort Wainwright has a relatively high potential for the existence of significant cultural resources on post. Several archaeological sites have been identified by prior studies and recommended as eligible for the National Register. The potential for impacts at Fort Wainwright under this alternative are anticipated to be minor, if any, to cultural resources.

4A.65 Although the exact location and nature of many possible cultural resources, particularly archeological resources, is unknown, the potential impacts of the proposed action can be generally discussed. Basically, any action which produces ground disturbances in any form would have a potential for disturbing an archeological resource, thereby destroying data. Construction of new buildings and facilities, and establishment of roads include such elements as excavation, grading, filling or stockpiling of materials. All of these elements have a potential for disturbance or destruction of archeological materials. Renovation of existing buildings or demolition can damage and destroy significant historic structures.

4A.66 Many training activities, including maneuvering of vehicles and digging of foxholes, cause ground disturbances that have a potential for damaging or destroying an archaeological resource. Establishment of new training areas or increases in land utilization frequency for training over current levels can increase the potential for impacts to undisturbed cultural resources.

4A.67 Considerations will be given to identifying potential cultural resources, as well as protecting those known to exist. Authority for these actions are found in Army Regulation AR-420-40, Facilities Engineering, Historic Preservation (April 15, 1984) effective 15 May 1984. The procedures for accomplishing these measures are detailed in the Army Technical Manual TM-5-801-1, Historic Preservation-Administrative Procedures and TM-5-801-2, Historic Preservation-Maintenance Procedures. In regard to the installation, the prime limitation would be to prohibit any destruction or alteration of all or part of any significant site through whatever measures are necessary (e.g., establishment of limited-use areas). It should be noted that it is always possible for studies to miss an archaeological site, particularly one which shows little or no surface evidence of its presence. Because of this, all construction contracts must allow for this possibility by specifying that, in the event that a suspected archaeological site is encountered during construction or some other form of activity, operations in the area would be suspended until the site is investigated by a professional archaeologist. This construction

contract provision is required by 32 CFR 650.192, Department of the Army, Environmental Protection and Enhancement, Peacetime Responsibilities, Historic Preservation, Archaeological Sites (March 15, 1978). Similarly, training activities that involve the use of new areas or the increased use of areas presently used may uncover evidence of archaeological sites that was not uncovered by prior studies. Officers in charge of field activities should be made aware of this possibility and procedures should be established whereby the officer could inform the installation's Historic Preservation Committee of any finds so that the committee may take appropriate measures to avoid the accidental destruction of a site. Additionally, since the looting of sites by irresponsible persons can be a problem, security measures should be instituted to prevent destruction of archaeological data in this manner.

Fort Greely, Alaska

4A.68 It is anticipated that no new troops would be permanently stationed at Fort Greely in Delta Junction, but that some training of troops may periodically occur here. Fort Greely has 661,000 acres, with ten impact areas covering 342,900 acres, and manuever areas used for training troops in the following types of activities:

- o Winter survival techniques
- o Camouflaging camps and vehicles
- o Bivouac in wilderness areas
- o Tracked and snowmobile movements cross-country
- o Weapons firing
- o Engineer training
- o Helicopter flights

4A.69 There would be little or no socioeconomic impacts, since troop activitiy would be temporary, and Fort Greely is a very remote location.

4A.70 The addition of the light infantry division would not cause any new impacts or require new training ranges (Macknicki, 1984). Ecological impacts from similar types of Army training have been described in detail in the Draft Environmental Impact Statement Concerning Proposed Land Withdrawal for the 172nd Infantry Brigade (Alaska) at Fort Greely (U.S. Army Corps of Engineers, 1979). These impacts are summarized below.

4A.71 Noise levels in the wilderness are normally 20 to 30 dBA. Weapon noises range from 110 to 190 dBA. Noise from vehicles range from 70 to 90 dBa. Low altitude (250 feet) helicopter noise is 90-100 dBA. All of these affect wildlife behavior. The most sensitive species are grizzly bears and Dall sheep. Bison are sensitive during calving season.

4A.72 Tracked and snowmobile movements across tundra and muskeg leave long-lasting scars, and when permafrost melts those scars may actually enlarge following the initial disturbance.

4A.73 Stream crossings in summer and winter bulldozing of dirt on ice create sedimentation problems in streams. The Delta River bed is impacted by ordnance firing.

4A.74 The only federally listed species which may occasionally be present on Greely, the Arctic peregrine falcon (Falco peregrinus tundrius), has been recently (1984) reclassified to threatened. Low-flying helicopters could disturb this species, as well as bald and golden eagles, along the Black Rapids Glacier area, near the Tanana River, and in the 100-Mile Creek drainages. The Office of Endangered Species of the U.S. Fish and Wildlife Service agrees that these species would not be significantly affected by this action (Mallory, 1984).

4A.75 Since no new training or new training ranges would be proposed, the above impacts would not be changed in nature by training activities of the light infantry division. If there is an increase in the amount of training activity, increased adverse effects on wildlife populations may result from noise, helicopters, and troop activity resulting in conflicts with wildlife conservation objectives of the state of Alaska.

4A.76 One National Register property, the Sullivan Roadhouse, is located on Fort Greely. However, the potential for impacts at Fort Greely under this alternative are anticipated to be minor, if any, to cultural resources.

4A.77 Although the exact location and nature of many possible cultural resources, particularly archeological resources, is unknown, the potential impacts of the proposed action can be generally discussed. Basically, any action which produces ground disturbances in any form would have a potential for disturbing an archeological resource, thereby destroying data. Construction of new buildings and facilities, and establishment of roads include such elements as excavation, grading, filling or stockpiling of materials. All of these elements have a potential for disturbance

or destruction of archeological materials. Renovation of existing buildings or demolition can damage and destroy significant historic structures.

4A.78 Many training activities, including maneuvering of vehicles and digging of foxholes, cause ground disturbances that have a potential for damaging or destroying an archaeological resource. Establishment of new training areas or increases in land utilization frequency for training over current levels can increase the potential for impacts to undisturbed cultural resources.

4A.79 Considerations will be given to identifying potential cultural resources, as well as protecting those known to exist. Authority for these actions are found in Army Regulation AR-420-40, Facilities Engineering, Historic Preservation (April 15, 1984) effective 15 May 1984. The procedures for accomplishing these measures are detailed in the Army Technical Manual TM-5-801-1, Historic Preservation-Administrative Procedures and TM-5-801-2, Historic Preservation-Maintenance Procedures. In regard to the installation, the prime limitation would be to prohibit any destruction or alteration of all or part of any significant site through whatever measures are necessary (e.g., establishment of limited-use areas). It should be noted that it is always possible for studies to miss an archaeological site, particularly one which shows little or no surface evidence of its presence. Because of this, all construction contracts must allow for this possibility by specifying that, in the event that a suspected archaeological site is encountered during construction or some other form of activity, operations in the area would be suspended until the site is investigated by a professional archaeologist. This construction contract provision is required by 32 CFR 650.192, Department of the Army, Environmental Protection and Enhancement, Peacetime Responsibilities, Historic Preservation, Archaeological Sites (March 15, 1978). Similarly, training activities that involve the use of new areas or the increased use of areas presently used may uncover evidence of archaeological sites that was not uncovered by prior studies. Officers in charge of field activities should be made aware of this possibility and procedures should be established whereby the officer could inform the installation's Historic Preservation Committee of any finds so that the committee may take appropriate measures to avoid the accidental destruction of a site. Additionally, since the looting of sites by irresponsible persons can be a problem, security measures should be instituted to prevent destruction of archaeological data in this manner.

FORT RICHARDSON AND THE ANCHORAGE, ALASKA REGION

4A.80 Table 4A-1 shows the changes in personnel from 1984 to 1989. Tables 4A-2 and 4A-3 summarize the impacts to the Fort and region from the addition of the proposed alternative.

Anchorage, Alaska Region

4A.81 It is assumed that the primary mission of the 172nd Brigade, to defend Alaska, will remain unchanged. Only 1130 new troops will be stationed at Fort Richardson, so the impacts would be minimal. The new troops would "plant the flag" in 1984 and build up in Alaska through 1989. Fort Richardson troops would arrive from Fort Wainwright, and these would include the 172nd Infantry Battalion and support to the 222nd Aviation Battalion (Macknichi, 1984).

Biological Environment

4A.82 Off-post there would be a minor disturbance to wildlife from noise, for example from helicopters to Dall sheep. A few more moose might be involved in automobile accidents on the Glenn Highway.

4A.83 Assuming that all the new family housing would be off-post with half-acre lots, then 350 acres of terrestrial habitat would be removed by that construction. Since housing construction is already taking place in Anchorage at a rapid rate, this loss of habitat would be considered in addition to the on-going construction.

4A.84 In Cook Inlet, where the primary sewage wastes are being disposed of, the area around Point Woronzof is contaminated with coliforms. The additon of 260,000 gallons per day of primary-treated sewage from 1987 to 1989 would further pollute this estuary, and in particular, affect the shellfish population here.

Demography

4A.85 The increase in 1130 troops would increase the Army population by 25 percent on Fort Richardson. Assuming a 2.5 multiplier per married troop, the resulting population for dependents would be 1270, a 28 percent increase over the existing dependents on-post. About 160 civilians would also be added to the workforce (Anderson, 1984). Assuming these civilians are new people to the region, the total population increase to Anchorage would be 2600 people, about a one percent increase.

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AUG 1984

4A.86 Since the Anchorage area is already growing at a rate of ten percent per year, the total population increase would be about 11 percent, when the new troops and secondary population growth are added. Of the total 2,600 person increase in population, 520 would live on-post, and 2,080 would live off-post.

Land Use

4A.87 Since the Anchorage area is growing so fast and housing construction is taking place rapidly, the action would not have any effect on Anchorage land use patterns. However, the urbanization in the Eagle River area, north of Fort Richardson, would probably increase at a faster pace. This area has cheaper housing and is within an easy commuting distance to the post, and therefore, would probably be affected.

4A.88 The Anchorage Bowl Comprehensive Development Land Use Plan does not include any plans or goals for military land within the Municipality. The Anchorage government has no jurisdiction over the Fort; the post develops under the federal government and the post planning board (U.S. Army Corps of Engineers, 1983c).

Noise

4A.89 The existing off-post environment is currently affected by noise from weapons firing at Eagle River and from main garrison activities including the airfield. This latter noise contour of 65 to 70 LC_{dn} affects the Glenn Highway area off-post.

4A.90 The addition of 1,800 private vehicles, plus heavy trucks and motorcycles associated with the Army mission, will add to the existing noise levels on Glenn Highway. The addition of only six guns to the Eagle River artillery range will not add substantially to the existing problem. No more frequent firing is anticipated (Macknicki, 1984).

4A.91 Increases in off-post noise levels as a result of this stationing alternative cannot be determined until a training change has been established for the 172nd Infantry. Should the training of troops change at Fort Richardson, simulation modeling of noise effects would be conducted as part of the Army's ongoing noise assessment program.

Regional Economic Activity

4A.92 The stationing alternative would have a direct effect upon the Greater Anchorage Borough economy through a net increase in on-post military and civilian employment of 1,290, construction

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and an annual increase in purchases by the installation of $0.9 million in regionally supplied goods and services. Additional economic benefits would accrue to the region through indirect economic activity resulting from multiplier effects.

4A.92a It is likely that some of the civilian jobs created as a result of the stationing activity could be filled be spouses of incoming military personnel. As described in Appendix L about 36 percent of the spouses of Army enlisted men and 35 percent of Army officer spouses are members of the civilian workforce (Doering and Hutzler, 1982).

4A.93 The Economic Impact Forecast System (EIFS) has been used to estimate changes in total business volume and personal income within the region. Model outputs for these parameters associated with mission change and construction resulting from the stationing alternative are displayed in Table 4A-5. Model outputs for mission change are expressed as permanent increases which reoccur on an annual basis over the life of the stationing alternative. Outputs associated with construction are the highest estimated values which would occur for the parameters in a single year over an expected five year construction period (FY85-FY89).

4A.94 Interpretation of changes in these parameters is possible through comparison of the percent change values associated with each parameter and the rational threshold value (RTV). Percent parameter that is attributable to the stationing alternative. The RTV is the maximum historical percentage fluctuation from yearly average change rates for each parameter. Percent change values which approach or exceed RTV values for one or more parameters may be considered as regional stress equal to or greater than that experienced over the period for which the RTV has been calculated (1965-1978). A printout of the EIFS model inputs and outputs is given in Appendix A. A brief explanation of the model is found in Appendix I.

Air Quality

4A.95 The addition of 2600 people could result in 1800 more cars on the Glenn Highway and a 20 percent increase in air emissions, particularly the carbon monoxide levels. While this increase would be mainly where traffic converges at the Post Gate, the increase to the Anchorage region would be minimal. Since the carbon monoxide is already high in the winter months, this 20 percent increase could exacerbate this problem. Troop training that involves land clearing or vehicles using dirt roads may also increase particulates in off-post locations. Off-post housing, which uses wood fuels, would also add to the winter hydrocarbon levels.

Water Supply

4A.96 Both on-post and off-post populations currently draw surface water from Ship Creek, as does 75 percent of the Anchorage population. The legal allocation for this source exceeds the winter flow. Assuming 140 gallons per person per day, then 364,000 gallons

REVISED 1984

TABLE 4A-5

ECONOMIC EFFECT OF THE PROPOSED STATIONING ALTERNATIVE ON THE ANCHORAGE REGION[a]

Category	Highest One-Time Annual Change Due to Construction		Recurring Annual Change Due to Proposed Stationing		Rational Threshold Value	
	Amount of Change	Percent Change	Amount of Change	Percent Change	Negative	Positive
Total business volume	$4,257,000	+0.18	$40,935,000	+1.76	-9.9	18.2
Local personal income	$2,960,000	+0.15	$53,395,000	+2.70	-8.1	24.5
Employee equivalent[b]	72	+0.10	1,708	+2.45	-2.9	10.3

[a]All changes in 1984 dollars.

[b]Added personal income is equivalent to the average annual salaries of the number of persons shown.

3.672 In addition to family housing, there are about 16,200 barrack spaces, 365 bachelor officer quarters spaces and 269 guest house spaces (Montanye, 1984). Approximately 1035 bachelor personnel live off post, of which about 72 percent are enlisted and 28 percent are officers.

3.673 As stated in the regional description, available family housing is very limited and units are often not affordable by military personnel without payment of from 50 to 90 percent above the available housing allowances. Based on an April 1984 printout from the Fort Ord Housing Referral Office, only 175 units were available in the greater region around the post. About half of these were two-bedroom units, with the remainder split about evenly between one-bedroom and three or four-bedroom units. Prices for the two bedroom units ranged from $400 to $1200 a month. Even if all of the units were affordable by military personnel, it would only account for about 7 percent of those presently on the waiting lists. These conditions have resulted in lengthy periods of involuntary separation for military families.

Schools

3.674 Most of the dependents of Fort Ord personnel attend classes at schools in one of four school districts: Monterey Peninsula Unified, Pacific Grove Unified, Salinas Union and Salinas City School District. The Monterey Peninsula Unified School District operates four elementary schools and one junior high school at Fort Ord while high school students living on post attend Seaside High School, located just south of the reservation (Montanye, 1984). The elementary schools have a capacity of about 2835 students with a present enrollment of 2280, while the junior high school is presently operating at approximately 90 percent capacity with 897 students. Seaside High School has about 1,265 students, about 80 percent its capacity (Malone, 1984).

Health Care

3.675 The Silas B. Hays Army Hospital at Fort Ord is a general medical and surgical facility providing comprehensive health care to all active duty personnel and other eligible beneficiaries. It has an operating level of 169 beds with a current inpatient census of about 130 per day and outpatient outpatient clinic visits averaged 1450 and 1560 per day for 1982 and 1983, respectively (Dean, 1984). Approximately 260 statements of non-availability were issued for referrals to community health care facilities during all of 1983 (Rawson, 1984). It should be noted that approximately 45 percent of the statements issued were for retired military or their dependents from the area. The hospital has expansion capabilities of up to 660

beds. The veterinary clinic is involved in the prevention and contorl of disease transmitted by animals to man. There are five permanent dental clinics and four temporary dental clinics. Specialty capabilities on post and through associated agencies and institutions include nuclear medicine, and neurology.

Public Safety

3.676 On the post, protection is provided by the military police under the Office of the Provost Marshall. Traffic control has required a large amount of policing due to inadequate traffic controls and an inefficient road network. Special duty security police are required for the issuance of visitor passes at the main gate.

3.677 Fire service at Fort Ord consists of a two-company facility, centrally located on the North-South Road near the Main Entrance Road. Additionally, a fire and rescue unit is located at Fritzsche Airfield. Fort Ord has mutual firefighting agreements with the cities of Monterey, Seaside, Salinas, and Marina. Fort Ord practices a controlled fire program that has two purposes: to eliminate excess vegetation that reduces wildlife habitats, and to prevent the accumulation of massive amounts of dead leaves and brush which constitute a fire hazard in and of the themselves. As older, temporary wooden structures are replaced with new facilities, the fire risk associated with their presence continues to decrease (Resource Planning Consultants, 1980c).

Traffic and Transportation

3.678 The primary points of access to the post are the main entrance road and the 12th Street gate, both off State Highway 1. State Highway 1, in turn, connects with the major north-south highway, U.S. 1 fourteen miles east of Fort Ord, and intersects with other major roadways, State Highways 156 at Castroville and 68 at Monterey.

3.679 The interior roadway network at Fort Ord consists of 148 miles of improved roads and 254 miles of unimproved roads. The primary and secondary roads at the installation are hard-surfaced with bituminous pavement or asphaltic concrete and are in good to excellent condition. In addition, the roads have high wheel loading capacity and require little maintenance (U.S. Army Corps of Engineers, 1979).

3.680 Widening of approaches on First Avenue to the intersection with Main Entrance Gate Road has reduced major traffic congestion during afternoon peak hours.

Energy Usage

3.681 The total on-post energy usage at Fort Ord for FY 83 was 4.29 trillion Btu, obtained from the following sources:

Natural Gas	2,824,400 MBtu
Gasoline	100,100 MBtu
Diesel Fuel	230,000 MBtu
Aviation Fuel	120,500 MBtu
Electricity	1,014,800 MBtu

Based on an effective population of 23,740 residents derived using the methodology described in Appendix H, on-post energy consumption is approximately 181 MBtu per resident per year.

3.682 The majority of on-post energy usage is for heating; 2.82 trillion Btu were consumed in FY 83. Natural gas is the only heating fuel, and is supplied by Pacific Gas and Electric Company. Because natural gas is in short supply nationally, future use of natural gas is expected to decrease due to the use of alternative fuels for new construction and for retrofit of existing facilities.

3.683 Electrical power for Fort Ord is supplied by the Pacific Gas and Electric Company. Presently, the post is served by two overhead primary electric distribution systems; a 4,160 volt system serves the majority of temporary buildings, and a 12,000 volt system serving the permanent facilities.

3.684 East Garrison is supplied directly from Pacific Gas and Electric transmission lines, using a 4,160 volt, 3 phase overhead distribution. Fritzsche Army Airfield is served by a 12,000 volt feeder from the Main Garrison switching station. Standby engine generators of various kilowatt ratings are installed at sensitive facilities in the event of commercial power failure or outages.

3.685 On-post energy consumption by military vehicles was 690 billion Btu in FY 83. Gasoline consumption by vehicles owned by military personnel is estimated at 15 million gallons (1,863 billion Btu) per year based on ownership of 26,000 cars driven an average of 9,026 miles per year at a mileage of 15.53 miles per gallon. Present energy use for personal transportation by military personnel is approximately 11 percent of that of civilian personnel in counties adjacent to the fort.

3.686 Estimated energy consumption for off-post housing of military personnel and their dependents is 2,110 billion Btu per year based on an average per capita residential energy consumption of 94.9 MBtu per year. Residential energy consumption in the

counties adjacent to the fort is approximately 27,600 billion Btu per year. Military personnel consume approximately 8 percent of the total residential energy used in the area.

3.687 Total energy consumption for Fort Ord in 1983 was approximately 8.26 trillion Btu, including on-post energy usage, military vehicles, private vehicles owned by military personnel and off-post housing requirements of military personnel. Total energy usage is approximately 508 MBtu per troop per year.

Cultural Resources

3.688 Although the region around Fort Ord has been occupied through both prehistoric and historic time and has been involved in the earliest European contacts in California, the known cultural resources of Fort Ord relate primarily to several buildings built in the Spanish revival style by the Works Progress Administration in the 1940's (Swernoff, 1982a; Roberts and Zahniser, 1980). Fort Ord began in 1917 when the federal government purchased 15,000 acres and established Gigling Reservation near what is now East Garrison (Fort Ord Directorate of Facilities Engineering, 1975). The name changed to Camp Ord in 1939 and the post expanded by 12,000 acres through purchases in 1940 and 1943. Camp Ord was renamed Fort Ord in August 1940 and became a permanent Army post. The installation has not been completely surveyed but data from a sample survey has been used to develop a predictive map of zones of high, medium and low cultural resource potential (Swernoff, 1982a). There are no National Register sites on Fort Ord.

Fort Hunter Liggett, California

3.689 Fort Hunter Liggett, a permanent sub installation of Fort Ord, is a 165,000 acre facility in southern Monterey County, about 70 miles southeast of Fort Ord. Figure 3-16 identifies features with the installation and adjacent areas.

Geology, Minerals, and Soils

3.690 Fort Hunter Liggett is located within the Coastal Ranges of southern Monterey County bordering Los Padres National Forest. The headwaters of the San Antonio and Nacimiento Rivers have carved two valleys within the otherwise relatively mountainous area of the Santa Lucia Range, which comprises the reservation. The Santa Lucia Range consists primarily of grandiorite, which has been formed by volcanic activity, uplifting and faulting since the Cretaceous period (65 million years ago). Quaternary alluvium and alluvial fans cover the valley floors and hillslopes.

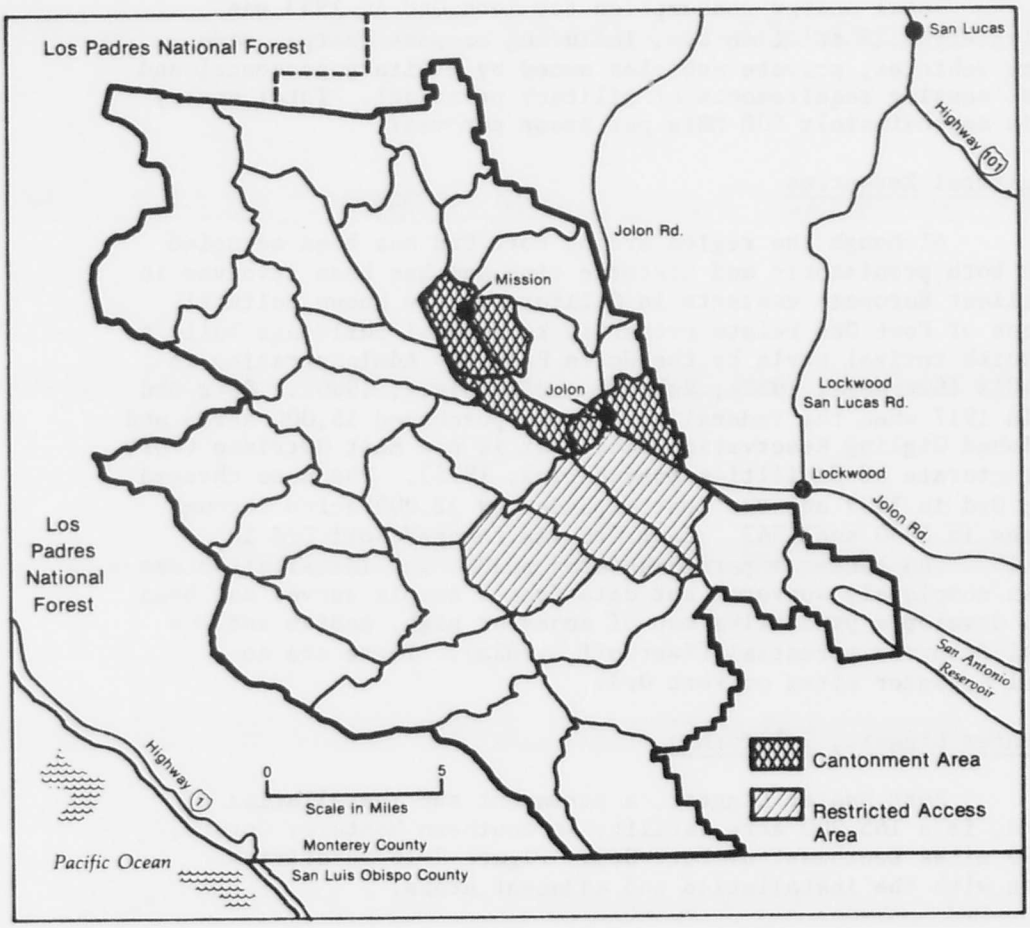


FIGURE 3—16
FORT HUNTER LIGETT, CALIFORNIA

3.691 Two major fault zones are located near Fort Hunter Liggett; the San Andreas, which borders the Gabilan Range approximately 30 miles to the east, and the Sur Nacimiento, which passes the southern post boundary. Several faults between these major zones are considered seismically active (Beach-Philpot Associates, 1984).

3.692 No mineral extraction occurs on the post. Within Monterey County, mineral extraction is presently limited to oil, limestone, dolomite, and sand and gravel (Monterey County Planning Department, 1982).

3.693 Soil types within the large installation are diverse and varied. Most soil types have moderate to severe erosion potential particularly if gournd cover is disturbed and must be re-established during dry periods. Santa Lucia and Reliz soils are found on upland areas and around rock outcroppings and have the most severe erosion hazards. On less steep slopes, these soil types along with Nacimiento and Los Osos types are considered suitable for range grazing and some dryland grain farming. Chualar soil, when containing inclusions of brown sandy loam in valleys, is suitable for irrigated row crops and dryland grains. These and other bottomland soils have generally good surface drainage; however, the substratum is absorptive. This causes problems for vehicle movement following periods of preciptiation. (Beach-Philpot Associates, 1984).

3.694 The U.S. Soil Conservation Service has designated 45 soils in Monterey County as prime farmland. Several of these soils are found within the boundary of Fort Hunter Liggett.

Biological Environment

3.695 The 4 vegetation communities that occur on Fort Hunter Liggett include valley white oak grassland, blue oak woodland, mixed chaparral and chamise chaparral (Beach-Philpot Associates, 1984). Valley white oak grassland areas (25 percent of the installation) are dominated by California white oaks with a ground cover of annual grasses and forbs and occurs on the more moist, level or gently sloping areas of the installation. Dominated by denser tree cover than the above, the blue oak woodland (40 percent) occurs on dryer, steeper terrain with some grass ground cover. Mixed chaparral (30 percent) occurs on moderate to very steep, north- and east-facing slopes with shrub species such as scrub oak, chamise, toyon and other species interspersed. Chamise chaparral (5 percent) is dominated by this shrub species and occurs on hotter, drier south- and west-facing slopes. Areas of riparian habitat occur along the banks of the San Antonia and Nacimiento Rivers.

3.696 Although a wide variety of wildlife exists on the installation, the present community structures are the result of various human-related activities including cattle grazing, species introduction, prescribed burning for wildfire management and an active public hunting and fishing program.

3.697 Cattle have grazed the area of the installation since the 1770's and records indicate that in the 1820's the ranchos in the area had 8,000 head of cattle, 11,000 sheep and more than 800 horses (Fort Ord Directorate of Facilities Engineering, 1980). Species introduction began in the 1920's and 1930's when the area was part of the extensive ranch system of William Randolf Hearst. Two of the animals introduced at that time continue to be the focus of hunting activities: the black-tailed deer and the wild pig. More recent introductions include the tule elk and the wild turkey.

3.698 The endangered species listed for Fort Hunter Liggett include the San Joaquin kit fox (Vulpes macrotis mutica), the bald eagle (Haliaeetus leucocephalus), the California condor (Gymnogyps californianus) and the American peregrine falcon (Falco peregrinus anatum). There are several additional candidate species under consideration for possible listing as threatened for endangered species. These species are listed in Appendix G.

Land Use

3.699 The 165,000 acres of the installation are divided in a cantonment area and 29 training and maneuver areas, providing a wide range of terrain types with relatively little light or electromagnetic interference for troop and aircraft training. During 1983, there were approximately 540,000 man-days of training by the 7th Infantry, California National Guard and Army Reserve units (Beach-Philpot Associates, 1984). At present, helicopter training is a significant part of training operations and several nap-of-the-earth routes used for training pilots in tactical combat flying are located in the more rugged terrain of the north, west and south fringes of the installation. This type of training requires helicopters to maintain a 200 to 300 altitude while flying over rough terrain. The Combat Developments Experimentation Center also uses the installation for research and development activities on new equipment.

3.700 The installation use includes a significant amount of non-military use in the form of cattle grazing and public recreation, primarily hunting and fishing. Outleasing for cattle grazing involves approximately 100,000 acres of the installation. Generally, 14,000 to 18,000 head of cattle are on grazing lands from Nobember through May and produce about $250,000 per year in leasing

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AUG 1984

fees (Peterson, 1984). Hunting is allowed on weekends and holidays and fishing is allowed all week as training activities permit. Hunting is limited to a maximum of about 400 hunters. Hunting is permitted on 26 of the 29 training areas and generally at least half of these areas are open on the weekends (Decker, 1984). Hunting and fishing special permits produce about $170,000 annually, an important source of funds for natural resource management on the installation.

Noise

3.701 Potentially significant sources of noise at Fort Hunter Liggett are aircraft operations, weapons firing, and training vehicles. Noise associated with aircraft utilization is generated by rotary-wing operations at the heliport and medical helipad, overhead fixed-wing parachute drops (turnaround flights) and intermilitary exercises (C-130 assault landing strips). Noise levels generated by rotary-wing operations have been measured at approximately 65 Ldn within the airfield area. Medical flights are emergency in nature and are therefore less frequent than other types of rotary-wing operations. Turnaround overflights provide elevated background disturbance only and are short in duration (Beach-Philpot Associates, 1984).

3.702 Noise generated from weapons firing and military training vehicles at Fort Hunter Liggett has not been extensively recorded; however, it is probable that the 65 Ldn level falls within the post boundaries (Beach-Philpot Associates, 1984).

Air Emissions

3.703 On-post activities which contribute emissions to the air are several stationary sources (fuel burning devices, storage tanks, fuel handling, vehicle surface coating and degreasing), vehicle maneuvers, weapons testing, and infrequent construction work. The latter activities generate fugitive dust, which is difficult to mitigate especially during the dry summer months and must therefore increase usual particulate emission levels. Water or oil may be applied to trails and roads but this procedure cannot always be practiced since training exercises must have a degree of realism (Beach-Philpot Associates, 1984).

3.704 Among stationary sources, nitrogen oxide and hydrocarbon emissions are greatest, but levels constitute less than 0.05 percent of total emissions in Monterey County.

Water Supply

3.705 Water for Fort Hunter Liggett is supplied by wells as deep as 1000 feet. Primary water-supply wells produce over 100 gallons per minute. The water is generally of good quality although it is hard and may contain high iron and fluoride levels. Potable water is treated with chlorine at the well. Water consumption at Fort Hunter Liggett is slightly less than 1 million gallons per day.

3.706 Nearby Nacimiento and San Antonio Reservoirs are possible long-range water-supply sources should the ground-water resources diminish or degrade (although neither is probable). These surface-water reservoirs therefore primarily serve to regulate river flows and augment ground-water recharge (Beach-Philpot Associates, 1984). As defined by the Safe Drinking Water Act, there are no sole source aquifers within the boundaries of Fort Hunter Liggett.

Traffic and Transportation

3.707 Generally the road system of Fort Hunter Liggett and the surrounding rural area is spartan in character and there is little redundancy built into the pattern in the event of the necessity to stop traffic. Main roads are typically paved two-lane with few passing lanes while secondary roads are gravel-surfaced. The U.S. Army maintains 400 miles of unimproved dirt tank trails within the installation.

3.708 Primary access to Fort Hunter Liggett is by Mission Road which connects State road G14 at Jolon to the cantonment area and Mission San Antonio. From Jolon, G14 connects with U.S. Highway 101, which is a major four-lane north-south freeway (Beach-Philpot Associates, 1984).

Cultural Resources

3.709 The grassy, wooded valleys on Fort Hunter Liggett have many areas that are rich in archaeological remains, including possible village sites, various types of worked stone, bone and shell tools and beads and a number of pictographs and petroglyphs Swernoff, 1982b; Beach-Philpott Associates, 1984). An intensive survey of about 6,500 acres delineated five archaeological districts with several hundred individual sites. A good portion of the installation appears to be quite rich in archaeological remains.

3.710 In a similar fashion, the area has a rich, historical heritage over the past 200 hundred years. In 1771, the Mission San Antonio de Padua was established as the third of a string of California coastal missions, and by the late 1770's, the mission

fees (Peterson, 1984). Hunting is allowed on weekends and holidays and fishing is allowed all week as training activities permit. Hunting is limited to a maximum of about 400 hunters. Hunting is permitted on 26 of the 29 training areas and generally at least half of these areas are open on the weekends (Decker, 1984). Hunting and fishing special permits produce about $170,000 annually, an important source of funds for natural resource management on the installation. Wildfire management is practiced to prevent destruction of training areas or of the adjacent National Forest. Prescribed burning is used within selected areas on a ten year cycle (Beach-Philpot Associates, 1984).

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community had a population of over 1,000 (Beach-Philpott Associates, 1984). During the 1830's and 1840's, several ranchero families controlled the region and, in the early 1900's, William Randolph Hearst added this area to his cattle empire. In 1940, Hearst sold 154,000 acres to the U.S. Army which established Camp Hunter Liggett with the area being renamed Fort Hunter Liggett in 1975. Present National Register sites on installation land include the restored mission (with portions functioning as a parish church), the Milpitas Ranch House (also known as the Hacienda) built in 1930 as ranch headquarters for Hearst and now serving as quarters and Officers Open Mess, the Dutton Hotel (built in 1849), the Jose Mario Gil Adobe (built in 1865), the Tidball Store in Jolon (built in 1865) and the Cueva Pintada (Painted Cave), a cave with prehistoric pictographs.

CHAPTER 4A

ENVIRONMENTAL CONSEQUENCES OF THE FORT WAINWRIGHT, ALASKA - FORT LEWIS, WASHINGTON STATIONING ALTERNATIVE

INTRODUCTION

4A.1 Under this stationing alternative, the new light infantry division would be split between two installations. The division minus one infantry brigade would be stationed at Fort Wainwright, Alaska along with some support elements. The remaining infantry brigade plus support elements would be stationed at Fort Lewis, Washington. To make room at Fort Wainwright for the division minus one infantry brigade, the 172nd Infantry Battalion and elements of the 222nd Aviation Battalion currently stationed at Fort Wainwright would be restationed at Fort Richardson, Alaska. Civilian employees would be added at each installation to support the new troops.

4A.2 Stationing of the new light division troops at Fort Wainwright would begin in Fiscal Year 1984 (FY 84) and be completed in FY 89. Most of the troops would arrive during FY 85, FY 86 and FY 87. Movement of troops to Fort Richardson from Fort Wainwright would occur during FY 85 through FY 87. Stationing of the infantry brigade at Fort Lewis would take place during FY 86 and FY 87.

4A.3 At Fort Lewis, several other events also occur during the FY 84 through FY 89 period. The 9th Infantry Division currently stationed at Fort Lewis is being reorganized into a High Technology Motorized Division. This action, to be completed during FY 86, includes the reduction of division personnel to about 13,000. Also in progress is the expansion of the Madigan Army Medical Center. This project would be completed by 1990 or 1991.

4A.4 Changes in military and civilian personnel associated with the Fort Wainwright-Fort Lewis stationing alternative for the three installations involved are shown in Table 4A-1. At Fort Wainwright, there would be a net increase of 7,400 military and 9,270 dependents for a total increase of 16,670. On-post civilian employment would increase by 360. At Fort Richardson, there would be a net increase of 1,130 military and 1,270 dependents for a total increase of 2,400. On-post civilian employment would increase by 160. At Fort Lewis, there would be a net increase of 3,890 military and 5,190 dependents for a total increase of 9,080. On-post civilian employment would increase by 270.

TABLE 4A-1
CHANGES IN MILITARY AND CIVILIAN PERSONNEL FOR
THE FORT WAINWRIGHT - FORT LEWIS STATIONING ALTERNATIVE

Category	Baseline	FY 1984 Strength	FY 1984 Change	FY 1985 Strength	FY 1985 Change	FY 1986 Strength	FY 1986 Change	FY 1987 Strength	FY 1987 Change	FY 1988 Strength	FY 1988 Change	FY 1989 Strength	FY 1989 Change	Total Change
FORT WAINWRIGHT														
Officers	330	350	20	580	230	740	160	1140	400	1150	10	1150	0	820
Enlisted	3070	3100	30	4290	1190	6180	1890	9350	3160	9640	290	9650	10	6580
Total military	3400	3450	50	4870	1420	6920	2050	10480	3560	10790	310	10800	10	7400
Civilian employees	1350	1350	0	1410	60	1550	150	1690	140	1710	10	1710	0	360
Total installation	4750	4800	50	6270	1470	8470	2200	12180	3700	12490	320	12500	10	7750
Families	1690	1720	30	2450	730	3460	1010	5240	1790	5390	150	5400	10	3710
Dependents	4230	4300	70	6120	1820	8650	2530	13110	4460	13480	370	13500	20	9270
School-aged dependents of military	1520	1550	30	2200	660	3110	910	4720	1610	4850	130	4860	10	3340
FORT RICHARDSON														
Officers	520	520	0	530	10	570	40	640	80	640	0	640	0	120
Enlisted	3960	3960	0	4070	110	4680	610	4970	290	4970	0	4970	0	1010
Total military	4490	4490	0	4600	110	5240	640	5610	370	5610	0	5610	0	1130
Civilian employees	1390	1390	0	1390	0	1460	60	1550	90	1550	0	1550	0	160
Total installation	5880	5880	0	5990	120	6700	710	7160	460	7160	0	7160	0	1290
Families	2260	2260	0	2260	0	2570	310	2760	200	2760	0	2760	0	510
Dependents	5640	5640	0	5640	0	6420	780	6910	490	6910	0	6910	0	1270
School-aged dependents of military	2030	2030	0	2030	0	2310	280	2490	180	2490	0	2490	0	460
FORT LEWIS														
Officers	2780	3010	230	3170	160	3510	340	3560	50	3610	50	3660	50	880
Enlisted	22080	22980	900	21710	-1270	23890	2180	24620	730	24770	150	25090	320	3010
Total military	24860	25990	1130	24880	-1110	27400	2520	28180	780	28380	200	28750	370	3890
Civilian employees	4070	4140	70	4130	-10	4290	160	4310	20	4320	10	4340	20	270
Total installation	28930	30130	1200	29010	-1120	31690	2680	32490	800	32700	210	33090	390	4160
Families	12460	13060	600	12580	-480	13860	1280	14240	380	14350	110	14540	190	2080
Dependents	31160	32650	1490	31460	-1190	34660	3200	35610	950	35880	270	36350	470	5190
School-aged dependents of military	11220	11750	540	11320	-430	12480	1150	12820	340	12920	100	13090	170	1870

Note: Strength = authorized positions at end of fiscal year
Change = personnel change during fiscal year
Numbers may not add exactly because of rounding
Families and Dependents are for military personnel only

4A.5 Some construction would be undertaken as part of the stationing action. A list of major construction required is given in Appendix K. Tables 4A-2 and 4A-3 summarize regional and on-post impacts, respectively, that could occur from this stationing alternative.

FORT WAINWRIGHT AND THE FAIRBANKS, ALASKA REGION

4A.6 It is assumed that stationing of the light infantry division minus one infantry brigade at Fort Wainwright would not result in substantial change in the nature of the mission of the post (Machnicki, 1984), which is to train and maintain assigned units at the state of readiness required for the ground defense of northern Alaska; to provide facilities for cold weather training and testing; and to provide support for various tenants and their activities. The addition of the light infantry division will fill a requirement for a smaller, more strategically responsive component for special contingencies and deployment. The major change would constitute a large increase in the number of assigned troops (and their dependents) and a minimal change in the characteristics of the assigned units consonant with the light infantry division.

Fairbanks, Alaska Region

4A.7 Regional impacts resulting from stationing the light infantry division minus one brigade at Fort Wainwright would be those associated with an increase in population in the Fairbanks area. Anticipated impacts to the Fairbanks North Star Borough are described below.

Biological Environment

4A.8 Impacts to the biological environment would be minor, consisting primarily of increases in the number of occurances of noise disturbances to wildlife due to helicopter and truck traffic and of habitat loss for residential areas. In addition, there may be an increase in hunting, trapping and fishing pressure off post as a consequence of the increased regional population. In 1983, 130 moose were harvested on Alaska Game Unit 20A and 60 were harvested north of Eielson on Fort Wainwright (L. Jennings, 1984). Approximately 20 moose were harvested by military personnel on Fort Wainwright during the 1983 season (Kerns, 1984).

Demography

4A.9 Stationing the light infantry division minus one brigade at Fort Wainwright would result in a net increase in the military population of the post of 7,400 troops (820 officers and warrant

TABLE 4A-2

SUMMARY OF THE REGIONAL ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE FORT WAINWRIGHT-FORT LEWIS STATIONING ALTERNATIVE

Category	Fort Wainwright, Alaska	Fort Richardson, Alaska	Fort Lewis, Washington
Biological Environment	Increasing conflicts between military activities and civilian hunting/trapping pressure on the military reservation, noise disruption of wildlife, and wildlife habitat loss due to to residential development.	Minimal habitat removal (300-350 acres) for housing construction; noise disruption of wildlife behavior; contamination of Cook Inlet estuary with sewage.	Minor habitat disturbance from housing construction could result. Noise from increased training. Silt from river crossing practice could affect aquatic biota. No likely adverse effects to the rigid white topped aster candidate for federal listing, or the bald eagle at Lewis. At Yakima, some adverse effects to bald eagles. Official consultation process with FWS has been initiated.
Demography	Increased rate of population growth (24.3% of 1983 population by 1989).	Less than 1 percent change in Anchorage population.	By 1989 11,000 military families could live off post, an increase of about 1,320 in Pierce County and 160 in Thurston based on current distribution. Off-post military personnel and dependents could reach 39,300 by 1989, about 5 percent of Pierce and Thurston population projections. It is likely that the counties could accommodate these increases.
Land Use	Potential increase in rate of residential development with as much as 2,000 acres of land converted to residential use.	Increased development pressure in Eagle River rural community.	Direct change could result from housing construction. Increases in off-post families could represent about 7 percent of projected housing needs for 1985-1990 in both counties. Most construction would be likely in Pierce, where vacant areas are available.
Noise	Increased noise due to aircraft operations (especially helicopter flights) artillery, and ammunition demolition.	No increased noise projected, however, Eagle River area already affected by noise from artillary range.	Increases in noise levels on roadways associated with increased traffic volumes. Increases in noise levels associated with rotary-wing flight operations (Fort Lewis) and fixed wing flight operations (McChord AFB).
Regional Economic Activity	Increased business volume, local personal income and employment.	Beneficial input of millions in construction and local services.	The Stationing activity would benefit the area's total business volume, personal income and employment.
Air Quality	Increased vehicular emissions in the region which is currently in non-attainment for carbon monoxide. Increased potential for ice fog from vehicular emissions and from power plant cooling water. Increased hydrocarbons from residential heating. Increased fugitive emissions.	Small increase in emissions due to more vehicles in the region.	Increased emissions loadings from vehicular traffic and flight operations. Slight increases or no change in stationary source emissions.
Water Supply	Increased demand for water would consume most of the reserve capacity for the Municipal Utilities System treatment plant.	Temporary strain on municipal water supply until Eklutna Water Project is completed.	Increased demand on community and private (well-groundwater) supplies.
Wastewater Disposal	Increased demand for wastewater treatment would exceed the current operating capacity of the sewage treatment plant by 1.72 mdg.	Two years of sewage treatment over-capacity of plant; primary treated wastes disposed of in Cook Inlet.	Increased demand on community systems and increased number of private (septic) wastewater management systems. Deterioration of groundwater quality possible in some rural areas.
Solid Waste Disposal	Increased demand for solid waste disposal of at least 22.2% would shorten the life-span of the landfill facility.	Shortened life of military landfill by 2 years puts strain on municipal landfill and need to locate a new one.	Increased demands on regional landfill capacity.

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TABLE 4A-2

SUMMARY OF THE REGIONAL ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE FORT WAINWRIGHT-FORT LEWIS STATIONING ALTERNATIVE

Category	Fort Wainwright, Alaska	Fort Richardson, Alaska	Fort Lewis, Washington
Biological Environment	Increasing conflicts between military activities and civilian hunting/trapping pressure on the military reservation, noise disruption of wildlife, and wildlife habitat loss due to to residential development.	Minimal habitat removal (300-350 acres) for housing construction; noise disruption of wildlife behavior; contamination of Cook Inlet estuary with sewage.	Minor habitat disturbance from housing construction could result. Noise from increased training. Silt from river crossing practice could affect aquatic biota. No likely adverse effects to the rigid white topped aster candidate for federal listing, or the bald eagle at Lewis. At Yakima, some adverse effects to bald eagles. Official consultation process with FWS has been initiated.
Demography	Increased rate of population growth (26.3% of 1983 population by 1989).	Less than 1 percent change in Anchorage population.	By 1989 11,000 military families could live off post, an increase of about 1,320 in Pierce County and 160 in Thurston based on current distribution. Off-post military personnel and dependents could reach 39,300 by 1989, about 5 percent of Pierce and Thurston population projections. It is likely that the counties could accommodate these increases.
Land Use	Potential increase in rate of residential development with as much as 2,000 acres of land converted to residential use.	Increased development pressure in Eagle River rural community.	Direct change could result from housing construction. Increases in off-post families could represent about 7 percent of projected housing needs for 1985-1990 in both counties. Most construction would be likely in Pierce, where vacant areas are available.
Noise	Increased noise due to aircraft operations (especially helicopter flights) artillery, and ammunition demolition.	No increased noise projected, however, Eagle River area already affected by noise from artillary range.	Increases in noise levels on roadways associated with increased traffic volumes. Increases in noise levels associated with rotary-wing flight operations (Fort Lewis) and fixed wing flight operations (McChord AFB).
Regional Economic Activity	Increased business volume, local personal income and employment.	Beneficial input of millions in construction and local services.	The Stationing activity would benefit the area's total business volume, personal income and employment.
Air Quality	Increased vehicular emissions in the region which is currently in non-attainment for carbon monoxide. Increased potential for ice fog from vehicular emissions and from power plant cooling water. Increased hydrocarbons from residential heating. Increased fugitive emissions.	Small increase in emissions due to more vehicles in the region.	Increased emissions loadings from vehicular traffic and flight operations. Slight increases or no change in stationary source emissions.
Water Supply	Increased demand for water would consume most of the reserve capacity for the Municipal Utilities System treatment plant.	Temporary strain on municipal water supply until Eklutna Water Project is completed.	Increased demand on community and private (well-groundwater) supplies.
Wastewater Disposal	Increased demand for wastewater treatment would exceed the current operating capacity of the sewage treatment plant by 1.72 mdg.	Two years of sewage treatment over-capacity of plant; primary treated wastes disposed of in Cook Inlet.	Increased demand on community systems and increased number of private (septic) wastewater management systems. Deterioration of groundwater quality possible in some rural areas.
Solid Waste Disposal	Increased demand for solid waste disposal of at least 22.2% would shorten the life-span of the landfill facility.	Shortened life of military landfill by 2 years puts strain on Municipal landfill and need to locate a new one.	Increased demands on regional landfill capacity.

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TABLE 4A-2 (concluded)

SUMMARY OF THE REGIONAL ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE FORT WAINWRIGHT-FORT LEWIS STATIONING ALTERNATIVE

Category	Fort Wainwright, Alaska	Fort Richardson, Alaska	Fort Lewis, Washington
Housing	Increased demand for housing would require about 3,790 housing units by 1989.	Shortfall of 700 new family units will be needed in community surrounding Fort Richardson.	By 1990, 11,000 Fort Lewis families could need off-post housing, a regional increase of 1,610 (17%). Based on current distributions, about 9,350 could live in Pierce County and 1,100 in Thurston. The increases in off-post housing needs would represent about 7 percent of 1985-1990 projected housing needs in the two counties; the area could likely to accommodate the increase.
Schools	Increased demand for schools would be nearly two times the current planned expansion for the region. The ultimate location of married personnel may place differential loads on various schools within the district.	High schools and junior high schools temporarily overcrowded; one new elementary school needed off post.	Nearby schools districts are operating at or near capacity, particularly at elementary levels. Plans prepared to accommodate population growth with additions and/or expansions to schools could be activated and the student population could probably be accommodated.
Health Care	No impacts are anticipated on the Fairbanks Memorial Hospital, but increased need for mental health, preventative medicine, and social service facilities in the community may be required.	New expansion planned will handle the increased demand; increase preventative medicine, mental health and social services.	Many area hospitals are currently operating under capacity, the population growth in the area from the stationing could be accommodated.
Cultural Resources	Potential for disturbance or destruction of cultural resources by private residential/commercial developments.	Potential for disturbance or destruction of cultural resources by private residential/commercial developments.	Potential for disturbance or destruction of cultural resources by private residential/commercial developments.
Energy and Fuels	9% increase in residential fuel use. 25% increase in gasoline consumption.	1% increase in residential fuel use. 1% increase in gasoline consumption.	1% increase in residential fuel use. 4% increase in gasoline consumption.

TABLE 4A-3

SUMMARY OF THE ON-POST ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE FORT WAINWRIGHT-LEWIS STATIONING ALTERNATIVE

Category	Fort Wainwright	Fort Richardson	Fort Lewis
Geology, Minerals and Soils	Increased conflict between mineral-mining interests and military requirements would result from training activities. Increased off-road vehicular traffic and training activities would disturb sensitive soils and permafrost.	Impact area in permafrost would increase melting with an land clearing or tracked vehicles.	Soil disturbances and some erosion associated with construction and training activities.
Biological Environment	Increased training activity would result in increased habitat disturbance and noise disturbance to wildlife. The increased population would increase hunting, fishing and trapping pressures on fish and wildlife.	Minor habitat disruption from noise of low-flying helicopters; some clearing of vegetation in training areas increase moose browse.	Construction and training could adversely affect on post habitats, less than 1% of fort property. Noise and silt could disturb terrestrial and aquatic species. No adverse effects likely to candidate or threatened species on Fort Lewis. More battalion trips to Yakima could increase erosion of thin soils, producing more silt in rivers and potentially affecting aquatic biota. Potential adverse effects to bald eagles along the Columbia River could result. The formal consultation process with FWS has been initiated.
On-Post Population	Working population of the post would increase from 4,750 civilian employees to 12,500 military and civilian employees.	On-post working population would increase by 25%, from 5,880 military and civilian employees to 7,160 military and civilian employees.	A 13 to 16% increase in military personnel would result under the proposed alternative (from 24,858 in FY 1983 to 28,72e in FY 1989); about 9% would be directly assigned to the light infantry brigade. No new on-post family housing would be constructed but barracks and bachelor officer quarters would yielding a total on-post population of about 26,200 by FY 1989.
Land Use	Headquarters would move to Building 1555 on the North Post resulting in a change in locus for the center of activity. Some construction and renovation would take place.	No significant land use changes on-post. One new bachel quarters would be constructed or modernized.	Less than 1% of total post acreage converted by construction. 20 to 25% increase training activities could adversely affect the condition of existing ranges and maneuver areas. Conflicts could arise over recreational access to the fort. Increased use of existing ranges and maneuver areas at Yakima Firing Center would result from an estimated 15% increase in battalion trips, also a 5% increase in the use of Camp Bonneville would result.
Noise	Increased aircraft operations and munitions demolition would result in an increased potential for complaints. Increased night training would increase night-time noise levels and consequent complaint.	No increased noise levels projected; only six guns added to Eagle River range.	Increased noise levels from aircraft operations, wheeled vehicle use and training activities. Slight decrease in artillery impact noise intensity.
Air Quality	Increased vehicular traffic would add to the carbon monoxide emissions in the region. Ice fog on Richardson Highway would be exacerbated as a result of increased thermal shedding from the power plant cooling pond on post.	No significant new sources added; 20% increase in auto emissions, may add to carbon monoxide problem.	Increased emissions loadings resulting from increased vehicular traffic levels, rotary-wing aircraft use. Slight increase or no change in emissions from stationary sources.

TABLE 4A-3 (Continued)

SUMMARY OF THE ON-POST ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE FORT WAINWRIGHT-LEWIS STATIONING ALTERNATIVE

Category	Fort Wainwright	Fort Richardson	Fort Lewis
Water Supply	Additional loadings to the water supply system would be 0.648 mgd resulting in use of remaining excess capacity.	Need to use three wells on-post may require upgrading of distribution system.	No significant impacts.
Wastewater Disposal	Additional wastewater demand would be 0.54 mgd. Current capacity, limited by contractual arrangement, would be exceeded.	Overload on Anchorage system projected for two years; primary treatment wastes disposed in Cook Inlet.	No significant impacts.
Solid and Hazardous Waste Disposal	The effective life of the on-post landfill would be reduced.	If all wastes disposed of on-post; shorten lifetime of landfill from ten to eight years.	No significants impacts.
Housing	Barracks would be renovated for bachelors on post. Family housing would be required off-post.	Barracks for 522 single enlisted persons on-post would be constructed. 700 family quarters needed off-post.	1,323 additional barracks and 50 new bachelor officer quarters would be built yielding total adequate housing as follows: 13,796 barracks, 3,509 family units and 139 bachelor officer quarters. Adequate space would exist for enlisted, 11,000 families would live off-post as would 820 bachelor officers.
Schools	Impacts would be for regional schools from addition of 3,460 new students.	Impacts would be for Anchorage area schools from addition of 500 students.	Without additional family housing no more elementary students would be added, thus the existing situation at capacity would persist.
Health Care	There would be increased demand for veterinarian services and preventative, mental health and social service facilities. Demand on Bassett Army Hospital facilities would be increased.	Medical clinic should be up-graded to a full health clinic; add one dental clinic. Increase preventative medicine, mental health and social services.	The new Madigan Medical Center would not be complete until 1990 or 1991. Additional troops to the post with the stationing has not been identified as a problem.
Public Safety	The increased population on and off post would result in increased demands on local and military law enforcement and fire protection facilities.	Military from Wainwright will arrive with own MP's.	Increases in training activities would widen the potential for more accidents by military and the public. Public safety problems could increase at Yakima and Camp Bonneville. Crime increase possible with added personnel.
Traffic and Transportation	Aircraft and vehicular traffic would increase. The 6,300 registered privately owned vehicles on post would more than double.	About 20% increase in traffic on-post, minor crowding at main gate from Glenn Highway.	Increases in on-post privately-owned and military vehicle traffic.

TABLE 4A-3 (Concluded)

SUMMARY OF THE ON-POST ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE FORT WAINWRIGHT-LEWIS STATIONING ALTERNATIVE

Category	Fort Wainwright	Fort Richardson	Fort Lewis
Cultural Resources	Potential for disturbance or destruction of cultural resources by increased training and new construction.	No impacts on cultural resource are anticipated.	Potential for disturbance or destruction of cultural resources by increased training and new construction. A Native American Reservation of the Nisqually is adjacent to the post. Complaints could arise from increased siltation in area waters, and noise from increased artillery fire and helicopter use. An estimated 15% more battalion trips to Yakima would increase potential for archeological resource disturbances; new areas would be surveyed. The Wanapum Indians live adjacent to the center and use certain locations for traditional hunting and gathering; increased use of the center could pose a conflict to these uses.
Energy and Fuels	121% increase in on-post energy usage can be accommodated without major construction. 303% increase in military vehicle fuel consumption.	11% increase in on-post energy usage can be accommodated without major construction. 26% increase in military vehicle fuel consumption.	64% increase in on-post energy usage can be accommodated without major construction. 68% increase in military vehicle fuel consumption.

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officers, 6,580 enlisted) by the end of FY 1989. In addition, the action would create an additional 360 civilian jobs. Given the following assumptions:

- o 47% of the enlisted soldiers and 75% of the officers are married;
- o 2.5 dependents per married troop; and
- o 50% of the civilian jobs would be filled by persons coming from outside of the region, 75% of them married with 2.5 dependents.

The net increase in military personnel and dependents would be 16,670 individuals. The net increase in civilians and their dependents to the Fairbanks area would be 518 individuals. The net total population increase would be 17,188 individuals.

4A.10 This increase in population represents 26.3 percent more than the current (1983) estimated population of 65,300 in the Fairbanks North Star Borough (Burke, 1984). The total population (1983 population plus net increase due to proposed activity) of almost 82,500 is greater than the estimated population for the year 1998 projected by the University of Alaska Institute of Social and Economic Research (Institute of Social and Economic Research, 1984).

Land Use

4A.11 The Fairbanks region is growing rapidly and building construction is without the guidance and control of subdivision permits. Consequently, it is difficult to predict where residential development may be greatest as a result of the proposed stationing. It is most likely that residential development will take place within 15 miles of downtown Fairbanks, and much of it may be along Badger Road and south of Airport Way, southeast and west of the post, respectively.

4A.12 Assuming 3,710 new military families and 338 new civilian families needing housing; 120 of the military families quartered in vacant housing on post; and housing density of 2 units per acre, a total of 1,964 acres of new residential development would be required by 1989. Additional commercial development would also be required to support the added population.

Noise

4A.13 Currently, major noise complaints from the civilian population of the Fairbanks region occur when defective ammunition

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- o 47% of the enlisted soldiers and 75% of the officers are married;
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Noise

4A.13 Currently, major noise complaints from the civilian population of the Fairbanks region occur when defective ammunition

is exploded in an area along the Tanana River. Artillery fire does not generate complaints at present. Demolition usually occurs on an average of 4 times per year and is preceded by announcements to the public via radio (Watz, 1984). Assuming an increase in training activity (six infantry battalions with the light infantry division minus one brigade compared to one battalion currently on-post), such demolition activity could also be expected to increase.

4A.14 The U.S. Army Environmental Hygiene Agency (1981) predicted noise from individual aircraft operations of the Fort Wainwright Army Airfield would result in complaints from nearby residents. With increasing residential encroachment of the post boundaries due to population growth (both as a consequence of the proposed action and as a consequence of intrinsic growth) and increased aircraft operations (both helicopter and fixed-wing) of the airfield, such complaints would be even more likely. The incoming troops will be accompained by 100 helicopters. In addition, E-Troop 1st Cavalry of the 172nd (27 helicopters) and the Medevac unit of the 222nd Aviation Battalion will remain at Fort Wainwright.

4A.15 Increases in the off-post noise levels as a result of this stationing alternative cannot be determined until a training schedule has been established for the light infantry division minus one brigade. Should these units be stationed at Fort Wainwright, simulation modeling of noise effects would be conducted as part of the Army's ongoing noise assessment program.

Regional Economic Activity

4A.16 The stationing alternative would have a direct effect upon the Fairbanks North Star Borough economy through a net increase in on-post military and civilian employment of 7,760 and an annual increase in purchases by the installation of $3.627 million in regionally supplied goods and services. Additional economic benefits would accrue to the region through indirect economic activity resulting from multiplier effects.

4A.17 The Economic Impact Forecast System (EIFS) has been used to estimate changes in total business volume and personal income within the region. Model outputs for these parameters associated with mission change and construction resulting from the stationing alternative are displayed in Table 4A-4. Model outputs for mission change are expressed as permanent increases which reoccur on an annual basis over the life of the stationing alternative. Outputs associated with construction are the highest estimated values which would occur for the parameters in a single year over an expected five year construction period (FY85-FY89).

CHAPTER 4C

ENVIRONMENTAL CONSEQUENCES OF STATIONING A FULL LIGHT INFANTRY DIVISION AT FORT DRUM, NEW YORK

INTRODUCTION

4C.1 Under this alternative the full light infantry division would be stationed at Fort Drum, New York. Civilian employees would also be added to support the new troops.

4C.2 Stationing of the new light division troops would begin in Fiscal Year 1984 (FY 84) and be completed in FY 87. Most of the troops would arrive in FY 85, 86, and 87.

4C.3 Changes in military and civilian personnel associated with the stationing at Fort Drum are shown in Table 4C-1. There would be a net increase of 11,630 military and 14,480 dependents for a total increase of 26,110. On-post civilian employment would increase by 1,480. There probably would be a slight decrease in the peak number of Reserve and National Guard trainees present at one time, but their number will continue to average approximately 7,000 over the May-August period.

4C.4 To accommodate the increased population at Fort Drum, the Army would construct over 4,400 new housing units, office, support, and utility facilities, and would extensively rehabilitate others (Appendix K). Tables 4C-2 and 4C-3 summarize regional and on-post impacts that could occur from this stationing alternative.

FORT DRUM AND THE EASTERN LAKE ONTARIO -- ST. LAWRENCE, NEW YORK REGION

4C.5 A major impact of adding a light infantry division at Fort Drum would be the increased demand for retail and service industries caused by the increased population. As part of the alternative, the Army plans to provide for most of the basic needs of military personnel on post. This will require the construction of a hospital, housing for 90 percent of families eligible, and two elementary schools. Total construction volume is estimated at just over $1 billion. Over the short-term there could be impacts in these areas however, since all construction is scheduled to be completed in FY 89 or later while the stationing of military personnel at Drum is scheduled to be completed during FY 87. This may preclude families from accompanying military until at least the family housing is completed in FY 89 or later. Approximately 1,330 families would require off-post housing. Although this is less than

TABLE 4C-1
CHANGES IN MILITARY AND CIVILIAN PERSONNEL FOR
THE FULL LIGHT INFANTRY DIVISION AT FORT DRUM

Category	Baseline	FY 1984		FY 1985		FY 1986		FY 1987		FY 1988		FY 1989		Total Change
		Strength	Change	Strength	Change	Strength	Change	Strength	Change	Strength	Change	Strength	Change	
Officers	100	120	20	360	240	760	400	1260	500	1260	0	1260	0	1160
Enlisted	930	990	60	2400	1400	7370	4970	11400	4030	11400	0	11400	0	10470
Total military	1030	1120	90	2760	1640	8130	5370	12660	4530	12660	0	12660	0	11630
Civilian employees	920	970	50	1460	500	1880	420	2280	410	2380	100	2400	20	1480
Total installation	1950	2080	130	4220	2140	10010	5790	14940	4940	15040	100	15060	20	13110
Families	510	560	50	1400	840	4030	2640	6300	2270	6300	0	6300	0	5790
Dependents	1280	1400	120	3500	2100	10080	6590	15760	5670	15760	0	15760	0	14480
School-aged dependents of military	460	500	40	1260	760	3630	2370	5670	2040	5670	0	5670	0	5210

Note: Strength = authorized positions at end of fiscal year
Change = personnel change during fiscal year
Numbers may not add exactly because of rounding
Families and Dependents are for military personnel only.

TABLE 4C-2

SUMMARY OF THE REGIONAL ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE FORT DRUM STATIONING ALTERNATIVE

Category	Fort Drum, New York
Biological Environment	Some habitat lost to new residential and commercial construction activities in the area.
Demography	A population increase of 11,630 military and 14,480 dependents would occur over the FY 84 to FY 87 period, an 11 percent population increase in the tri-county area. An additional 1,480 civilian jobs on post could also result in some population increase to the extent these positions are filled by in-migrants.
Land Use	Residential and commercial development would occur in the region in response to the increase in military and dependents. Housing demand would increase by a minimum of 1,330 units. Potential for commercial "strip" development on roads leading from the post given lack of land use regulations in many areas.
Noise	Average noise levels would increase due to more frequent activities but peak energy levels would not.
Regional Economic Activity	Economic impacts in the tri-county area resulting from the stationing include 11.9 percent increase in total business volume, 18.9 percent in personal income. Over one billion dollars in new construction. Potential disruptive effects due to greater economic activity than historically experienced.
Air Quality	The number of mobile and stationary sources in the region would increase, but this should not have a significant effect on regional air quality.
Water Supply	Abundant supply but municipal distribution systems would be inadequate for new demand if the majority of development takes place in areas with public water systems.
Wastewater Disposal	Existing municipal systems not sized for expansion; taxes and/or user fees would increase for new development; increased number of private (septic) wastewater management systems could affect ground-water quality.
Solid Waste Disposal	Increased demand on regional landfills would further aggravate existing problems. Highly permeable soil in the region makes suitable landfill sites difficult to find. Counties are considering energy-recovery incineration facilities.
Housing	Minimum of over 1,300 military families would require off-post housing; demand would have to be met by new construction since existing adequate housing is not sufficient. Short-term pressure could be much greater since the on-post housing construction would not be completed until at least 2 years after all troops are on post. This would result in either involuntary separation of military families or increased pressure on region for housing.

TABLE 4C-2 (concluded)

SUMMARY OF THE REGIONAL ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE FORT DRUM STATIONING ALTERNATIVE

Category	Fort Drum, New York
Schools	Potentially serious short term impact if families arrive with soliders prior to new school construction. On-post construction of 2 elementary schools would meet the long-term demand. 2,605 junior and senior high school students would attend area schools. Capacity is available, although some shifting of student populations to under used schools may be required.
Health Care	Significant short term impacts since stationing would be scheduled for completion prior to hospital construction on post. Post hospital, when operational, potentially could outcompete local hospitals for staff.
Cultural Resources	Potential for disturbance or destruction of cultural resources by private residential-commercial development.
Energy and Fuels	2% increase in residential fuel use. 11% increase in gasoline consumption.

TABLE 4C-3

SUMMARY OF THE ON-POST ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE FORT DRUM STATIONING ALTERNATIVE

Category	Fort Drum, New York
Geology Minerals and Soils	Increased erosion in poorly protected regions due to construction and increased training activities; increased quarrying of rock and gravel for use in construction.
Biological Environment	Loss of 300 acres of wildlife habitat to construction; increased pressure on wildlife due to year-round and nighttime activities.
On-post Population	Permanent workforce increase of almost 8 fold from 1,950 to 15,060 military and cilivian employees. Number of family housing units on post increases more than 12 fold from 350 to 4,461.
Land Use	300 acres undeveloped land used for housing, 130 acres paved for new roads, runways. Reduced lumbering activity.
Noise	Continuation of existing noise patterns. Increased frequency of noise from increased aircraft operation and training activities.
Air Quality	The number of mobile and stationary sources would be increased on post, including a new 150 MBtu heating facility. These increases, however, should not adversely affect the good air quality of the post.
Water Supply	Demand for water would be approximately 5.3 mgd which is 39 percent more than the existing capacity. Approximately 7 new wells would be needed to meet increased demand.
Wastewater Disposal	Total treatment capacity of 3.7 mgd would be required. Present primary treatment capacity would be adequate but secondary treatment capacity would need to be expanded to meet this demand.
Solid and Hazardous Waste Disposal	Current landfill permit expires on Dec. 1985. New site or alternative disposal method would be required.
Housing	Construction of 4,461 housing units on-post, more than 12 times number of existing units; construction of 1.4 million square feet of new barracks space.
Schools	Construction of two elementary schools on-post to meet increased demand by 5,220 school age children.

TABLE 4C-3 (concluded)

SUMMARY OF THE ON-POST ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE FORT DRUM STATIONING ALTERNATIVE

Health Care	Construction of hospital totalling 110,000 ft^2 and dental clinic (22,661 ft^2) on post; addition of 260 medical staff to run the new facilities.
Public Safety	Increase accidents due to significant population growth, increased problems in handling offenders not subject to the Uniform Code of Military practice in areas of the post not covered by concurrent jurisdication. Increased demands on fire fighting services.
Traffic and Transportation	Number of personnel vehicles of workforce living off post would increase more than 2.3 times. Increased traffic flow and congestion on Nash and First St. W. in the afternoon and on Black River Road and First St. W. in the morning.
Cultural Resources	Potential for disturbance or destruction of cultural resources by increased training and new construction.
Energy and Fuels	1,140% increase in on-post energy consumption requires expansion of energy services and fuel storage capacity. 1,900% increase in military vehicle fuel consumption.

a one percent increase to the total tri-county population, if housing construction is concentrated in areas with municipal services, current systems for water distribution and waste disposal would not be able to accommodate the expanded requirements.

4C.6 Communities that will experience the greatest effects are those closest to the Fort, including the city of Watertown and the small communities of Carthage, Black River, Antwerp, Evans Mills, and Philadelphia, in Jefferson County, Gouverneur and Canton in St. Lawrence County, and Lowville and other small communities in Lewis County. During construction, labor and technicians probably will come from as far away as Syracuse (70 miles to the south) and Massena (70 miles to the northeast).

Biological Environment

4C.7 There will be additional pressure on the regional biological environment from increased human population. There will be land-use conversion to accomodate new housing and service facilties, which will result in losses of wildlife habitat and associated wildlife. There will be increased numbers of road kills from increased traffic, and there will be increased hunting and fishing pressures. The region currently has an abundance of wildlife and habitat, and the amount that would be lost will be small in proportion to the total. Furthermore, additional hunting, fishing, and trapping pressure probably would not have significant adverse effects and are not expected to be of serious concern.

Demography

4C.8 This alternative would add 26,110 military and dependents to a population of 227,440 over a 3 year period for an 11 percent increase in the tri-county area. This is considerably higher than the 3 percent growth projected for the area by 1990. Of this total military population slightly more than 22,700 will be living on post with the remaining 3,330 living in the off-post region.

Land Use

4C.9 The development resulting from a population increase of approximately 26,000 people would have a significant impact on land use in the immediate area of the installation. Although housing, health care, and elementary schools will be provided on post, the increased demand for clothing and other retail stores, entertainment, and other services generated by the added population will greatly stimulate commercial development in the area. In addition, approximately 1,330 families will need off-post housing.

SUPERSEDED
AUG 1984

4C.10 The most likely areas to be impacted by strip development are on those roads leading from the post. The area which is likely to be impacted by Fort Drum, as discussed in Jefferson County's Land Use Plan, is along NYS Route 3 and the Black River which connects the Carthage-West Carthage area and the Village of Black River. Along this route lie the Villages of Herrings and Deferiet and the Hamlets of Great Bend and Felt Mills. The type of strip development that could spring up in this area would be directed at young, military population, including, for example, discount stores, fast food restaurants, 24-hour convenience stores, pawn shops, auto dealers, and night clubs.

4C.11 Although the urban area of Watertown City has zoning regulations, many of the villages and towns around the installation have little or no planning regulations. Rapid development requires a strong planning effort to prevent haphazard or undesirable development patterns. However, only about half of the local municipalities have planning boards (Black River-St. Lawrence Region, 1977). Although comprehensive land use plans have been developed in Jefferson and St. Lawrence Counties, these serve only as guidelines for local towns and villages where actual planning authority rests. St. Lawrence County's Planning Board in their comprehensive plan describe planning efforts in that county as follows: "land use regulations and decisions tend to permit the economy to dictate the location, composition and overall pattern of development, rather than to establish and follow sound land use priorities and principles" (St. Lawrence County, 1978). The Thousand Island parks area should also experience increased use due to the added population.

Noise

4C.12 The existing training mission at Fort Drum would remain basically unchanged, with increases only in uses of helicopters and smaller weapons. There would be no changes in firing of 8-inch and 155 mm guns and 105 mm tank guns. There would be 10 percent or less increases in firing of 105 mm howitzers, and moderate increases in firing of smaller weapons which usually are not heard more than 1000 m from the firing point. Peak noise levels, therefore, would not increase; rather the major change would be in the frequency of occurrences with more nightime and winter season firing and more helicopter flights, which would raise average noise levels. The greatest noise effects would be on villages near the range areas, including Natural Bridge, Antwerp, and Philadelphia.

4C.13 It is difficult to estimate effects of noises from helicopters because most of the flights will be over government

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4C.11 Although the urban area of Watertown City has zoning regulations, many of the villages and towns around the installation have little or no planning regulations. Rapid development requires a strong planning effort to prevent haphazard or undesirable development patterns. Jefferson County has the most communities with zoning regulations in place. Of the 18 villages and towns adjoining or in the immediate area of the post 11 or 61 percent have zoning regulations. In the same areas however only 4 communities have subdivision regulations. Overall in Jefferson County, approximately 57 percent of the villages and towns have zoning regulations. However in Lewis County only 38 percent of the towns and villages have zoning regulations. Of the 11 communities in St. Lawrence County most likely to be affected by changes at Fort Drum only Gouverneur village has zoning regulations. The town of Fowler has implemented some land use planning regulations affecting residential development such as construction and sanitary codes and set back requirements but there are no similar regulations for commercial development.

4C.11a Although comprehensive land use plans have been developed in Jefferson and St. Lawrence Counties, these serve only as guidelines for local towns and villages where actual planning authority rests. St. Lawrence County's Planning Board in their comprehensive plan describe planning efforts in that county as follows: "land use regulations and decisions tend to permit the economy to dictate the location, composition and overall pattern of development, rather than to establish and follow sound land use priorities and principles" (St. Lawrence County, 1978). The Thousand Island parks area should also experience increased use due to the added population.

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the major change would be in the frequency of occurrences with more nightime and winter season firing and more helicopter flights, which would raise average noise levels. The greatest noise effects would be on villages near the range areas, including Natural Bridge, Antwerp, and Philadelphia.

4C.13 It is difficult to estimate effects of noises from helicopters because most of the flights will be over government property, as they are now. Presently there are approximately 2,500 aircraft movements per month at Fort Drum. With the addition of 100 helicopters associated with a light infantry division, that number might be expected to increase as much as fourfold. Although the present

activity from helicopters has not caused a serious community noise problem in the past (New and Luz, 1979), it is possible that the increased operations could cause some problems.

4C.14 If a light infantry division is stationed at Fort Drum, simulation modeling of noise effects would be conducted as part of the Army's ongoing noise assessment program.

Regional Economic Activity

4C.15 The stationing of a full light infantry division at Fort Drum would have a direct effect upon the tri-county region composed of Jefferson, Lewis, and St. Lawrence Counties. There would be increases of approximately 11,630 military employees and 1,480 civilian employees, and increased purchases of local services and supplies of about $4.7 million annually. There also will be a four-year period of new construction and rehabilitation that will amount to approximately $51 million in the 1985 fiscal year (FY), $513 million in 1986FY, $252 million in 1987FY, and $187 million in 1988FY. Construction will affect the tri-county region and also three counties to the south--Onondaga, Oswego, and Onieda Counties. In addition, there would be added regional economic activity caused by multiplier effects.

4C.15a It is likely that some of the civilian jobs created as a result of the stationing activity could be filled be spouses of incoming military personnel. As described in Appendix L about 36% of the spouses of Army enlisted men and 35% of Army officer spouses are members of the civilian workforce (Doering and Hutzler, 1982).

4C.16 The Economic Impact Forecast System (EIFS) has been used to estimate changes in total business volume and personal income withing the region. Economic effects of stationing and construction, as predicted by EIFS, are given in Table 4C-4. Predicted effects of mission changes are given as permanent increases which recur on annual bases. Economic effects associated with construction will vary from year to year. Those shown in the table were computed assuming an annual expenditure of $319 million, a value that is between the expected construction expenditures for the two highest years.

4C.17 Effects of economic changes can be interpreted based upon the percent change of the several variables and the rational threshold value (RTV). The RTV is the maximum annual historical percentage fluctuation of a variable. Predicted changes which exceed the RTV values for one or more economic factors can be expected to cause economic stresses equal or greater than that experienced over the perion for which the RTV has been calculated (1965-1978). Comparison of the percent change and RTV values in

REVISED 1984

TABLE 4C-4

ECONOMIC EFFECT OF THE PROPOSED STATIONING ALTERNATIVE ON THE EASTERN LAKE ONTARIO AND ST. LAWRENCE, NEW YORK REGION[a]

Category	Highest One-Time Annual Change Due to Construction		Recurring Annual Change Due to Proposed Stationing		Rational Threshold Value	
	Amount of Change	Percent Change	Amount of Change	Percent Change	Negative	Positive
Total business volume	$329,498,000	+1.7	$290,679,000	+11.9	-6.8	2.0
Local personal income	$100,566,000	+0.9	$373,068,000	+18.9	-3.2	1.0
Employee equivalent[b]	4,443	+1.0	17,236	+21.9	-3.4	2.1

[a]All changes in 1984 dollars.

[b]Added personal income is equivalent to the average annual salaries of the number of persons shown.

SUPERSEDED
AUG 1984

Table 4C-4 show expected increases that far exceed historical rates of change. In other words, the changes, which will reduce the high unemployment in the area, can be expected to be inflationary.

4C.18 In considering the economic effects in the region immediately surrounding Fort Drum, it also is necessary to consider that the increase of military personnel will bring with it an increase of nearly 6,000 spouses of military, approximately half of whom can be expected to be seeking employment on the Fort or in the new jobs that will be created in the private sector.

Air Quality

4C.19 Present levels of air pollutants in the region are well below New York State Ambient Air Quality Standards (NYSAAQS). Pollutant emissions as a result of increased populations and activities are expected to be from heating Fort Drum facilities and housing, heating for off-post housing and commercial facilities, and automobile emissions. Specific amounts of emissions from the Fort's facilities are discussed in the subsection of this report on installation air emissions. Given the good air quality in the area State air quality agency officials do not expect that the addition of more than 26,000 people would cause any serious degradation of the regional air quality (Prosser, 1984).

Water Supply

4C.20 There would be 1,330 families living off-post under this alternative, representing a total of about 4,650 people. If the majority of the families settle in Watertown or other jurisdictions with municipal water service, there could be a serious distribution problem. Although surface and ground water in the region are more than adequate to supply expanded populations and activities, many community water supply systems in the region are not adequate. In addition, new business development in these areas would put additional pressure on the water distribution system. Construction in areas without municipal water will have to include provision of a source of water.

Wastewater Disposal

4C.21 The situation with wastewater systems is much the same as it is with water supply--present municipal systems are not sized for expanded operation. If residential and commercial development were concentrated in areas with municipal services, it would be necessary to renovate and expand many community wastewater systems or to build new ones. Because community wastewater systems

generally are built with revenue bonds or general obligation bonds on which the existing users also are required to pay, it can be expected that taxes and (or) use fees will increase for the present property owners and users.

4C.22 A substantial amount of housing would be expected to develop in strips along existing roads, especially in areas where zoning is poor or unenforced. Most of this housing would have individual supply wells and septic systems which are unregulated or poorly regulated. Depending upon density and separation factors, such small individual septic systems often present a threat for contamination of drinking water supplies.

Solid Waste Disposal

4C.23 As stated in Chapter 3, a regional problem currently exists with finding suitable landfill sites because of highly permeable soils. The addition of 1,330 military families off-post plus the greatly expanded commercial activity would only aggravate this problem. The most workable solutions, which will be used in St. Lawrence County and are being considered for Jefferson County, probably are energy-recovery incineration facilities.

Housing

4C.24 The stationing of a full light infantry division at Fort Drum would have an impact on the regional housing market. Although the stationing alternative includes the construction of 4,461 housing units on-post, this would still force approximately 1,330 military families to find housing off the installation. There could be some additional short-term pressure on local housing since on-post construction is not due to be completed until after at least 60 percent of troops have arrived on-post. This would result in either involuntary separation of military families or increased demand for off-post housing.

4C.25 There also would be some increase in civilian population in the area attracted by the increased economic activity generated with the influx of military personnel. The existing shortage of rental housing in the area generally can be attributed to the lack of demand for new housing due to a stable population and the large percentage of substandard housing which averages 19 percent of the total market as compared to 5.1 percent for the State (Black River-St. Lawrence Planning, 1976).

4C.26 Although the Housing Referral Service on-post has generally been able to meet the demand for off-post housing, they

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Water Supply

4C.20 There would be 1,330 families living off-post under this alternative, representing a total of about 4,650 people. If many of the families settle in jurisdictions with limited municipal water service, there could be a serious distribution problem. Although surface and ground water in the region are more than adequate to supply expanded populations and activities, some small community water supply systems in the region are not adequate. In addition, new business development in these areas would put additional pressure on the water distribution system. Construction in areas without municipal water will have to include provision of a source of water.

Wastewater Disposal

4C.21 The situation with wastewater systems is much the same as it is with water supply--some of the present municipal systems are not sized for expanded operation. If residential and commercial development were concentrated in areas with municipal services, it would be necessary to renovate and expand some of the community wastewater systems or to build new ones. Because community wastewater systems

have experienced the problem of finding suitable housing. However the community is reported to be making a considerable effort to assist in off-post housing, with support from state and local officials (Williams, 1980). Local officials contacted concerning the stationing alternative expressed confidence that, given the new on-post housing and phased stationing of division troops, the community would be able to respond to the demand for housing. In light of the 17.1 percent unemployment rate in Jefferson County, officials there thought the economic benefits would outweigh any land use problems generated by the new housing construction (Jefferson County Planning Department, Greater Watertown Chamber of Commerce, 1984).

Schools

4C.27 The full division alternative at Fort Drum would involve approximately 5,210 additional school age dependents of military personnel (assuming a school age dependent ratio of 0.9 per married troop). One half of this number or 2,605 students, are assumed would be elementary school age, with the other half being junior and senior high school age. Current excess capacity for the nine public schools in the vicinity of the installation is 4,787. However, the proposed action includes the construction of two elementary schools. This would provide sufficient capacity for the slightly more than 2,000 elementary school children residing on post. Since all on-post children are currently attending area schools, this would remove approximately 260 students currently attending elementary schools in the area. All 2,605 junior and senior high school students would have to attend area schools. The proposed location of new division housing on post would mean these students would attend Carthage and Indian River schools where there is a total excess capacity of 294. Sufficient capacity is available in other area high schools to meet the demand although school officials may need to send some students to schools outside their resident district.

Health Care

4C.28 Implementation of this alternative would add 26,110 people (military and dependents) to the population eligible for military-provided health services. The stationing alternative includes the construction of a hospital and dental clinic on-post to handle the increased demand for health services. Local hospital officials have expressed concern that construction of a hospital on-post would have a negative impact on regional health care facilities (Seguin, 1984, Bellinger, 1984). Jefferson and Lewis County hospitals have been instructed by the Federal Health Systems

Agency to deactivate 93 acute care beds by the end of 1984. Fifty of these beds must come from the maternity and pediatric departments which are underused as a result of declining birth rates and increased elderly population in the area. At Mercy Hospital, average occupancy is 28 percent for maternity and 43 percent for pediatric beds. The loss of patients from Fort Drum would very likely require additional reductions in service. Local hospital officials believe that community facilities could be increased to meet the health care needs of an expanded population at Fort Drum. Local officials are also concerned that the use of a significant number of civilian nurses, technicians, and other staff on-post would drain qualified staff from local hospitals which cannot compete with the Federal pay scale (Seguin, 1984, Bellinger, 1984). About 33 percent of the required medical personnel for the post hospital would be civilians.

4C.29 The short-term increased demand for health care caused by the arrival of all military personnel prior to when the hospital is scheduled for completion probably could be accommodated by existing area facilities. However, local hospitals would be required to hire additional staff which would then need to be cut back when the hospital on-post became operational. In addition a permanent, full-time ambulance service would probably be needed between the installation and local hospitals to serve the increased demand. If the Army takes some interim measures to meet health care needs on-post using temporary facilities this impact on local hospitals would be greatly reduced.

Cultural Resources

4C.30 There is a potential for disturbance or destruction of cultural resources due to private residential or commercial development that could occur as a result of the stationing alternative.

FORT DRUM, NEW YORK

4C.31 The most pronounced effects of a new light infantry division will be felt directly on Fort Drum. On the facility there will be increased traffic, greater demands for family housing, and needs for schooling, health services, recreational facilities, and all utilities. The permanent population will expand greatly, and it will be necessary to construct military facilities, housing, facilities for supporting services, and utilities (Appendix K).

Geology, Minerals and Soils

4C.32 Two major effects probably would be:

1. Increased erosion in poorly protected regions.
2. Increased quarrying of rock and gravel.

Increased erosion will be associated directly with the overall increase in the numbers of troop-days in the field and with increases in the lengths of the seasons in which activities take place. As a result of these factors, there will be more ground traffic during the wet winter and spring periods when vegetation can be easily damaged. Furthermore, it will be more difficult for ground-cover vegetation to be reestablished in damaged areas. In addition, there would be increased quarrying of rock and gravel on the installation for the construction of roads and runways.

Biological Environment

Terrestrial Ecosystems

4C.33 Conversion of undeveloped lands to building areas for military facilities and housing will destroy approximately 300 acres of primarily woodlands on Fort Drum. These losses, however, are small in comparison with the total amount of habitat in the region of the Fort. It therefore can be concluded that the change will not create a significant stress on the regional terrestrial ecosystem.

4C.34 There will be greater pressure on wildlife because of the amount of year-round and nighttime field activities. Whereas Army training activities have been relatively minor during early spring breeding seasons, for example, much more activity now can be expected during these times. Deer wintering grounds also will be subject to disturbance and disruption by wintertime training activities unless special consideration is given to the areas. In addition, it is expected that the light infantry division will do extensive practice to become proficient at night fighting. This would disturb wildlife at rest and also disturb the activities of nocturnal animals.

Aquatic Ecosystems

4C.35 New housing to be constructed northwest of the Cantonment area will encroach upon or otherwise be very close to existing wetlands. Adverse effects will be mitigated, in part, by buffer zones to protect stream habitats. Also, encroachment upon wetlands is subject to State review and permit requirements. As in

SUPERSEDED
AUG 1984

the case of terrestrial habitat, there are abundant wetlands in the region and the overall effects of encroachment and crowding would not have a significant effect on the total regional availability of aquatic habitat.

4C.36 Stream crossings, especially with vehicles, have damaged spawning areas and other elements of stream environments. The major offenders, however, have been tracked vehicles which will not be part of a light infantry division. Although stream damage undoubtedly will occur, the amounts probably will not exceed the amounts that Fort Drum has experienced in the past.

Threatened and Endangered Species

4C.37 The Office of Endangered Species, U.S. Fish and Wildlife Service, has stated that no endangered or threatened species are known to be resident on the installation. Transient species would not be significantly affected (Mallory, 1984).

On-Post Population

4C.38 The work force population would increase from 1,030 to 12,660 military and from 920 to 2,400 civilian employees. Under this alternative 4,461 family housing units and approximately 15,000 barrack spaces will be constructed. This means that on-post daytime population would number about 27,067 not counting visitors, and on-post 24-hour population would be 23,073. In addition, during summer training peaks another 7,500 soldiers would be added to the population on-post.

4C.39 Current proposed timing of barracks and housing construction and the stationing of troops at Fort Drum could result in a serious short-term lack of housing space. Existing adequate barrack spaces number a maximum of 864 (90 sq. ft. per soldier), 65 percent of which are being utilized. There are an additional 10,330 WWII barracks which are of wooden, open bay construction. Rehabilitation is scheduled for the older barracks but it will not be completed until FY 87. Construction of family housing will not be completed before FY 87 as well, and the new barracks construction is not scheduled to begin until FY 87. However over 60 percent of the division troops are scheduled to be stationed on-post prior to FY 87 with the remaining 4,530 to come on-post during FY 87. By the end of FY 87 then, the military population will be 12,660. It's possible that a majority of these troops would have to be temporarily quartered in existing WWII barracks. The maximum quartering figure used for planning intensive training and mobilization at Fort Drum is 21,400 persons. This is based on 60 sq. ft. of space per soldier at a density of 60 persons per barracks.

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4C.40 The above population estimates do not account for medical personnel who would be needed to staff the hospital that is scheduled to be constructed on-post and become operational in FY 89 or 1990. Based on the increased military population, an estimated 660 medical personnel would be needed, which includes 375 military and 285 civilian staff.

Land Use

4C.41 The major land use changes to result from the proposed stationing of a light infantry division at Fort Drum are:

- Approximately 300 acres of land that now is wooded will be converted to housing.
- Approximately 130 acres will be paved for roads, runways, parking areas, and other uses.
- Increased year-round army field activity will reduce the amount of public hunting that can be permitted on the installation, especially in the areas northeast, east, and southeast of the main impact area.
- Increased year-round army field activity will reduce lumbering on the installation, or make it more difficult to schedule and manage.

Noise

4C.42 ,The configuration of Fort Drum is such that the greatest noise effects of Army activities (weapons firing and aircraft) are east of the cantonment area and consequently are heard, not on post, but in the communities near the firing ranges. The pattern is expected to remain the same after a light infantry division is added. As was stated in the discussion of regional noise, a light infantry division does not use the large caliber weapons that have resulted in problems in the past.

Air Quality

4C.43 Fort Drum already is planning to add a new central heating plant with a capacity of 50 million Btu per hour (MBtu/hr), to be fueled mainly with wood chips. The new plant will be equipped to remove particulates using a mechanical separator. Expected emissions when operating at full capacity will be 24.1 pounds per hour (lb/hr) of particulates, 9.6 lb/hr of sulfur dioxide, 27.0 lb/hr of nitrogen oxides, and 3.32 lb/hr of carbon monoxide (NUS Corporation, 1984).

4C.44 This power plant, however, would not meet the energy needs for a full light infantry division. It is estimated that an additional 150 MBtu/hr plant (probably coal-fired) would be required in addition to the planned new heating plant described above. Total emissions, therefore, would be approximately four times those given above for a 50 MBtu/hr plant. As stated in the section on regional air quality, New York state officials have estimated that the increased activity in the area would probably not cause any serious degradation given the existing good air quality in the area (Prosser, 1984).

Water Supply

4C.45 With added Fort Drum population and activities, a total water supply of approximately 5.3 million gallons per day (mgd) would be required, an increase of 1.5 mgd over the present capacity of 3.8 mgd. This would be accomplished by adding approximately seven new wells, which would provide the required new capacity plus enough reserve capacity to allow for taking some of the supply wells out of service for maintenance or to minimize draw down. Considering the overall abundance of ground water on the installation and in the region, there would not be any detrimental effects from developing the additional supply.

Wastewater Disposal

4C.46 A total treatment capacity of 3.7 mgd would be required, which is less than the present primary treatment capacity of 4 mgd, but is far more than the secondary capacity of 1.1 mgd. Fort Drum has plans to increase the secondary treatment capacity to meet these requirements. The new plant will increase the discharge of secondary-treated effluent into the Black River. There is currently no effluent problem in the Black River, and it is expected the new plant will be within National Pollution Discharges Elimination System (NPDES) limitations.

Solid and Hazardous Waste Disposal

4C.47 As stated previously, Fort Drum and the surrounding region have problems with finding suitable landfill sites. Furthermore, Fort Drum's permit for its present landfill site will expire in December 1985. It is necessary, therefore, whether or not a light infantry division is stationed at Fort Drum, that the installation develop solutions that can be designed, built, and put in operation before December 1985. Whatever the solution devised (e.g., a suitably sealed landfill, or incineration facilities, on or off post), the facility will be sized to meet the required needs.

Housing

4C.48 Approximately 70 percent of the current permanent military personnel assigned to Fort Drum reside on-post with no excess living quarters available. The proposed stationing alternative includes the construction of 4,461 family housing units to meet the needs of 90 percent of those eligible among division and support personnel. Although this would have a significant short-term impact during construction, the proposed site for the housing is next to existing housing, in an area not used for training. There would be a short-term shortage of family housing since all construction will be completed in FY 89 or later. The first significant number of military (5,370) would be stationed on-post in FY 86. In addition, 1,730 military personnel would be stationed at the installation in FY 84 and FY 85. Construction of 1,388,321 sq. ft. of new barrack space is not scheduled to begin until FY 87. All military personnel are scheduled to be on post by the end of that fiscal year. A majority of these troops would be required to live in existing WWII wooden, open bay barracks, which are substandard by existing Army standards, for two years or more until family housing and barracks construction and rehabilitation is completed. The only long-term impacts on-post would be in land use in the new housing site, since neither the current mission nor future operations would be affected by the new housing construction.

Schools

4C.49 The full-division alternative at Fort Drum would involve approximately 5,210 additional school age dependents of military personnel (assuming a school age dependent ratio of 0.9 per married troop). The Army's proposed stationing alternative includes the construction of two elementary schools on post totaling 103,000 square feet. Assuming 770 square feet per classroom, as is required by New York state, this would mean approximately 130 classrooms accommodating slightly more than 3,200 students (25 per room). If 50 percent of school-age dependents are assumed to be in elementary school, this would mean approximately 2,605 students in grades K thru 6. Since about 2,000 of all school-age dependents would live on-post and attend post schools (housing would be provided for only 90 percent of those eligible) the proposed facilities would meet the projected demand for classroom space. All junior and senior high school students would attend area schools; the impacts of this are discussed in the regional impacts section.

Health Care

4C.50 Implementation of this alternative would add 26,110 people (military and dependents) to the population eligible for military-provided health services. Based on data from a comparably sized post, this size population would average approximately 1,066 clinic visits a day (includes retirees and retiree dependents) and an average daily admission rate to acute care beds of 15. The clinic at Fort Drum is currently handling 70 visits a day on average and has no acute care beds available (Poulton, 1984). To accommodate this significant increase in demand for health care the proposed action would include the construction of a hospital with a total area of 110,000 sq. ft.. In addition, a dental clinic with an area of 22,661 sq. ft. would be constructed. Construction would begin in FY 87. This would mitigate the long-term impacts on the installation health care requirements. However, there would be a significant short-term strain on available health care services prior to and during hospital construction because all division and support personnel are scheduled to be stationed on-post by the end of FY 87. The current estimate of when the hospital would be operational is FY 89 or 1990 (Directorate of Engineering and Housing [DEH], 1984). Health Services Command is investigating how health services would be provided prior to the hospital completion. One option being considered is the renovation of a deactivated World War II hospital on-post. A detailed engineering study by Fort Drum facilities engineers has been carried out within the past year on the cost of renovating the existing hospital buildings. However this study assessed only the renovation cost and not any equipment or supply requirements. In addition, the construction of an operating room was not considered.

Public Safety

4C.51 Stationing of a full division at Fort Drum would likely result in significant impacts on public safety on-post and in the Fort Drum area. Several factors would contribute to this impact including: (1) the large increase in population from 1,030 to 12,660 military; (2) a change in the type of military personnel from largely administrative to combat units; and (3) the lag time for the local communities economic and social infrastructure to meet the demands of a significantly increased permanent military population. The garrison's military police and judge advocate office personnel would be increased to meet the new demand and construction of additional detention space would be required. There could also be a considerable burden put on local law officials, since on-post the military has concurrent jurisdiction in only a small part of the entire installation in a zone surrounding the cantonment area.

SUPERSEDED
AUG 1984

Outside this area, military police may only detain people not subject to the Uniform Code of Military Justice who violate state laws on the installation and call the proper state or local police to take the offender into custody. Traffic law violations and criminal offenses committed upon the installation by persons not subject to the Uniform Code have long been a law enforcement problem at Fort Drum. The Judge Advocate's office has requested of the state that concurrent jurisdiction be given on the entire installation but as yet no action has been taken (Key, 1984).

Traffic and Transportation

4C.52 There would be two sources of increased transportation and transportation-related impacts in the Fort Drum area. The additional military vehicles and personnel stationed on-post would greatly increase traffic on the installation. The personal vehicles owned by the new population would also increase off-post transportation in the vicinity of Fort Drum. Increased traffic flow on and off-post would be expected to impact those routes which are currently most heavily used: Nash Boulevard and First Street West in the afternoon and Black River Road and First Street West in the morning. Traffic flow at Gates 1, 2, and 3 as presented in Chapter 3 could be expected to more than double in proportion to increased work force population living off-post. New road construction will take place in the area of the new housing units to be constructed on-post. Off-post, the most serious impacts resulting from increased vehicular traffic should be experienced on State Highway 3 and U.S. Highway 11, with lesser impacts on County Highway 52 (Pearl Street) in the Watertown-Fort Drum corridor.

Cultural Resources

4C.53 In compliance with existing regulations the National Park Service has contracted for a cultural resources overview and management plan for Fort Drum. The work, which is scheduled to be completed in May 1984, will include the formulation of a predictive model of cultural resource distribution and density, and management recommendations to assist Fort Drum in considering cultural resources in their planning process. Two major historic sites on-post, the LeRay Mansion, listed on the National Register, and the Iroquois village site, nominated to the National Register, have been placed off limits to Army maneuvers. Given the potential for additional as yet undiscovered cultural resources on the post, there is a potential for impact on significant cultural resources under this alternative.

4C.54 Although the exact location and nature of many possible cultural resources, particularly archeological resources, is unknown, the potential impacts of the proposed action can be generally discussed. Basically, any action which produces ground disturbances in any form would have a potential for disturbing an archeological resource, thereby destroying data. Construction of new buildings and facilities, and establishment of roads include such elements as excavation, grading, filling or stockpiling of materials. All of these elements have a potential for disturbance or destruction of archeological materials. Renovation of existing buildings or demolition can damage and destroy significant historic structures.

4C.55 Many training activities, including maneuvering of vehicles and digging of foxholes, cause ground disturbances that have a potential for damaging or destroying an archaeological resource. Establishment of new training areas or increases in land utilization frequency for training over current levels can increase the potential for impacts to undisturbed cultural resources.

4C.56 Considerations will be given to identifying potential cultural resources, as well as protecting those known to exist. Authority for these actions are found in Army Regulation AR-420-40, Facilities Engineering, Historic Preservation (April 15, 1984) effective 15 May 1984. The procedures for accomplishing these measures are detailed in the Army Technical Manual TM-5-801-1, Historic Preservation-Administrative Procedures and TM-5-801-2, Historic Preservation-Maintenance Procedures. In regard to the installation, the prime limitation would be to prohibit any destruction or alteration of all or part of any significant site through whatever measures are necessary (e.g., establishment of limited-use areas). It should be noted that it is always possible for studies to miss an archaeological site, particularly one which shows little or no surface evidence of its presence. Because of this, all construction contracts must allow for this possibility by specifying that, in the event that a suspected archaeological site is encountered during construction or some other form of activity, operations in the area would be suspended until the site is investigated by a professional archaeologist. This construction contract provision is required by 32 CFR 650.192, Department of the Army, Environmental Protection and Enhancement, Peacetime Responsibilities, Historic Preservation, Archaeological Sites (March 15, 1978). Similarly, training activities that involve the use of new areas or the increased use of areas presently used may uncover evidence of archaeological sites that was not uncovered by prior studies. Officers in charge of field activities should be made aware of this possibility and procedures should be established

Outside this area, military police may only detain people not subject to the Uniform Code of Military Justice who violate state laws on the installation and call the proper state or local police to take the offender into custody. Traffic law violations and criminal offenses committed upon the installation by persons not subject to the Uniform Code have long been a law enforcement problem at Fort Drum. The Judge Advocate's office has requested of the state that concurrent jurisdiction be given on the entire installation but as yet no action has been taken (Key, 1984).

4C.51a As described in Appendix M, most crimes committed by Army personnel in the continental United States are confined to the installation. Further, Army crime rates in general have been declining. Between 1980 and 1983 the most common offenses committed by Army personnel, those against property, declined by 26%. Marijuana use and possession, the second most common offense declined by 64%, while crimes of violence, ranking third dropped 42% (U.S. Army Office of the Deputy Chief of Staff for Personnel, 1984). Although Army crime rates are not directly comparable to national trends, more arrests per 1000 of U.S. males 18 to 22 years versus Army personnel were made for crimes against property, drug offenses and crimes of violence in 1982. In the event of troop stationing, the actual number of crimes could increase, yet as detailed in Appendix M most of the increase probably would be concentrated on post.

Traffic and Transportation

4C.52 There would be two sources of increased transportation and transportation-related impacts in the Fort Drum area. The additional military vehicles and personnel stationed on-post would greatly increase traffic on the installation. The personal vehicles owned by the new population would also increase off-post transportation in the vicinity of Fort Drum. Increased traffic flow on and off-post would be expected to impact those routes which are currently most heavily used: Nash Boulevard and First Street West in the afternoon and Black River Road and First Street West in the morning. Traffic flow at Gates 1, 2, and 3 as presented in Chapter 3 could be expected to more than double in proportion to increased work force population living off-post. New road construction will take place in the area of the new housing units to be constructed on-post. Off-post, the most serious impacts resulting from increased vehicular traffic should be experienced on State Highway 3 and U.S. Highway 11, with lesser impacts on County Highway 52 (Pearl Street) in the Watertown-Fort Drum corridor. It should be noted that New York State's Department of Transportation has scheduled a project for the reconditioning and preservation of the Pearl Street and Route 283 corridor to Fort Drum. The project is aimed at highway

update with the reconstruction of an urban section in the City of Watertown and resurfacing of existing concrete pavement to within 1/10th of a mile the post's main gate. The project has a tentative letting date scheduled for April 1985.

Cultural Resources

4C.53 In compliance with existing regulations the National Park Service has contracted for a cultural resources overview and management plan for Fort Drum. The work, which is scheduled to be completed in October 1984, will include the formulation of a predictive model of cultural resource distribution and density, and management recommendations to assist Fort Drum in considering cultural resources in their planning process. Two major historic sites on-post, the LeRay Mansion, listed on the National Register, and the Iroquois village site, nominated to the National Register, have been placed off limits to Army maneuvers. Given the potential for additional as yet undiscovered cultural resources on the post, there is a potential for impact on significant cultural resources under this alternative.

whereby the officer could inform the installation's Historic Preservation Committee of any finds so that the committee may take appropriate measures to avoid the accidental destruction of a site. Additionally, since the looting of sites by irresponsible persons can be a problem, security measures should be instituted to prevent destruction of archaeological data in this manner.

ENERGY AND FUELS ANALYSIS

4C.57 The anticipated changes in energy and fuel consumption at each of the forts involved in this alternative are summarized in Table 4C-5. The methodology for the derivation of these estimates is presented in Appendix H.

4C.58 Increased gasoline consumption for private vehicles owned by military personnel is based on 18,600 additional vehicles at the forts, each driven an average of 9,026 miles per year with a mileage of 15.53 miles per gallon (Motor Vehicle Manufacturers Association, 1983). The resulting estimated increase in fuel consumption is 11 million gallons of gasoline per year. This consumption is an increase of 1,300 billion Btu per year, or 1,130 percent more fuel than is presently being consumed in the private vehicles of military personnel at the fort. The estimated number of motor vehicles and corresponding gasoline consumption in the counties adjacent to Fort Drum are 92,600 vehicles consuming 11 trillion Btu per year. The implementation of this alternative would increase local gasoline consumption by 11 percent.

4C.59 The increase in energy consumption for off-post housing is based on an increase of 4,700 military personnel and dependents living off-post at Fort Drum. The resulting fuel requirement of 490 billion Btu at Fort Drum represents a 2 percent increase in the present residential consumption of 24 trillion Btu in the counties adjacent to the installation.

4C.60 The increased requirement for on-post heating and associated energy usage is a linear extrapolation of the per capita on-post energy usage based on the permanent effective population on-post as defined in TB ENG 354. The projected increase of 4,400 billion Btu per year at Fort Drum is 1,144 percent of the current energy usage. Assuming the relative proportions of fuels used at the installations remain unchanged, implementation of this alternative require the following additional amounts of fuels and energy based on a present effective population of 1,960:

TABLE 4C-5

INCREASED ENERGY REQUIREMENTS IF THE FULL LIGHT INFANTRY DIVISION IS STATIONED AT FORT DRUM

	Fort Drum
Personal Vehicles	
Increase, 10^9 Btu/yr	1,300
Percent[1]	1,130
Off-Post Housing	
Increase, 10^9 Btu/yr	490
Percent[1]	43
Military Vehicles	
Increase, 10^9 Btu/yr	1,320
Percent[1]	1,900
On-Post Usage[2]	
Increase, 10^9 Btu/yr	4,400
Percent[1]	1,144
Total Energy Use	
Increase, 10^9 Btu/yr	5,700
Percent[1]	860
Total Annual Use, 10^9 Btu/yr	6,400
Energy Requirement per Troop 10^6 Btu/yr	506

[1]Percent Increase = Increased Energy Requirement x 100/Present Consumption.
[2]Based on permanent post population.

SUPERSEDED
AUG 1984

Coal, tons	12,800
Fuel Oil, million gallons	10.5
Natural Gas, million therms	0.050
Propane, million gallons	1.08
Gasoline, million gallons	4.15
Diesel Fuel, million gallons	2.20
Aviation Fuel, million gallons	3.90
Electricity, TKWH	217,300

4C.61 The 1,700 additional vehicles at Fort Drum would use 393,000 gallons of gasoline and 682,000 gallons of diesel fuel.

4C.62 The number of additional helicopters at Fort Drum would be 100. Based on flight time of 300 hours per year and fuel consumption of 100 gallons per hour, the helicopters account for 3 million gallons of the increase in aviation fuel use at Fort Drum.

4C.63 The total additional energy requirements resulting from implementation of this alternative are 5.75 trillion Btu at Fort Drum. These requirements are 860 percent of present energy consumption. The total fuel consumption per troop would change from 649 MBtu to 506 MBtu at Fort Drum.

4C.64 Although there would be some impact on local energy use due to implementation of this alternative, the impact on national energy use would be negligible. Personnel of the light infantry division are to be drawn from existing Army units. Therefore, there would be a decrease in energy use in the localities where the troops are presently stationed approximately equal to the impacts described here. Similarly, many of the vehicles for the light infantry division are to be obtained from existing inventory. The only new vehicles to be added to the Army would be light trucks.

MITIGATION MEASURES

4C.65 Mitigating measures are defined as those actions that can be taken to lessen the adverse impacts resulting from implementation of the proposed action. Mitigating measures can be taken in anticipation of, concurrently with, or subsequent to the proposed action to minimize or offset undesirable impacts. Tables 4C-6 and 4C-7 describe generic mitigation measures available to the government. The measures described are potential only. No commitment is intended that these will be chosen at any specific installation. There are many variables influencing actual mitigation, including funding, timing, other Army actions, and specific environmental conditions found while the Army implements actions described here.

TABLE 4C-6

SUMMARY OF MITIGATING MEASURES FOR REGIONAL EFFECTS OF STATIONING A FULL LIGHT INFANTRY DIVISION AT FORT DRUM

Category	Fort Drum, New York
Biological Environment	Consider biological effects in selection of any off-post areas for construction activities (e.g., housing, commercial development).
Demography	No feasible mitigating measures available.
Land Use	Coordinated planning and regulation by local governments in region to minimize "sprawl" effects of rapid development.
Noise	To the extent practical restrict, reschedule or relocate any on-post activities with a potential for regional noise conflict.
Regional Economic Activity	Institute advanced planning to allow local governments and private firms (e.g., construction real estate) adequate time to plan for mitigation of any potentially adverse impacts.
Air Quality	Applications for stationary source permits are subject to Prevention of Significant Deterioration (PSD) review of NYSDEC.
Water Supply	Regulation of private septic systems to avoid ground water contamination.
Wastewater Disposal	Permits are subject to NYSDEC review for NPDES compliance.
Solid Waste Disposal	Implementation plans being developed for area resource recovery incineration programs and facilities in Jefferson and St. Lawrence counties.
Housing	Would construct on-post housing to lessen demand on region. Alter schedule for stationing or construction to mitigate possible short-term housing shortage.
Schools	Would build elementary schools on post to mitigate strain on region. Reassign junior and senior high school students from overcrowded to under-used school districts in area. Alter schedule for stationing or construction to avoid potential short-term pressures on schools prior to school construction on post.
Health Care	Make temporary provision for short-term health care services prior to hospital construction on post, or alter schedule for construction to allow for hospital completion on post prior to arrival of all troops.

Coal, tons	12,800
Fuel Oil, million gallons	10.5
Natural Gas, million therms	0.050
Propane, million gallons	1.08
Gasoline, million gallons	4.15
Diesel Fuel, million gallons	2.20
Aviation Fuel, million gallons	3.90
Electricity, MWH	217,300

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MITIGATION MEASURES

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TABLE 4C-7

SUMMARY OF MITIGATING MEASURES FOR ON-POST EFFECTS OF STATIONING A FULL LIGHT INFANTRY DIVISION AT FORT DRUM

Category	Fort Drum, New York
Geology, Minerals and Soils	Institute land use planning in training areas to control erosion through measures such as land use rotation, revegetation and location of maneuvering areas; continue current erosion control measures.
Biological Environment	Continue implementation of Natural Resources Management Plan.
Terrestrial Ecosystems	Continue implementation by Fort Drum Land Management Branch of its Natural Resources Management Program.
Aquatic Ecosystems	Continue implementation by Fort Drum Land Management Branch of its Natural Resources Management Program.
Threatened and Endangered Species	No mitigating measures required because no significant impacts identified.
On-Post Population	Alter construction schedule or troop stationing to avoid short-term pressures and involuntary separation of military families.
Land Use	Continue implementation by Fort Drum Land Management Branch of its Natural Resources Management Program.
Noise	Helicopter flights generally are restricted from cantonment and housing areas. Further mitigation is not possible without a change in mission.
Air Quality	New stationary facilities to have particulate controls and are subject to review by NYSDEC for PSD. Institute ridesharing program to decrease mobile source emissions.
Water Supply	Would need 7 new wells to meet increased demand.
Wastewater Disposal	Wastewater treatment plant would be built to adequate size, subject to NPDES permit and NYSDEC regulations.
Solid and Hazardous Waste Disposal	Implement proposed cooperative effort with Jefferson County in development of resource recovery incineration facilities. Institute efforts to reduce the generation of solid waste on post.
Housing	Would construct 4,461 housing units on post to meet 90% of demand for those eligible; 1,388,321 ft^2 of new barracks space 190,964 ft^2 of new BOQ.
Schools	Would construct two elementary schools on post totaling 103,000 ft^2 to meet increased demand.
Health Care	Would construct a hospital on post totaling 110,000 ft^2, and a 22,661 ft^2 Dental Clinic to meet new demand for health services. Alter construction schedule or troop stationing to mitigate short-term lack of health services on post.
Public Safety	Increase MP staff and Judge Advocates staff to meet new demands.
Traffic and Transportation	Implement recently completed "Traffic Engineering Planning Study" to reduce peak loads. Undertake survey of new traffic patterns following proposed stationing. Implement staggered work hours, encourage car pools.
Cultural Resources	Consideration of potential cultural resources, including if necessary, identification and evaluation. Protection of significant cultural resources.

ADVERSE IMPACTS THAT CANNOT BE AVOIDED

4C.66 Some effects of the proposed stationing action cannot be mitigated. Those adverse impacts that cannot be avoided even if the measures given in the Mitigating Measures tables are used are summarized in Table 4C-8.

TABLE 4C-8

SUMMARY OF ADVERSE IMPACTS THAT CANNOT BE AVOIDED IF THE
FULL LIGHT INFANTRY DIVISION IS STATIONED AT FORT DRUM, NEW YORK

Category	Fort Drum and Surrounding Region
Geology, Minerals and Soils	Increased erosion because of increased troop-days in field.
Biological Environment	Over 400 acres of wildlife habitat lost to construction on-post. Increase in frequency of wildfires on-post due to increases in training activity.
Demography	None.
Land Use	None.
Noise	Increased frequency of training activity could increase noise complaints.
Air Quality	Emissions during construction, and increased long-term emission due to more automobiles, power plants; increased dust particulate loading from training activities.
Water Supply	None.
Wastewater Disposal	Increased effluent discharge to Black River.
Solid and Hazardous Waste Disposal	None.
Housing	None.
Schools	None.
Health Care	None.
Public Safety	None.
Traffic and Transportation	None.
Cultural Resources	Potential loss or disturbance of significant cultural resources.

TABLE 4C-8 (concluded)

SUMMARY OF ADVERSE IMPACTS THAT CANNOT BE AVOIDED UNDER THE FULL LIGHT INFANTRY DIVISION IS STATIONED AT FORT DRUM, NEW YORK

Category	Fort Drum and Surrounding Region
Relationship Between Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity	Substantial acreage would be used for new construction. Until a change in mission, the maintenance and enhancement of long-term productivity would not equal its current level.
Irreversiblie and Irretrievable Commitment of Resources	Some materials and fuels used for construction would be irretrievably lost. Also, capital used for construction would be lost to other uses. Increased erosion would lead to loss of soils. Archaeological sites could be accidentally lost or damaged through construction or training activities. Rural quality could be affected in those communities with increased population.

CHAPTER 4D

ENVIRONMENTAL CONSEQUENCES OF THE FORT DRUM, NEW YORK - FORT CAMPBELL, KENTUCKY STATIONING ALTERNATIVE

INTRODUCTION

4D.1 Under this stationing alternative, the new light infantry division would be split among two installations. The division minus one infantry brigade would be stationed at Fort Drum, New York along with some support elements. The remaining infantry brigade plus support elements would be stationed at Fort Campbell, Kentucky. Civilian employees would also be added at each installation to support the new troops.

4D.2 Stationing of the new light division troops at Fort Drum would begin in Fiscal Year 1984 (FY 84) and be completed in FY 87. Most of the troops would arrive during FY 85, FY 86, and FY 87. Stationing of the infantry brigade at Fort Campbell would take place during FY 86 and FY 87.

4D.3 Changes in military and civilian personnel associated with the Fort Drum-Fort Campbell alternative are shown in Table 4D-1. At Fort Drum there would be a net increase of 8,960 military and 11,200 dependents for a total increase of 20,160. On-post civilian employment would increase by 1,420. At Fort Campbell there would be a net increase of 1,150 military and 1,640 dependents for a total increase of 2,790. On-post civilian employment would increase by 50. At Fort Drum there probably would be a reduction in the peak number of Reserve and National Guard trainees present at one time from the present 10,000 to 11,000 to approximately 7,000 to 7,500.

4D.4 To accommodate the increased population at Fort Drum, the Army will construct a large number of new housing, office, support, and utility facilities, and will extensively rehabilitate others. There would be some construction of facilities to accommodate the new brigade at Fort Campbell (Appendix K). Tables 4D-2 and 4D-3 summarize regional and on-post impacts that could occur from this stationing alternative.

FORT DRUM AND THE EASTERN LAKE ONTARIO--ST. LAWRENCE, NEW YORK REGION

Eastern Lake Ontario--St. Lawrence, New York Region

4D.5 A major impact of adding a light infantry division at Fort Drum would be increased demand for retail and service

TABLE 4D-1
CHANGES IN MILITARY AND CIVILIAN PERSONNEL FOR THE
FORT DRUM - FORT CAMPBELL STATIONING ALTERNATIVE

Category	Baseline	FY 1984 Strength	FY 1984 Change	FY 1985 Strength	FY 1985 Change	FY 1986 Strength	FY 1986 Change	FY 1987 Strength	FY 1987 Change	FY 1988 Strength	FY 1988 Change	FY 1989 Strength	FY 1989 Change	Total Change
FORT DRUM														
Officers	100	120	20	370	250	580	210	1070	490	1070	0	1070	0	970
Enlisted	930	980	50	2330	1350	5030	2700	8920	3890	8920	0	8920	0	7990
Total military	1030	1100	70	2700	1600	5610	2910	9990	4370	9990	0	9990	0	8960
Civilian employees	920	960	40	1430	470	1780	350	2200	410	2320	120	2340	30	1420
Total installation	1950	2060	110	4130	2070	7390	3270	12180	4790	12300	120	12330	30	10380
Families	510	550	40	1370	820	2800	1430	4990	2190	4990	0	4990	0	4480
Dependents	1280	1380	100	3430	2050	7000	3570	12480	5480	12480	0	12480	0	11200
School-aged dependents of military	460	500	40	1240	740	2520	1290	4490	1970	4490	0	4490	0	4030
FORT CAMPBELL														
Officers	2450	2470	20	2520	50	2790	270	2800	10	2870	70	2850	-20	400
Enlisted	19760	19870	110	19960	90	20390	430	20520	130	20720	210	20510	-210	750
Total military	22210	22340	130	22480	140	23180	700	23320	140	23590	270	23360	-230	1150
Civilian employees	2660	2660	0	2730	70	2760	30	2760	0	2770	10	2710	-60	50
Total installation	24870	25000	130	25210	220	25940	730	26080	140	26360	290	26070	-290	1200
Families	11120	11190	70	11270	80	11680	410	11740	70	11890	150	11780	-110	660
Dependents	27810	27970	160	28180	210	29190	1010	29360	170	29730	370	29450	-280	1640
School-aged dependents of military	10010	10070	60	10150	70	10510	370	10570	60	10700	130	10600	-100	590

Note: Strength = authorized positions at end of fiscal year
Change = personnel change during fiscal year
Numbers may not add exactly because of rounding
Families and Dependents are for military personnel only

TABLE 4D-2

SUMMARY OF THE REGIONAL ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE FORT DRUM-FORT CAMPBELL STATIONING ALTERNATIVE

Category	Fort Drum, New York	Fort Campbell, Kentucky
Biological Environment	Some habitat lost to new residential and commercial construction activities in the area.	No significant effects. Although not proposed under this alternative, should an additional 20,000 to 30,000 acres be acquired, post forest and wildlife management programs could enhance wildlife habitats in areas now actively farmed.
Demography	A population increase of 8,960 military personnel and an estimated 11,200 dependents would occur over the FY 84 to FY 87 period. This would result in a 9 percent population increase in the tri-county area. An additional 1,420 civilian positions at Fort Drum could also result in some population increase, to the extent these positions were filled by in-migrants.	A net population increase of 1,150 military personnel and an estimated 1,640 dependents would occur in the region during the FY 84 to FY 89 period as a result of the action and other troop strength changes. An additional 50 civilian positions at Fort Campbell could also result in a population increase if these positions were filled by in-migrants.
Land Use	Residential and commercial development would occur in the region in response to the increase in military and dependents. Housing demand would increase by a minimum of 1,030 units. Potential for commercial "strip" development near post given lack of land use regulation in many areas.	Residential and commercial development would occur in the region in response to the increase in military personnel and dependents. Housing demand would increase by a minimum of 700 units during the FY 84 to FY 89 period. Present deficits in range, impact, and maneuver areas coupled with the training requirements of the brigade could lead to acquisition of 20,000 to 30,000 acres for post expansion.
Noise	Average noise levels would increase due to more frequent activities but peak energy levels would not.	Communities adjacent to the western boundary of the post would potentially experience higher day-night (L_{dn}) noise levels, especially as the frequency of night training is increased.
Regional Economic Activity	The change in troop strength would result in increases in total business volume, personal income, and local employment slightly below those projected for a full division stationing at Fort Drum. Total construction dollars spent for on-post construction would total about $800 million. The potential problems of rapid development would still be a concern.	The FY 84-FY 89 net change in troop strength would have a beneficial effect upon the regional economy by generating 915 jobs, $24.6 million in personal income, and $19.1 million in business volume on an annual basis. Construction in support of the action would generate 313 jobs, with increases in personal income and business volume of $1.6 million and $4.8 million respectively.
Air Quality	The number of mobile and stationary sources in the region would not have a significant impact on regional air quality.	The number of mobile and stationary sources on post and in the region would increase, but this increase would have a negligible effect on air quality.
Water Supply	Abundant supply, but municipal distribution systems may be inadequate for new demand if the majority of development takes place in areas with public water systems.	No significant impacts.
Wastewater Disposal	Existing municipal systems are not sized for expansion; taxes and/or user fees would increase for new development; increased numbers of private (septic) wastewater management systems could impact on ground-water quality.	No significant impacts.

SUPERSEDED
AUG 1984

TABLE 4D-2 (concluded)

SUMMARY OF THE REGIONAL ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE FORT DRUM-FORT CAMPBELL STATIONING ALTERNATIVE

Category	Fort Drum, New York	Fort Campbell, Kentucky
Solid Waste Disposal	Increased demand on regional landfills would further aggravate existing problems. Highly permeable soil in the region makes suitable landfill sites difficult to find. Counties are considering energy-recovery incineration facilities.	No significant impacts.
Housing	Minimum of over 1,000 military families would require hoising, demand would have to be met by new construction since existing adequate housing is not sufficient. Short-term pressure could be much greater because on-post construction would not be completed until at least 2 years after all troops are on post. This would result in either involuntary separation of military families or increased pressure on the regional housing market.	The net FY 84-FY 89 increase in the regional population of approximately 2,790 military personnel and dependents could generate a demand for 754 housing units. This would represent seven percent of the projected 1980-1990 housing construction.
Schools	Potentially serious short-term impact if families arrive with soldiers prior to new school construction. On-post construction of 2 elementary schools would meet new demand. 2,015 junior and senior high school students would attend area schools. Capacity is available although some shifting of student populations to underused schools may be required.	Without construction of additional on-post military family housing, 590 school-aged children would be added to county school systems. Christian County schools could absorb the increased enrollment without difficulty, but Montgomery County schools in the vicinity of the post are currently overcrowded.
Health Care	Significant short-term impacts since stationing is scheduled for completion prior to hospital construction on post. Post hospital, when operational, could drain regional supply of medical support staff from local hospitals.	Regional health care facilities would not be affected. Referrals under CHAMPUS are typically to Nashville hospitals and specialists.
Cultural Resources	Potential for disturbance or destruction of cultural resources by private residential-commercial development.	Potential for disturbance or destruction of cultural resources by private residential-commercial development.
Energy and Fuels	2% increase in residential fuel use. 9% increase in gasoline consumption.	1% increase in residential fuel use. 1% increase in gasoline consumption.

TABLE 4D-2

SUMMARY OF THE REGIONAL ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE FORT DRUM-FORT CAMPBELL STATIONING ALTERNATIVE

Category	Fort Drum, New York	Fort Campbell, Kentucky
Biological Environment	Some habitat lost to new residential and commercial construction activities in the area.	No significant effects. Although not proposed under this alternative, should an additional 20,000 to 30,000 acres be acquired, post forest and wildlife management programs could enhance wildlife habitats in areas now actively farmed.
Demography	A population increase of 8,960 military personnel and an estimated 11,200 dependents would occur over the FY 84 to FY 87 period. This would result in a 9 percent population increase in the tri-county area. An additional 1,420 civilian positions at Fort Drum could also result in some population increase, to the extent these positions were filled by in-migrants.	A net population increase of 1,150 military personnel and an estimated 1,640 dependents would occur in the region during the FY 84 to FY 89 period as a result of the action and other troop strength changes. An additional 50 civilian positions at Fort Campbell could also result in a population increase if these positions were filled by in-migrants.
Land Use	Residential and commercial development would occur in the region in response to the increase in military and dependents. Housing demand would increase by a minimum of 1,030 units. Potential for commercial "strip" development near post given lack of land use regulation in many areas.	Residential and commercial development would occur in the region in response to the increase in military personnel and dependents. Housing demand would increase by a minimum of 700 units during the FY 84 to FY 89 period. Present deficits in range, impact, and maneuver areas coupled with the training requirements of the brigade could lead to acquisition of 20,000 to 30,000 acres for post expansion.
Noise	Average noise levels would increase due to more frequent activities but peak energy levels would not.	Communities adjacent to the western boundary of the post would potentially experience higher day-night (L_{dn}) noise levels, especially as the frequency of night training is increased.
Regional Economic Activity	The change in troop strength would result in increases in total business volume, personal income, and local employment slightly below those projected for a full division stationing at Fort Drum. Total construction dollars spent for on-post construction would total about $800 million. The potential problems of rapid development would still be a concern.	The FY 84-FY 89 net change in troop strength would have a beneficial effect upon the regional economy by generating $24.6 million in personal income, and $19.1 million in business volume on an annual basis. Construction in support of the action would result in increases in personal income and business volume of $1.6 million and $4.8 million respectively.
Air Quality	The number of mobile and stationary sources in the region would not have a significant impact on regional air quality.	The number of mobile and stationary sources on post and in the region would increase, but this increase would have a negligible effect on air quality.
Water Supply	Abundant supply, but municipal distribution systems may be inadequate for new demand if the majority of development takes place in areas with public water systems.	No significant impacts.
Wastewater Disposal	Existing municipal systems are not sized for expansion; taxes and/or user fees would increase for new development; increased numbers of private (septic) wastewater management systems could impact on ground-water quality.	No significant impacts.

REVISED 1984

TABLE 4D-3

SUMMARY OF THE ON-POST ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE DRUM-CAMPBELL STATIONING ALTERNATIVE

Category	Fort Drum	Fort Campbell
Geology, Minerals and Soils	Increased erosion in poorly protected regions due to construction and increased training activities; increased quarrying of rock and gravel for use in construction.	No significant impacts.
Biological Environment	Loss of 230 acres of wildlife habitat to construction; increased pressure on wildlife due to year-round and nighttime activites.	No significant negative effects; ongoing wildlife management and reforestation programs will improve wildlife habitats.
On-Post Population	Permanent workforce increase of more than six-fold from 1,950 to 12,400 military and civilian employees. Number of family housing units on-post would increase almost 10-fold from 350 to 3,453.	Without construction of additional family housing or bachelor quarters, the increase to the post's full-time population would be limited to 400 unmarried enlisted personnel. The daytime population would increase by 1,150 military personnel, 50 civilian employees and dependents using post facilities.
Land Use	230 acres wooded land use for housing, 120 acres paved for new roads, runways, etc. Reduced lumbering activity. More intensive use of maneuver and range facilities could result in increased erosion.	The proposed action would result in 203,250 sq. ft. of new construction in the cantonment area and more intensive use maneuver and range facilities.
Noise	Continuation of existing noise patterns. Increased noise levels would result from increased aircraft operations and training activities.	On-post family housing and troop billeting areas potentially would be subject to increases in day-night noise levels.
Air Quality	The number of mobile and stationary sources would be increased on post, including a new 120 MBtu heating facility. These increases, however, should not adversely affect the good air quality of the post.	The number of mobile and stationary sources would be increased on-post. These increases, however, would not adversely affect regional air quality.
Water Supply	Demand for water would be approximately 4.1 mgd which is 8 percent more than the existing capacity. Need approximately 5 new wells to meet the increased demand.	Water storage capacity would be insufficient to provide water for the projected effective population.
Wastewater Disposal	Total treatment capacity of 2.9 mgd would be required. Present primary treatment capacity is adequate but secondary treatment capacity would need to be expanded to meet this demand.	No significant impacts.

REVISED 1984

TABLE 4D-3 (Concluded)

SUMMARY OF THE ON-POST ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE DRUM-CAMPBELL STATIONING ALTERNATIVE

Category	Fort Drum	Fort Campbell
Solid and Hazardous Waste Disposal	Current landfill permit expires in December 1985. New site or alternative disposal method is required.	No significant effects.
Housing	Construction of 3,453 housing units on-post, almost 10 times the number of existing units, construction of 1.1 million square feet of new barracks space.	The unmet demand for military family housing would increase as a result of this action. Excess barracks space is more than sufficient to house the estimated increase of 400 unmarried enlisted personnel.
Schools	Construction of two elementary schools on-post to meet increased demand by 4,030 school age children.	There would be no effect on post schools unless additional on-post family housing is constructed.
Health Care	Construction of hospital totalling 86,650 ft.^{2} and dental clinic (16,361 ft.^{2}) on post; addition of 200 medical staff to run the new facilities.	Inpatient care facilities are adequate to meet the needs of the increased population. Out-patient clinics and dental facilities may be strained.
Public Safety	Increased incidents due to significant population growth, increased problems in handling offenders not subject to the Uniform Code of Military Justice in areas of the post not covered by concurrent jurisdiction.	Law enforcement would be adequate to meet the needs of the increased post population. Existing shortfalls in fire fighting personnel and equipment would be worsened.
Traffic and Transportation	Increased traffic flow and congestion on Nash and First Street West in afternoon and on Black River Road and First Street West in the morning. The number of personal vehicles of work force living off-post would almost double.	Traffic congestion on the U.S. Route 41-A corridor would worsen as a result of an estimated increase of 10 percent in average daily volumes.
Cultural Resources	Potential for disturbance or destruction of cultural resources by increased training and new construction.	Potential for disturbance or destruction of cultural resources by increased training and new construction.
Energy and Fuels	886% increase in on-post energy consumption requires expansion of energy services and fuel storage capacity. 1,600% increase in military vehicle fuel consumption.	2% increase in on-post energy consumption would aggrevate electricity supply shortage. 5% increase in military vehicle fuel consumption.

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industries caused by the increased population. As part of the alternative the Army plans to provide for most of the basic needs of military personnel on-post. This will require the construction of a hospital, housing for 90 percent of families eligible, and two elementary schools. Over the short-term there could be some impacts in these areas however, since all construction is scheduled to be completed in FY 89 or later while the stationing of military personnel at Drum is scheduled to be completed during FY 87. This may preclude families from accompanying military until at least the family housing is completed in FY 89 or later. Approximately 1,030 families would require off-post housing. Although this is less than a one percent increase to the total tri-county population, if housing construction is concentrated in the areas with municipal services, current systems for water distribution and waste disposal would not be able to accommodate the expanded requirements.

4D.6 Communities that will experience the greatest effects are those closest to the Fort, including the city of Watertown and the small communities of Carthage, Black River, Antwerp, Evans Mills, and Philadelphia, in Jefferson County, Gouverneur and Canton in St. Lawrence County, and Lowville and other small communities in Lewis County. During construction, labor and technicians probably will come from as far away as Syracuse (70 miles to the south) and Massena (70 miles to the northeast).

Biological Environment

4D.7 There will be moderate pressure on the regional biological environment from increased human population. Land-use conversion to accomodate new housing and service facilities will result in losses of wildlife habitat and associated wildlife. There will be increased numbers of road kills from increased traffic and increased hunting and fishing pressures. The region currently has an abundance of wildlife and habitat, however, and the amount that would be lost will be quite small is proportion to the total. Furthermore, additional hunting, fishing, and trapping pressure probably would not have significant adverse effects and are not expected to be of serious concern.

Demography

4D.8 This alternative would add 20,160 military and dependents to a population of 227,440 over a 3 year period for a 9 percent increase in the tri-county area. This is considerably higher than the 3 percent growth projected for the area by 1990. Of this total military population slightly more than 17,590 will be living on-post with the remaining 2,570 living in the off-post region.

SUPERSEDED
AUG 1984

Land Use

4D.9 The development resulting from a population increase of approximately 20,000 people would have a significant impact on land use in the immediate area of the installation. Although housing, health care, and elementary schools will be provided on-post, the increased demand for clothing and other retail stores, entertainment, and other services generated by the added population will greatly stimulate commercial development in the area. In addition, approximately 1,030 families will need off-post housing.

4D.10 The most likely areas to be impacted by strip development are on those roads leading from the post. The area which is likely to be impacted by Fort Drum, as discussed in Jefferson County's Land Use Plan, is along NYS Route 3 and the Black River. Along this route lie the Villages of Herrings and Deferiet and the Hamlets of Great Bend and Felt Mills. The type of strip development that could spring up in this area would be directed at a young, military population, including, for example, discount stores, fast food restaurants, 24-hour convenience stores, pawn shops, auto dealers, and night clubs.

4D.11 Although the urban area of Watertown City has zoning regulations, many of the villages and towns around the installation have little or no planning regulations. Rapid development requires a strong planning effort to prevent haphazard, environmentally destructive, or generally undesirable development patterns. However, only about half of the local municipalities have planning boards (Black River-St. Lawrence Region, 1977). Although comprehensive land use plans have been developed in Jefferson and St. Lawrence Counties, these serve only as guidelines for local towns and villages where actual planning authority rests. St. Lawrence County's Planning Board in their comprehensive plan describe planning efforts in that county as follows: "land use regulations and decisions tend to permit the economy to dictate the location, composition and overall pattern of development, rather than to establish and follow sound land use priorities and principles" (St. Lawrence County, 1978). The Thousand Islands park area could also experience increased use due to the added population.

Noise

4D.12 The existing training mission at the Fort Drum would remain basically unchanged, with increases only in uses of helicopters and smaller weapons. There would be no changes in firing of 8-inch and 155 mm guns and 105 mm tank guns. There would be 10 percent or less increases in firing of 105 mm howitzers, and moderate increases in firing of smaller weapons which usually are

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Land Use

4D.9 The development resulting from a population increase of approximately 20,000 people would have a significant impact on land use in the immediate area of the installation. Although housing, health care, and elementary schools will be provided on-post, the increased demand for clothing and other retail stores, entertainment, and other services generated by the added population will greatly stimulate commercial development in the area. In addition, approximately 1,030 families will need off-post housing.

4D.10 The most likely areas to be impacted by strip development are on those roads leading from the post. The area which is likely to be impacted by Fort Drum, as discussed in Jefferson County's Land Use Plan, is along NYS Route 3 and the Black River. Along this route lie the Villages of Herrings and Deferiet and the Hamlets of Great Bend and Felt Mills. The type of strip development that could spring up in this area would be directed at a young, military population, including, for example, discount stores, fast food restaurants, 24-hour convenience stores, pawn shops, auto dealers, and night clubs.

4D.11 Although the urban area of Watertown City has zoning regulations, many of the villages and towns around the installation have little or no planning regulations. Rapid development requires a strong planning effort to prevent haphazard, environmentally destructive, or generally undesirable development patterns. Jefferson County has the most communities with regulations in place. Of the 18 villages and towns adjoining or in the immediate area of the post, 11 or 61 percent have zoning regulations. Overall in Jefferson County, approximately 57 percent of the villages and towns have zoning regulations. However in Lewis County, only 38 percent of the towns and villages have zoning regulations. Of the 11 communities in St. Lawrence County most likely to be affected by changes at Fort Drum, only Gouverneur Village has zoning regulations. The town of Fowler has implemented some land use planning regulations affecting residential development such as construction and sanitary codes and set back requirements but there are no similar regulations for commercial development.

4D.11a Although comprehensive land use plans have been developed in Jefferson and St. Lawrence Counties, these serve only as guidelines for local towns and villages where actual planning authority rests. St. Lawrence County's Planning Board in their comprehensive plan describe planning efforts in that county as follows: "land use regulations and decisions tend to permit the economy to dictate the location, composition and overall pattern of

development, rather than to establish and follow sound land use priorities and principles" (St. Lawrence County, 1978). The Thousand Islands park area could also experience increased use due to the added population.

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not heard more than 1000 m from the firing point. Peak noise levels, therefore, would not increase; rather the major change would be in the frequency of occurrences with more nightime and winter season firing and more helicopter flights, which would raise average noise levels. The greatest noise effects would be on villages near the range areas, including Natural Bridge, Antwerp, and Philadelphia.

4D.13 It is difficult to estimate effects of noises from helicopters because most of the flights will be over government property, as the are now. Presently there are approximately 2,500 aircraft movements per month. With the addition of 100 helicopters associated with a light infantry division, that number might be expected to increase as much as four fold. Although the present activity from helicopters has not caused a serious community noise problem, it is possible that the increased operations could cause some problems.

4D.14 If a light infantry division is stationed at Fort Drum, simulation modeling of noise effects would be conducted as part of the Army's ongoing noise assessment program.

Regional Economic Activity

4D.15 The stationing at Fort Drum would have a direct effect upon the tri-country region composed of Jefferson, Lewis, and St. Lawrence Counties. There would be increases of approximately 8,960 military employees and 1,420 civilian employees, and increased purchases of local services and supplies . There also will be a four-year period of new construction and rehabilitation that will amount to approximately $40 million in the 1985 fiscal year (FY), $397 million in 1986FY, $207 million in 1987FY, and $156 million in 1988FY. Construction will affect the tri-county region and also three counties to the south--Onondaga, Oswego, and Onieda Counties.In addition, there would be added regional economic activity caused by multiplier effects.

It is likely that some of the civilian jobs created as a result of the stationing activity could be filled be spouses of incoming military personnel. As described in Appendix L about 36% of the spouses of Army enlisted men and 35% of Army officer spouses are members of the civilian workforce (Doering and Hutzler, 1982).

4D.16 The Economic Impact Forecast System (EIFS) was used to predict the economic effects of adding a full division at Fort Drum but was not run for other alternatives. It is assumed, however, that the economic effects of this alternative would also be significant and slightly less than the values projected for a full division.

4D.17 Expected increases will far exceed historical rates of change. The changes will reduce the high unemployment in the area,

but can be expected to be inflationary. It also is necessary to consider that the increase of military personnel will bring with it an increase of nearly 4,500 spouses of military, approximately half of whom can be expected to be seeking employment on the Fort or in the new jobs that will be created in the private sector.

Air Quality

4D.18 Present levels of air pollutants in the region are well below New York State Ambient Air Quality Standards (NYSAAQS). Pollution emissions, as a result of increased populations and activities, are expected to be from heating for Fort Drum facilities and housing, heating for off-post housing and commercial facilities, and automobile emissions. Specific amounts of emissions from the Fort's facilities are discussed in the subsection of this report on installation air emissions. Given the good air quality in the area State air quality agency officials do not expect that the addition of more than 20,000 people would cause any serious degradation of the regional air quality.

Water Supply

4D.19 There would be 1,030 families living off-post under this alternative, representing a total of about 2,575 people. If many of the families settle in jurisdictions with limited municipal water service there could be a serious distribution problem. Although surface and ground water in the region are more than adequate to supply expanded populations and activities, some small community water supply systems in the region are not adequate. In addition, new business development in these areas would put additional pressure on the water distribution system. Construction in areas without municipal water will have to include provision of a source of water.

Wastewater Disposal

4D.20 The situation with wastewater systems is much the same as it is with water supply--some of the present municipal systems are not sized for expanded operation. If residential and commercial development were concentrated in areas with municipal services, it will be necessary to renovate and expand some of the community wastewater systems or to build new ones. Because community wastewater systems generally are built with revenue bonds or general obligation bonds on which the existing users also are required to pay, it can be expected that taxes and/or use fees will increase for the present property owners and users.

4D.21 A substantial amount of housing would be expected to develop in strips along existing roads, especially in areas where zoning is poor or uninforced. Most of this housing would have individual supply wells and septic systems which are unregulated or

4E.35 Threatened and Endangered Species. The Office of Endangered Species, U.S. Fish and Wildlife Service has advised that there are no threatened or endangered species known to be resident on the installation. Transient species would not be significantly affected (Mallory, 1984).

On-Post Population

4E.36 The work force population would increase from 1,030 to 8,860 military and from 920 to 2,330 civilian employees. Under this alternative 2,990 family housing units and approximately 10,300 barrack spaces will be constructed. This means that the on-post daytime population would be about 19,518 not counting visitors, and the on-post 24-hour population would be 16,035. In addition, during summer training peaks another 7,500 soldiers would be added to the population on-post.

4E.37 Current proposed timing of barracks and housing construction and the stationing of troops at Fort Drum could result in a serious short-term lack of housing space. Existing adequate barrack spaces number a maximum of 864 (90 sq. ft. per soldier), 65 percent of which are being utilized. There are an additional 10,330 spaces available in WWII barracks which are of wooden, open bay construction. Rehabilitation is scheduled for the older barracks but it will not be completed until FY 87. Construction of family housing will not be completed before FY 87 as well, and the new barracks construction is not scheduled to begin until FY 87. However, all of the division troops are scheduled to be stationed on-post prior to the end of FY 87. By the end of FY 87 then, the military population will be 8,860. It is possible that a majority of these troops would have to be temporarily quartered in existing WWII barracks. The maximum quartering figure used for planning intensive training and mobilization at Fort Drum is 21,400 persons. This is based on 60 sq.ft. of space per soldier at a density of 60 persons per barracks.

4E.38 The above population estimates do not account for medical personnel who would be needed to staff the hospital that is scheduled to be constructed on-post and become operational in FY 1989 or 1990. Based on the increased military population an estimated 172 medical personnel would be needed which includes 115 military and 57 civilian staff.

Land Use

4E.39 The major land use changes to result from the proposed stationing of a light infantry division minus one infantry brigade and aviation brigade at Fort Drum are:

would be required, which is slightly less than the present capacity. Approximately two or three new wells will be added to provide enough reserve capacity to allow for taking some of the supply wells out of service for maintenance or to minimize drawdown. Considering the overall abundance of ground water on the installation and in the region, there would not be any detrimental effects from developing the additional supply.

Wastewater Disposal

4E.44 A total treatment capacity of about 2.7 mgd would be required, which is less than the present primary treatment capacity of 4 mgd, but is far more than the secondary capacity of 1.1 mgd. Fort Drum has plans to increase the treatment capacity to meet these requirements. The new plant will increase the discharge of secondary-treated effluent into the Black River. There currently is no effluent problem in the Black River and it is expected the new plant will be within National Pollution Discharge Elimination System (NPDES) limitations.

Solid and Hazardous Waste Disposal

4E.45 As stated previously, Fort Drum and the surrounding region have problems with finding suitable landfill sites. Furthermore, Fort Drum's permit for its present landfill site will expire in December 1985. It is necessary, therefore, whether or not a light infantry division is stationed at Fort Drum, that the installation develop solutions that can be designed, built, and put in operation before December 1985. Whatever the solution devised (e.g., a suitably sealed landfill, or incineration facilities, on or off-post), the facility will be sized to meet the required needs.

Housing

4E.46 Approximately 70 percent of the current permanent military personnel assigned to Fort Drum reside on-post with no excess living quarters available. The proposed stationing alternative includes the construction of 2,990 family housing units to meet the needs of 90 percent of those eligible among division and support personnel. Although this would have a significant short-term impact during construction, the proposed site for the housing is next to existing housing, in an area not used for training. There would be a short-term shortage of family housing since all construction will be completed in FY 89 or later. The first significant number of military (2,760) would be stationed on-post in FY 86. In addition, 1,720 military personnel would be stationed at the installation in FY 84 and 85. Construction of 928,000 sq. ft. of new barracks space is not scheduled to begin

until FY 87. Almost 90 percent of all military personnel are scheduled to be on-post by the end of that fiscal year. A majority of these troops would be required to live in existing World War II wooden, open-bay barracks which are substandard by current Army standards, for two years or more until family housing and barracks construction and rehabilitation is completed. The only long-term impacts on-post would be in land use in the new housing site, since neither the current mission nor future operations would be affected by the new housing construction.

Schools

4E.47 The division minus an infantry brigade and aviation brigade alternative at Fort Drum would involve approximately 3,500 additional school age dependents of military personnel (assuming a school age dependent ratio of .90 per married troop). The Army's proposed stationing alternative includes the construction of two elementary schools on-post totaling 70,400 square feet. Assuming 770 square feet per classroom, as is required by New York State, this would mean approximately 92 classrooms accommodating 2,300 students (25 per room). If 50 percent of school age dependents are assumed to be in elementary school this would mean approximately 1,750 students in grades K thru 6. Since not all school age dependents will live on-post and attend post schools (housing is provided for only 90 percent of those eligible) the proposed facilities should easily meet the projected demand for classroom space. All junior and senior high school students would attend area schools, the impacts of this are discussed in the regional impacts section.

Health Care

4E.48 Implementation of this alternative would add 17,540 people (military and dependents) to the population eligible for military-provided health services. Based on data from a comparably sized post, this size population would average approximately 650 clinic visits a day (includes retirees and retiree dependents) and an average daily admission rate to acute care beds of 9. The clinic at Fort Drum is currently handling 70 visits a day on average and has no acute care beds available (Poulton, 1984). To accommodate this significant increase in demand for health care the proposed action would include the construction of a hospital with a total area of 77,400 sq. ft. Construction would start in FY 87. In addition, a dental clinic with an area of 14,500 sq. ft. would be built. This would mitigate the long-term impacts on the installation health care requirements. However, there would be a short-term strain on available health care services prior to and during hospital construction since 90 percent of division and support personnel are scheduled to be stationed on-post by the end

would be required, which is slightly less than the present capacity. Approximately two or three new wells will be added to provide enough reserve capacity to allow for taking some of the supply wells out of service for maintenance. Considering the overall abundance of ground water on the installation and in the region, there would not be any detrimental effects from developing the additional supply.

Wastewater Disposal

4E.44 A total treatment capacity of about 2.7 mgd would be required, which is less than the present primary treatment capacity of 4 mgd, but is far more than the secondary capacity of 1.1 mgd. Fort Drum has plans to increase the treatment capacity to meet these requirements. The new plant will increase the discharge of secondary-treated effluent into the Black River. There currently is no effluent problem in the Black River and it is expected the new plant will be within National Pollution Discharge Elimination System (NPDES) limitations.

Solid and Hazardous Waste Disposal

4E.45 As stated previously, Fort Drum and the surrounding region have problems with finding suitable landfill sites. Furthermore, Fort Drum's permit for its present landfill site will expire in December 1985. It is necessary, therefore, whether or not a light infantry division is stationed at Fort Drum, that the installation develop solutions that can be designed, built, and put in operation before December 1985. Whatever the solution devised (e.g., a suitably sealed landfill, or incineration facilities, on or off-post), the facility will be sized to meet the required needs.

Housing

4E.46 Approximately 70 percent of the current permanent military personnel assigned to Fort Drum reside on-post with no excess living quarters available. The proposed stationing alternative includes the construction of 2,990 family housing units to meet the needs of 90 percent of those eligible among division and support personnel. Although this would have a significant short-term impact during construction, the proposed site for the housing is next to existing housing, in an area not used for training. There would be a short-term shortage of family housing since all construction will be completed in FY 89 or later. The first significant number of military (2,760) would be stationed on-post in FY 86. In addition, 1,720 military personnel would be stationed at the installation in FY 84 and 85. Construction of 928,000 sq. ft. of new barracks space is not scheduled to begin

until FY 87. Almost 90 percent of all military personnel are scheduled to be on-post by the end of that fiscal year. A majority of these troops would be required to live in existing World War II wooden, open-bay barracks which are substandard by current Army standards, for two years or more until family housing and barracks construction and rehabilitation is completed. The only long-term impacts on-post would be in land use in the new housing site, since neither the current mission nor future operations would be affected by the new housing construction.

Schools

4E.47 The division minus an infantry brigade alternative at Fort Drum would involve approximately 3,500 additional school age dependents of military personnel (assuming a school age dependent ratio of .90 per married troop). The Army's proposed stationing alternative includes the construction of two elementary schools on-post totaling 70,400 square feet. Assuming 770 square feet per classroom, as is required by New York State, this would mean approximately 92 classrooms accommodating 2,300 students (25 per room). If 50 percent of school age dependents are assumed to be in elementary school this would mean approximately 1,750 students in grades K thru 6. Since not all school age dependents will live on-post and attend post schools (housing is provided for only 90 percent of those eligible) the proposed facilities should easily meet the projected demand for classroom space. All junior and senior high school students would attend area schools, the impacts of this are discussed in the regional impacts section.

Health Care

4E.48 Implementation of this alternative would add 17,540 people (military and dependents) to the population eligible for military-provided health services. Based on data from a comparably sized post, this size population would average approximately 650 clinic visits a day (includes retirees and retiree dependents) and an average daily admission rate to acute care beds of 9. The clinic at Fort Drum is currently handling 70 visits a day on average and has no acute care beds available (Poulton, 1984). To accommodate this significant increase in demand for health care the proposed action would include the construction of a hospital with a total area of 77,400 sq. ft. Construction would start in FY 87. In addition, a dental clinic with an area of 14,500 sq. ft. would be built. This would mitigate the long-term impacts on the installation health care requirements. However, there would be a short-term strain on available health care services prior to and during hospital construction since 90 percent of division and support personnel are scheduled to be stationed on-post by the end

of FY 87. The current estimate of when the hospital would be operational is FY 89 or 90 (Directorate of Engineering and Housing, 1984). Health Services Command is investigating how health care would be provided prior to the hospital completion. One option being considered is the renovation of a deactivated World War II hospital on-post. A detailed engineering study by Fort Drum facilities engineers has been carried out within the past year on the cost of renovating the existing hospital buildings. However this study assessed only the renovation cost and not any equipment or supply requirements. In addition, the construction of an operating room was not considered.

Public Safety

4E.49 Stationing of a division minus an infantry brigade and aviation brigade at Fort Drum would likely result in significant impacts on public safety on-post and in the Fort Drum area. Several factors would contribute to this impact including: (1) the large increase in population from 1,030 to 8,860 military; (2) a change in the type of military personnel from largely administrative to combat units; and (3) the lag time for the local communities economic and social infrastructure to meet the demands of a significantly increased permanent military population. The garrison's military police and judge advocate office personnel would be increased to meet the new demand and construction of additional detention space will be required. There could also be a considerable burden put on local law officials since on-post the military has concurrent jurisdiction in only a small part of the entire installation in a zone surrounding the cantonment area. Outside this area, military police may only detain people not subject to the Uniform Code of Military Justice who violate state laws on the installation and call the proper state or local police to take the offender into custody. Traffic law violations and criminal offenses committed upon the installation by persons not subject to the Uniform Code have long been a law enforcement problem at Fort Drum. The Judge Advocate's office has requested of the state that concurrent jurisdiction be given on the entire installation but as yet no action has been taken (Major Key, 1984).

As described in Appendix M, most crimes committed by Army personnel in the continental United States are confined to the installation. Further, Army crime rates in general have been declining. Between 1980 and 1983 the most common offenses committed by Army personnel, those against property, declined by 26 percent. Marijuana use and possession, the second most common offense declined by 64 percent, while crimes of violence, ranking third dropped 42 percent (U.S. Army Office of the Deputy Chief of Staff for Personnel, 1984). Although Army crime rates are not directly

comparable to national trends, more arrests per 1000 of U.S. males 18 to 22 years versus Army personnel were made for crimes against property, drug offenses and crimes of violence in 1982. In the event of troop stationing, the actual number of crimes could increase, yet as detailed in Appendix M most of the increase probably would be concentrated on post.

Traffic and Transportation

4E.50 There would be two sources of increased transportation and transportation-related impacts in the Fort Drum area. The additional military vehicles and personnel stationed on-post would greatly increase traffic on the installation. The personal vehicles owned by the new population would also increase off-post transportation in the vicinity of Fort Drum. Increased traffic flow on and off-post would be expected to impact those routes which are

currently most heavily used: Nash Boulevard and First Street West in the afternoon and Black River Road and First Street West in the morning. Traffic flow at Gates 1,2, and 3, as described in Chapter 3, could expect to increase in proportion to the increased work force population living off-post. New road construction will take place in the area of the new housing units to be constructed on-post. Off-post the most serious impacts resulting from increased vehicular traffic should be experienced on State Highway 3 and U.S. Highway 11 with lesser impacts on County Highway 52 (Pearl Street) in the Watertown-Fort Drum corridor. It should be noted that New York State's Department of Transportation has scheduled a project for the reconditioning and preservation of the Pearl Street and Route 283 Corridor to Fort Drum. The project is aimed at highway update with the reconstruction of an urban section in the City of Watertown and resurfacing of existing concrete pavement. The project has a tentative letting date schedule for April 1985.

Cultural Resources

4E.51 In compliance with existing regulations the National Park Service has contracted for a cultural resources overview and management plan for Fort Drum. The work, which is scheduled to be completed in October 1984, will include the formulation of a predictive model of cultural resource distribution and density, and management recommendations to assist Fort Drum in considering cultural resources in their planning process. Two major historic sites on-post, the LeRay Mansion, listed on the National Register of Historic Places, and the Iroquois village site, nominated to the National Register, have been placed off limits to Army maneuvers. Given the potential for additional, as yet undiscovered, cultural resources on the post, there is a potential for impact on significant cultural resources under this alternative.

4E.52 Although the exact location and nature of many possible cultural resources, particularly archeological resources, is unknown, the potential impacts of the proposed action can be generally discussed. Basically, any action which produces ground disturbances in any form would have a potential for disturbing an archeological resource, thereby destroying data. Construction of new buildings and facilities, and establishment of roads include such elements as excavation, grading, filling or stockpiling of materials. All of these elements have a potential for disturbance or destruction of archeological materials. Renovation of existing buildings or demolition can damage and destroy significant historic structures.

REVISED 1984

4E.53 Many training activities, including maneuvering of vehicles and digging of foxholes, cause ground disturbances that have a potential for damaging or destroying an archaeological resource. Establishment of new training areas or increases in land utilization frequency for training over current levels can increase the potential for impacts to undisturbed cultural resources.

4E.54 Considerations will be given to identifying potential cultural resources, as well as protecting those known to exist. Authority for these actions are found in Army Regulation AR-420-40, Facilities Engineering, Historic Preservation (April 15, 1984) effective 15 May 1984. The procedures for accomplishing these measures are detailed in the Army Technical Manual TM-5-801-1, Historic Preservation-Administrative Procedures and TM-5-801-2, Historic Preservation-Maintenance Procedures. In regard to the installation, the prime limitation would be to prohibit any destruction or alteration of all or part of any significant site through whatever measures are necessary (e.g., establishment of limited-use areas). It should be noted that it is always possible for studies to miss an archaeological site, particularly one which shows little or no surface evidence of its presence. Because of this, all construction contracts must allow for this possibility by specifying that, in the event that a suspected archaeological site is encountered during construction or some other form of activity, operations in the area would be suspended until the site is investigated by a professional archaeologist. This construction contract provision is required by 32 CFR 650.192, Department of the Army, Environmental Protection and Enhancement, Peacetime Responsibilities, Historic Preservation, Archaeological Sites (March 15, 1978). Similarly, training activities that involve the use of new areas or the increased use of areas presently used may uncover evidence of archaeological sites that was not uncovered by prior studies. Officers in charge of field activities should be made aware of this possibility and procedures should be established whereby the officer could inform the installation's Historic Preservation Committee of any finds so that the committee may take appropriate measures to avoid the accidental destruction of a site. Additionally, since the looting of sites by irresponsible persons can be a problem, security measures should be instituted to prevent destruction of archaeological data in this manner.

FORT BENNING AND THE COLUMBUS, GEORGIA REGION

4E.55 Under this proposed stationing alternative, a light infantry brigade and a combat aviation brigade would be stationed at Fort Benning. These two brigades would consist of 3,810 personnel, including 470 officers and warrant officers, and 3,340 enlisted personnel.

4E.56 Table 4E-1 indicates the total number of military personnel and civilian employees estimated to be at Fort Benning under this proposed stationing alternative for FY 1984 through FY 1989, by year. The table also indicates the cumulative increase in military personnel and civilian employees by year. The personnel

counties are considered as indicated in Chapter 3: Marion, Stewart, Talbot, and Webster Counties, Georgia and Barbour, Lee, and Macon Counties, Alabama (see Figure 3-4).

4E.63 Under this alternative, it is estimated that at the end of FY 1989 there would be an increase of 1,900 military personnel and 4,760 military dependents living off-post in the four-county assessment area. This is a total increase of 6,660 persons living off-post. It should be noted that over 96 percent of this increase would occur by the end of FY 1987. As previously indicated, it is assumed that there would be no increase in civilian residents in the region as a result of this alternative.

4E.64 For reasons discussed under the Fort Benning Land Use section, there would not be any requirement for off-post land acquisition or leasing by Fort Benning as a result of this alternative.

4E.65 Specific impacts in the Columbus, Georgia region related to the changes under this alternative are discussed in the following sections.

Biological Environment

4E.66 No significant biological impacts are anticipated in the four-county assessment area under this alternative. As discussed in the Land Use and Housing Sections, some additional land would be required for housing and commercial development in the four-county area. This would lead to the loss of some habitat, along with the loss of some wildlife and vegetation. However, since the total population increase would be less than 4 percent of current levels and since less than 11 percent of the 1.0 million acres in the four-county area is commercial/residential/developed land, any such losses would not be expected to have a significant impact on the biological environment of the area.

4E.67 Wildlife populations off-post in the four-county area would not be significantly impacted by on-post activities at Fort Benning. As discussed elsewhere in this chapter (e.g., see Air Quality), on-post activities would not result in any significant changes to air quality or water quality, either on-post or off-post. Increased aircraft operations under this alternative could potentially increase noise levels off-post to the southwest of Lawson Army Airfield (see Fort Benning Noise Section). However, due to the limited area likely to be affected, this would be unlikely to result in any significant biological impacts.

SUPERSEDED
AUG 1984

Demography

4E.68 The population of the four-county assessment area was 254,660 in 1980 and is projected, as indicated in Chapter 3, to increase to 278,000 by 1990. Total population increases under this alternative would be approximately 8,460 military personnel and dependents (see Table 4E-1), or less than 4 percent of current population levels and about 3 percent of the projected 1990 levels. The largest one-year population increase, 6,030 people, would occur during FY 1986. Under this alternative, the off-post population would increase by about 6,660 military personnel and dependents, or less than 3 percent of 1980 and 1990 population levels.

Land Use

4E.69 Adequate housing is currently available for the additional 1,900 military families who would be living off-post. However, new construction might be necessary to house both these additional military families who would arrive under this alternative plus the increased population projected to be in the area by 1990 even without the proposed alternative (see Housing). Commercial land use changes should be relatively small since the total increase in population under this alternative (both off-post and on-post) is about 8,460 persons. This would be less than a 4 percent increase in the population of the four-county assessment area.

4E.70 The City of Columbus has long considered a troop strength of 30,000 at Fort Benning for its long-range land use planning (Columbus Department of Community Development, 1977). Thus, the troop strength of 29,360 under this alternative should not cause any significant land use planning changes.

4E.71 The proposed stationing action could also have an effect on the operation of the Columbus Airport. The airport currently ceases operations between 11:00 p.m. and 7:00 a.m. Due to the increase in night rotary-wing aircraft operations expected under this alternative (see Fort Benning Noise), it might be necessary for the Columbus Airport approach control to operate 24-hours a day to provide necessary coverage of these operations (Cardin, 1984). The night operations would be primarily within the Fort Benning boundaries. There would not be any landings or take-offs from the Columbus Airport during the 11:00 p.m. to 7:00 a.m. period.

Noise

4E.72 As discussed under the Fort Benning Noise Section, off-post noise impacts resulting from this alternative would be relatively minor. Some increase in the noise level due to increased

REVISED 1984

Demography

4E.68 The population of the four-county assessment area was 254,660 in 1980 and is projected, as indicated in Chapter 3, to increase to 278,000 by 1990. Total population increases under this alternative would be approximately 8,460 military personnel and dependents (see Table 4E-1), or less than 4 percent of current population levels and about 3 percent of the projected 1990 levels. The largest one-year population increase, 6,030 people, would occur during FY 1986. Under this alternative, the off-post population would increase by about 6,660 military personnel and dependents, or less than 3 percent of 1980 and 1990 population levels.

Land Use

4E.69 Adequate housing is currently available for the additional 1,900 military families who would be living off-post. However, new construction might be necessary to house both these additional military families who would arrive under this alternative plus the increased population projected to be in the area by 1990 even without the proposed alternative (see Housing). Commercial land use changes should be relatively small since the total increase in population under this alternative (both off-post and on-post) is about 8,460 persons. This would be less than a 4 percent increase in the population of the four-county assessment area.

4E.70 The City of Columbus has long considered a troop strength of 30,000 at Fort Benning for its long-range land use planning (Columbus Department of Community Development, 1977). Thus, the troop strength of 29,360 under this alternative should not cause any significant land use planning changes.

4E.71 The proposed stationing action could also have an effect on the operation of the Columbus Airport. The airport currently ceases operations between 11:00 p.m. and 7:00 a.m. during which time Atlanta Approach takes over watching air traffic over the Columbus and Ft. Benning area. Due to the increase in night rotary-wing aircraft operations expected under this alternative (see Fort Benning Noise), it might be necessary for the Columbus Airport approach control to operate 24-hours a day to provide necessary coverage of these operations (Cardin, 1984). The night operations would be primarily within the Fort Benning boundaries. There would not be any landings or take-offs from the Columbus Airport during the 11:00 p.m. to 7:00 a.m. period; however Columbus Approach could remain open, given notice, if necessitated by the increased air traffic (Passailaigue, 1984).

vehicular traffic would be produced on the access roads to the installation, predominantly Victory Drive (U.S. Highway 27). There could be up to a 15 percent increase in average daily traffic off-post on Victory Drive, west of Lindsey Creek Bypass (see Fort Benning Traffic and Transportation). The overall impact would be slight given the existing noise level.

4E.73 Increased aircraft operations could potentially increase noise levels off-post to the southwest of Lawson Army Airfield (see Fort Benning Noise); however, the area likely to be affected by this, if it were to occur, contains woodlands. Thus, there should not be any conflict with noise sensitive land uses.

4E.74 Increased artillery operations under this alternative would not be likely to increase peak noise levels off-post; however, the frequency of occurrence of noise generating activities would increase. The area likely to be affected by this is located near the northeast boundary of Fort Benning (see Fort Benning Noise). The area does not contain any noise sensitive land uses, and thus there should not be any significant impact.

Regional Economic Activity

4E.75 The impact of this proposed stationing alternative on the level of economic activity in the eleven counties around Fort Benning is assessed in this section. The impacts of both the change in the level of military activity at the installation and of the construction that would be required by the stationing action have been assessed. The description of the region that would be impacted under this alternative appears in Chapter 3, Fort Benning, Georgia and Surrounding Region, Regional Economic Activity.

4E.76 The proposed stationing alternative would have a direct effect upon the eleven county regional economy through a net increase in on-post military and civilian employment of 4,210, construction activity to support this increase totalling $185 million and an annual increase in purchases by the installation of $1.5 million in regionally supplied goods and services. Additional economic benefits would accrue to the region through indirect economic activity resulting from multiplier effects.

It is likely that some of the civilian jobs created as a result of the stationing activity could be filled be spouses of incoming military personnel. As described in Appendix L about 36 percent of the spouses of Army enlisted men and 35 percent of Army officer spouses are members of the civilian workforce (Doering and Hutzler, 1982).

4E.77 The Economic Impact Forecast System (EIFS) has been used to estimate changes in total business volume and personal income within the region (a brief explanation of the EIFS model is presented in Appendix I). Model outputs for these parameters associated with mission change and construction resulting from the proposed stationing alternative are displayed in Table 4E-4 (a printout of the EIFS model inputs and outputs is presented in

REVISED 1984

TABLE 4E-4

ECONOMIC EFFECT OF THE PROPOSED STATIONING ALTERNATIVE ON THE COLUMBUS, GEORGIA REGION[a]

Category	Highest One-Time Annual Change Due to Construction		Recurring Annual Change Due to Proposed Stationing		Rational Threshold Value	
	Amount of Change	Percent Change	Amount of Change	Percent Change	Negative	Positive
Total business volume	$42,175,000	+1.0	$106,655,000	+2.6	-7.1	5.6
Local personal income	$15,504,000	+0.5	$124,677,000	+4.0	-5.4	3.7
Employee equivalent[b]	1,000	+0.6	5,833	+3.7	-6.0	4.8

[a]All changes in 1984 dollars.

[b]Added personal income is equivalent to the average annual salaries of the number of persons shown.

Appendix C). Model outputs for mission change are expressed as permanent increases which would reoccur on an annual basis over the life of the proposed stationing alternative. Outputs associated with construction are the highest estimated values which would occur for the parameters in a single year over an expected three year construction period (FY 86-FY 88).

4E.78 Interpretation of changes in these parameters is possible through comparison of the percent change values associated with each parameter and the rational threshold value (RTV). The percent change in value is that fraction of the regional total for a parameter that is attributable to the proposed stationing alternative. The RTV is the maximum historical percentage fluctuation from yearly average change rates for each parameter within the region. Percent change values which approach or exceed RTV values for one or more parameters may be considered as indicators of potential regional stress equal to or greater than that experienced over the period for which the RTV has been calculated (1965-1978).

4E.79 Comparison of the percent change and RTV values in Table 4E-4 shows that both the annual increase in total business volume and the increase in employee equivalent numbers are both less than the corresponding positive RTV's. However, the annual increase in the local personal income due to the mission change alone exceeds by 8 percent the corresponding positive RTV. Additional increases in local personal income during the construction period could result in the RTV being exceeded by up to 22 percent during the expected 3 year construction period.

Air Quality

4E.80 As discussed in the Fort Benning Air Emissions Section, the increase in emissions from Fort Benning under this alternative would not be expected to have any significant impact on air quality in the four-county assessment areas. Furthermore, the additional 6,660 military personnel who would be living off-post would represent less than a 3 percent increase in population for the area. Thus, their activities would not be expected to have any significant impact on air quality in the area.

Water Supply

4E.81 Average domestic per capita water consumption in the area is estimated to be approximately 150 gallons per day. Peak per capita consumption is estimated to be approximately 250 gallons per day based on the ratio of peak consumption to average consumption in Table 3-2 (Gaylor, 1984; Tant, 1984).

4E.82 Based on these per capita consumption figures, the 6,660 additional people living off-post under this alternative would consume between 1.0 and 1.7 mgd of water. Based on the existing water supply in the four-county assessment area (see Table 3-2), this requirement would be well below the current excess capacity and should pose no significant impacts. For example, the Columbus water treatment plant alone has excess capacity of 25 mgd for average consumption periods and 6 mgd for peak consumption periods, while the Phenix City plant has excess capacities of 12 mgd and 9.4 mgd, respectively.

4E.83 There would also be sufficient water to handle the projected increase in population in the area that is expected to occur by 1990, independent of this alternative. The projected increased population of 23,300 would require between 3.5 and 5.8 mgd of water. The excess capacity in the area is more than adequate to handle this additional requirement plus that of the stationing action.

4E.84 As indicated in Chapter 3, there are no designated Sole Source Aquifers in the area.

Wastewater Disposal

4E.85 Average domestic per capita wastewater treatment flow in the area is approximately 100 gallons per day. Peak domestic per capita flow is estimated to be about 170 gallons per day based on the ratio of peak flow to average flow (Gaylor, 1984; Tant, 1984).

4E.86 Based on these per capita wastewater flows, the 6,660 additional people living off-post would generate between 0.6 and 1.2 mgd of wastewater flow. The Columbus wastewater treatment plant alone could readily accommodate this entire requirement during both average and peak flow periods. The Phenix City plant could also readily accommodate the entire requirement during average flow periods; however, during peak flow periods (which are caused by rainfall), the plant currently resorts to controlled bypass. The plant is currently being studied for expansion.

4E.87 The projected 23,300 additional people expected in the area by 1990, independent of this alternative, would generate between 2.3 and 4.0 mgd of wastewater flow. While the excess wastewater treatment capacity in the area is adequate to handle this additional requirement plus that of the stationing action for average flow periods, the existing excess capacity would not be adequate during peak flow periods. However, Columbus is currently designing a 12 mgd expansion to its plant and Phenix City is currently studying its plant for expansion. The additional capacity

being designed for the Columbus plant alone would be adequate to handle the increased flows during peak flow periods.

4E.88 Most other portions of the four-county area rely on septic tanks. Thus, any increase in population in these areas would result in an increase in the number of septic tanks. However, due to the relatively small increase in population expected in such areas, under this alternative, there should not be any significant increase in water quality impacts from any likely increase in septic tank use.

Solid Waste Disposal

4E.89 The 6,660 additional military personnel and dependents who would be living off-post represent less than a 3 percent increase in the population of the four-county assessment area. They would thus be expected to increase solid waste generation by less than 3 percent in the area and would accordingly reduce the life of the existing sanitary landfills by less than 3 percent. (This would be less than a 2-month reduction per 5 years of landfill life.) The actual reduction in the life of each individual landfill would depend on how many people choose to live in each county.

Housing

4E.90 The Fort Benning family housing units are currently at maximum capacity. Since no additional family housing construction is planned, this analysis assumes all necessary family housing would have to be provided by the Columbus region housing market.

4E.91 Under this alternative, an additional 1,900 housing units would be needed to accommodate families living off-post. Present statistics indicate that the Columbus, Georgia Housing Market Area (HMA) which includes Muscogee and Chattahoochee Counties, Georgia and Russell County, Alabama, has a minimum housing surplus of 2,950 units (U.S. Department of Housing and Urban Development, 1982). Thus, there should be no significant impacts as a result of the housing requirements under this alternative.

4E.92 Natural (e.g., unrelated to this proposed stationing alternative) population growth in the region is projected to be about 23,300 people by 1990. Based on an average of 3.05 people per household in the area (U.S. Department of Commerce, 1982a and 1982c), this natural growth could require almost 7,700 additional housing units. This housing requirement plus that of the alternative would mean that almost 6,700 additional housing units would have to be constructed by 1990. Based upon past growth in the area's housing units, this requirement should not present a

significant impact. Over the past several years, the HMA has been experiencing rapid growth rates in construction of single family and especially apartment units. For example, between 1980 and February 1984, the city of Columbus, Georgia alone issued a total of 3,021 residential building permits, including 1,393 for single-family homes, 1,493 for apartment units, and 135 for condominiums. About 45 percent of the permits were issued in 1983. In addition, there are currently a number of platted subdividions with available utility hook-ups, for which no building permits have yet been issued (Gant, 1984). Phenix City expects about 7,000 housing starts between 1984 and 2005 (Tolbert, 1984). Furthermore, the Columbus HMA has historically been able to adjust its housing market to absorb changes in the Fort Benning population, and is expected to be able to continue to do so (Duck, 1984; Mills, 1984).

Schools

4E.93 No adverse impacts to schools are expected in the four-county assessment area under this alternative. Present levels of enrollment (for operational schools and staff) indicate a total of 9,730 excess student spaces for schools currently operating in the four counties (see Chapter 3). The Muscogee County school system alone accounts for almost 85 percent, or over 8,200 spaces, of the surplus capacity.

4E.94 Under this alternative, 1,720 school-aged military dependents would be added to present population levels. These school-aged dependents could be readily absorbed by existing schools without any significant impact.

Health Care

4E.95 There would be about 8,460 additional military personnel and dependents under this alternative. Based on a military population (active and retired, plus dependents) of 82,450 currently served by Fort Benning (see Table 3-3), this would represent about a 10 percent increase in the military population served by Fort Benning.

4E.96 This increased population could thus result in about a 10 percent increase in the 6,700 CHAMPUS and supplemental care referrals made annually to local (Columbus-Phenix City) health services. However, as discussed under Fort Benning Health Care, due to some projected space shortages at Martin Army Community Hospital under this alternative, there could be an even greater increase in referral of patients to off-post health care services.

4E.97 Based on an 80 percent occupancy rate representing full capacity (Thornton, 1984), the four area hospitals currently have an excess capacity equal to 11 percent of their current beds and 17 percent of their licensed beds (see Chapter 3, Columbus, Georgia Region, Health Care). Since the additional 8,460 people under this alternative would represent less than a 4 percent increase in the area's population, the additional referrals should not pose a significant impact even with the projected natural population growth.

Cultural Resources

4E.98 There is a potential for disturbance or destruction of cultural resources due to private residential or commercial development that could occur as a result of the proposed stationing alternative.

Fort Benning, Georgia

4E.99 Under this alternative, it is estimated that there would be about 29,360 military personnel and 8,280 civilian employees at Fort Benning at the end of FY 1989 (see Table 4E-1). This is a net increase of 3,700 military personnel (14 percent) and 510 civilian employees (7 percent) compared to the March 31, 1984 baseline. Approximately 97 percent of the total increase would occur by the end of FY 1987.

4E.100 As previously indicated, there would be no increase in the number of married military personnel and dependents living on-post. However, it is estimated that an additional 1,800 bachelor military personnel would be living on-post. This would represent an increase of about 6 percent in the total military population living on-post compared to the baseline.

4E.101 To accommodate the additional population and mission change, there would be construction activities on-post under this alternative. Construction would likely include cantonment type facilities (e.g., barracks), vehicle maintenance facilities, utility support systems (e.g., electricity and sanitary sewer distribution), warehouses, a telephone exchange building, a stinger/redeye simulator facility, and road improvements. Such construction is not expected to exceed 1.2 million square feet of facilities. Essentially all construction would occur in the Harmony Church area, most likely in the northern portion of Harmony Church. In addition, there would be construction of rotary-wing aircraft maintenance facilities and possibly helipads and taxiways at Lawson Army Airfield. Such construction would be within the existing perimeter of the airfield fence. There would not be any construction of new ranges or training areas, nor would there be any new impact areas (Caldwell, 1984).

SUPERSEDED
AUG 1984

4E.102 With regard to training, there would be increased utilization of the existing training areas and ranges. However, there would not be any increase in annual training days above the current baseline level of 242 days (Caldwell, 1984). Training activities on the ground would be essentially the same as those that currently occur at Fort Benning. However, there would be more air transport during training of the light infantry brigade than for other types of units. There would also be a significant increase in night rotary-wing aircraft flights (Cardin, 1984; Caldwell, 1984). There would not be any significant increase in night artillery firing activities (Caldwell, 1984).

4E.103 There would be an increase of 100 rotary-winged aircraft, 910 trucks, and 6 tracked vehicles on-post under this alternative. This would represent a 200 percent increase in the number of rotary-wing aircraft, a 28 percent increase in the number of wheeled vehicles, and less than a 1 percent increase in the number of tracked vehicles on-post compared to the baseline. Tracked and wheeled vehicles together would increase by about 23 percent.

Geology, Minerals and Soils

4E.104 Construction activities associated with this alternative include approximately 1.2 million square feet of buildings, 3 to 5 miles of new roads, and possibly some helipads and taxiways. Most construction would occur in Harmony Church, most likely in the northern end, with some additional construction within the fence at Lawson Army Airfield.

4E.105 Construction materials would include sand, gravel and crushed stone for use as base course material for roads, helipads and taxiways, and as aggregate for the construction. If a typical new road requires 6 inches of base course material, paved roads of 20 to 36 foot widths (widths now typical on the installation) would require approximately 2,000 to 3,500 cubic yards of sand and gravel as base course material per mile of road. There are several sand and gravel pits now being used on-post and several possible pit or quarry development sites have been identified which could serve as sources of the construction materials required (U.S. Army Engineer Topographic Laboratories, 1976).

4E.106 Impacts to soils could potentially occur as a result of construction activities and from increased uses of existing maneuvering areas. A major portion of the installation contains poorly graded sandy soils that are susceptible to erosion. In many training areas, erosion has become a problem. Under this alternative there would be approximately a 16 percent increase in

4E.102 With regard to training, there would be increased utilization of the existing training areas and ranges. However, there would not be any increase in annual training days above the current baseline level of 242 days (Caldwell, 1984). Training activities on the ground would be essentially the same as those that currently occur at Fort Benning. However, there would be more air transport during training of the light infantry brigade than for other types of units. There would also be a significant increase in night rotary-wing aircraft flights (Cardin, 1984; Caldwell, 1984). There would not be any significant increase in night artillery firing activities (Caldwell, 1984).

4E.103 There would be an increase of 100 rotary-winged aircraft and 510 trucks on-post under this alternative. This would represent a 200 percent increase in the number of rotary-wing aircraft and a 16 percent increase in the number of wheeled vehicles. There would be no increase in the number of tracked vehicles on-post compared to the baseline. The total number of tracked and wheeled vehicles together would increase by about 13 percent.

Geology, Minerals and Soils

4E.104 Construction activities associated with this alternative include approximately 1.2 million square feet of buildings, 3 to 5 miles of new roads, and possibly some helipads and taxiways. Most construction would occur in Harmony Church, most likely in the northern end, with some additional construction within the fence at Lawson Army Airfield.

4E.105 Construction materials would include sand, gravel and crushed stone for use as base course material for roads, helipads and taxiways, and as aggregate for the construction. If a typical new road requires 6 inches of base course material, paved roads of 20 to 36 foot widths (widths now typical on the installation) would require approximately 2,000 to 3,500 cubic yards of sand and gravel as base course material per mile of road. There are several sand and gravel pits now being used on-post and several possible pit or quarry development sites have been identified which could serve as sources of the construction materials required (U.S. Army Engineer Topographic Laboratories, 1976).

4E.106 Impacts to soils could potentially occur as a result of construction activities and from increased uses of existing maneuvering areas. A major portion of the installation contains poorly graded sandy soils that are susceptible to erosion. In many training areas, erosion has become a problem. Under this alternative there would be approximately a 16 percent increase in

the use of existing training areas (see Land Use) and no increase in tracked vehicles. Thus, there should not be any significant increase in the potential for soil erosion as a result of increased usage of maneuvering areas. Natural reseeding is the most common method currently utilized for erosion control, but where necessary, checkdams, water bars, seedings, etc. are implemented to control erosion. Land utilization is currently rotated to reduce wear on vegetation, thus reducing the potential for erosion.

4E.107 All construction would occur within existing cantonment and built-up areas (i.e., Harmony Church and Lawson Army Airfield). There could be potential soil impacts due to erosion in the areas of construction activities. However, the requisite measures necessary to minimize soil erosion and attendant pollution problems would be utilized during construction.

4E.108 Due to the location of construction areas and the small increase in the frequency of utilization of the existing maneuvering areas, the changes under this alternative should not cause any irrevocable alterations to prime farmlands on Fort Benning.

Biological Environment

4E.109 Under this alternative, only existing training areas would be utilized. There would be no construction of new areas. The frequency of utilization is expected to increase from current levels of 86 percent to almost 99 percent (a 16 percent increase over current levels) with the addition of the light infantry and combat aviation brigades (see Land Use).

4E.110 The increased frequency of training activities could potentially contribute to existing training activities that damage vegetative covering, disturb wildlife habitat, increase the frequency of wild fires, cause soil erosion, and decrease the space available for propagation of natural species (Fort Benning Directorate of Engineering and Housing, 1983).

4E.111 Construction related to this alternative would occur primarily at the Harmony Church area, with some additional construction at Lawson Army Airfield; both are presently developed areas. Potential biological impacts resulting from training and construction activities are discussed in the following sections.

4E.112 Terrestrial Ecosystems. The construction activities associated with this alternative include cantonment facilities, support facilities and roads. The majority of this construction would occur at the existing cantonment area of Harmony Church; with

some support facilities (e.g., rotary-wing aircraft maintenance facilities and possibly helipads and taxiways), being built at areas within the fence enclosing Lawson Army Airfield. Construction at Harmony Church would occur within the cantonment area and would require removing some trees between existing buildings. This construction would not cause any significant impacts to wildlife.

4E.113 No construction of additional ranges or training areas would be expected under this alternative. However, training and range-use frequency would increase by about 16 percent. There would be no additional tracked vehicles. As a result, impacts that could potentially result from increased vehicle operation and maneuvering activities, including increased soil erosion and changes in vegetation, habitat, and noise, should not be significant, especially since maneuvering areas would not be expanded from current levels.

4E.114 While additional noise from increased maneuvering and training of the brigades is expected to be small, the increase in noise, depending upon the duration and frequency of occurrence, could potentially affect the wild turkey population on Fort Benning. The wild turkey population has been determined to be sensitive to such environmental changes and could be adversely impacted. For example, impacts on the population have been noted in the past when activity levels, such as rotary-wing aircraft operations, have significantly increased for extended periods of time. The population on-post has declined at such times, but has recovered after cessation of such activities (Dunn, 1984; Greenley, 1984; Land, 1984).

4E.115 On the other hand, the white-tail deer population residing on Fort Benning has historically adjusted to mission changes over the years and no adverse impacts would be expected under this alternative (Fort Benning Directorate of Engineering and Housing, 1983).

4E.116 In March of 1984, there were 48 wildfires on Fort Benning; estimates of 400 fires for all of 1984 represent almost a 45 percent increase over the 1978 number of wildfires (Greenley, 1984). Wildfires are caused primarily by the combat training exercises on post using pyrotechnics of various sorts. The number of wildfires on-post could increase proportionally to the 16 percent increase in the utilization of training areas. Furthermore, the time available for controlled burning, which is used to mitigate the impacts of such wildfires, could be reduced as a result of the increased utilization of the maneuver area. Increases in wildfire could adversely affect present and future hardwood populations

(Greenley, 1984). If this alternative becomes effective, it could be necessary to employ a "standby crew" of firefighters, whose exclusive responsibility would be to respond to and extinguish increased wildfires on the installation, since the personnel currently responsible for this activity are working at full capacity. The potential for large uncontrolled fires would be reduced by prescribed controlled burning, which reduces ground cover accumulation as well as improving habitat for several timber and game species. The controlled burning season of the forest management office is presently December through March. It may be necessary to extend this time period to effectively reduce the number of uncontrolled fires.

4E.117 Aquatic Ecosystems. No significant impacts to aquatic ecosystems would be expected under this alternative. No new river crossing maneuvering areas would be added. Increased training activities and construction activities at Harmony Church and Lawson Airfield would not be likely to significantly increase effluent pollutant discharges to the aquatic ecosystem.

4E.118 Threatened and Endangered Species. One endangered species, the red-cockaded woodpecker (Picoides borealis), is known to reside on Fort Benning. While this species has endangered status throughout its range, it is locally abundant on-post due principally to the presence of preferred habitat (i.e., mature pines infected with red heart disease). Under the current management program of Fort Benning, nest trees are identified, marked, and protected from disturbance in accordance with the Endangered Species Act of 1973 (16 U.S.C. 1531-1543, 87 Stat 884), and activities such as maneuvering and construction are modified as necessary to prevent habitat destruction. As long as these management practices continue, there would likely be no significant impacts to the red-cockaded woodpecker from this alternative.

4E.119 The American alligator, Alligator mississippiensis, which is endangered, has been occasionally sighted on the installation, in the area of Lake W.F. George. It has not been determined whether the alligators now inhabit Fort Benning (Divinyi, 1984). Wet marshy areas which the alligator would inhabit on the installation are not suitable or utilized for troop training and maneuvers or construction. Projects which fall on the floodplain or in wetlands (which require Section 404 permits) are reviewed as required, at which time the presence or absence of the alligator is noted.

4E.120 The Office of Endangered Speices of the U.S. Fish and Wildlife Service agrees that this alternative would not affect any endangered species.

On-Post Population

4E.121 Under this alternative, there would be almost 29,360 military personnel and 8,280 civilian employees at Fort Benning at the end of FY 1989 (see Table 4E-1). This would be a net increase of 3,700 military personnel (14 percent) and 510 civilian employees (7 percent) compared to the March 31, 1984 baseline. Approximately 97 percent of the total increase would occur by the end of FY 1987.

4E.122 There would be no change in the number of married military personnel and dependents living on-post. However, it is estimated that an additional 1,800 bachelor military personnel would be living on-post. This would represent an increase of about 6 percent in the total military population living on-post compared to the baseline. The total population living on-post would be approximately 31,500.

4E.123 The effective population of Fort Benning, defined as the number of military, dependents and civilians living on post (resident population) plus one-third of the number of personnel working on-post but living off-post, would increase under this alternative by almost 2,600, or less than 8 percent over current levels. The effective population would be 37,200. This effective population is used in subsequent sections of this analysis to determine utilization and adequacy of resources (e.g., water treatment) at Fort Benning.

Land Use

4E.124 Fort Benning would have adequate land to provide the necessary space for both maneuvering/training areas and facilities for a light infantry brigade and combat aviation brigade. Maneuvering/training areas currently consist of over 128,300 usable acres, all of which are contiguous. Under this alternative, about 126,900 acres per day would be required for maneuvering/training. The average utilization of existing maneuvering/training areas would increase to 99 percent from the current 86 percent, based on a training level of 242 days per year (Caldwell, 1984). This would be about a 16 percent increase over current rates. No additional maneuvering areas or ranges would have to be constructed, although there could be some slight modifications to a few existing ranges.

4E.125 The increased utilization of the maneuver areas for training purposes would have an impact on other activities currently carried out on the same lands. These activities include controlled burning for forest management purposes, timber harvesting, and hunting. There would be reductions in the time presently available for such activities. Measures to mitigate such impacts are discussed under Biological Environment.

SUPERSEDED
AUG 1984

4E.126 Both the light infantry brigade and the combat aviation brigade would be located within the existing Harmony Church cantonment area. Troops would live in the temporary World War II barracks in Harmony Church until new barracks could be constructed for them in Harmony Church, which would be late 1988 or 1989 at the earliest. Depending on the availability of barrack space in Harmony Church, it might be necessary to temporarily house some of the personnel in one barrack on the Main Post (Carmody, 1984). (The 10 battalions of recruits currently utilizing the barracks in Harmony Church are in the process of being moved to the Sand Hill area, as new barracks are constructed there. Barracks are expected to be available in Sand Hill for 6 of the 10 battalions in May 1984, with additional barracks available in 1987 and 1988. By 1992 at the latest, all recruits should be moved from Harmony Church to Sand Hill under current plans. This relocation of recruits is not related to this proposed stationing alternative.)

4E.127 Most additional construction would occur in the north end of Harmony Church, although there would be some construction at Lawson Army Airfield. Up to 1.2 million square feet of buildings, 3 to 5 miles of new roads (all within Harmony Church), and possibly some helipads and taxiways would be constructed. The land necessary for this construction is available and should not present any significant land use problems.

Noise

4E.128 Increases in noise levels, both off-post and on-post, as a result of this proposed stationing alternative cannot be determined until a training schedule has been established for both the light infantry brigade and the combat aviation briagde. Should the two brigades be stationed at Fort Benning, simulation modeling of noise effects would be conducted as part of the Army's on-going noise assessment program.

4E.129 The three major sources of noise at Fort Benning (i.e., aircraft operations, artillery operations, and vehicular traffic) would increase under this alternative.

4E.130 The number of rotary-wing aircraft would increase 200 percent, to 150 from the current 50. While there would be a 200 percent increase in the number of rotary-wing aircraft, it is estimated that the number of rotary-wing aircraft flights could increase by 300 percent. In addition, the number of Air Force flights (heavy aircraft) could increase by 5 to 10 percent; the number of rotary-wing aircraft flights at night could increase to between 25 and 50 per week from the current three (Cardin, 1984). For the 12-month period from April 1983 to March 1984, there were

2,670 heavy aircraft operations (take-offs or landings), 24,550 light aircraft operations, and 3,060 rotary-wing aircraft operations at Lawson Army Airfield (Ellis, 1984). Under this alternative, it is estimated that there could thus be a 32 percent increase in aircraft operations, to 39,900 from the current 30,300. This would result in an increase in the frequency of noise generation by aircraft operations.

4E.131 A zone II contour indicates a noise level between 65 and 75 decibels day-night level (dB DNL) and is considered "normally unacceptable" for noise sensitive land uses such as housing, hospitals, schools, etc. (U.S. Army Environmental Hygiene Agency, 1982). In developing ICUZ noise contours for Fort Benning (see Chapter 3, Affected Environment), the U.S. Army Environmental Hygiene Agency (1982) indicated that increased flight operations from Lawson Army Airfield could expand a zone II contour off-post near the southwest boundary of Fort Benning (see Appendix C). The increased aircraft operations under this alternative could have the potential to expand this zone II contour off-post. However, the off-post land use in that area is woodlands and thus there should not be any significant impacts even if this were to occur.

4E.132 Artillery operations would increase under this alternative. There is currently one artillery battalion at Fort Benning. Under this alternative, there would be a second artillery battalion. The proposed light artillery battalion would not fire any artillery larger than 105 mm, whereas the existing artillery battalion fires artillery up to 155 mm. Consequently, the noise levels generated by the proposed artillery battalion would be less than those from the existing battalion. Furthermore, the proposed artillery battalion would not fire as frequently as the existing artillery battalion which supports the infantry school at Fort Benning (Caldwell, 1984). Thus, while there would be an increase in the frequency of noise generating activities by artillery operations, there should not be an increase in the peak noise levels from artillery operations.

4E.133 The ICUZ contours for Fort Benning indicate that existing armor and artillery operations produce a zone II contour extending off-post near the northeast boundary of Fort Benning. This zone II contour results predominantly from tanks and 500-pound bombs, not from artillery, and this would not be expected to be expanded by artillery operations under this alternative. Furthermore, no noise sensitive land uses are currently present within the zone. Thus, increased artillery operations under this alternative should not result in any significant adverse impacts.

REVISED 1984

4E.126 Both the light infantry brigade and the combat aviation brigade would be located within the existing Harmony Church cantonment area. Troops would live in the temporary World War II barracks in Harmony Church until new barracks could be constructed for them in Harmony Church, which would be late 1988 or 1989 at the earliest. Depending on the availability of barrack space in Harmony Church, it might be necessary to temporarily house some of the personnel in one barrack on the Main Post (Carmody, 1984). (Ten battalions of recruits previously utilized the barracks in Harmony Church. They are currently in the process of being moved to the Sand Hill area, as new barracks are constructed there. Barracks in Sand Hill currently house 6 of the 10 battalions, with additional barracks becoming available in 1987 and 1988. By 1992 at the latest, all recruits should be moved from Harmony Church to Sand Hill under current plans. This relocation of recruits is not related to this proposed stationing alternative.)

4E.127 Most additional construction would occur in the north end of Harmony Church, although there would be some construction at Lawson Army Airfield. Up to 1.2 million square feet of buildings, 3 to 5 miles of new roads (all within Harmony Church), and possibly some helipads and taxiways would be constructed. The land necessary for this construction is available and should not present any significant land use problems.

Noise

4E.128 Increases in noise levels, both off-post and on-post, as a result of this proposed stationing alternative cannot be determined until a training schedule has been established for both the light infantry brigade and the combat aviation briagde. Should the two brigades be stationed at Fort Benning, simulation modeling of noise effects would be conducted as part of the Army's on-going noise assessment program.

4E.129 The three major sources of noise at Fort Benning (i.e., aircraft operations, artillery operations, and vehicular traffic) would increase under this alternative.

4E.130 The number of rotary-wing aircraft would increase 200 percent, to 150 from the current 50. While there would be a 200 percent increase in the number of rotary-wing aircraft, it is estimated that the number of rotary-wing aircraft flights could increase by 300 percent. In addition, the number of Air Force flights (heavy aircraft) could increase by 5 to 10 percent; the number of rotary-wing aircraft flights at night could increase to between 25 and 50 per week from the current three (Cardin, 1984). For the 12-month period from April 1983 to March 1984, there were

SUPERSE
AUG 1

4E.134 There would be approximately a 23 percent increase in total military vehicles (tracked and wheeled), to 4,840 from the current 3,920. Private vehicles on-post could increase approximately 12 percent, (see Appendix H). This would result in an increase in the frequency of noise from vehicular operations. Also, noise levels on some access roads to the post, primarily Victory Drive, would likely increase (see Traffic and Transportation). However, the overall impact would be expected to be slight, given the existing noise level.

4E.135 No noise complaints were received by Fort Benning during 1983 and 1984 (Divinyi, 1984).

Air Quality

4E.136 Increases in air pollutant emissions would result from increases in space heating requirements, increases in military and private vehicles, and increased aircraft operations.

4E.137 Construction requirements could result in up to an additional 1.2 million square feet of space that needs to be heated or cooled. This would represent about a 6 percent increase over the existing 19.4 million square feet of space (Robert and Company, 1982a), and would be expected to produce a similar increase in pollutant emissions. The estimated 32 percent increase in aircraft operations, 23 percent increase in military vehicles, and 12 percent increase in private vehicles on-post (see Noise), would also be expected to produce proportionate increases in pollutant emissions.

4E.138 Based on the emissions data in Tables 3-4 and 3-5, the increase in emission sources could result in total air pollutant emissions from Fort Benning being increased annually on the order of 30 tons of particulates (17 percent), 50 tons of sulfur oxides (8 percent), 390 tons of carbon monoxide (20 percent), 30 tons of hydrocarbons (14 percent), and 100 tons of nitrogen oxides (11 percent).

4E.139 The increases in emissions from changes under this alternative would not be expected to have any significant impact on air quality in the four-county assessment area (Kemerick, 1984; Yeast, 1984).

Water Supply

4E.140 For the one-year period March 1983 through February 1984, average daily water demand was 7.3 mgd for Fort Benning, which is the same as the average daily demand for the six-year period July 1976 through September 1982 (Harland Bartholomew and

Associates, Inc., 1983). The peak daily demand during the one-year period was 13.0 mgd in August 1983. Based on the Fort Benning effective population of about 34,000 (see Table 3-3), the average per capita water demand is approximately 220 gpd and the peak per capita water demand is approximately 390 gpd.

4E.141 The present capacity of the water treatment plant is 18 mgd. Based on the current average per capita water consumption, the plant can support an effective population of 81,800 users. Based on the current peak per capita water consumption, the plant can support an effective population of 46,200 users.

4E.142 Under this alternative, the effective population of Fort Benning would be approximately 37,200 users. This would be well below the existing capacity, and there should be no adverse impact on the water supply.

Wastewater Disposal

4E.143 Fort Benning has two wastewater treatment plants. Plant 1 serves Harmony Church, Sand Hill, Kelley Hill, Fort Benning Mall, Martin Army Hospital, Custer Road Family Housing, Bouton Heights Family Housing, and the extreme northeast portion of the Main Post family housing area. This plant has a hydraulic capacity of 4.6 mgd. The average daily flow for Plant 1 during the one-year period from March 1983 through February 1984 was 2.2 mgd and the peak daily flow was 3.4 mgd. Assuming that 55 percent of the effective post population is served by Plant 1 and that the infiltration rate is 0.8 mgd (Harland Bartholomew and Associates, Inc., 1983), the average per capita flow is approximately 80 gpd for this period and the peak per capita flow is approximately 140 gpd.

4E.144 Plant 2 serves the Main Post and Lawson Army Airfield. This plant has a hydraulic capacity of 3.8 mgd. The average daily flow during the above one-year period was 2.3 mgd and the peak daily flow was 3.6 mgd. Assuming that 45 percent of the effective post population is served by Plant 2 and that the infiltration rate is 0.4 mgd (Harland Bartholomew and Associates, Inc., 1983), the average per capita flow is approximately 120 gpd for this period and the peak per capita flow is approximately 210 gpd. For Plants 1 and 2 combined, the average per capita flow is approximately 100 gpd and the peak flow is approximately 170 gpd.

4E.145 The two brigades included under this proposed stationing alternative are expected to be located in Harmony Church, the area served by Plant 1. Based on an infiltration rate of 0.8 mgd and the current average per capita flow of 80 gpd, Plant 1 can support an effective population of 47,500 users. Based on the infiltration

4E.134 There would be approximately a 13 percent increase in total military vehicles (tracked and wheeled), to 4,430 from the current 3,920. Private vehicles on-post could increase approximately 12 percent (see Energy and Fuels Analysis). This would result in an increase in the frequency of noise from vehicular operations. Also, noise levels on some access roads to the post, primarily Victory Drive, would likely increase (see Traffic and Transportation). However, the overall impact would be expected to be slight, given the existing noise level.

4E.135 No noise complaints were received by Fort Benning during 1983 and 1984 (Divinyi, 1984).

Air Quality

4E.136 Increases in air pollutant emissions would result from increases in space heating requirements, increases in military and private vehicles, and increased aircraft operations.

4E.137 Construction requirements could result in up to an additional 1.2 million square feet of space that needs to be heated or cooled. This would represent about a 6 percent increase over the existing 19.4 million square feet of space (Robert and Company, 1982a), and would be expected to produce a similar increase in pollutant emissions. The estimated 32 percent increase in aircraft operations, 13 percent increase in military vehicles, and 12 percent increase in private vehicles on-post (see Noise), would also be expected to produce proportionate increases in pollutant emissions.

4E.138 Based on the emissions data in Tables 3-4 and 3-5, the increase in emission sources could result in total air pollutant emissions from Fort Benning being increased annually on the order of 30 tons of particulates (17 percent), 50 tons of sulfur oxides (8 percent), 370 tons of carbon monoxide (19 percent), 30 tons of hydrocarbons (14 percent), and 90 tons of nitrogen oxides (10 percent).

4E.139 The increases in emissions from changes under this alternative would not be expected to have any significant impact on air quality in the four-county assessment area (Kemerick, 1984; Yeast, 1984).

Water Supply

4E.140 For the one-year period March 1983 through February 1984, average daily water demand was 7.3 mgd for Fort Benning, which is the same as the average daily demand for the six-year period July 1976 through September 1982 (Harland Bartholomew and

SUPERSEDED
AUG 1984

rate and the current peak per capita flow of 140 gpd, Plant 1 can support an effective population of over 27,100 users.

4E.146 Assuming 55 percent of the current effective post population is served by Plant 1, there is currently an effective population of 19,100 using the plant. Under this alternative, the effective population of Fort Benning would increase by almost 2,600 people. Thus, the effective population using Plant 1 would be about 21,700. This is well below the existing capacity, and there should be no adverse impacts on water treatment or to water quality under this alternative.

Solid and Hazardous Waste Disposal

4E.147 Fort Benning currently generates about 590,000 cubic yards of non-compacted refuse per year, with a per capita generation of 17.1 cubic yards per year. The new landfill has a projected life of 5.3 years.

4E.148 Based on an effective population of 37,200 at the end of FY 1989 under this alternative, solid waste generation would increase by almost 8 percent to 636,000 cubic yards of non-compacted refuse per year. Based on this increase, the life expectancy of the landfill would decrease approximately 0.5 years to a life expectancy of 4.8 years. However, since most of the population increase would not occur until 1986-1987, there would be little change in use of the landfill until that time and thus the life expectancy of the landfill would decrease by only about half this amount to 5.0 years.

4E.149 There would be an increase in the generation of hazardous wastes (primarily spent solvents, corrosive wastes, and waste explosives), waste oil, and infectious and pathological wastes. Based on a 14 percent increase in the military personnel at Fort Benning, a 23 percent increase in tracked and wheeled military vehicles, and a 32 percent increase in aircraft operations, it is estimated that generation of hazardous wastes could increase by up to 32 percent, generation of waste oil by 23 to 32 percent, and generation of infectious wastes by 14 percent. Under this assumption, hazardous waste generation would increase by up to one ton per year and waste oil generation could increase by 17,000 to 37,000 gallons per year. Management of these quantities of waste would not be expected to pose a significant threat to the environment.

Housing

4E.150 Fort Benning family housing units are presently at full occupancy and no additional units are expected to be constructed.

Thus, all additional family housing requirements under this alternative would have to be provided from the surrounding communities markets. Impacts from this are discussed under the Columbus, Georgia Region Housing Section.

4E.151 It is assumed under this alternative, that all 1,800 additional bachelor military personnel would be housed on-post, in Harmony Church. This would require the construction of barracks for 1,800 bachelor military personnel in the Harmony Church Cantonment area. However, such barracks could not be completed until late 1988 or 1989 at the earliest. Until such time as construction could be completed, bachelor military personnel would utilize the existing World War II temporary barracks in Harmony Church. If necessary, some of the personnel could temporarily be accommodated in a barrack on the Main Post (Carmody, 1984).

Schools

4E.152 No adverse impacts to Fort Benning schools would occur under this alternatave. Currently, only military dependents living on-post attend schools on Fort Benning. Since all additional family housing would be located off-post, no increase in the Fort Benning school enrollment would result from this alternative.

Health Care

4E.153 Under this alternative there would be an increase of 8,460 military personnel and dependents. There would be some health care impacts from the addition of this many people to the population served by Martin Army Community Hospital. Assuming sufficient additional medical staffing were provided, this number of people could be supported, but this would require major decisions on the utilization of space and referrals of patients to off-post providers (Thornton, 1984). Trailers and/or space in other buildings might have to be utilized for some health services. Additional funds would be required for additional referrals off-post.

4E.154 Areas where space problems currently exist consist of labor and delivery rooms, OB/GYN clinic (outpatient), orthopedic clinic (outpatient), orthopedic ward (inpatient), physical exam service (outpatient), and pediatric clinic (outpatient). The labor and delivery area could only handle an increased population of less than 6,000. Some labor and delivery patients would have to be sent to the community hospitals, where there is currently sufficient space to handle them. Space problems in the other areas could be managed through the use of trailers and/or the utilization of space in other buildings on-post. For example, the reception station might be used for physical exams (Thornton, 1984).

rate and the current peak per capita flow of 140 gpd, Plant 1 can support an effective population of over 27,100 users.

4E.146 Assuming 55 percent of the current effective post population is served by Plant 1, there is currently an effective population of 19,100 using the plant. Under this alternative, the effective population of Fort Benning would increase by almost 2,600 people. Thus, the effective population using Plant 1 would be about 21,700. This is well below the existing capacity, and there should be no adverse impacts on water treatment or to water quality under this alternative.

Solid and Hazardous Waste Disposal

4E.147 Fort Benning currently generates about 590,000 cubic yards of non-compacted refuse per year, with a per capita generation of 17.1 cubic yards per year. The new landfill has a projected life of 5.3 years.

4E.148 Based on an effective population of 37,200 at the end of FY 1989 under this alternative, solid waste generation would increase by almost 8 percent to 636,000 cubic yards of non-compacted refuse per year. Based on this increase, the life expectancy of the landfill would decrease approximately 0.5 years to a life expectancy of 4.8 years. However, since most of the population increase would not occur until 1986-1987, there would be little change in use of the landfill until that time and thus the life expectancy of the landfill would decrease by only about half this amount to 5.0 years.

4E.149 There would be an increase in the generation of hazardous wastes (primarily spent solvents, corrosive wastes, and waste explosives), waste oil, and infectious and pathological wastes. Based on a 14 percent increase in the military personnel at Fort Benning, a 13 percent increase in tracked and wheeled military vehicles, and a 32 percent increase in aircraft operations, it is estimated that generation of hazardous wastes could increase by up to 32 percent, generation of waste oil by 13 to 32 percent, and generation of infectious wastes by 14 percent. Under this assumption, hazardous waste generation would increase by up to one ton per year and waste oil generation could increase by 9,800 to 37,000 gallons per year. Management of these quantities of waste would not be expected to pose a significant threat to the environment.

Housing

4E.150 Fort Benning family housing units are presently at full occupancy and no additional units are expected to be constructed.

REVISED 1984

Public Safety

4E.155 This alternative would not likely result in any significant adverse impact on public safety. There would not be any significant changes in the demographic composition (age, education, income) of the traditional Fort Benning military population. Fort Benning has traditionally been the home of infantry units and surrounding communities have a well established infrastructure for accommodating a military community. Based on the crime statistics presented in Chapter 3, Affected Environment, there could be an annual increase (on-post plus off-post) of about 16 crimes of violence, 210 crimes against property, and 100 drug offenses. Each of these would represent about a 14 percent increase over the current situation.

4E.155a As described in Appendix M, most crimes committed by Army personnel in the continental United States are confined to the installation. Further, Army crime rates in general have been declining. Between 1980 and 1983 the most common offenses committed by Army personnel, those against property, declined by 26 percent. Marijuana use and possession, the second most common offense declined by 64 percent, while crimes of violence, ranking third dropped 42 percent (U.S. Army Office of the Deputy Chief of Staff for Personnel, 1984). Although Army crime rates are not directly comparable to national trends, more arrests per 1000 of U.S. males 18 to 22 years versus Army personnel were made for crimes against property, drug offenses and crimes of violence in 1982. In the event of troop stationing, the actual number of crimes could increase, yet as detailed in Appendix M most of the increase probably would be concentrated on post.

Traffic and Transportation

4E.156 There would be two sources of increased transportation and transportation-related impacts in the Fort Benning area. The additional military vehicles and personnel stationed at Fort Benning would result in an increase in on-post military transportation activities, and the private vehicles owned by the additional personnel would result in an increase in off-post transportation activity in the vicinity of Fort Benning.

4E.157 Military vehicles on-post would increase by about 13 percent. To the extent that they were used on the Main Post, there would be an increase in the existing traffic congestion. Their use elsewhere on-post should not result in any significant traffic impacts.

4E.158 There would be an additional 1,900 military personnel and 510 civilians living off-post and commuting to the post. Based on a vehicle occupancy ratio of 1.28 (Military Traffic Management Control,

1982), this would result in approximately 1,880 additional vehicles per day commuting to Fort Benning. This would be about a 17 percent increase in traffic commuting to Fort Benning.

4E.159 Since most of this additional traffic would be directed toward the Harmony Church area, there should be little impact on traffic congestion either off-post or on-post if Victory Drive, the most likely route, were to be used, since it is far from capacity. Assuming all the increase in commuter traffic occurred along Victory Drive, there could be a 15 percent increase in average daily traffic on Victory Drive west of Lindsey Creek Bypass and a 25 percent increase east of Lindsey Creek Bypass. However, if it were necessary to place some personnel in barracks on the Main Post, the existing traffic congestion on the access roads to the Main Post

itself would be increased (Armstrong, 1984). The existing "ridesharing" program could, however, reduce the potential for increases in traffic congestion.

4E.160 Increased transportation would have a minor impact on water quality in the area. Runoff from paved surfaces contains oil, grease, other hydrocarbons, and heavy metals, such as lead, released by vehicular exhausts. Data are not available to estimate the magnitude of any such increased releases or the potential for such pollutants to be carried into surface waters or ground water by runoff. However, based on over 150,000 registered vehicles in the four county area (see Energy and Fuels Analysis), any increase in such releases would be minor.

Cultural Resources

4E.161 Professional knowledge of the terrain and the prehistoric habitation patterns of the area, together with the knowledge derived from archaeological sites on the installation and in surrounding areas, indicates that archaeological sites are present on the installation. To date, over 10,000 acres have been surveyed on-post, and over 150 sites have been identified. (Mullen, 1984). The National Register Property, Riverside, is located on the post, as are other potentially significant structures. Fort Benning is considered to have a high potential for significant, as yet undiscovered, archaeological resources, and a potential exists for impact on significant cultural resources under this alternative.

4E.162 Although the exact location and nature of many possible cultural resources, particularly archeological resources, is unknown, the potential impacts of the proposed action can be generally discussed. Basically, any action which produces ground disturbances in any form would have a potential for disturbing an archeological resource, thereby destroying data. Construction of new buildings and facilities, and establishment of roads include such elements as excavation, grading, filling or stockpiling of materials. All of these elements have a potential for disturbance or destruction of archeological materials. Renovation of existing buildings or demolition can damage and destroy significant historic structures.

4E.163 Many training activities, including maneuvering of vehicles and digging of foxholes, cause ground disturbances that have a potential for damaging or destroying an archaeological resource. Establishment of new training areas or increases in land utilization frequency for training over current levels can increase the potential for impacts to undisturbed cultural resources.

4E.164 Considerations will be given to identifying potential cultural resources, as well as protecting those known to exist. Authority for these actions are found in Army Regulation AR-420-40, Facilities Engineering, Historic Preservation (April 15, 1984) effective 15 May 1984. The procedures for accomplishing these measures are detailed in the Army Technical Manual TM-5-801-1, Historic Preservation-Administrative Procedures and TM-5-801-2, Historic Preservation-Maintenance Procedures. In regard to the installation, the prime limitation would be to prohibit any destruction or alteration of all or part of any significant site through whatever measures are necessary (e.g., establishment of limited-use areas). It should be noted that it is always possible for studies to miss an archaeological site, particularly one which shows little or no surface evidence of its presence. Because of this, all construction contracts must allow for this possibility by specifying that, in the event that a suspected archaeological site is encountered during construction or some other form of activity, operations in the area would be suspended until the site is investigated by a professional archaeologist. This construction contract provision is required by 32 CFR 650.192, Department of the Army, Environmental Protection and Enhancement, Peacetime Responsibilities, Historic Preservation, Archaeological Sites (March 15, 1978). Similarly, training activities that involve the use of new areas or the increased use of areas presently used may uncover evidence of archaeological sites that was not uncovered by prior studies. Officers in charge of field activities should be made aware of this possibility and procedures should be established whereby the officer could inform the installation's Historic Preservation Committee of any finds so that the committee may take appropriate measures to avoid the accidental destruction of a site. Additionally, since the looting of sites by irresponsible persons can be a problem, security measures should be instituted to prevent destruction of archaeological data in this manner.

ENERGY AND FUELS ANALYSIS

4E.165 The anticipated changes in energy and fuel consumption at each of the forts involved in this alternative are summarized in Table 4E-5. The methodology for the derivation of these estimates is presented in Appendix H.

4E.166 Increased gasoline consumption for private vehicles owned by military personnel is based on 17,900 additional vehicles at the two forts, each driven an average of 9,026 miles per year with a mileage of 15.53 miles per gallon (Motor Vehicle Manufacturers Association, 1983). The resulting estimated increase in fuel consumption is 10 million gallons of gasoline per year.

TABLE 4E-5

INCREASED ENERGY REQUIREMENTS UNDER THE FORT DRUM-FORT BENNING STATIONING ALTERNATIVE I

	Fort Drum	Fort Benning
Personal Vehicles		
Increase, 10^9 Btu/yr	870	420
Percent[1]	734	14
Off-Post Housing		
Increase, 10^9 Btu/yr	320	660
Percent[1]	28	30
Military Vehicles		
Increase, 10^9 Btu/yr	810	510
Percent[1]	1,150	59
On-Post Usage		
Increase, 10^9 Btu/yr	2,900	320
Percent[1]	744	8
Total Energy Use		
Increase, 10^9 Btu/yr	3,700	830
Percent[1]	552	8
Total Annual Use, 10^9 Btu/yr	4,400	11,000
Energy Requirement per Troop 10^6 Btu/yr	508	382

[1]Percent Increase = Increased Energy Requirement x 100/Present Consumption.

SUPERSEDED
AUG 1984

This consumption is an increase of 1,300 billion Btu per year, or 43 percent more fuel than is presently being consumed in the private vehicles of military personnel at the forts. The estimated number of motor vehicles and corresponding gasoline consumption in the counties adjacent to Fort Drum are 92,600 vehicles consuming 11 trillion Btu per year. The implementation of this alternative would increase local gasoline consumption by 7 percent. The corresponding estimates for Fort Benning are 152,600 vehicles consuming 18 trillion Btu per year. The increase in local gasoline consumption near Fort Benning is 2 percent.

4E.167 The increase in energy consumption for off-post housing is based on an increase of 3,010 military personnel and dependents living off-post at Fort Drum and 6,500 living off-post at Fort Benning. The resulting fuel requirement of 320 billion Btu at Fort Drum represents a 1 percent increase in the present residential consumption of 24 trillion Btu in the counties adjacent to the installation. At Fort Benning, the resulting fuel requirement of 660 billion Btu represents a 3 percent increase in the present residential consumption of 26 trillion Btu in the counties adjacent to the installation.

4E.168 The increased requirement for on-post heating and associated energy usage is a linear extrapolation of the per capita on-post energy usage based on the effective population on-post as defined in TB ENG 354. The projected increase of 2,900 billion Btu per year at Fort Drum is 744 percent of the current energy usage. At Fort Benning, the projected increase of 320 billion Btu per year is 8 percent of the present energy usage. Assuming the relative proportions of fuels used at the installations remain unchanged, implementation of this alternative require the following additional amounts of fuels and energy:

	Fort Drum	Fort Benning
Coal, tons	8,350	0.23
Fuel Oil, million gallons	6.90	0.13
Natural Gas, million therms	0.03	0.13
Propane, gallons	703,000	91,600
Gasoline, million gallons	2.70	0.24
Diesel Fuel, million gallons	1.50	0.30
Aviation Fuel, million gallons	0.73	3.50
Electricity, TKWH	141,300	13,900

4E.169 The 1,200 additional vehicles at Fort Drum would use 276,000 gallons of gasoline and 475,000 gallons of diesel fuel. The 500 additional vehicles at Fort Benning would use 118,000 gallons of gasoline and 207,000 gallons of diesel fuel.

4E.170 The consumption of aviation fuel includes transport of the infantry and aviation brigade to Fort Drum once a year. The travel distance is 1,175 miles, requiring 134,000 gallons of JP-4. The number of additional helicopters at Fort Benning would be 100. Based on flight time of 300 hours per year and fuel consumption of 100 gallons per hour, the helicopters account for 3 million gallons of the increase in aviation fuel use at Fort Benning.

4E.171 The total additional energy requirements resulting from implementation of this alternative are 3.7 trillion Btu at Fort Drum and 0.8 trillion Btu at Fort Benning. These requirements are 552 percent of present energy consumption at Fort Drum and 8 percent of that at Fort Benning. The total fuel consumption per troop would change from 649 MBtu to 508 MBtu at Fort Drum, and from 405 MBtu to 382 MBtu at Fort Benning.

4E.172 Although there would be some impact on local energy use due to implementation of this alternative, the impact on national energy use would be negligible. Personnel of the light infantry division are to be drawn from existing Army units. Therefore, there would be a decrease in energy use in the localities where the troops are presently stationed approximately equal to the impacts described here. Similarly, many of the vehicles for the light infantry division are to be obtained from existing inventory. The only new vehicles to be added to the Army would be light trucks.

MITIGATING MEASURES

4E.173 Mitigating measures are defined as those actions that can be taken to lessen the adverse impacts resulting from implementation of the proposed action. Mitigating measures can be taken in anticipation of, concurrently with, or subsequent to the proposed action to minimize or offset undesirable impacts. Tables 4E-6 and 4E-7 describe generic mitigation measures available to the government. The measures described are potential only. No commitment is intended that these will be chosen at any specific installation. There are many variables influencing actual mitigation, including funding, timing, other Army actions, and specific environmental conditions found while the Army implements actions described here.

ADVERSE IMPACTS THAT CANNOT BE AVOIDED

4E.174 Some effects of the proposed stationing action cannot be mitigated. Those residual adverse impacts that cannot be avoided even after using the measures given in the Mitigating Measures tables are summarized in Table 4E-8.

This consumption is an increase of 1,300 billion Btu per year, or 43 percent more fuel than is presently being consumed in the private vehicles of military personnel at the forts. The estimated number of motor vehicles and corresponding gasoline consumption in the counties adjacent to Fort Drum are 92,600 vehicles consuming 11 trillion Btu per year. The implementation of this alternative would increase local gasoline consumption by 7 percent. The corresponding estimates for Fort Benning are 152,600 vehicles consuming 18 trillion Btu per year. The increase in local gasoline consumption near Fort Benning is 2 percent.

4E.167 The increase in energy consumption for off-post housing is based on an increase of 3,010 military personnel and dependents living off-post at Fort Drum and 6,660 living off-post at Fort Benning. The resulting fuel requirement of 320 billion Btu at Fort Drum represents a 1 percent increase in the present residential consumption of 24 trillion Btu in the counties adjacent to the installation. At Fort Benning, the resulting fuel requirement of 660 billion Btu represents a 3 percent increase in the present residential consumption of 26 trillion Btu in the counties adjacent to the installation.

4E.168 The increased requirement for on-post heating and associated energy usage is a linear extrapolation of the per capita on-post energy usage based on the effective population on-post as defined in TB ENG 354. The projected increase of 2,900 billion Btu per year at Fort Drum is 744 percent of the current energy usage. At Fort Benning, the projected increase of 320 billion Btu per year is 8 percent of the present energy usage. Assuming the relative proportions of fuels used at the installations remain unchanged, implementation of this alternative require the following additional amounts of fuels and energy:

	Fort Drum	Fort Benning
Coal, tons	8,350	0.23
Fuel Oil, million gallons	6.90	0.13
Natural Gas, million therms	0.03	0.13
Propane, gallons	703,000	91,600
Gasoline, million gallons	2.70	0.24
Diesel Fuel, million gallons	1.50	0.30
Aviation Fuel, million gallons	0.73	3.50
Electricity, MWH	141,300	13,900

4E.169 The 1,200 additional vehicles at Fort Drum would use 276,000 gallons of gasoline and 475,000 gallons of diesel fuel. The 500 additional vehicles at Fort Benning would use 118,000 gallons of gasoline and 207,000 gallons of diesel fuel.

TABLE 4E-6

SUMMARY OF MITIGATING MEASURES FOR REGIONAL EFFECTS OF THE FORT DRUM-FORT BENNING ALTERNATIVE I

Category	Fort Drum, New York	Fort Benning, Georgia
Biological Environment	Consider biological effects in selection of any off-post areas for construction activities (e.g., housing, commercial development).	Consider biological impacts in selection of any off-post areas for construction activities (e.g., housing, commercial development).
Demography	No feasible mitigating measures available.	No mitigating measures required because no significant impacts have been identified.
Land Use	Coordinated planning and regulation by local governments in region to minimize "sprawl" effects of rapid development.	No mitigating measures required because no significant impacts have been identified.
Noise	To the extent practical restrict, reschedule or relocate any on-post activities with a potential for regional noise conflict.	Re-evaluate Installation Compatible Use Noise Zone (ICUZ) contours with regard to proposed activities; to extent practical restrict, reschedule, or relocate any activities with a potential for noise conflict.
Regional Economic Activity	Institute advanced planning to allow local governments and private firms adequate time to plan for mitigation of any of any potentially adverse impacts.	Institute advanced planning to allow local governments adequate time to plan for any needed mitigation.
Air Quality	Applications for stationary source permits are subject to prevention of significant deterioration (PSD) review by NYSDEC.	No mitigating measures required because no significant impacts have been identified.
Water Supply	Regulation of private septic systems to avoid ground water contamination.	No mitigating measures required because no significant impacts have been identified.
Wastewater Disposal	Permits are subject to NYSDEC review for NPDES compliance.	Continue on-going design activities related to expansion of Columbus wastewater treatment plant. Continue study of need for expansion of Phenix City wastewater treatment plant.
Solid Waste Disposal	Implement plans being developed for area resource recovery incineration programs and facilities in Jefferson and St. Lawrence counties.	Implement the joint solid waste incineration - steam generation facility being contemplated for construction by Fort Benning and the city of Columbus, Georgia.
Housing	Would construct on-post housing to lessen demand on region. Alter schedule for stationing or construction to mitigate possible short-term housing shortage.	Any potential shortfall in housing would occur as a result of natural population growth unrelated to this alternative; on-going planning and construction activities in the area should alleviate any potential shortage; if necessary, additional family housing units could be constructed on post.
Schools	Would build elementary schools on post to mitigate pressure on region. Reassign junior and senior high students from overcroweded to underused schools districts in area. Alter schedule for stationing or construction to avoid potential short-term pressure on schools prior to school construction on post.	No mitigating measures required because no significant impacts have been identified.
Health Care	Make provisions for short-term health care services prior to hospital construction on post; or alter schedule for construction to allow for hospital completion on post prior to arrival of troops.	No mitigating measures required because no significant impacts have been identified.

TABLE 4E-7

SUMMARY OF MITIGATING MEASURES FOR ON-POST EFFECTS OF THE FORT DRUM-FORT BENNING STATIONING ALTERNATIVE 1

Category	Fort Drum, New York	Fort Benning, Georgia
Geology, Minerals and Soils	Institute land use planning in training areas to control erosion through measures such as land use rotation, revegetation, and location of maneuvering areas; continue current erosion control program.	Initiate land-use planning on training areas to control erosion through measures such as land use rotation, revegetation, and location of maneuvering areas; continue current erosion control measures such as check dams, water bars, and seeding; use applicable erosion control barriers and procedures in new construction areas.
Biological Environment Terrestrial Ecosystems	Continue implementation by Fort Drum Land Management Branch of its Natural Resources Management Program.	Update and continue to use Fort Benning Natural Resources Management Plan; employ stand-by crew of firefighters to handle likely increase in wildfires on post; extend current controlled burning season (December through March) to compensate for reduction in time available for controlled burning during this period due to increased utilization of woodlands for training activities use of erosion control methods discussed for land use.
Aquatic Ecosystems	Continue implementation by Fort Drum Land Management Branch of its Natural Resources Management Program.	No mitigating measures required because no significant impacts have been identified.
Threatened/Endangered Species	No mitigating measures required because no significant impacts. have been identified.	Continue current protection measures related to red-cockaded woodpecker on post; determine whether American alligator inhabits or could potentially inhabit post and implement any necessary protection procedures.
On-Post Population	After construction schedule or troop stationing to avoid short-term pressures and involuntary separation of military families.	No mitigating measures required because no significant impacts have been identified.
Land Use	Continue implementation by Fort Drum Land Management Branch of of its Natural Resources Management Program.	No mitigating measures required because no significant impacts have been identified.
Noise	Helicopter flights generally are restricted from cantonment and housing areas. Further mitigation is not possible without a change in mission.	Re-evaluate Installation Compatible Use Noise Zone (ICUZ) contours with regard to proposed activities; to extent practical restrict, reschedule, or relocate any activities with a potential for noise conflict.
Air Quality	New stationary facilities to have particulate controls and are subject to review by NYSDEC for PSD. Institute ridesharing program to decrease mobile source emissions.	Continue current energy conservation efforts and expand existing energy monitoring control system to additional buildings on post; expand solar pond capacity; increase use of existing "ridesharing" program.

TABLE 4E-7 (Concluded)

SUMMARY OF MITIGATING MEASURES FOR ON-POST EFFECTS OF THE FORT DRUM-FORT BENNING STATIONING ALTERNATIVE I

Category	Fort Drum, New York	Fort Benning, Georgia
Water Supply	Would need new wells to meet increased demand.	No mitigating measures required because no significant impacts have been identified.
Wastewater Disposal	New wastewater treatment plant would be built to adequate size, subject to NPDES permit and NYSDEC regulations.	No mitigating measures required because no significant impacts have been identified.
Solid and Hazardous Waste Disposal	Implement proposed cooperative effort with Jefferson County in development of resource recovery incineration facilities. Institute efforts to reduce the generation of solid wastes on post.	Continue on-going efforts to reduce generation of solid waste on post and to increase recycling of those solid wastes that are generated; continue on-going efforts to replace hazardous materials, such as specific hazardous solvents, with equivalent non-hazardous materials; implement the joint solid waste incineration-steam generation facility being contemplated for construction by Fort Benning and the city of Columbus, Georgia.
Housing	Would construct approximately 2,990 housing units on post to meet 90% of demand for those eligible; 928,000 ft^2 of new barracks space 135,000 ft of new BOQ.	Accelerate construction of additional bachelor quarters on post; construct additional family housing units on post if sufficient units were not available off post.
Schools	Would construct two elementary schools on post totaling approximately 70,400 ft^2 to meet increased demand.	No mitigating measures required because no significant impacts have been identified.
Health Care	Would construct a hospital on post totaling 77,400 ft^2, and a 14,500 ft^2 dental clinic to meet new demand for health services. Accelerate hospital construction schedule to mitigate short-term lack of health services.	Accelerate planned FY 1991 construction of administrative annex to Martin Army Community Hospital which would allow current facility to expand to 480 beds from the 355 beds currently available; provide additional staffing necessary for expansion of beds; provide additional supplemental funding for referral of patients to off-post providers; utilize trailers or space in other buildings on post to handle additinal patient load.
Public Safety	Increase MP and Judge Advocate staff to meet new demands.	No mitigating measures required because no significant impacts have been identified.
Traffic and Transportation	Implement recently completed "Traffic Engineering Planning Study" to reduce peak loads. Undertake survey of new traffic patterns following proposed stationing. Implement staggered work hours, encourage car pools.	Increase use of existing "ridesharing" program; accelerate the implementation of the recommendations made by the Military Traffic Management Command with regard to improving traffic circulation on post and off post.
Cultural Resources	Consideration of potential cultural resources, including, if necessary, identification and evaluation. Protection of significant cultural resources.	Complete and implement Cultural Resources Management Plan; accelerate on-going cultural and historical surveys of Fort Benning. Consideration of potential cultural resources, including, if necessary, identification and evaluation. Protection of significant cultural resources.

TABLE 4E-8

SUMMARY OF ADVERSE IMPACTS THAT CANNOT BE AVOIDED UNDER THE FORT DRUM-FORT BENNING STATIONING ALTERNATIVE I

Category	Fort Drum and Surrounding Region	Fort Benning and Surrounding Region
Geology, Minerals and Soils	Increased erosion because of construction and increased troop days in field.	Disturbance to soils, both on-post and off-post, would occur as a result of construction; increased potential for soil erosion as a result of construction activities and 16 percent increase in frequency of utilization of existing training areas on-post.
Biological Environment	Over 300 acres or wildlife habitat lost to construction on-post. Increased frequency of wildfires on-post due to increases in training activity.	Small loss of habitat due to any off-post construction; slight increase in habitat disturbance due to 16 percent increase in utilization of maneuvering/training areas; potential for decline in wild turkey population on-post (not an endangered or threatened species); increase in frequency of wildfires on-post due to increases in training.
Demography	None.	None.
Land Use	None.	Sixteen percent increase in utilization of maneuvering/training areas would correspondingly reduce the time the area was available for other uses (e.g., recreation, controlled burning). Columbus approach control may have to expand operations to 24-hours per day.
Noise	Increased frequency of training activity would increase noise incidents.	Slight increase in frequency of activities that generate noise.
Air Quality	Emissions during construction, and increased long-term emission due to more automobiles, power plants.	Slight increase in the emission of air pollutants; this would not cause any air quality standards to be violated.
Water Supply	None.	None.
Wastewater Disposal	Increased effluent discharge to Black River.	None.
Solid and Hazardous Waste Disposal	None.	Very slight decrease in life of existing landfills.
Housing	None.	None.

SUPERSEDED AUG 1984

TABLE 4E-8

SUMMARY OF ADVERSE IMPACTS THAT CANNOT BE AVOIDED UNDER THE FORT DRUM-FORT BENNING STATIONING ALTERNATIVE I

Category	Fort Drum and Surrounding Region	Fort Benning and Surrounding Region
Geology, Minerals and Soils	Increased erosion because of construction and increased troop days in field.	Disturbance to soils, both on-post and off-post, would occur as a result of construction; increased potential for soil erosion as a result of construction activities and 16 percent increase in frequency of utilization of existing training areas on-post.
Biological Environment	Over 350 acres of wildlife habitat lost to construction on-post. Increased frequency of wildfires on-post due to increases in training activity.	Small loss of habitat due to any off-post construction; slight increase in habitat disturbance due to 16 percent increase in utilization of maneuvering/training areas; potential for decline in wild turkey population on-post (not an endangered or threatened species); increase in frequency of wildfires on-post due to increases in training.
Demography	None.	None.
Land Use	None.	Sixteen percent increase over current utilization of maneuvering/training areas would correspondingly reduce the time the area was available for other uses (e.g., recreation, controlled burning). Columbus approach control may have to expand operations to 24-hours per day.
Noise	Increased frequency of training activity would increase noise incidents.	Slight increase in frequency of activities that generate noise.
Air Quality	Emissions during construction, and increased long-term emission due to more automobiles, power plants.	Slight increase in the emission of air pollutants; this would not cause any air quality standards to be violated.
Water Supply	None.	None.
Wastewater Disposal	Increased effluent discharge to Black River.	None.
Solid and Hazardous Waste Disposal	None.	Very slight decrease in life of existing landfills.
Housing	None.	None.

REVISED 1984

TABLE 4E-8 (concluded)

SUMMARY OF ADVERSE IMPACTS THAT CANNOT BE AVOIDED UNDER THE FORT DRUM-FORT BENNING STATIONING ALTERNATIVE I

Category	Fort Drum and Surrounding Region	Fort Benning and Surrounding Region
Schools	None.	None
Health Care	None.	None.
Public Safety	None.	None.
Traffic and Transportation	None.	Additional traffic at peak periods.
Cultural Resources	Potential loss or disturbance of signifant cultural resources.	Potential loss or disturbance of significant cultural resources.
Relationship Between Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity	Disturbance of vegetation, wildlife and habitat as a result of construction and increased training activities. Increases in air emissions, however, air quality standards would not be violated. Soil loss due to increased potential for erosion.	Disturbance of vegetation, wildlife and habitat as a result of construction and increased training activities. Increases inn air emissions, however, air quality standards would not be violated. Soil loss due to increased potential for erosion.
Irreversible and Irretrievable Commitment of Resources	Some materials and fuels used for construction would be irretrievably lost. Also, capital used for construction would be lost to other uses. Increased erosion would lead to loss of soils. Archaeological sites could be accidentally lost or damaged through construction or training activities. Rural quality could be affected in those communities with increased population.	Some materials and fuels used for construction irretrievably lost. Also, capital used for construction would be lost to other uses. Increased erosion would lead to loss of soils. Archaeological sites could be accidentally lost or damaged through construction or training activities.

CHAPTER 4F

ENVIRONMENTAL CONSEQUENCES OF THE FORT DRUM, NEW YORK - FORT BENNING, GEORGIA STATIONING ALTERNATIVE II

INTRODUCTION

4F.1 Under this stationing alternative, the new light infantry division would be split among two installations. The division minus one infantry brigade would be stationed at Fort Drum, New York along with some support elements. The remaining infantry brigade plus support elements would be stationed at Fort Benning, Georgia. Civilian employees would also be added at each installation to support the new troops.

4F.2 Stationing the new light division troops at Fort Drum would begin in Fiscal Year 1984 (FY 84) and be completed in FY 87. Most of the troops would arrive during FY 85, FY 86, and FY 87. Stationing of the infantry brigade at Fort Benning would take place during FY 86 and FY 87. A ranger regiment of 700 military personnel is being stationed at Fort Benning in FY 84, an action not associated with the proposed stationing of the infantry brigade. The personnel in the ranger regiment are included in the Fort Benning baseline.

4F.3 Net changes in military and civilian personnel associated with the Fort Drum-Fort Benning alternative are shown in Table 4F-1. At Fort Drum there would be a net increase of 8,960 military and 11,200 dependents for a total increase of 20,160. On-post civilian employment would increase by 1,420. At Fort Benning there would be a net increase of 2,450 military and 3,100 dependents for a total increase of 5,550. On-post civilian employment would increase by 430. At Fort Drum there probably would be a reduction in the peak number of Reserve and National Guard trainees present at one time from the present 10,000 to 11,000 to approximately 7,000 to 7,500.

4F.4 To accommodate the increased population at Fort Drum, the Army would construct a large number of new housing, office, support, and utility facilities, and would extensively rehabilitate others. There would be some construction of facilities to accommodate the new light infantry brigade at Fort Benning (Appendix K).

4F.5 Table 4F-2 summarizes the regional environmental and secondary socioeconomic consequences of this proposed stationing alternative. Table 4F-3 summarizes the on-post environmental and secondary socioeconomic consequences.

TABLE 4F-1
CHANGES IN MILITARY AND CIVILIAN PERSONNEL FOR
THE FORT DRUM - FORT BENNING ALTERNATIVE II

Category	Baseline	FY 1984 Strength	FY 1984 Change	FY 1985 Strength	FY 1985 Change	FY 1986 Strength	FY 1986 Change	FY 1987 Strength	FY 1987 Change	FY 1988 Strength	FY 1988 Change	FY 1989 Strength	FY 1989 Change	Total Change
FORT DRUM														
Officers	100	120	20	370	250	580	210	1070	490	1070	0	1070	0	970
Enlisted	930	980	50	2330	1350	3030	2700	8920	3890	8920	0	8920	0	7990
Total military	1030	1100	70	2700	1600	3610	2910	9990	4370	9990	0	9990	0	8960
Civilian employees	920	960	40	1430	470	1780	350	2200	410	2200	0	2200	0	1280
Total installation	1950	2060	110	4130	2070	7390	3270	12180	4790	12180	0	12180	0	10230
Families	810	850	40	1370	820	2800	1430	4990	2190	4990	0	4990	0	4480
Dependents	1280	1380	100	3430	2050	7000	3570	12480	5480	12480	0	12480	0	11200
School-aged dependents of military	460	500	40	1240	740	2520	1280	4490	1970	4490	0	4490	0	4030
FORT BENNING														
Officers	2730	2740	10	2830	100	3030	200	3030	0	3030	0	3040	10	310
Enlisted	22930	22440	-490	22830	390	25040	2210	24950	-90	24930	-20	25070	140	2140
Total military	25660	25180	-480	25670	490	28070	2400	27980	-90	27960	-20	28110	150	2450
Civilian employees	7770	7780	10	8070	290	8170	110	8190	20	8200	0	8200	0	430
Total installation	33430	32960	-470	33730	770	36240	2510	36170	-70	36150	-20	36300	150	2880
Families	10010	9780	-220	10040	260	11220	1180	11180	-40	11170	-10	11250	70	1240
Dependents	26470	25910	-560	26550	640	29510	2960	29400	-110	29380	-20	29560	190	3100
School-aged dependents of military	6430	6230	-200	6460	230	7530	1070	7490	-40	7480	-10	7550	70	1120

Note: Strength = authorized positions at end of fiscal year
Change = personnel change during fiscal year
Numbers may not add exactly because of rounding
Families and Dependents are for military personnel only

TABLE 4F-2

SUMMARY OF THE REGIONAL ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE FORT DRUM-FORT BENNING STATIONING ALTERNATIVE II

Category	Fort Drum, New York	Fort Benning, Georgia
Biological Environment	Some habitat lost to new residential and commercial construction activities in the area.	Some disturbance of vegetation, wildlife and habitat due to residential and commercial construction activities.
Demography	A population increase of 8,960 military personnel and an estimated 11,200 dependents would occur over the FY 84 to FY 87 period. This would result in a 9 percent population increase in tri-county area.	Two percent increase over current and projected 1990 population levels.
Land Use	Residential and commercial development would occur in the region in response to the increase in military and dependents. Housing demand would increase by a minimum of 1,030 units. Potential for commercial "strip" development given lack of of development regulation in many areas.	No significant impacts.
Noise	Average noise levels would increase due to more frequent activities but peak energy levels would not.	Increases in aircraft and artillery operations and vehicular traffic unlikley to cause any significant impact.
Regional Economic Activity	Increases in total business volume, personal income, and local employment would be slightly below those projected for a full division stationing at Fort Drum. The potential problems of rapid development would still be of concern.	Increases in total business volume and personal income would be within changes historically experienced by region.
Air Quality	The number of mobile and stationary sources in the region would increase, but this should not have a significant impact on regional air quality.	Very slight increase in air pollutant emissions would not cause any air quality standards to be violated.
Water Supply	Abundant supply but municipal distribution systems may be inadequate for new demand if the majority of development takes place in areas with public water systems.	Sufficient water available to handle population increases due to the stationing alternative as well as natural population growth.
Wastewater Disposal	Existing municipal systems not sized for expansion; taxes and/or user fees would increase for new development; increased numbers of private (septic) wastewater management systems could impact on ground-water quality.	Sufficient wastewater treatment capacity to absorb population increases, especially with ongoing expansion activities. Number of septic tanks might increase depending on where people choose to live.
Solid Waste Disposal	Increased demand on regional landfills would further aggravate existing problems. Highly permeable soil in the region makes makes suitable landfill sites difficult to find. Counties are considering energy-recovery incineration facilities.	Very slight decrease in life of existing landfill would pose no significant impacts.
Housing	Minimum of over 1,000 military families requiring housing, demand will have to be met by new construction since existing adequate housing is not sufficient. Short-term pressure could be much greater since on-post construction would not be completed until at least 2 years after all troops are on post. This would result in either involuntary separation of military	Current surplus of housing in the region could readily absorb population growth resulting from the stationing alternative. Housing demand due to natural population growth by 1990 could necessitate additional units. The housing market in the region should readily adjust to the increased demand.

TABLE 4F-2 (concluded)

SUMMARY OF THE REGIONAL ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE FORT DRUM-FORT BENNING STATIONING ALTERNATIVE II

Category	Fort Drum, New York	Fort Benning, Georgia
Schools	Potentially serious short-term impact if families arrive with soldiers prior to new school construction. On-post construction of 2 elementary schools would meet new demand. 2,015 junior and senior high school students would attend area schools. Capacity is available, although some shifting of student population to underused schools may be required.	Addition of 1,120 pupils to regional school systems could be readily absorbed by the excess 9,730 student spaces available in the region.
Health Care	Significant short-term impacts since stationing is scheduled for completion prior to hospital construction on post. Post hospital, when operational, could drain regional supply of medical support staff from local hospitals.	Slight increase in off-post referrals to regional health services would pose no significant impacts.
Cultural Resources	Potential for disturbance or destruction of cultural resources by private residential-commercial development.	Potential for disturbance or destruction of cultural resources by private residential-commercial development.
Energy and Fuels	2% increase in residential fuel use. 9% increase in gasoline consumption.	2% increase in residential fuel use. 2% increase in gasoline consumption.

TABLE 4F-3

SUMMARY OF THE ON-POST ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE FORT DRUM-FORT BENNING STATIONING ALTERNATIVE II

Category	Fort Drum	Fort Benning
Geology, Minerals and Soils	Increased erosion in poorly protected regions due to construction and increased training activities increased quarrying of rock and gravel.	Increase in potential loss of soil due to increased erosion-inducing activities.
Biological Environment	Loss of 230 acres of wildlife habitat to construction; increased pressure on wildlife due to year-round and nighttime activities.	Some disturbance of vegetation, wildlife and habitat due to construction and increase in training. Potential for disturbances to wild turkey population due to increases in noise and other activities. Potential for increase in number of wildfires.
On-Post Population	Permanent workforce increase of more than six-fold from 1,950 to 12,400 military and civilian employees. Number of family housing units on-post increases almost 10-fold from 350 to 3,453.	Military strength at Fort Benning would increase 2,450, or 10 percent of current levels. Civilian personnel increases would be 430, or 6 percent over current levels. On-post population would increase by 1,210, or 4 percent, over current levels.
Land Use	230 acres undeveloped land used for housing, 120 acres paved for new roads, runways, etc. Reduced lumbering activity.	No additional land required for training. Four percent increase in frequency of land utilization for training activities. Small amount of land used for construction at existing developed areas.
Noise	Continuation of existing noise patterns. Increase average noise levels due to increased frequency of aircraft operations and training activities.	Increases in aircraft and artillery operations and vehicular traffic unlikely to cause any significant noise impacts.
Air Quality	The number of mobile and stationary sources would increase on post, including a new 120 MBtu heating facility. These increases however should not adversely affect the good air quality of the post.	Slight increase in emissions of air pollutants would not cause any air quality standards to be violated.
Water Supply	Demand for water would be approximately 4.1 mgd, which is 8 percent more than existing capacity.	Sufficient water treatment capacity to handle increase in population at Fort Benning with no significant impact.
Wastewater Disposal	Total treatment capacity of 2.9 mgd would be required. Present primary treatment capacity is adequate but secondary treatment capacity would need to be expanded to meet this demand.	Sufficient wastewater treatment capacity to handle increase in population. No significant impacts to water quality likely.

TABLE 4F-3 (concluded)

SUMMARY OF THE ON-POST ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE FORT DRUM-FORT BENNING STATIONING ALTERNATIVE II

Category	Fort Drum	Fort Benning
Solid and Hazardous Waste Disposal	Current landfill permit expires in December 1985. New site or alternative disposal method is required.	Solid waste generation could increase by about five percent and would decrease the life expectancy of the landfill by less than 0.2 years. Management of increased quantities of other wastes would not cause any significant impact.
Housing	Construction of 3,453 housing units on-post, almost 10 times the number of existing units, construction of 1.1 million square feet of new barracks space.	Four percent increase in number of personnel living on-post would require construction of bachelor housing units.
Schools	Construction of two elementary schools on-post to meet increased demand by 4,030 school age children.	No additional students would attend schools on-post under this alternative.
Health Care	Construction of hospital totalling 86,650 ft.^{2} and dental clinic (16,361 ft.^{2}) on post; addition of 200 medical staff	The additional number of military personnel and dependents could be handled with some additional staffing.
Public Safety	Increased incidents due to significant population growth, increased problems in handling offenders not subject to the Uniform Code of Military Justice in areas of the post not covered by concurrent jurisdiction.	No significant changes in the demographic composition of the Fort Benning population.
Traffic and Transportation	Number of personal vehicles of the workforce living off-post would almost double. Increased traffic flow and congestion on Nash and First Street West in afternoon and on Black River Road	Eighteen percent increase in military vehicles on-post and 11 percent increase in vehicles commuting to Fort Benning. This traffic is not expected to have significant impacts on the roads likely to be utilized.
Cultural Resources	Potential for disturbance or destruction of cultural resources by increased training and new construction.	Potential for disturbance or destruction of cultural resources by increased activities and new construction.
Energy and Fuels	886% increase in on-post energy consumption requires expansion of energy services and fuel storage capacity. 1,600% increase in military vehicle fuel consumption.	5% increase in on-post energy usage can be accommodated without major construction. 9% increase in military vehicle fuel consumption.

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TABLE 4F-3 (concluded)

SUMMARY OF THE ON-POST ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE FORT DRUM-FORT BENNING STATIONING ALTERNATIVE II

Category	Fort Drum	Fort Benning
Solid and Hazardous Waste Disposal	Current landfill permit expires in December 1985. New site or alternative disposal method is required.	Solid waste generation could increase by about five percent and would decrease the life expectancy of the landfill by less than 0.2 years. Management of increased quantities of other wastes would not cause any significant impact.
Housing	Construction of 3,453 housing units on-post, almost 10 times the number of existing units, construction of 1.1 million square feet of new barracks space.	Four percent increase in number of personnel living on-post would require construction of bachelor housing units.
Schools	Construction of two elementary schools on-post to meet increased demand by 4,030 school age children.	No additional students would attend schools on-post under this alternative.
Health Care	Construction of hospital totalling 86,650 ft.^{2} and dental clinic (16,361 ft.^{2}) on post; addition of 520 medical staff	The additional number of military personnel and dependents could be handled with some additional staffing.
Public Safety	Increased incidents due to significant population growth, increased problems in handling offenders not subject to the Uniform Code of Military Justice in areas of the post not covered by concurrent jurisdiction.	No significant changes in the demographic composition of the Fort Benning population.
Traffic and Transportation	Number of personal vehicles of the workforce living off-post would almost double. Increased traffic flow and congestion on Nash and First Street West in afternoon and on Black River Road	Eighteen percent increase in military vehicles on-post and 11 percent increase in vehicles commuting to Fort Benning. This traffic is not expected to have significant impacts on the roads likely to be utilized.
Cultural Resources	Potential for disturbance or destruction of cultural resources by increased training and new construction.	Potential for disturbance or destruction of cultural resources by increased activities and new construction.
Energy and Fuels	886% increase in on-post energy consumption requires expansion of energy services and fuel storage capacity. 1,600% increase in military vehicle fuel consumption.	5% increase in on-post energy usage can be accommodated without major construction. 9% increase in military vehicle fuel consumption.

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FORT DRUM AND THE EASTERN LAKE ONTARIO - ST. LAWRENCE, NEW YORK REGION

4F.6 The environmental consequences of this stationing alternative at Fort Drum are the same as those described in Chapter 4D for the Fort Drum - Fort Campbell stationing alternative.

FORT BENNING AND THE COLUMBUS, GEORGIA REGION

4F.7 Under this proposed stationing alternative, a light infantry brigade would be stationed at Fort Benning. The brigade would consist of 2,570 personnel, including 200 officers and warrant officers and 2,370 enlisted personnel.

4F.8 Table 4F-1 indicates the total number of military personnel and civilian employees estimated to be at Fort Benning under this proposed stationing alternative for FY 1984 through FY 1989, by year. The table also indicates the cumulative increase in military personnel and civilian employees by year. The personnel numbers in Table 4F-1 include all currently planned changes through FY 1989 in addition to the proposed alternative.

4F.9 There would be almost 28,110 military personnel and 8,200 civilian employees at Fort Benning at the end of FY 1989. This is a net increase of nearly 2,450 military personnel (10 percent) and 430 civilian employees (6 percent) compared to the March 31, 1984 baseline. It should be noted that almost 95 percent of the increase in military personnel and all of the increase in civilian employees would occur by the end of FY 1987.

4F.10 There would also be approximately 29,570 military dependents at the end of FY 1989, a net increase of about 3,100 (12 percent) compared to the baseline. The number of dependents is calculated based upon the Army-wide average of 75 percent of officers and 47 percent of enlisted personnel being married, with each married troop having 2.5 dependents.

4F.11 Since no additional family housing is to be constructed at Fort Benning and since the existing family housing is at capacity (Carmody, 1984; Hankins, 1984), it is assumed for analysis purposes that all of the additional 1,240 military families associated with this alternative would live off-post in the Columbus, Georgia region. On-post housing would be provided for all bachelor military personnel. Thus, there would be an estimated increase of 1,240 military personnel and 3,100 dependents living off-post in the region. There would also be an estimated increase of 1,210 bachelor military personnel living on-post at Fort Benning.

4F.12 It is assumed that all of the additional 430 civilian employees would come from the Columbus, Georgia region and thus would not pose an additional burden on the region's infrastructure. The increase in civilian employees represents less than 0.5 percent of the 96,700 people in the 1980 civilian labor force for the four county Columbus, Georgia region; 9.0 percent of the labor force was unemployed in 1980 (U.S. Department of Commerce, 1982a and 1982c).

4F.13 Tables 4F-2 and 4F-3 summarize the impacts that would occur as a result of this proposed stationing alternative. Specific impacts are discussed below.

Columbus, Georgia Region

4F.14 As discussed under the Affected Environment in Chapter 3, off-post impacts are assessed for the following four-county assessment area: Chattahoochee, Harris and Muscogee Counties, Georgia and Russell County, Alabama. For purposes of assessing regional economic impacts only, the following seven additional counties are considered as indicated in Chapter 3: Marion, Stewart, Talbot, and Webster Counties, Georgia and Barbour, Lee, and Macon Counties, Alabama (see Figure 3-4).

4F.15 Under this alternative, it is estimated that at the end of FY 1989 there would be an increase of 1,240 military personnel and 3,100 military dependents living off-post in the four-county assessment area. This is a total increase of 4,340 persons living off-post. It should be noted that almost 95 percent of this increase would occur by the end of FY 1987. As previously indicated, it is assumed that there would be no increase in civilian residents in the region as a result of this alternative.

4F.16 For reasons discussed under the Fort Benning Land Use section, there would not be any requirement for off-post land acquisition or leasing by Fort Benning as a result of this alternative.

4F.17 Specific impacts in the Columbus, Georgia region related to the changes under this alternative are discussed in the following sections.

Biological Environment

4F.18 No significant biological impacts are anticipated in the four-county assessment area under this alternative. As discussed in the Land Use and Housing Sections, some additional land would be required for housing and commercial development in the four-county area. This would lead to the loss of some habitat, along with the

loss of some wildlife and vegetation. However, since the total population increase would be about 2 percent of current levels and since less than 11 percent of the 1.0 million acres in the four-county area is commercial/residential/developed land, any such losses would not be expected to have a significant impact on the biological environment of the area.

4F.19 Wildlife populations off-post in the four-county area would not be significantly impacted by on-post activities at Fort Benning. As discussed elsewhere in this chapter (e.g., see Air Quality), on-post activities would not result in any significant changes to air quality or water quality, either on-post or off-post, or in off-post levels.

Demography

4F.20 The population of the four-county assessment area was 254,660 in 1980 and is projected, as indicated in Chapter 3, to increase to 278,000 by 1990. Total population increases under this alternative would be approximately 5,550 military personnel and dependents (see Table 4F-1), or about 2 percent of both current population levels and the projected 1990 levels. The largest one-year population increase, 5,360 people, would occur during FY 1986. Under this alternative, the off-post population would increase by about 4,340 military personnel and dependents, or less than 2 percent of 1980 and 1990 population levels.

Land Use

4F.21 Adequate housing is currently available for the additional 1,240 military families who would be living off-post. However, new construction might be necessary to house both these additional military families who would arrive under this alternative plus the increased population projected to be in the area by 1990 even without the proposed alternative (see Housing). Commercial land use changes should be relatively small since the total increase in population under this alternative (both off-post and on-post) is about 5,550 persons. This would be about a 2 percent increase in the population of the four-county assessment area.

4F.22 The City of Columbus has long considered a troop strength of 30,000 at Fort Benning for its long-range land use planning (Columbus Department of Community Development, 1977). Thus, the troop strength of 28,110 under this alternative should not cause any significant land use planning changes.

SUPERSED :
AUG 1984

Noise

4F.23 As discussed under the Fort Benning Noise Section, off-post noise impacts resulting from this alternative would be relatively minor. Some increase in the noise level due to increased vehicular traffic would be produced on the access roads to the installation, predominantly Victory Drive (U.S. Highway 27). There could be up to a 10 percent increase in average daily traffic off-post on Victory Drive, west of Lindsey Creek Bypass (see Fort Benning Traffic and Transportation). The overall impact would be slight given the existing noise level.

4F.24 Increased aircraft operations could potentially increase noise levels off-post to the southwest of Lawson Army Airfield (see Fort Benning Noise); however, the area likely to be affected by this, if it were to occur, contains woodlands. Thus, there should not be any conflict with noise sensitive land uses.

4F.25 Increased artillery operations under this alternative would not be likely to increase peak noise levels off-post; however, the frequency of occurrence of noise generating activities would increase. The area likely to be affected by this is located near the northeast boundary of Fort Benning (see Fort Benning Noise). The area does not contain any noise sensitive land uses, and thus there should not be any significant impact.

Regional Economic Activity

4F.26 The impact of this proposed stationing alternative on the level of economic activity in the 11 counties around Fort Benning is assessed in this section. The impacts of both the change in the level of military activity at the installation and of the construction that would be required by the stationing action have been assessed. The description of the region that would be affected under this alternative appears in Chapter 3, Fort Benning, Georgia and Surrounding Region, Regional Economic Activity.

4F.27 The proposed stationing alternative would have a direct effect upon the 11 county regional economy through a net increase in on-post military and civilian employment of 2,880, construction activity to support this increase totalling $112 million and an annual increase in purchases by the installation of $1.5 million in regionally supplied goods and services. Additional economic benefits would accrue to the region through indirect economic activity resulting from multiplier effects.

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It is likely that some of the civilian jobs created as a result of the stationing activity could be filled be spouses of incoming military personnel. As described in Appendix L about 36 percent of the spouses of Army enlisted men and 35 percent of Army officer spouses are members of the civilian workforce (Doering and Hutzler, 1982).

4F.28 The Economic Impact Forecast System (EIFS) has been used to estimate changes in total business volume and personal income within the region. (A brief explanation of the EIFS model is presented in Appendix I). Model outputs for these parameters associated with mission change and construction resulting from the proposed stationing alternative are displayed in Table 4F-4. (A printout of the EIFS model inputs and outputs are presented in Appendix C). Model outputs for mission change are expressed as permanent increases which would reoccur on an annual basis over the life of the proposed stationing alternative. Outputs associated with construction are the highest estimated values which would occur for the parameters in a single year over an expected three year construction period (FY86-FY88).

4F.29 Interpretation of changes in these parameters is possible through comparison of the percent change values associated with each parameter and the rational threshold value (RTV). The percent change in value is that fraction of the regional total for a parameter that is attributable to the proposed stationing alternative. The RTV is the maximum historical percentage fluctuation from yearly average change rates for each parameter within the region. Percent change values which approach or exceed RTV values for one or more parameters may be considered as indicators of potential regional stress equal to or greater than that experienced over the period for which the RTV has been calculated (1965-1978).

4F.30 Comparison of the percent change and RTV values in Table 4F-4 shows that the increases in total business volume, local personal income, and employee equivalent numbers are all less than the corresponding positive RTV's.

Air Quality

4F.31 As discussed in the Fort Benning Air Emissions Section, the increase in emissions from Fort Benning under this alternative would not be expected to have any significant impact on air quality in the four-county assessment areas. Furthermore, the additional 4,340 military personnel and dependents who would be living off-post would represent less than a 2 percent increase in population for the area. Thus, their activities would not be expected to have any significant impact on air quality in the area.

Water Supply

4F.32 Average domestic per capita water consumption in the area is estimated to be approximately 150 gallons per day. Peak per capita consumption is estimated to be approximately 250 gallons per

TABLE 4F-4

ECONOMIC EFFECT OF THE PROPOSED STATIONING ALTERNATIVE ON THE COLUMBUS, GEORGIA REGION[a]

Category	Highest One-Time Annual Change Due to Construction		Recurring Annual Change Due to Proposed Stationing		Rational Threshold Value	
	Amount of Change	Percent Change	Amount of Change	Percent Change	Negative	Positive
Total business volume	$25,702,000	+0.6	$76,865,000	+1.9	-7.1	5.6
Local personal income	$ 9,448,000	+0.3	$86,728,000	+2.8	-5.4	3.7
Employee equivalent[b]	610	+0.04	4,066	+2.6	-6.0	4.8

[a]All changes in 1984 dollars.

[b]Added personal income is equivalent to the average annual salaries of the number of persons shown.

day based on the ratio of peak consumption to average consumption in Table 3-2 (Gaylor, 1984; Tant, 1984).

4F.33 Based on these per capita consumption figures, the 4,340 additional people living off-post under this alternative would consume between 0.6 and 1.1 mgd of water. Based on the existing water supply in the four-county assessment area (see Table 3-2), this requirement would be well below the current excess capacity and should pose no significant impacts. For example, the Columbus water treatment plant alone has excess capacity of 25 mgd for average consumption periods and 6 mgd for peak consumption periods, while the Phenix City plant has excess capacities of 12 mgd and 9.4 mgd, respectively.

4F.34 There would also be sufficient water to handle the projected increase in population in the area that is expected to occur by 1990, independent of this alternative. The projected increased population of 23,300 would require between 3.5 and 5.8 mgd of water. The excess capacity in the area is more than adequate to handle this additional requirement plus that of the stationing action.

4F.35 As indicated in Chapter 3, there are no designated sole source aquifers in the area.

Wastewater Disposal

4F.36 Average domestic per capita wastewater treatment flow in the area is approximately 100 gallons per day. Peak domestic per capita flow is estimated to be about 170 gallons per day based on the ratio of peak flow to average flow (Gaylor, 1984; Tant, 1984).

4F.37 Based on these per capita wastewater flows, the 4,340 additional people living off-post would generate between 0.4 and 0.8 mgd of wastewater flow. The Columbus wastewater treatment plant alone could readily accommodate this entire requirement during both average and peak flow periods. The Phenix City plant could also readily accommodate the entire requirement during average flow periods; however, during peak flow periods (which are caused by rainfall), the plant currently resorts to controlled bypass. The plant is currently being studied for expansion.

4F.38 The projected 23,300 additional people expected in the area by 1990, independent of this alternative, would generate between 2.3 and 4.0 mgd of wastewater flow. While the excess wastewater treatment capacity in the area is adequate to handle this additional requirement plus that of the stationing action for average flow periods, the existing excess capacity would not be adequate during peak flow periods. However, Columbus is currently

designing a 12 mgd expansion to its plant and Phenix City is currently studying its plant for expansion. The additional capacity being designed for the Columbus plant alone would be adequate to handle the increased flows during peak flow periods.

4F.39 Most other portions of the four-county area rely on septic tanks. Thus, any increase in population in these areas would result in an increase in the number of septic tanks. However, due to the relatively small increase in population expected in such areas, under this alternative, there should not be any significant increase in water quality impacts from any likely increase in septic tank use.

Solid Waste Disposal

4F.40 The 4,340 additional military personnel and dependents who would be living off-post represent less than a 2 percent increase in the population of the four-county assessment area. They would thus be expected to increase solid waste generation by less than 2 percent in the area and would accordingly reduce the life of the existing sanitary landfills by less than 2 percent. (This would be about a one-month reduction per 5 years of landfill life.) The actual reduction in the life of each individual landfill would depend on how many people choose to live in each county.

Housing

4F.41 The Fort Benning family housing units are currently at maximum capacity. Since no additional family housing construction is planned, this analysis assumes all necessary family housing would have to be provided by the Columbus region housing market.

4F.42 Under this alternative, an additional 1,240 housing units would be needed to accommodate families living off-post. Present statistics indicate that the Columbus, Georgia Housing Market Area (HMA) which includes Muscogee and Chattahoochee Counties, Georgia and Russell County, Alabama, has a minimum housing surplus of 2,950 units (U.S. Department of Housing and Urban Development, 1982). Thus, there should be no significant impacts as a result of the housing requirements under this alternative.

4F.43 Natural (e.g., unrelated to this proposed stationing alternative) population growth in the region is projected to be about 23,300 people by 1990. Based on an average of 3.05 people per household in the area (U.S. Department of Commerce, 1982a and 1982c), this natural growth could require almost 7,700 additional housing units. This housing requirement plus that of the alternative would mean that almost 6,000 additional housing units

would have to be constructed by 1990. Based upon past growth in the area's housing units, this requirement should not present a significant impact. Over the past several years, the HMA has been experiencing rapid growth rates in construction of single family and especially apartment units. For example, between 1980 and February 1984, the city of Columbus, Georgia alone issued a total of 3,021 residential building permits, including 1,393 for single family homes, 1,493 for apartment units and 135 for condominiums. About 45 percent of the permits were issued in 1983. In addition, there are currently a number of platted subdivisions with available utility hook-ups, for which no building permits have yet been issued (Gant, 1984). Phenix City expects about 7,000 housing starts between 1984 and 2005 (Tolbert, 1984). Furthermore, the Columbus HMA has historically been able to adjust its housing market to absorb changes in the Fort Benning population, and is expected to be able to continue to do so (Duck, 1984; Mills, 1984).

Schools

4F.44 No adverse impacts to schools are expected in the four-county assessment area under this alternative. Present levels of enrollment (for operational schools and staff) indicate a total of 9,730 excess student spaces for schools currently operating in the four counties (see Chapter 3). The Muscogee County school system alone accounts for almost 85 percent, or over 8,200 spaces, of the surplus capacity.

4F.45 Under this alternative, 1,120 school-aged military dependents would be added to present population levels. These school-aged dependents could be readily absorbed by existing schools without any significant impact.

Health Care

4F.46 There would be about 5,550 additional military personnel and dependents under this alternative. Based on a military population (active and retired, plus dependents) of 82,450 currently served by Fort Benning (see Table 3-3), this would represent less than a 7 percent increase in the military population served by Fort Benning. This increased population could thus result in less than a 7 percent increase in the 6,700 CHAMPUS and supplemental care referrals made annually to local (Columbus-Phenix City) health services.

4F.47 Based on an 80 percent occupancy rate representing full capacity (Thornton, 1984), the four area hospitals currently have an excess capacity equal to 11 percent of their current beds and 17 percent of their licensed beds (see Chapter 3, Columbus, Georgia

Region, Health Care). Since the additional 5,550 people under this alternative would represent about a 2 percent increase in the area's population, the additional referrals should not pose a significant impact even with the projected natural population growth.

Cultural Resources

4F.48 There is a potential for disturbance or destruction of cultural resources due to private residential or commercial development that could occur as a result of the proposed stationing alternative.

Fort Benning, Georgia

4F.49 Under this alternative, it is estimated that there would be almost 28,110 military personnel and 8,200 civilian employees at Fort Benning at the end of FY 1989 (see Table 4F-1). This is a net increase of almost 2,450 military personnel (10 percent) and 430 civilian employees (6 percent) compared to the March 31, 1984 baseline. Almost 96 percent of the total increase would occur by the end of FY 1987.

4F.50 As previously indicated, there would be no increase in the number of married military personnel and dependents living on-post. However, it is estimated that an additional 1,210 bachelor military personnel would be living on-post. This would represent an increase of about four percent in the total military population living on-post compared to the baseline.

4F.51 To accommodate the additional population and mission change, there would be construction activities on-post under this alternative. Construction would include cantonment type facilities (e.g., barracks), vehicle maintenance facilities, utility support systems (e.g., electricity and sanitary sewer distribution), warehouses, a telephone exchange building and road improvements. Such construction is expected to total about 0.7 million square feet of facilities (Carmody, 1984). All construction would occur in the Harmony Church area, most likely in the northern portion of Harmony Church. There would not be any construction of new ranges or training areas, nor would there be any new impact areas (Caldwell, 1984).

4F.52 With regard to training, there would be increased utilization of the existing training areas and ranges. However, there would not be any increase in annual training days above the current baseline level of 242 days (Caldwell, 1984). Training activities on the ground would be essentially the same as those that currently occur at Fort Benning. There would not be any significant

increase in night artillery firing activities (Caldwell, 1984). However, there would likely be more air transport during training of the light infantry brigade than for other types of units. There would also be an increase in night rotary-wing aircraft flights (Cardin, 1984; Caldwell, 1984).

4F.53 There would not be any increase in rotary-wing aircraft at Fort Benning under this alternative. Thus, the amount of air transport provided as part of training the infantry brigade would be dependent on whether aviation assets from outside of Fort Benning were periodically used in training of the light infantry brigade at Fort Benning. The existing rotary-wing aircraft could support only about a 20 percent increase in operations over current usage (Cardin, 1984). At this time, it is not known whether aviation assets from outside of Fort Benning would be used periodically. For purposes of analysis, it is assumed that such aviation assets would not be provided and that rotary-wing aircraft operations would increase by about 20 percent under this alternative. Note that if additional aviation assets were periodically provided, the increase in operations and related impacts would likely be between the 20 percent increase assessed under this alternative and the 300 percent increase assessed under Alternative I in Chapter 4E.

4F.54 There would be an increase of 270 trucks on-post under this alternative. This would represent an 8 percent increase in the number of wheeled vehicles on-post compared to the baseline. There would be no increase in the number of tracked vehicles under this alternative. The total number of tracked and wheeled vehicles together would increase by about 7 percent.

Geology, Minerals and Soils

4F.55 Construction activities associated with this alternative include approximately 0.7 million square feet of buildings and about 3 to 5 miles of new roads. All construction would occur in Harmony Church, most likely in the northern end.

4F.56 Construction materials would include sand, gravel and crushed stone for use as base course material for roads, helipads and taxiways, and as aggregate for the construction. If a typical new road requires 6 inches of base course material, paved roads of 20 to 36 foot widths (widths now typical on the installation) would require approximately 2,000 to 3,500 cubic yards of sand and gravel as base course material per mile of road. There are several sand and gravel pits now being used on-post and several possible pit or quarry development sites have been identified which could serve as sources of the construction materials required (U.S. Army Engineer Topographic Laboratories, 1976).

REVISED 1984

4F.57 Impacts to soils could potentially occur as a result of construction activities and from increased uses of existing maneuvering areas. A major portion of the installation contains poorly graded sandy soils that are susceptible to erosion. In many training areas, erosion has become a problem. Under this alternative there would be approximately a 4 percent increase in the use of existing training areas (see Land Use) and no increase in tracked vehicles. Thus, there should not be any significant increase in the potential for soil erosion as a result of increased usage of maneuvering areas. Natural reseeding is the most common method currently utilized for erosion control, but where necessary, checkdams, water bars, seedings, etc. are implemented to control erosion. Land utilization is currently rotated to reduce wear on vegetation, thus reducing the potential for erosion.

4F.58 All construction would occur within the existing Harmony Church cantonment area. There could be potential soil impacts due to erosion in the areas of contruction activities. However, the requisite measures necessary to minimize soil erosion and attendant pollution problems would be utilized during construction.

4F.59 Due to the location of construction areas and the small increase in the frequency of utilization of the existing maneuvering areas, the changes under this alternative should not cause any irrevocable alterations to prime farmlands on Fort Benning.

Biological Environment

4F.60 Under this alternative, only existing training areas would be utilized. There would be no construction of new areas. The frequency of utilization is expected to increase from current levels of 86 percent utilization to about 89 percent (a 4 percent increase over current levels) with the addition of the light infantry brigade (see Land Use).

4F.61 The increased frequency of training activities could potentially contribute to existing training activities that damage vegetative covering, disturb wildlife habitat, increase the frequency of wild fires, cause soil erosion, and decrease the space available for propagation of natural species (Fort Benning Directorate of Engineering and Housing, 1983).

4F.62 Construction related to this alternative would occur only at the Harmony Church area. This is presently a developed area. Potential biological impacts resulting from training and construction activities are discussed in the following sections.

SUPERSEDED
AUG 1984

4F.63 Terrestrial Ecosystems. The construction activities associated with this alternative include cantonment facilities, support facilities and roads to be located within the existing Harmony Church cantonment area. Construction at Harmony Church would require removing some trees between existing buildings. This construction would not cause any significant impacts to wildlife.

4F.64 No construction of additional ranges or training areas would be expected under this alternative. However, training and range-use frequency would increase by about 4 percent. There would be only six additional tracked vehicles (less than a 1 percent increase over current levels). As a result, impacts that could potentially result from increased vehicle operation and maneuvering activities, including increased soil erosion and changes in vegetation, habitat, and noise, should not be significant, especially since maneuvering areas would not be expanded from current levels.

4F.65 While additional noise from increased maneuvering and training of the infantry brigade is expected to be small, the increase in noise, depending upon the duration and frequency of occurrence, could potentially affect the wild turkey population on Fort Benning. The wild turkey population has been determined to be sensitive to such environmental changes and could be adversely impacted. For example, impacts on the population have been noted in the past when activity levels, such as rotary-wing aircraft operations, have significantly increased for extended periods of time. The population on-post has declined at such times, but has recovered after cessation of such activities (Dunn, 1984; Greenley, 1984; Land, 1984).

4F.66 On the other hand, the white-tail deer population residing on Fort Benning has historically adjusted to mission changes over the years and no adverse impacts would be expected under this alternative (Fort Benning Directorate of Engineering, 1983).

4F.67 In March of 1984, there were 48 wildfires on Fort Benning; estimates of 400 fires for all of 1984 represent almost a 45 percent increase over the 1978 number of wildfires (Greenley, 1984). Wildfires are caused primarily by the combat training exercises on-post using pyrotechnics of various sorts. The number of wildfires on-post could increase proportionally to the 4 percent increase in the utilization of training areas. Furthermore, the time available for controlled burning, which is used to mitigate the impacts of such wildfires, could be reduced as a result of the increased utilization of the maneuver area. Increases in wildfire could adversely affect present and future hardwood populations

(Greenley, 1984). If this alternative becomes effective, it could be necessary to employ a "standby crew" of firefighters, whose exclusive responsibility would be to respond to and extinguish increased wildfires on the installation, since the personnel currently responsible for this activity are working at full capacity. The potential for large uncontrolled fires would be reduced by prescribed controlled burning, which reduces ground cover accumulation as well as improving habitat for several timber and game species. The controlled burning season of the forest management office is presently December through March. It may be necessary to extend this time period to effectively reduce the number of uncontrolled fires.

4F.68 Aquatic Ecosystems. No significant impacts to aquatic ecosystems would be expected under this alternative. No new river crossing maneuvering areas would be added. Increased training activities and construction activities at Harmony Church would not be likely to significantly increase effluent pollutant discharges to the aquatic ecosystem.

4F.69 Threatened and Endangered Species. One endangered species, the red-cockaded woodpecker (Picoides borealis), is known to reside on Fort Benning. While this species has endangered status throughout its range, it is locally abundant on-post due principally to the presence of preferred habitat (i.e., mature pines infected with red heart disease). Under the current management program of Fort Benning, nest trees are identified, marked, and protected from disturbance in accordance with the Endangered Species Act of 1973, as amended, (16 U.S.C. 1531-1543, 87 Stat 884), and activities such as maneuvering and construction are modified as necessary to prevent habitat destruction. As long as these management practices continue, there would likely be no significant impacts to the red-cockaded woodpecker from this alternative.

4F.70 The American alligator, Alligator mississippiensis which is endangered has been occasionally sighted on the installation, in the area of Lake W.F. George. It has not been determined whether the alligator now inhabits Fort Benning (Divinyi, 1984). Wet marshy areas which the alligator would inhabit on the installation are not suitable or utilized for troop training and maneuvers or construction. Projects which fall on the floodplain or in wetlands (which require Section 404 permits) are reviewed as required, at which time the presence or absence of the alligator is noted.

4F.71 The Office of Endangered Species of the U.S. Fish and Wildlife Service agrees that this alternative would not affect any endangered species.

REVISED 1984

4F.63 Terrestrial Ecosystems. The construction activities associated with this alternative include cantonment facilities, support facilities and roads to be located within the existing Harmony Church cantonment area. Construction at Harmony Church would require removing some trees between existing buildings. This construction would not cause any significant impacts to wildlife.

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On-Post Population

4F.72 Under this alternative, there would be almost 28,110 military personnel and 8,200 civilian employees at Fort Benning at the end of FY 1989 (see Table 4F-1). This would be a net increase of almost 2,450 military personnel (10 percent) and 430 civilian employees (6 percent) compared to the March 31, 1984, baseline. Almost 96 percent of the total increase would occur by the end of FY 1987.

4F.73 There would be no change in the number of married military personnel and dependents living on-post. However, it is estimated that an additional 1,210 bachelor military personnel would be living on-post. This would represent an increase of about 4 percent in the total military population living on-post compared to the baseline. The total population living on-post would be approximately 30,910.

4F.74 The effective population of Fort Benning, defined as the number of military, dependents and civilians living on-post (resident population) plus one-third of the number of personnel working on-post but living off-post, would increase under this alternative by 1,800, or about 5 percent over current levels. The effective population would be 36,400. This effective population is used in subsequent sections of this analysis to determine utilization and adequacy of resources (e.g., water treatment) at Fort Benning.

Land Use

4F.75 Fort Benning would have adequate land to provide the necessary space for both maneuvering/training areas and facilities for a light infantry brigade. Maneuvering/training areas currently consist of over 128,300 usable acres, all of which are contiguous. Under this alternative, about 113,900 acres per day would be required for maneuvering/training. The average utilization of existing maneuvering/training areas would increase to 89 percent from the current 86 percent, based on a training level of 242 days per year (Caldwell, 1984). This would be about a 4 percent increase over current rates. No additional maneuvering areas or ranges would have to be constructed, although there could be some slight modifications to a few existing ranges.

4F.76 The increased utilization of the maneuver areas for training purposes would have an impact on other activities currently carried out on the same lands. These activities include controlled burning for forest management purposes, timber harvesting, and hunting. There would be reductions in the time presently available

SUPERSEDED
AUG 1984

for such activities. Measures to mitigate such impacts are discussed under Biological Environment.

4F.77 The light infantry brigade would be located within the existing Harmony Church cantonment area. Troops would live in the temporary World War II barracks in Harmony Church until new barracks could be constructed for them in Harmony Church, which would be late 1988 or 1989 at the earliest. (The 10 battalions of recruits currently utilizing the barracks in Harmony Church are in the process of being moved to the Sand Hill area, as new barracks are constructed there. Barracks are expected to be available in Sand Hill for 6 of the 10 battalions in May 1984, with additional barracks available in 1987 and 1988. By 1992 at the latest, all recruits should be moved from Harmony Church to Sand Hill under current plans. This relocation of recruits is not related to this proposed stationing alternative.)

4F.78 All additional construction would occur in the north end of Harmony Church. Approximately 0.7 million square feet of buildings and 3 to 5 miles of new roads (all within Harmony Church) would be constructed. The land necessary for this construction is available and should not present any significant land use problems.

Noise

4F.79 Increases in noise levels, both off post and on post, as a result of this proposed stationing alternative cannot be determined until a training schedule has been established for the light infantry brigade. Should the brigade be stationed at Fort Benning, simulation modeling of noise effects would be conducted as part of the Army's on-going noise assessment program.

4F.80 The three major sources of noise at Fort Benning (i.e., aircraft operations, artillery operations, and vehicular traffic) would increase under this alternative.

4F.81 While the number of rotary-wing aircraft would not increase, the number of rotary-wing aircraft flights could increase by 20 percent; the number of Air Force flights (heavy aircraft) could increase by 5 to 10 percent; and the number of rotary-wing aircraft flights at night could also increase slightly from the current three per week (Cardin, 1984). For the 12-month period from April 1983 to March 1984, there were 2,670 heavy aircraft operations (take-offs or landings), 24,550 light aircraft operations, and 3,060 rotary-wing aircraft operations at Lawson Army Airfield (Ellis, 1984). Under this alternative, it is estimated that there could thus be a 3 percent increase in aircraft operations, to 31,180 from the current 30,300. This would result in a slight increase in the frequency of noise generation by aircraft operations.

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4F.77 The light infantry brigade would be located within the existing Harmony Church cantonment area. Troops would live in the temporary World War II barracks in Harmony Church until new barracks could be constructed for them in Harmony Church, which would be late 1988 or 1989 at the earliest. (Ten battalions of recruits previously utilized the barracks in Harmony Church. They are currently in the process of being moved to the Sand Hill area, as new barracks are constructed there. Barracks in Sand Hill currently house 6 of the 10 battalions, with additional barracks becoming available in 1987 and 1988. By 1992 at the latest, all recruits should be moved from Harmony Church to Sand Hill under current plans. This relocation of recruits is not related to this proposed stationing alternative.)

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REVISED 1984

4F.82 A zone II contour indicates a noise level between 65 and 75 decibels day-night level (dB DNL) and is considered "normally unacceptable" for noise sensitive land uses such as housing, hospitals, schools, etc. (U.S. Army Environmental Hygiene Agency, 1982). In developing ICUZ noise contours for Fort Benning (see Chapter 3, Affected Environment), the U.S. Army Environmental Hygiene Agency (1982) indicated that increased flight operations from Lawson Army Airfield could expand a zone II contour off-post near the southwest boundary of Fort Benning (see Appendix C). The 3 percent increase in aircraft operations under this alternative should not expand this zone II contour off-post. The off-post land use in the area is woodlands and thus there should not be any significant impacts even if this were to occur.

4F.83 Artillery operations would increase under this alternative. There is currently one artillery battalion at Fort Benning. Under this alternative, there would be a second artillery battalion. The proposed light artillery battalion would not fire any artillery larger than 105 mm, whereas the existing artillery battalion fires artillery up to 155 mm. Consequently, the noise levels generated by the proposed artillery battalion would be less than those from the existing battalion. Fur- thermore, the proposed artillery battalion would not fire as frequently as the existing artillery battalion which supports the infantry school at Fort Benning (Caldwell, 1984). Thus, while there would be an increase in the frequency of noise generating activities by artillery operations, there should not be an increase in the peak noise levels from artillery operations.

4F.84 The ICUZ contours for Fort Benning indicate that existing armor and artillery operations produce a zone II contour extending off-post near the northeast boundary of Fort Benning. This zone II contour results predominantly from tanks and 500-pound bombs, not from artillery, and this would not be expected to be expanded by artillery operations under this alternative. Furthermore, no noise sensitive land uses are currently present within the zone. Thus, increased artillery operations under this alternative should not result in any significant adverse impacts.

4F.85 There would be approximately an 7 percent increase in total military vehicles (tracked and wheeled), to 4,190 from the current 3,920. Private vehicles on-post could increase approximately 8 percent, (see Energy and Fuels Analysis). This would result in an increase in the frequency of noise from vehicular operations. Also, noise levels on some access roads to the post, primarily Victory Drive, would likely increase (see Traffic and Transportation). However, the overall impact would be expected to be slight, given the existing noise level.

REVISED 1984

4F.86 No noise complaints were received by Fort Benning during 1983 and 1984 (Divinyi, 1984).

Air Quality

4F.87 Increases in air pollutant emissions would result from increases in space heating requirements, increases in military and private vehicles, and increased aircraft operations.

4F.88 Construction requirements could result in about an additional 0.7 million square feet of space that needs to be heated or cooled. This would represent almost a 4 percent increase over the existing 19.4 million square feet of space (Robert and Company, 1982a), and would be expected to produce a similar increase in pollutant emissions. The estimated 3 percent increase in aircraft operations, 7 percent increase in military vehicles, and 8 percent increase in private vehicles on-post (see Noise) would also be expected to produce proportionate increases in pollutant emissions.

4F.89 Based on the emissions data in Tables 3-4 and 3-5, the increase in emission sources could result in total air pollutant emissions from Fort Benning being increased annually on the order of 10 tons of particulates (6 percent), 30 tons of sulfur oxides (5 percent), 150 tons of carbon monoxide (8 percent), 20 tons of hydrocarbons (10 percent), and 60 tons of nitrogen oxides (7 percent).

4F.90 The increases in emissions from changes under this alternative would not be expected to have any significant impact on air quality in the four-county assessment area (Kemerick, 1984; Yeast, 1984).

Water Supply

4F.91 For the one-year period March 1983 through February 1984, average daily water demand was 7.3 mgd for Fort Benning, which is the same as the average daily demand for the six-year period July 1976 through September 1982 (Harland Bartholomew and Associates, Inc., 1983). The peak daily demand during the one-year period was 13.0 mgd in August 1983. Based on the Fort Benning effective population of about 34,000 (see Table 3-3), the average per capita water demand is approximately 220 gpd and the peak per capita water demand is approximately 390 gpd.

4F.92 The present capacity of the water treatment plant is 18 mgd. Based on the current average per capita water consumption, the plant can support an effective population of 81,800 users. Based on the current peak per capita water consumption, the plan can support an effective population of 46,200 users.

4F.93 Under this alternative, the effective population of Fort Benning would be approximately 36,400 users. This would be well below the existing capacity, and there should be no adverse impact on the water supply.

Wastewater Disposal

4F.94 Fort Benning has two wastewater treatment plants. Plant 1 serves Harmony Church, Sand Hill, Kelley Hill, Fort Benning Mall, Martin Army Hospital, Custer Road Family Housing, Bouton Heights Family Housing, and the extreme northeast portion of the Main Post family housing area. This plant has a hydraulic capacity of 4.6 mgd. The average daily flow for Plant 1 during the one-year period from March 1983 through February 1984 was 2.2 mgd and the peak daily flow was 3.4 mgd. Assuming that 55 percent of the effective post population is served by Plant 1 and that the infiltration rate is 0.8 mgd (Harland Bartholomew and Associates, Inc., 1983), the average per capita flow is approximately 80 gpd for this period and the peak per capita flow is approximately 140 gpd.

4F.95 Plant 2 serves the Main Post and Lawson Army Airfield. This plant has a hydraulic capacity of 3.8 mgd. The average daily flow during the above one-year period was 2.3 mgd and the peak daily flow was 3.6 mgd. Assuming that 45 percent of the effective post population is served by Plant 2 and that the infiltration rate is 0.4 mgd (Harland Bartholomew and Associates, Inc., 1983), the average per capita flow is approximately 120 gpd for this period and the peak per capita flow is approximately 210 gpd. For Plants 1 and 2 combined, the average per capita flow is approximately 100 gpd and the peak flow is approximately 170 gpd.

4F.96 The infantry brigade is expected to be located in Harmony Church, the area served by Plant 1. Based on an infiltration rate of 0.8 mgd and the current average per capita flow of 80 gpd, Plant 1 can support an effective population of 47,500 users. Based on the infiltration rate and the current peak per capita flow of 140 gpd, Plant 1 can support an effective population of over 27,100 users.

4F.97 Assuming 55 percent of the current effective post population is served by Plant 1, there is currently an effective population of 19,100 using the plant. Under this alternative, the effective population of Fort Benning would increase by about 1,800 people. Thus, the effective population using Plant 1 would be about 20,900. This is well below the existing capacity, and there should be no adverse impacts on water treatment or to water quality under this alternative.

SUPERSEDED
AUG 1984

Solid and Hazardous Waste Disposal

4F.98 Fort Benning currently generates about 590,000 cubic yards of non-compacted refuse per year, with a per capita generation of 17.1 cubic yards per year. The new landfill has a projected life of 5.3 years.

4F.99 Based on an effective population of 36,400 at the end of FY 1989 under this alternative, solid waste generation would increase by about 5 percent to 622,400 cubic yards of non-compacted refuse per year. Based on this increase, the life expectancy of the landfill would decrease less than 0.3 years to a life expectancy of 5.0 years. However, since most of the population increase would not occur until 1986-1987, there would be little change in use of the landfill until that time and thus the life expectancy of the landfill would decrease by only about half this amount to about 5.2 years.

4F.100 There would be an increase in the generation of hazardous wastes (primarily spent solvents, corrosive wastes, and waste explosives), waste oil, and infectious and pathological wastes. Based on a 9 percent increase in the military personnel at Fort Benning, an 18 percent increase in tracked and wheeled military vehicles, and a 3 percent increase in aircraft operations, it is estimated that generation of hazardous wastes could increase by up to 18 percent, generation of waste oil by up to 18 percent, and generation of infectious wastes by 9 percent. Under this assumption, hazardous waste generation would increase by less than one ton per year and waste oil generation could increase by 13,000 to 21,000 gallons per year. Management of these quantities of waste would not be expected to pose a significant threat to the environment.

Housing

4F.101 Fort Benning family housing units are presently at full occupancy and no additional units are expected to be constructed. Thus, all additional family housing requirements under this alternative would have to be provided from the surrounding communities markets. Impacts from this are discussed under the Columbus, Georgia Region Housing Section.

4F.102 It is assumed under this alternative, that all 1,210 additional bachelor military personnel would be housed on-post, in Harmony Church. This would require the construction of barracks for 1,210 bachelor military personnel in the Harmony Church Cantonment area. However, such barracks could not be completed until late 1988 or 1989 at the earliest. Until such time as construction could be

REVISED 1984

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completed, bachelor military personnel would utilize the existing World War II temporary barracks in Harmony Church.

Schools

4F.103 No adverse impacts to Fort Benning schools would occur under this alternatave. Currently, only military dependents living on-post attend schools on Fort Benning. Since all additional family housing would be located off-post, no increase in the Fort Benning school enrollment would result from this alternative.

Health Care

4F.104 Under this alternative there would be an increase of 5,550 military personnel and dependents. Assuming sufficient additional medical staffing were provided, Martin Army Community Hospital has sufficient capacity available to handle this increase (Thornton, 1984).

Public Safety

4F.105 This alternative would not likely result in any significant adverse impact on public safety. There would not be any significant changes in the demographic composition (age, education, income) of the traditional Fort Benning military population. Fort Benning has traditionally been the home of infantry units and surrounding communities have a well established infrastructure for accommodating a military community. Based on the crime statistics presented in Chapter 3, Affected Environment, there could be an annual increase (on-post plus off-post) of about 10 crimes of violence, 140 crimes against property, and 70 drug offenses. Each of these would represent about a 10 percent increase over the current situation.

As described in Appendix M, most crimes committed by Army personnel in the continental United States are confined to the installation. Further, Army crime rates in general have been declining. Between 1980 and 1983 the most common offenses committed by Army personnel, those against property, declined by 26 percent. Marijuana use and possession, the second most common offense declined by 64 percent, while crimes of violence, ranking third dropped 42 percent (U.S. Army Office of the Deputy Chief of Staff for Personnel, 1984). Although Army crime rates are not directly comparable to national trends, more arrests per 1000 of U.S. males 18 to 22 years versus Army personnel were made for crimes against property, drug offenses and crimes of violence in 1982. In the event of troop stationing, the actual number of crimes could increase, yet as

detailed in Appendix M most of the increase probably would be concentrated on post.

Traffic and Transportation

4F.106 There would be two sources of increased transportation and transportation-related impacts in the Fort Benning area. The additional military vehicles and personnel stationed at Fort Benning would result in an increase in on-post military transportation activities, and the private vehicles owned by the additional personnel would result in an increase in off-post transportation activity in the vicinity of Fort Benning.

4F.107 Military vehicles on-post would increase by about 7 percent. To the extent that they were used on the Main Post, there would be an increase in the existing traffic congestion. Their use elsewhere on-post should not result in any significant traffic impacts.

4F.108 There would be an additional 1,240 military personnel and 430 civilians living off-post and commuting to the post. Based on a vehicle occupancy ratio of 1.28 (Military Traffic Management Control, 1982), this would result in approximately 1,300 additional vehicles per day commuting to Fort Benning. This would be about an 11 percent increase in traffic commuting to Fort Benning.

4F.109 Since most of this additional traffic would be directed toward the Harmony Church area, there should be little impact on traffic congestion either off-post or on-post if Victory Drive, the most likely route, were to be used, since it is far from capacity (Armstrong, 1984). Assuming all the increase in commuter traffic occurred along Victory Drive, there could be a 10 percent increase in average daily traffic on Victory Drive west of Lindsey Creek Bypass and a 17 percent increase east of Lindsey Creek Bypass. The existing "ridesharing" program could further reduce the potential for increases in traffic congestion.

4F.110 Increased transportation would have a minor impact on water quality in the area. Runoff from paved surfaces contains oil, grease, other hydrocarbons, and heavy metals, such as lead, released by vehicular exhausts. Data are not available to estimate the magnitude of any such increased releases or the potential for such pollutants to be carried into surface waters or ground water by runoff. However, based on over 150,000 registered vehicles in the four county area (see Energy and Fuels Analysis), any increase in such releases would be minor.

Cultural Resources

4F.111 Professional knowledge of the terrain and the prehistoric habitation patterns of the area, together with the knowledge derived from archaeological sites on the installation and in surrounding areas, indicates that archaeological sites are present on the installation. To date, over 10,000 acres have been surveyed on-post, and over 150 sites have been identified. (Mullen, 1984). The National Register property, Riverside, is located on the post, as are other potentially significant structures. Fort Benning is considered to have a high potential for significant, as yet undiscovered, archaeological resources and a potential exists for impacts on significant cultural resources under this alternative.

4F.112 Although the exact location and nature of many possible cultural resources, particularly archeological resources, is unknown, the potential impacts of the proposed action can be generally discussed. Basically, any action which produces ground disturbances in any form would have a potential for disturbing an

archeological resource, thereby destroying data. Construction of new buildings and facilities, and establishment of roads include such elements as excavation, grading, filling or stockpiling of materials. All of these elements have a potential for disturbance or destruction of archeological materials. Renovation of existing buildings or demolition can damage and destroy significant historic structures.

4F.113 Many training activities, including maneuvering of vehicles and digging of foxholes, cause ground disturbances that have a potential for damaging or destroying an archaeological resource. Establishment of new training areas or increases in land utilization frequency for training over current levels can increase the potential for impacts to undisturbed cultural resources.

4F.114 Considerations will be given to identifying potential cultural resources, as well as protecting those known to exist. Authority for these actions are found in Army Regulation AR-420-40, Facilities Engineering, Historic Preservation (April 15, 1984) effective 15 May 1984. The procedures for accomplishing these measures are detailed in the Army Technical Manual TM-5-801-1, Historic Preservation-Administrative Procedures and TM-5-801-2, Historic Preservation-Maintenance Procedures. In regard to the installation, the prime limitation would be to prohibit any destruction or alteration of all or part of any significant site through whatever measures are necessary (e.g., establishment of limited-use areas). It should be noted that it is always possible for studies to miss an archaeological site, particularly one which shows little or no surface evidence of its presence. Because of this, all construction contracts must allow for this possibility by specifying that, in the event that a suspected archaeological site is encountered during construction or some other form of activity, operations in the area would be suspended until the site is investigated by a professional archaeologist. This construction contract provision is required by 32 CFR 650.192, Department of the Army, Environmental Protection and Enhancement, Peacetime Responsibilities, Historic Preservation, Archaeological Sites (March 15, 1978). Similarly, training activities that involve the use of new areas or the increased use of areas presently used may uncover evidence of archaeological sites that was not uncovered by prior studies. Officers in charge of field activities should be made aware of this possibility and procedures should be established whereby the officer could inform the installation's Historic Preservation Committee of any finds so that the committee may take appropriate measures to avoid the accidental destruction of a site. Additionally, since the looting of sites by irresponsible persons can be a problem, security measures should be instituted to prevent destruction of archaeological data in this manner.

SUPERSEDED
AUG 1984

ENERGY AND FUELS ANALYSIS

4F.115 The anticipated changes in energy and fuel consumption at each of the forts involved in this alternative are summarized in Table 4F-5. The methodology for the derivation of these estimates is presented in Appendix H.

4F.116 Increased gasoline consumption for private vehicles owned by military personnel is based on 18,100 additional vehicles at the two forts, each driven an average of 9,026 miles per year with a mileage of 15.53 miles per gallon (Motor Vehicle Manufacturers Association, 1983). The resulting estimated increase in fuel consumption is 11 million gallons of gasoline per year. This consumption is an increase of 1,300 billion Btu per year, or 43 percent more fuel than is presently being consumed in the private vehicles of military personnel at the forts. The estimated number of motor vehicles and corresponding gasoline consumption in the counties adjacent to Fort Drum are 92,600 vehicles consuming 11 trillion Btu per year. The implementation of this alternative would increase local gasoline consumption by 9 percent. The corresponding estimates for Fort Benning are 152,600 vehicles consuming 17 trillion Btu per year. The increase in local gasoline consumption near Fort Benning is 2 percent.

4F.117 The increase in energy consumption for off-post housing is based on an increase of 3,600 military personnel and dependents living off-post at Fort Drum and 4,200 living off-post at Fort Benning. The resulting fuel requirement of 380 billion Btu at Fort Drum represents a 2 percent increase in the present residential consumption of 24 trillion Btu in the counties adjacent to the installation. At Fort Benning, the resulting fuel requirement of 420 billion Btu represents a 2 percent increase in the present residential consumption of 26 trillion Btu in the counties adjacent to the installation.

4F.118 The increased requirement for on-post heating and associated energy usage is a linear extrapolation of the per capita on-post energy usage based on the effective population on-post as defined in TB ENG 354. The projected increase of 3,400 billion Btu per year at Fort Drum is 886 percent of the current energy usage. At Fort Benning, the projected increase of 220 billion Btu per year is 5 percent of the present energy usage. Assuming the relative proportions of fuels used at the installations remain unchanged, implementation of this alternative require the following additional amounts of fuels and energy:

ENERGY AND FUELS ANALYSIS

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4F.116 Increased gasoline consumption for private vehicles owned by military personnel is based on 18,100 additional vehicles at the two forts, each driven an average of 9,026 miles per year with a mileage of 15.53 miles per gallon (Motor Vehicle Manufacturers Association, 1983). The resulting estimated increase in fuel consumption is 11 million gallons of gasoline per year. This consumption is an increase of 1,300 billion Btu per year, or 43 percent more fuel than is presently being consumed in the private vehicles of military personnel at the forts. The estimated number of motor vehicles and corresponding gasoline consumption in the counties adjacent to Fort Drum are 92,600 vehicles consuming 11 trillion Btu per year. The implementation of this alternative would increase local gasoline consumption by 9 percent. The corresponding estimates for Fort Benning are 152,600 vehicles consuming 17 trillion Btu per year. The increase in local gasoline consumption near Fort Benning is 2 percent.

4F.117 The increase in energy consumption for off-post housing is based on an increase of 3,600 military personnel and dependents living off-post at Fort Drum and 4,340 living off-post at Fort Benning. The resulting fuel requirement of 380 billion Btu at Fort Drum represents a 2 percent increase in the present residential consumption of 24 trillion Btu in the counties adjacent to the installation. At Fort Benning, the resulting fuel requirement of 420 billion Btu represents a 2 percent increase in the present residential consumption of 26 trillion Btu in the counties adjacent to the installation.

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TABLE 4F-5

INCREASED ENERGY REQUIREMENTS UNDER THE FORT DRUM-
FORT BENNING STATIONING ALTERNATIVE II

	Fort Drum	Fort Benning
Personal Vehicles		
Increase, 10^9 Btu/yr	1,000	270
Percent[1]	870	10
Off-Post Housing		
Increase, 10^9 Btu/yr	380	420
Percent[1]	33	19
Military Vehicles		
Increase, 10^9 Btu/yr	1,100	80
Percent[1]	1,600	9
On-Post Usage		
Increase, 10^9 Btu/yr	3,400	220
Percent[1]	886	5
Total Energy Use		
Increase, 10^9 Btu/yr	4,500	300
Percent[1]	675	3
Total Annual Use, 10^9 Btu/yr	5,200	10,000
Energy Requirement per Troop 10^6 Btu/yr	519	380

[1]Percent Increase = Increased Energy Requirement x 100/Present Consumption.

SUPERSEDED
AUG 1984

	Fort Drum	Fort Benning
Coal, tons	9,600	0.16
Fuel Oil, million gallons	7.90	0.08
Natural Gas, million therms	0.04	0.09
Propane, thousand gallons	810	62
Gasoline, million gallons	3.20	0.15
Diesel Fuel, million gallons	1.80	0.17
Aviation Fuel, million gallons	3.70	0.30
Electricity, TKWH	168,300	9,400

4F.119 The 1,480 additional vehicles at Fort Drum would use 328,000 gallons of gasoline and 567,000 gallons of diesel fuel. The 220 additional vehicles at Fort Benning would use 65,000 gallons of gasoline and 114,000 gallons of diesel fuel.

4F.120 The consumption of aviation fuel includes transport of the infantry brigade to Fort Drum once a year. The travel distance is 1,175 miles, requiring 91,700 gallons of JP 4. The number of additional helicopters at Fort Benning would be 100. Based on flight time of 300 hours per year and fuel consumption of 100 gallons per hour, the helicopters account for 3 million gallons of the increase in aviation fuel use at Fort Drum.

4F.121 The total additional energy requirements resulting from implementation of this alternative are 4.51 trillion Btu at Fort Drum and 0.30 trillion Btu at Fort Benning. These requirements are 675 percent of present energy consumption at Fort Drum and 3 percent of that at Fort Benning. The total fuel consumption per troop would change from 649 MBtu to 519 MBtu at Fort Drum, and from 405 MBtu to 380 MBtu at Fort Benning.

4F.122 Although there would be some impact on local energy use due to implementation of this alternative, the impact on national energy use would be negligible. Personnel of the light infantry division are to be drawn from existing Army units. Therefore, there would be a decrease in energy use in the localities where the troops are presently stationed approximately equal to the impacts described here. Similarly, many of the vehicles for the light infantry division are to be obtained from existing inventory. The only new vehicles to be added to the Army would be light trucks.

REVISED 1984

	Fort Drum	Fort Benning
Coal, tons	9,600	0.16
Fuel Oil, million gallons	7.90	0.08
Natural Gas, million therms	0.04	0.09
Propane, thousand gallons	810	62
Gasoline, million gallons	3.20	0.15
Diesel Fuel, million gallons	1.80	0.17
Aviation Fuel, million gallons	3.70	0.30
Electricity, MWH	168,300	9,400

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MITIGATING MEASURES

4F.123 Mitigating measures are defined as those actions that can be taken to lessen the adverse impacts resulting from implementation of the proposed action. Mitigating measures can be taken in anticipation of, concurrently with, or subsequent to the proposed action to minimize or offset undesirable impacts. Tables 4F-6 and 4F-7 describe generic mitigation measures available to the government. The measures described are potential only. No commitment is intended that these will be chosen at any specific installation. There are many variables influencing actual mitigation, including funding, timing, other Army actions, and specific environmental conditions found while the Army implements actions described here.

ADVERSE IMPACTS THAT CANNOT BE AVOIDED

4F.124 Some effects of the proposed stationing action cannot be mitigated. Those residual adverse impacts that cannot be avoided even after using the measures given in the mitigating measures tables are summarized in Table 4F-8.

TABLE 4F-6

SUMMARY OF MITIGATING MEASURES FOR REGIONAL EFFECTS OF THE FORT DRUM-FORT BENNING ALTERNATIVE II

Category	Fort Drum, New York	Fort Benning, Georgia
Biological Environment	Consider biological effects in selection of any off-post areas for construction activities (e.g., housing, commercial development).	Consider biological impacts in selection of any off-post areas for construction activities (e.g., housing, commercial development).
Demography	No feasible mitigating measures available.	No mitigating measures required because no significant impacts have been identified.
Land Use	Coordinated planning and regulation by local governments in region to minimize "sprawl" effects of rapid development.	No mitigating measures required because no significant impacts have been identified.
Noise	To the extent practical restrict, reschedule, or relocate any on-post activities with a potential for regional noise conflict.	Re-evaluate Installation Compatible Use Noise Zone (ICUZ) contours with regard to proposed activities; to extent practical restrict, reschedule, or relocate any activities with a potential for noise conflict.
Regional Economic Activity	Institute advanced planning to allow local governments and private firms adequate time to plan for mitigation of any potentially adverse impacts.	No mitigating measures required because no significant impacts have been identified.
Air Quality	Applications for stationary source permits are subject to prevention of significant deterioration (PSD) review by NYSDEC.	No mitigating measures required because no significant impacts have been identified.
Water Supply	Regulation of private septic systems to avoid ground water contamination.	No mitigating measures required because no significant impacts have been identified.
Wastewater Disposal	Permits are subject to NYSDEC review for NPDES compliance.	Continue on-going design activities related to expansion of Columbus wastewater treatment plant; continue study of need for expansion of Phenix City wastewater treatment plant.
Solid Waste Disposal	Implement plans being developed for area resource recovery incineration programs and facilities in Jefferson and St. Lawrence counties.	Implement the joint solid waste incineration - steam generation facility being contemplated for construction by Fort Benning and the City of Columbus, Georgia.
Housing	Would construct on-post housing to lessen demand on region. Alter schedule for stationing or construction to mitigate possible short-term housing shortage.	Any potential shortfall in housing would occur as a result of natural population growth unrelated to this alternative; on-going planning and construction activities in the area should alleviate any potential shortage; if necessary, additional family housing units could be constructed on post.
Schools	Would build elementary schools on post to mitigate pressure on region. Reassign junior and senior high school students from overcrowded to underused school districts in area. Alter schedule for stationing or construction to avoid potential short-term pressure on schools prior to school construction on post.	No mitigating measures required because no significant impacts have been identified.
Health Care	Make temporary provisions for short-term health care services prior to hospital construction on post; or alter schedule for construction to allow for hospital construction on post prior to arrival of troops.	No mitigating measures required because no significant impacts have been identified.

TABLE 4F-7

SUMMARY OF MITIGATING MEASURES FOR ON-POST EFFECTS OF THE FORT DRUM-FORT BENNING STATIONING ALTERNATIVE II

Category	Fort Drum, New York	Fort Benning, Georgia
Geology, Minerals and Soils	Institute land use planning in training areas to control erosion through measures such as land use rotation, revegetation, and location of maneuvering areas; continue current erosion control program.	Initiate land-use planning on training areas to control erosion through measures such as land use rotation, revegetation, and location of maneuvering areas; continue current erosion control measures such as check dams, water bars, and seeding; use applicable erosion control barriers and procedures in new construction areas.
Biological Environment Terrestrial Ecosystems	Continue implementation by Fort Drum Land Management Branch of its Natural Resources Management Program.	Update and continue to use Fort Benning Natural Resources Management Plan; employ stand-by crew of firefighters to handle likely increase in wildfires on post; extend current controlled burning season (December through March) to compensate for reduction in time available for controlled burning during this period due to increased utilization of woodlands for training activities use of erosion control methods discussed for land use.
Aquatic Ecosystems	Continue implementation by Fort Drum Land Management Branch of its Natural Resources Management Program.	No mitigating measures required because no significant impacts have been identified.
Threatened/Endangered Species	No mitigating measures required because no significant impacts were identified.	Continue current protection measures related to red-cockaded woodpecker on post; determine whether American alligator inhabits or could potentially inhabit post and implement any necessary protection procedures.
On-Post Population	After construction schedule or troop stationing to avoid short-term pressures and involuntary separation of military families.	No mitigating measures required because no significant impacts have been identified.
Land Use	Continue implementation by Fort Drum Land Management Branch of its Natural Resources Management Program.	No mitigating measures required because no significant impacts have been identified.
Noise	Helicopter flights generally are restricted from cantonment and housing areas. Further mitigation is not possible without a change in mission.	Re-evaluate Installation Compatible Use Noise Zone (ICUZ) contours with regard to proposed activities; to extent practical restrict, reschedule, or relocate any activities with a potential for noise conflict.
Air Quality	New stationary facilities to have particulate controls and are subject to review by NYSDEC for PSD. Institute ridesharing program to decrease mobile source emissions.	Continue current energy conservation efforts and expand existing energy monitoring control system to additional buildings on post; expand solar pond capacity; increase use of existing "ridesharing" program.

TABLE 4F-7 (Concluded)

SUMMARY OF MITIGATING MEASURES FOR ON-POST EFFECTS OF THE FORT DRUM-FORT BENNING STATIONING ALTERNATIVE II

Category	Fort Drum, New York	Fort Benning, Georgia
Water Supply	Would need new wells to meet increased demand.	No mitigating measures required because no significant impacts have been identified.
Wastewater Disposal	New wastewater treatment plant would be built to adequate size, subject to NPDES permit and NYSDEC regulations.	No mitigating measures required because no significant impacts have been identified.
Solid and Hazardous Waste Disposal	Implement proposed cooperative effort with Jefferson County in development of resource recovery incineration facilities. Institute efforts to reduce the generation of solid wastes on post.	Continue on-going efforts to reduce generation of solid waste on post and to increase recycling of those solid wastes that are generated; continue on-going efforts to replace hazardous materials, such as specific hazardous solvents, with equivalent non-hazardous materials; implement the joint solid waste incineration-steam generation facility being contemplated for construction by Fort Benning and the city of Columbus, Georgia.
Housing	Would construct 3,453 housing units on post to meet 90% of demand for those eligible; 1,061,000 ft^2 of new barracks space 154,405 ft of new BOQ.	Accelerate construction of additional bachelor quarters on post; construct additional family housing units on-post if sufficient units were not available off post.
Schools	Would construct two elementary schools on post totaling approximately 70,400 ft^2 to meet increased demand.	No mitigating measures required because no significant impacts have been identified.
Health Care	Would construct a hospital on post totaling 86,654 ft^2, and a 16,361 ft^2 dental clinic to meet new demand for health services. Alter construction schedule or troop stationing schedule to migitate shortterm lack of health services on post.	Provide additional staffing necessary for expansion of beds.
Public Safety	Increase MP and Judge Advocate staff to meet increased demand.	No mitigating measures required because no significant impacts have been identified.
Traffic and Transportation	Implement recently completed "Traffic Engineering Planning Study" to reduce peak loads. Undertake survey of new traffic patterns following proposed stationing. Implement staggered work hours, encourage car pools.	Increase use of existing "ridesharing" program; accelerate the implementation of the recommdnations made by the Military Traffic Management Command with regard to improving traffic circulation on post and off post.
Cultural Resources	Consideration of potential cultural resources, including, if necessary, identification and evaluation. Protection of significant cultural resources.	Complete and implement Cultural Resources Management Plan; accelerate on-going cultural and historical surveys of Fort Benning. Consideration of potential cultural resources, including, if necessary, identification and evaluation. Protection of significant cultural resources.

TABLE 4F-8

SUMMARY OF ADVERSE IMPACTS THAT CANNOT BE AVOIDED UNDER THE FORT DRUM-FORT BENNING STATIONING ALTERNATIVE II

Category	Fort Drum and Surrounding Region	Fort Benning and Surrounding Region
Geology, Minerals and Soils	Increased erosion because of increased troop days in field.	Disturbance to soils, both on-post and off-post, would occur as a result of construction; increased potential for soil erosion as a result of construction activities and 4 percent increase in frequency of utilization of existing training areas on-post.
Biological Environment	Over 350 acres or wildlife habitat lost to construction on-post. Increase in frequency of wildfires on-post due to increases in training activities.	Small loss of habitat due to any off-post construction; slight increase in habitat disturbance due to 4 percent increase in utilization of maneuvering/training areas; potential for decline in wild turkey population on-post (not an endangered or threatened species); slight increase in frequency of wildfires on-post to increases in training.
Demography	None.	None.
Land Use	None.	Four percent increase in utilization of maneuvering/training areas would correspondingly reduce the time the area was available for other uses (e.g., recreation, controlled burning).
Noise	Increased frequency of training activity could increase noise complaints.	Slight increase in activities that generate noise.
Air Quality	Emissions during construction, and increased long-term emission due to more automobiles, power plants.	Slight increase in the emission of air pollutants; this would not cause any air quality standards to be violated.
Water Supply	Increased effluent discharge to Black River.	None.
Wastewater Disposal	None.	None.
Solid and Hazardous Waste Disposal	None.	Very slight decrease in life of existing landfills.
Housing	None.	None.

TABLE 4F-8 (concluded)

SUMMARY OF ADVERSE IMPACTS THAT CANNOT BE AVOIDED UNDER THE FORT DRUM-FORT BENNING STATIONING ALTERNATIVE II

Category	Fort Drum and Surrounding Region	Fort Benning and Surrounding Region
Schools	None.	None.
Health Care	None.	None.
Public Safety	None.	None.
Traffic and Transportation	None.	Additional traffic at peak periods.
Cultural Resources	Potential loss or disturbance of significant cultural resources. and increase in training activities.	Potential loss or disturbance of some significant cultural resources.
Relationship Between Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity	Disturbance of vegetation, wildlife and habitat as a result of construction and increased training activities. Increases in air emissions, however, air quality standards would not be violated. Soil loss due to. increased potential for erosion.	Disturbance of vegetation, wildlife and habitat as a result of construction and increased training activities. Increases in air emissions, however, air quality standards would not be violated. Soil loss due to increased potential for erosion.
Irreversible and Irretrievable Commitment of Resources	Materials and fuels used for constructioin would be irretrievably lost. Also, capital used for construction would be lost to other uses. Increased erosion would lead to loss of soils. Archaeological sites could be accidentally lost or damaged through construction or training activities. Rural quality could be be affected in those communities with increased population.	Some materials and fuels used for construction would be irretrievably lost. Also, capital used for construction would be lost to other uses. Increased erosion would lead to loss of soils. Archaeological sites could be accidentally lost or damaged in through construction or training activities.

CHAPTER 4G

ENVIRONMENTAL CONSEQUENCES OF THE FORT DRUM, NEW YORK - FORT BENNING, GEORGIA STATIONING ALTERNATIVE III

INTRODUCTION

4G.1 Under this stationing alternative, the new light infantry division would be split among two installations. The division minus the combat aviation brigade would be stationed at Fort Drum, New York along with some support elements. The combat aviation brigade would be stationed at Fort Benning, Georgia. Civilian employees would also be added at each installation to support the new troops. Stationing of the new light division troops at Fort Drum would begin in Fiscal Year 1984 (FY 84) and be completed in FY 87. Most of the troops would arrive in FY 85, FY 86, and FY 87. Stationing of the combat aviation brigade at Fort Benning would take place during FY 86 and FY 87. A Ranger Regiment of 700 military personnel is being stationed at Fort Benning in FY 84, an action not associated with the proposed stationing of the combat aviation brigade. The personnel in the Ranger Regiment are included in the Fort Benning baseline.

4G.2 Changes in military and civilian personnel associated with the Fort Drum-Fort Benning alternative are shown in Table 4G-1. At Fort Drum there would be a net increase of 10,750 military and 13,290 dependents for a total increase of 24,040. On-post civilian employment would increase by 1,550. At Fort Benning there would be a net increase of 1,090 military and 1,540 dependents for a total increase of 2,630. On-post civilian employment would increase by 380. At Fort Drum there probably would be a reduction in the peak number of Reserve and National Guard trainees present at one time from the current 10,000 to 11,000 to approximately 7,000 to 7,500.

4G.3 To accommodate the increased population at Fort Drum, the Army would construct a large number of new housing, office, support, and utility facilities, and would extensively rehabilitate others. There would be some construction of new facilities to accommodate the brigade at Fort Benning (Appendix K).

4G.4 Table 4G-2 summarizes the regional, environmental and secondary socioeconomic consequences of this proposed stationing alternative. Table 4G-3 summarizes the on-post environmental and secondary socioeconomic consequences.

TABLE 4G-1
CHANGES IN MILITARY AND CIVILIAN PERSONNEL FOR
THE FORT DRUM - FORT BENNING ALTERNATIVE III

Category	Baseline	FY 1984 Strength	FY 1984 Change	FY 1985 Strength	FY 1985 Change	FY 1986 Strength	FY 1986 Change	FY 1987 Strength	FY 1987 Change	FY 1988 Strength	FY 1988 Change	FY 1989 Strength	FY 1989 Change	Total Change
FORT DRUM														
Officers	100	120	20	380	250	760	380	1040	280	1040	0	1040	0	940
Enlisted	930	980	50	2630	1650	7510	4880	10250	3240	10250	0	10750	0	9820
Total military	1030	1100	70	3000	1900	8270	5270	11780	3510	11780	0	11780	0	10750
Civilian employees	920	960	40	1460	500	1920	460	2330	410	2430	100	2470	50	1550
Total installation	1950	2060	110	4460	2400	10190	5730	14110	3930	14210	100	14260	50	12310
Families	510	550	40	1520	960	4100	2580	5830	1730	5830	0	5830	0	5320
Dependents	1280	1380	100	3790	2410	10250	6460	14570	4320	14570	0	14570	0	13290
School-aged dependents of military	460	500	40	1370	870	3690	2330	5250	1560	5250	0	5250	0	4790
FORT BENNING														
Officers	2730	2740	10	2830	100	2870	50	3090	230	3090	0	3100	10	380
Enlisted	22930	22440	-490	22830	390	23000	170	23520	520	23560	-20	23640	140	710
Total military	25660	25180	-480	25670	490	25870	200	26610	750	26590	-20	26740	150	1090
Civilian employees	7770	7780	10	8070	280	8090	20	8150	60	8150	0	8150	0	380
Total installation	33430	32960	-470	33750	770	33950	220	34760	800	34740	-20	34890	150	1460
Families	10010	9780	-220	10040	260	10140	100	10560	410	10550	-10	10620	70	620
Dependents	26470	25910	-560	26550	640	26810	260	27840	1030	27820	-20	28010	190	1540
School-aged dependents of military	6430	6230	-200	6460	230	6550	90	6930	370	6920	-10	6990	70	560

Note: Strength = authorized positions at end of fiscal year
Change = personnel change during fiscal year
Numbers may not add exactly because of rounding
Families and Dependents are for military personnel only

TABLE 4G-2

SUMMARY OF THE REGIONAL ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE FORT DRUM-FORT BENNING STATIONING ALTERNATIVE III

Category	Fort Drum, New York	Fort Benning, Georgia
Biological Environment	Some habitat lost to new residential and commercial construction activities in the area.	Some disturbance of vegetation, wildlife and habitat due to residential and commercial construction activities.
Demography	A population increase of 10,750 military and 13,290 dependents would occur over the FY 84 to FY 87 period. This would be an 11 percent population increase in tri-county area.	Less than 1 percent increase over projected 1990 population levels. About 1 percent increase over current population.
Land Use	Residential and commercial development would occur in the region in response to the increase in military and dependents. Housing demand would increase by a minimum of 1,220 units. Potential for commercial "strip" development given lack of development regulation in many areas.	Columbus approach control could have to expand to 24-hour operations, due to increase in night flights at Fort Benning.
Noise	Average noise levels would increase but peak energy levels would not.	Increases in aircraft operations and vehicular traffic unlikely to cause any significant impacts.
Regional Economic Activity	Increases in total business volume, personal income, and local employment would be slightly below those projected for a full division stationing at Fort Drum. The potential problems of rapid development would still be of concern.	Increases in total business volume and personal income would be within changes historically experienced by the region.
Air Quality	The number of mobile and stationary sources in the region would increase, but this should not have a significant impact on regional air quality.	Very slight increase in air pollutant emissions; would not cause any air quality standards to be violated.
Water Supply	Abundant supply but municipal distribution systems would be inadequate for new demand if the majority of development takes place in areas with public water systems.	Sufficient water available to handle population increases due to the stationing alternative as well as natural population growth.
Wastewater Disposal	Existing municipal systems not sized for expansion; taxes and/or user fees would increase for new development; increased numbers of private (septic) wastewater management systems could impact on ground-water quality.	Sufficient wastewater treatment capacity to absorb population increases, especially with ongoing expansion activities. Number of septic tanks might increase depending on where people choose to live.
Solid Waste Disposal	Increased demand on required landfills would further aggravate existing problems.	Very slight decrease in life of existing landfill would pose no significant impacts.
Housing	Minimum of over 1,200 military families requiring housing, demand would have to be met by new construction since existing adequate housing is not sufficient. Short-term pressure could be much greater since on-post construction would not be completed until at least 2 years after all troops are on post. This would result in either involuntary separation of military families or increased pressure on regional housing.	Current surplus of housing in the region could readily absorb population growth resulting from the stationing alternative. Housing demand due to natural population growth by 1990 could necessitate additional units. The housing market in the region should readily adjust to the increased demand.

TABLE 4G-2 (concluded)

SUMMARY OF THE REGIONAL ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE FORT DRUM-FORT BENNING STATIONING ALTERNATIVE III

Category	Fort Drum, New York	Fort Benning, Georgia
Schools	Potentially serious short-term impact if families arrive with soldiers prior to new school construction. On-post construction of 2 elementary schools would meet new demand. 2,395 junior and senior high school students would attend area schools. Capacity is available, although some shifting of student population to underused schools may be required.	Addition of 560 pupils to regional school systems could be readily absorbed by the excess 9,730 student spaces available in the region.
Health Care	Significant short-term impacts since stationing would be scheduled for completion prior to hospital construction on post. Post hospital, when operational, could outcompete local hospitals for staff.	Slight increase in off-post referrals to regional health services would pose no significant impacts.
Cultural Resources	Potential for disturbance or destruction of cultural resources by private residential-commercial development.	Potential for disturbance or destruction of cultural resources by private residential-commercial development.
Energy and Fuels	2% increase in residential fuel use. 10% increase in gasoline consumption.	1% increase in residential fuel use. 1% increase in gasoline consumption.

TABLE 4G-3

SUMMARY OF THE ON-POST ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE FORT DRUM-FORT BENNING STATIONING ALTERNATIVE III

Category	Fort Drum	Fort Benning
Geology, Minerals and Soils	Increased erosion in poorly protected regions due to construction and increased training activities; increased quarrying of rock and gravel for construction.	Increase in potential for loss of soil due to increased erosion-inducing activities.
Biological Environment	Loss of almost 300 acres of wildlife habitat to construction; increased pressure on wildlife due to year-round and nighttime activities.	Some disturbance of vegetation, wildlife and habitat due to construction and increase in training. Potential for disturbances to wild turkey population due to increases in noise and other activities. Potential for increase in number of wildfires.
On-Post Population	Permanent workforce increase of more than 7-fold from 1,950 to 14,260 military and civilian employees. Number of family housing units on-post increases almost 11-fold from 350 to 4,100.	Military strength at Fort Benning would increase 1,090, or 4 percent of current levels. Civilian personnel increases would be 380, or 5 percent over current levels. On-post population would increase by 440, or less than 2 percent over current levels.
Land Use	280 acres wooded land use for housing, 120 acres paved for new roads, runways, etc. Reduced lumbering activity.	No additional land required for training. Eleven percent increase in frequency of land utilization for training activities. Small amount of land used for construction at existing cantonment areas.
Noise	Continuation of existing noise patterns. Increased average noise levels due to increased frequency of aircraft operations and training activities.	Increases in aircraft and vehicular traffic operations unlikely to cause any significant noise impacts.
Air Quality	The number of mobile and stationary sources on post would increase. These increases, however should not adversly affect the good air quality of the post.	Slight increase in emissions of air pollutants would not cause any air quality standards to be violated.
Water Supply	Demand for water would be approximately 5.0 mgd which is 39 percent more than existing capacity.	Sufficient water treatment capacity to handle increase in population at Fort Benning no significant impact.
Wastewater Disposal	Total demand capacity of 3.7 mgd would be required. Present primary treatment capacity would be adequate but secondary treatment capacity would need to be expanded to meet this demand.	Sufficient wastewater treatment capacity to handle increase in population. No significant impacts to water quality likely from this alternative.

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TABLE 4G-3 (concluded)

SUMMARY OF THE ON-POST ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE FORT DRUM-FORT BENNING STATIONING ALTERNATIVE III

Category	Fort Drum	Fort Benning
Solid and Hazardous Waste Disposal	Current landfill permit expires in December 1985. New site or alternative disposal method is required.	Solid waste generation could increase by almost 3 percent and would decrease the life expectancy of the landfill by 0.1 years. Management of increased quantities of other wastes would not cause any significant impact.
Housing	Construction of 4,100 housing units on-post, almost 11 times the number of existing units, construction of 1.3 million square feet of new barracks space.	Less than two percent increase in number of personnel living on-post due to the stationing alternative would require construction of bachelor housing units.
Schools	Construction of two elementary schools on-post to meet increased demand by 4,790 school age children.	No additional students would attend schools on-post under this alternative.
Health Care	Construction of hospital and dental clinic on post; addition of 600 medical staff to run the new facilities.	The additional number of military personnel and dependents could be handled with some additional staffing.
Public Safety	Increased incidents due to significant population growth, increased problems in handling offenders not subject to the Uniform Code of Military Justice in areas of the post not covered by concurrent jurisdiction.	No significant changes in the demographic composition of the Fort Benning population.
Traffic and Transportation	Number of personal vehicles of work force living off-post would increase more than 2.0 times. Increased traffic flow and congestion on Nash and First Street West in afternoon and on Black River Road and First Street West in the morning.	Six percent increase in military vehicles on-post and 7 percent increase in vehicles commuting to Fort Benning. This traffic is not expected to have significant impacts on the roads likely to be utilized.
Cultural Resources	Potential for disturbance or destruction of cultural resources by increased training and new construction.	Potential for disturbance or destruction of cultural resources by increases in training activities and new construction.
Energy and Fuels	1,011% increase in on-post energy consumption requires expansion of energy services and fuel storage capacity. 1,180% increase in military vehicle fuel consumption.	13% increase in on-post energy usage can be accommodated without major construction. 60% increase in military vehicle fuel consumption.

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FORT DRUM AND THE EASTERN LAKE ONTARIO--ST. LAWRENCE, NEW YORK REGION

Eastern Lake Ontario--St. Lawrence, New York Region

4G.5 A major impact of adding a light infantry division minus the combat aviation brigade at Fort Drum would be the increased demand for retail and service industries caused by the increased population. As part of the alternative the Army plan to provide for most of the basic needs of military personnel on-post. This will require the construction of a hospital, housing for 90 percent of families eligible, and two elementary schools. Total construction volume is estimated at just over $1 billion. Over the short-term there could be some impacts in these areas however, since all construction is scheduled to be completed in FY 89 or later while the stationing of military personnel at Drum is scheduled to be completed during FY 87. This may preclude families from accompanying military until at least the family housing is completed in FY 89 or later. Approximately 1,220 families would require off-post housing. Although this is less than a one percent increase to the total tri-county populatin if housing construction is concentrated in the areas with municipal services, current systems for water distribution and waste disposal would not be able to accommodate the expanded requirements.

4G.6 Communities that will experience the greatest effects are those closest to the Fort, including the city of Watertown and the small communities of Carthage, Black River, Antwerp, Evans Mills, and Philadelphia, in Jefferson County, Gouverneur and Canton in St. Lawrence County, and Lowville and other small communities in Lewis County. During construction, labor and technicians probably will come from as far away as Syracuse (70 miles to the south) and Massena (70 miles to the northeast).

Biological Environment

4G.7 There will be moderate pressure on the regional biological environment from increased human population. Land-use conversion to accomodate new housing and service facilities will result in losses of wildlife habitat and associated wildlife. There will be increased numbers of road kills from increased traffic and increased hunting and fishing pressures. The region currently has an abundance of wildlife and habitat, however, and the amount that would be lost will be quite small is proportion to the total. Furthermore, additional hunting, fishing, and trapping pressure probably would not have overall adverse effects and are not expected to be of serious concern.

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Demography

4G.8 This alternative would add 24,040 military and dependents to a population of 227,440 over a 5 year period for an 11 percent increase in the tri-county area. This is considerably higher than the 3 percent growth projected for the area through 1990. Of this total military population slightly more than 19,770 will be living on-post with the remaining 4,270 living in the off-post region.

Land Use

4G.9 The development resulting from a population increase of approximately 24,040 people would have a significant impact on land use in the immediate area of the installation. Although housing, health care, and elementary schools will be provided on-post, the increased demand for clothing and other retail stores, entertainment, and other services generated by the added population will greatly stimulate commercial development in the area. In addition, approximately 1,220 families will need off-post housing.

4G.10 The most likely areas to be impacted by strip development are on those roads leading from the post. The area which is likely to be impacted by Fort Drum, as discussed in Jefferson County's Land Use Plan, is along NYS Route 3 and the Black River which connects the Carthage-West Carthage area and the Village of Black River. Along this route lie the Villages of Herrings and Deferiet and the Hamlets of Great Bend and Felt Mills. The type of strip development that could spring up in this area would be directed a young, military population, including, for example, discount stores, fast food restaurants, 24-hour convenience stores, pawn shops, auto dealers, and night clubs.

4G.11 Although the urban area of Watertown City has zoning regulations, many of the villages and towns around the installation have little or no planning regulations. Rapid development requires a strong planning effort to prevent haphazard or undesirable development patterns. Jefferson County has the most communities with zoning regulations in place. Of the 18 villages and towns adjoining or in the immediate area of the post, 11 or 61 percent have zoning regulations. In the same areas however only 4 communities have subdivision regulations. Overall in Jefferson County, approximately 57 percent of the villages and towns have zoning regulations. However in Lewis County only 38 percent of the towns and villages have zoning regulations. Of the 11 communities in St. Lawrence County most likely to be affected by changes at Fort Drum only Gouverneur Village has zoning regulations. The town of Fowler has implemented some land use planning regulations affecting residential

development such as construction and sanitary codes and set back requirements but there are no similar regulations for commercial development.

4G.11a Although comprehensive land use plans have been developed in Jefferson and St. Lawrence Counties, these serve only as guidelines for local towns and villages where actual planning authority rests. St. Lawrence County's Planning Board in their comprehensive plan describe planning efforts in that county as follows: "land use regulations and decisions tend to permit the economy to dictate the location, composition and overall pattern of development, rather than to establish and follow sound land use

priorities and principles" (St. Lawrence County, 1978). The Thousand Islands park area should also experience increased use due to the added population in the area.

Noise

4G.12 The existing training mission at Fort Drum would remain basically unchanged, with increases only in uses of helicopters and smaller weapons. There would be no changes in firing of 8-inch and 155 mm guns and 105 mm tank guns. There would be 10 percent or less increases in firing of 105 mm howitzers, and moderate increases in firing of smaller weapons which usually are not heard more than 1000 m from the firing point. Peak noise levels, therefore, would not increase; rather the major change would be in the frequency of occurrences with more nightime and winter season firing, which would raise average noise levels. The greatest noise effects would be on villages near the range areas, including Natural Bridge, Antwerp, and Philadelphia.

4G.13 If a light infantry division minus the aviation brigade is stationed at Fort Drum, simulation modeling of noise effects would be conducted as part of the Army's ongoing noise assessment program.

Regional Economic Activity

4G.14 The stationing at Fort Drum would have a direct effect upon the tri-country region composed of Jefferson, Lewis, and St. Lawrence Counties. There would be increases of approximately 10,750 military employees and 1,550 civilian employees, and increased purchases of local services and supplies . There also will be a four-year period of new construction and rehabilitation that will affect the tri-county region and also three counties to the south--Onondaga, Oswego, and Onieda Counties. In addition, there would be added regional economic activity caused by multiplier effects.

It is likely that some of the civilian jobs created as a result of the stationing activity could be filled be spouses of incoming military personnel. As described in Appendix L about 36 percent of the spouses of Army enlisted men and 35 percent of Army officer spouses are members of the civilian workforce (Doering and Hutzler, 1982).

4G.15 The Economic Impact Forecast System (EIFS) was used to predict the economic effects of adding a full division at Fort Drum, but was not run for other alternatives. It is assumed, however, that the economic effects of this alternative would also be significant and slightly less than the values projected for a full division.

4G.16 Expected increases will far exceed historical rates of change. The changes will reduce the high unemployment in the area, but can be expected to be inflationary. It also is necessary to consider that the increase of military personnel will bring with it

an increase of nearly 5,800 spouses of military, approximately half of whom can be expected to be seeking employment on the Fort or in the new jobs that will be created in the private sector.

4G.17 Additional indicators generated by the economic model as well as the inputs used in modeling are found in Appendix E.

Air Quality

4G.18 Present levels of air pollutants in the region are well below New York State Ambient Air Quality Standards (NYSAAQS). Pollution emissions, as a result of increased populations and activities, are expected to be from heating facilities for Fort Drum facilities and housing, heating for off-post housing and commercial facilities, and automobile emissions. Specific amounts of emissions from the Fort's facilities are discussed in the subsection of this report on installation air emissions. Given the good air quality in the area state officials do not expect that the addition of more than 24,040 people would cause any serious degradation of the regional air quality (Prosser, 1984).

Water Supply

4G.19 There would be 1,220 families living off-post under this alternative, representing a total of about 4,270 people. If the majority of the families settle in jurisdictions with limited municipal water service there could be a serious distribution problem. Although surface and ground water in the region are more than adequate to supply expanded populations and activities, some small community water supply systems in the region are not adequate. In addition, new business development in these areas would put additional pressure on the water distribution system. Construction in areas without municipal water will have to include provision of a source of water.

Wastewater Disposal

4G.20 The situation with wastewater systems is much the same as it is with water supply--some of the present municipal systems are not sized for expanded operation If residential and commercial development were concentrated in areas with municipal services it will be necessary to renovate and expand some of the community wastewater systems or to build new ones. Because community wastewater systems generally are built with revenue bonds or general obligation bonds on which the existing users also are required to pay, it can be expected that taxes and (or) use fees will increase for the present property owners and users.

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4G.21 A substantial amount of housing would be expected to develop in strips along roadways, especially in areas where zoning is poor or uninforced. Most of this housing would have individual supply wells and septic systems which are unregulated or poorly regulated. Depending upon density and separation factors, such small individual septic systems often present a threat for contamination of drinking water supplies.

Solid Waste Disposal

4G.22 As stated in Chapter 3, a regional problem currently exists with finding suitable landfill sites because of the highly permeable soils. The addition of 1,220 military families off-post plus the greatly expanded commercial activity would only aggravate this problem. The most workable solutions, which will be used in St. Lawrence County and are being considered for Jefferson County, probably are energy-recovery incineration facilities.

Housing

4G.23 The stationing of a light infantry division at Fort Drum would have an impact on the regional housing market. Although the stationing alternative includes the construction of 4,100 housing units on-post, this would still force approximately 1,220 military families to find housing off-post. There could be some additional short-term pressure on local housing since on-post construction is not due to be completed until after all of the troops have arrived on-post. This would result in either involuntary separation of military families or increased demand for off-post housing.

4G.24 There also would be an increase in civilian population in the area attracted by the increased economic activity generated with the influx of military personnel. The existing shortage of rental housing in the area generally can be attributable to lack of demand due to a stable population and the large percentage of substandard housing, averaging 19 percent of the total market as compared to 5.1 percent for the state (Black River-St. Lawrence Planning, 1976).

4G.25 Although the Housing Referral Service on-post has generally been able to meet the demand for off-post housing they have experienced the problem of finding suitable housing. However the community is reported to be making a considerable effort to assist in off-post housing, with support from state and local officials (Williams, 1980). Local officials contacted concerning the stationing alternative expressed confidence that, given the proposed on-post housing and phased stationing of division troops,

the community would be able to respond to the demand for housing. In light of the 17.1 percent unemployment rate in Jefferson County, officials there thought the economic benefits would outweigh any land use problems generated by the new housing construction (Jefferson County Planning Dept., Greater Watertown Chamber of Commerce, 1984).

Schools

4G.26 This alternative at Fort Drum would involve approximately 4,790 additional school age dependents of military personnel (assuming a school age dependent ration of .90 per married troop). One half of this number or 2,395 students are assumed would be elementary school age with the other half being junior and senior high school age. Current excess capacity for the nine public schools in the vicinity of the installation is 4,787. The proposed action includes the construction of two elementary schools on-post. This would provide sufficient space for all on-post elementary school children. All 2,395 junior and senior high school students would attend area schools. The proposed location for new division housing on-post would mean that these students would attend Carthage and Indian River schools where there is a total excess capacity of 294. Sufficient capacity is available in other area high schools to meet the demand although school officials may need to send some students to schools outside their resident district.

Health Care

4G.27 Implementation of this alternative would add 24,040 people (military and dependents) to the population eligible for military-provided health services. The stationing alternative includes the construction of a hospital and dental clinic on-post to handle the increased demand for health services. Local hospital officials have expressed concern that construction of a hospital on-post would have a negative impact on regional health care facilities (Seguin, 1984; Bellinger, 1984). Jefferson and Lewis County hospitals have been instructed by the Federal Health Systems Agency to deactivate 93 acute care beds by the end of 1984. 50 of these beds must come from the maternity and pediatric departments which are being underused as a result of declining birth rates and increased elderly population in the area. At Mercy Hospital average occupancy is 28 percent for maternity and 43 percent for pediatric beds. The loss of patients from Fort Drum would very likely require additional reductions in service. Local hospital officials believe that community facilities could be increased to meet the health care needs of an expanded population at Fort Drum. Local officials are also concerned that the use of a significant number of civilian

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4G.21 A substantial amount of housing would be expected to develop in strips along roadways, especially in areas where zoning is poor or uninforced. Most of this housing would have individual supply wells and septic systems which are unregulated or poorly regulated. Depending upon density and separation factors, such small individual septic systems often present a threat for contamination of drinking water supplies.

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TABLE 4D-8

SUMMARY OF MITIGATING MEASURES FOR ON-POST EFFECTS FOR THE FORT DRUM-FORT CAMPBELL STATIONING ALTERNATIVE

Category	Fort Drum, New York	Fort Campbell, Kentucky
Geology, Minerals and Soils	Institute land-use planning in training areas to control erosion through measures such as land-use rotation, revegetation, and location of maneuvering areas; continue current erosion control program.	No mitigating measures required because no significant impacts have been identified.
Biological Environment		
Terrestrial Ecosystems	Continue implementation by Fort Drum Land Management Branch of its Natural Resources Management Program	Improvements for wildlife enhancement will continue to be developed with technical advice from the Wildlife Agencies of Kentucky and Tennessee and the U.S. Fish and Wildlife Service under a cooperative agreement. These improvements have been effective and include seeding of corn, milo, wheat, sunflower, and Korean lespedeza, as well as the placing of salt. Measures such as extending the hunting season and increasing bag limits would be available to mitigate deer overcropping due to restricted hunting brought about by an increase in use of training areas.
Aquatic Ecosystems	Continued implementation by Fort Drum Land Management Branch of its Natural Resources Management Program.	No mitigating measures required because no significant impacts have been identified.
Threatened and Endangered Species	No mitigating measures required because no significant impacts were defined.	No mitigating measures required because no significant impacts have been identified.
On-Post Population	Alter construction schedule or troop stationing to avoid short-term pressures and involuntary separation of military families.	No mitigating measures required because no significant impacts have been identified.
Land Use	Continue implementation by Fort Drum Land Management Branch of its Natural Resources Management Program.	Overutilization of training areas could be avoided by increasing the frequency with which the post's tenants participate in exercises at other installations.
Noise	Helicopter flights generally are restricted from cantonment and housing areas. Further mitigation is not possible without a change in mission.	No feasible mitigating measures are available. Mitigating measures are not possible without a change in mission.
Air Quality	New stationary facilities to have particulate controls and are subject to review by NYSDEC for PSD. Institute ridesharing program to decrease mobile source emissions.	No mitigating measures required because no significant impacts have been identified.

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TABLE 4D-8 (Concluded)

SUMMARY OF MITIGATING MEASURES FOR ON-POST EFFECTS FOR THE FORT DRUM-FORT CAMPBELL STATIONING ALTERNATIVE

Category	Fort Drum, New York	Fort Campbell, Kentucky
Water Supply	Would need five new wells to meet increased demand.	An additional water storage tank can be constructed to provide an adequate water supply for the anticipated effective population.
Wastewater Disposal	New wastewater treatment plant would be built to adequate size, subject to NPDES permit and HYSDEC regulations.	Additional wastewater capacity studies can be conducted. The wastewater disposal system can be expanded.
Solid and Hazardous Waste Disposal	Implement proposed cooperative effort with Jefferson County development of resource recovery incineration facilities. Institute efforts to reduce the generation of solid wastes on post.	No mitigating measures required because no significant impacts have been identified.
Housing	Would construct 3,453 housing units on post to meet 90% of demand for those eligible; 1,061,620 ft^2 of new barracks space 154,405 ft of new BOQ.	Construction of additional military family housing and officer quarters would be necessary to offset existing and projected deficits.
Schools	Would construct two elementary schools on post totaling 81,164 ft^2 to meet increased demand.	Construction of 20 additional classrooms would offset expected impacts.
Health Care	Would construct a hospital on post totaling 86,654 ft^2, and a 16,361 ft^2 Dental Clinic to meet new demand for health services. Alter construction schedule or troop stationing schedule to mitigate short-term lack of health services on post.	The addition of clinic and dental facilities in troop areas would offset expected health care impacts.
Public Safety	Increase MP staff and Judge Advocate staff to meet new demands.	An increase in fire fighting personnel and equipment would mitigate existing and projected deficiencies.
Traffic and Transportation	Implement recently completed "Traffic Engineering Planning Study" to reduce peak loads. Undertake survey of new traffic patterns following proposed stationing. Implement staggered	Implementation of proposed on-post and off-post transportation (roadway) plans wold mitigate existing and anticipate problems.
Cultural Resources	Consideration of potential cultural resources, including, if necessary, identification and evaluation. Protection of significant cultural resources.	Consideration of potential cultural resorces, including if necessary, identification and evaluation. Protection of significant cultural resources.

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TABLE 4D-9

SUMMARY OF ADVERSE IMPACTS THAT CANNOT BE AVOIDED UNDER THE FORT DRUM-FORT CAMPBELL STATIONING ALTERNATIVE

Category	Fort Drum and Surrounding Region	Fort Campbell and Surrounding Region
Geology, Minerals and Soils	Increased erosion because of increased troop days in field.	None.
Biological Environment	Over 350 acres or wildlife habitat lost to construction on-post. Increased frequency of wildfires on-post due to increases in training activity.	Birds and mammals would be temporarily driven from corridors in which helicopter training flights are being made and from impact areas in the western portion of the installation. Some acclimation takes place in animals repeatedly exposed to these disturbances, but the disturbance is an unavoidable effect of the ongoing mission.
Demography	None.	None.
Land Use	None.	None.
Noise	Increased frequency of training activity could increase noise complaints.	The increased frequency of aircraft operations and weapons firing would potentially worsen noise problems experienced in the past in off-post rural communities and on-post housing areas.
Air Quality	Emissions during construction, and increased long-term emission due to more automobiles, power plants.	None.
Water Supply	None.	None.
Wastewater Disposal	Increased effluent discharge to Black River.	None.
Solid and Hazardous Waste Disposal	None.	None.
Housing	None.	None.
Schools	None.	None.
Health Care	None.	None.
Public Safety	None.	None.

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TABLE 4D-9 (concluded)

SUMMARY OF ADVERSE IMPACTS THAT CANNOT BE AVOIDED UNDER THE FORT DRUM-FORT CAMPBELL STATIONING ALTERNATIVE

Category	Fort Drum and Surrounding Region	Fort Campbell and Surrounding Region
Traffic and Transportation	None.	None.
Cultural Resources	Potential loss or disturbance of significant cultural resources.	Potential loss or disturbance of significant cultural resources.
Relationship Between Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity	Substantial acreage would be used for new construction. The post would be more intensively used for training purposes. Until a change in mission, the maintenance and enhancement of long-term productivity equal to the current level would not be feasible.	The short-term use of this environment would be essentially the same. The mission of the post and nature of training would remain the same, except for a slight increase in use of existing ranges, impact areas, and maneuver areas. No major construction is planned. Ongoing wildlife and cultural resource management programs are expected to result in a long-term improvement in wildlife diversity and productivity and in the protection of archaeological and historic sites on-post.
Irreversible and Irretrievable Commitment of Resources	Materials and fuels for construction would be irretrievably lost. Also, capital used for construction would be lost to other uses. Increased erosion would lead to loss of soils. Archaeological sites could be accidentally lost or damaged through construction or training activities. Rural quality could be affected in those communities with increased population.	Materials and fuels for construction would be irretrievably lost. Also, capital used for construction would be lost to other uses. Increased erosion would lead to loss of soils. Archaeological sites could be accidentally lost or damaged through construction or training activities.

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CHAPTER 4E

ENVIRONMENTAL CONSEQUENCES OF THE FORT DRUM, NEW YORK - FORT BENNING, GEORGIA STATIONING ALTERNATIVE I

INTRODUCTION

4E.1 Under this stationing alternative, the new light infantry division would be split among two installations. The division minus one infantry brigade and the combat aviation brigade would be stationed at Fort Drum, New York along with some support elements. One infantry brigade and the combat aviation brigade would be assigned to Fort Benning, Georgia. Civilian employees would also be added at each installation to support the new troops. Stationing of the new light division troops at Fort Drum would begin in Fiscal Year 1984 (FY 84) and be completed in FY 87. Most of the troops would arrive in FY 85, FY 86, and FY 87. Stationing of the infantry and combat aviation brigades at Fort Benning would take place during FY 86 and FY 87. A Ranger Regiment of 700 military personnel is being stationed at Fort Benning in FY 84, an action not associated with the proposed stationing of the infantry brigade and the combat aviation brigade. The personnel in the Ranger Regiment are included in the Fort Benning baseline.

4E.2 Changes in military and civilian personnel associated with the Fort Drum-Fort Benning alternative are shown in Table 4E-1. At Fort Drum there would be a net increase of 7,830 military and 9,710 dependents for a total increase of 17,540. On-post civilian employment would increase by 1,410. At Fort Benning there would be a net increase of 3,700 military and 4,760 dependents for a total increase of 8,460. On post civilian employment would increase by 510. At Fort Drum, there probably would be a reduction in the peak number of Reserve and National Guard trainees present at one time from the present 10,000 to 11,000 to approximately 7,000 to 7,500.

4E.3 To accommodate the increased population at Fort Drum, the Army would construct a large number of new housing, office, support, and utility facilities, and would extensively rehabilitate others. There would be some construction of new facilities, and rehabilitation of others, to accommodate the two brigades at Fort Benning (Appendix K).

4E.4 Table 4E-2 summarizes the regional, environmental and secondary socioeconomic consequences of this proposed stationing

TABLE 4E-1
CHANGES IN MILITARY AND CIVILIAN PERSONNEL FOR
THE FORT DRUM - FORT BENNING ALTERNATIVE I

Category	Baseline	FY 1984 Strength	FY 1984 Change	FY 1985 Strength	FY 1985 Change	FY 1986 Strength	FY 1986 Change	FY 1987 Strength	FY 1987 Change	FY 1988 Strength	FY 1988 Change	FY 1989 Strength	FY 1989 Change	Total Change
FORT DRUM														
Officers	100	120	20	370	250	560	190	820	260	820	0	820	0	720
Enlisted	930	980	50	2380	1400	4950	2570	8040	3090	8040	0	8040	0	7110
Total military	1030	1100	70	2750	1650	5510	2760	8860	3350	8860	0	8860	0	7830
Civilian employees	920	960	40	1450	490	1800	350	2190	390	2280	90	2330	50	1410
Total installation	1950	2060	110	4200	2130	7310	3110	11050	3750	11140	90	11190	50	9240
Families	510	550	40	1400	850	2750	1350	4400	1650	4400	0	4400	0	3880
Dependents	1280	1380	100	3490	2110	6860	3370	10990	4130	10990	0	10990	0	9710
School-aged dependents of military	460	500	40	1260	760	2470	1210	3960	1490	3960	0	3960	0	3500
FORT BENNING														
Officers	2730	2740	10	2830	100	3060	230	3300	240	3300	0	3310	10	590
Enlisted	22930	22440	-490	22830	390	25300	2470	25930	630	25910	-20	26050	140	3120
Total military	25660	25180	-480	25670	490	28360	2700	29230	870	29210	-20	29360	150	3700
Civilian employees	7770	7780	10	8070	290	8210	140	8280	70	8280	0	8280	0	510
Total installation	33430	32960	-470	33730	770	36570	2840	37510	940	37490	-20	37640	150	4220
Families	10010	9780	-220	10040	260	11370	1330	11850	470	11840	-10	11910	70	1910
Dependents	26470	25910	-560	26550	640	29080	3330	31070	1190	31050	-20	31230	190	4760
School-aged dependents of military	6430	6230	-200	6460	230	7660	1200	8090	430	8080	-10	8150	70	1720

Note: Strength = authorized positions at end of fiscal year
Change = personnel change during fiscal year
Numbers may not add exactly because of rounding
Families and Dependents are for military personnel only

TABLE 4E-2

SUMMARY OF THE REGIONAL ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE FORT DRUM-FORT BENNING STATIONING ALTERNATIVE 1

Category	Fort Drum, New York	Fort Benning, Georgia
Biological Environment	Some habitat lost to new residential and commercial construction activities in the area.	Some disturbance to vegetation, wildlife and habitat due to residential and commercial construction activities.
Demography	A population increase of 7,830 military personnel and estimated 9,710 dependents would occur over the FY 84 to FY 87 period. This would result in 8 percent population increase in tri-county area.	Less than 3 percent increase over projected 1990 1990 population levels. Less than 4 percent increase over current population levels.
Land Use	Residential and commercial development would occur in the region in response to the increase in military and dependents. Housing demand would increase by a minimum of 890 units. Potential for commercial "strip" development given lack of regulation in many areas.	Columbus approach control could have to expand to 24-hour operations, due to increase in night flights at Fort Benning.
Noise	Average noise levels would increase due to more frequent activities but peak energy levels would not.	Increase in aircraft and artillery operations and vehicular traffic unlikely to cause any significant impacts.
Regional Economic Activity	Increases in total business volume, personal income, and local employment will be slightly below those projected for a full divisioning stationing at Fort Drum. The potential problems of rapid development would still be of concern.	Increases in total business volume and personal income would be within changes historically experienced by the region.
Air Quality	The number of mobile and stationary sources in the region would increase, but this should not have a significant impact on regional air quality.	Very slight increase in air pollutant emissions would not cause any air quality standards to be violated.
Water Supply	Abundant supply but municipal distribution systems may be inadequate for new demand if the majority of developments takes place in areas ith public water systems.	Sufficient water available to handle population increases due to the stationing alternative as well as natural population growth.
Wastewater Disposal	Existing municipal systems not sized for expansion; taxes and/or user fees would increase for new development; an increased number of private (septic) wastewater management systems could impact on ground-water quality.	Sufficient wastewater treatment capacity to absorb population increases, especially with ongoing expansion activities. Number of septic tanks might increase depending on where people choose to live.
Solid Waste Disposal	Increased deand on regional landfills would further aggravate existing problems.	Very slight decrease in life of existing landfill would pose no significant impacts.
Housing	Minimum of 890 military families would require housing, demand would have to be met by new construction since existing adequate housing is not sufficient. Short-term pressure on the regional market could be much greater since on-post construction would not be complete until at least 2 years after after all troops are on post.	Current surplus of housing in the region could readily absorb population growth resulting from the stationing alternative. Housing demand due to natural population growth by 1990 could necessitate additional units. The housing market in the region should readily adjust to the increased demand.

TABLE 4E-2 (concluded)

SUMMARY OF THE REGIONAL ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE FORT DRUM-FORT BENNING STATIONING ALTERNATIVE I

Category	Fort Drum, New York	Fort Benning, Georgia
Schools	Potentially serious short-term impact if families arrive with soldiers prior to new school construction. On-post construction of 2 elementary schools would meet new demand. 1,750 junior and senior high school students would attend area schools. Capacity is available although some shifting of student population to underused schools may be required.	Addition of 1,720 pupils to regional school systems could be readily absorbed by the excess 9,730 student spaces available in the region.
Health Care	Significant short-term impacts since stationing is scheduled for completion prior to hospital construction on post. Post hospital, when operational, could out compete local hospitals for staff.	Slight increase in off-post referrals to regional health services would pose no significant impacts.
Cultural Resources	Potential for disturbance or destruction of cultural resources by private residential-commercial development.	Potential for disturbance or destruction of cultural resources by private residential-commercial development.
Energy and Fuels	1% increase in residential fuel use. 7% increase in gasoline consumption.	3% increase in residential fuel use. 2% increase in gasoline consumption.

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AUG 1984

alternative. Table 4E-3 summarizes the on-post environmental and secondary socioeconomic consequences.

FORT DRUM AND THE EASTERN LAKE ONTARIO - ST. LAWRENCE, NEW YORK REGION

Eastern Lake Ontario--St. Lawrence, New York Region

4E.5 A major impact of adding a light infantry division at Fort Drum would be the increased demand for retail and service industries caused by the increased population. As part of the alternative the Army plans to provide for most of the basic needs of military personnel on-post. This will require the construction of a hospital, housing for 90 percent of families eligible, and two elementary schools. Over the short-term there could be some impacts in these areas however, since all construction is scheduled to be completed in FY 89 or later the stationing of military personnel at Drum is scheduled to be completed during FY 87. This may preclude families from accompanying military until at least the family housing is completed in FY 89 or later. Approximately 890 families would require off-post housing. Although this is less than a one percent increase to the total tri-county population, if housing construction is concentrated in the areas with municipal services, current systems for water distribution and waste disposal would not be able to accommodate the expanded requirements.

4E.6 Communities that will experience the greatest effects are those closest to the Fort, including the city of Watertown and the small communities of Carthage, Black River, Antwerp, Evans Mills, and Philadelphia, in Jefferson County, Gouverneur and Canton in St. Lawrence County. During construction, labor and technicians probably will come from as far away as Syracuse (70 miles to the south) and Massena (70 miles to the northeast).

Biological Environment

4E.7 There will be moderate pressure on the regional biological environment from increased human population. Land-use conversion to accommodate new housing and service facilities will result in losses of wildlife habitat and associated wildlife. There will be increased numbers of road kills from increased traffic and increased hunting and fishing pressures. The region currently has an abundance of wildlife and habitat, however, and the amount that would be lost will be quite small is proportion to the total. Furthermore, additional hunting, fishing, and trapping pressure probably would not have significant adverse effects and are not expected to be of serious concern.

TABLE 4E-3

SUMMARY OF THE ON-POST ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE FORT DRUM-FORT BENNING STATIONING ALTERNATIVE I

Category	Fort Drum	Fort Benning
Geology, Minerals and Soils	Increased erosion in poorly protected regions due to increased training activities; increased quarrying of rock and gravel for construction.	Increase in potential for loss of soil due to increased erosion-inducing activities.
Biological Environment	Loss of 230 acres of wildlife habitat to construction; increased pressure on wildlife due to year-round and nighttime activities.	Some disturbance of vegetation, wildlife and habitat due to construction and increase in training. Potential for disturbances to wild turkey population due to increases in noise and other activities. Potential for increase in number of wildfires.
On-Post Population	Permanent workforce increase of almost six-fold from 1,950 to 11,190 military and civilian employees. Number of family housing units on-post increases more than 8-fold from 350 to 2,990.	Military strength at Fort Benning would increase 3,700, or 14 percent of current levels. Civilian personnel increases would be 510, or 7 percent over current levels. On-post population would increase by 1,800, or 6 percent, over current levels.
Land Use	230 acres undeveloped land used for housing, 120 acres paved for new roads, runways, etc. Reduced lumbering activity.	No additional land required for training. Sixteen percent increase in frequency of land utilization for training activities. Small amount of land used for construction at existing cantonment areas.
Noise	Continuation of existing noise patterns. Increased average noise levels due to increased frequency of aircraft operations and training activities.	Increases in aircraft and artillery operations and vehicular traffic unlikely to cause any significant noise impacts.
Air Quality	The number of mobile and stationary sources would be increased on post. These increases however should not adversely affect the good air quality of the post.	Slight increase in emissions of air pollutants would not cause any air quality standards to be violated.
Water Supply	Demand for water would be approximately 4.1 mgd which is 8 percent more than the existing capacity.	Sufficient water treatment capacity to handle increase in population at Fort Benning with no significant impact.
Wastewater Disposal	Primary capacity of 2.9 mgd would be required. Present primary treatment capacity would be adequate but secondary treatment capacity would need to be expanded to meet the new demand.	Suficient wastewater treatment capacity to handle increase in population. No significant impacts to water quality likely from this alternative.

alternative. Table 4E-3 summarizes the on-post environmental and secondary socioeconomic consequences.

FORT DRUM AND THE EASTERN LAKE ONTARIO - ST. LAWRENCE, NEW YORK REGION

Eastern Lake Ontario--St. Lawrence, New York Region

4E.5 A major impact of adding a light infantry division minus one infantry brigade and the combat aviation brigade at Fort Drum would be the increased demand for retail and service industries caused by the increased population. As part of the alternative the Army plans to provide for most of the basic needs of military personnel on-post. This will require the construction of a hospital, housing for 90 percent of families eligible, and two elementary schools. Over the short-term there could be some impacts in these areas however, since all construction is scheduled to be completed in FY 89 or later the stationing of military personnel at Drum is scheduled to be completed during FY 87. This may preclude families from accompanying military until at least the family housing is completed in FY 89 or later. Approximately 890 families would require off-post housing. Although this is less than a one percent increase to the total tri-county population, if housing construction is concentrated in the areas with municipal services, current systems for water distribution and waste disposal would not be able to accommodate the expanded requirements.

4E.6 Communities that will experience the greatest effects are those closest to the Fort, including the city of Watertown and the small communities of Carthage, Black River, Antwerp, Evans Mills, and Philadelphia, in Jefferson County, Gouverneur and Canton in St. Lawrence County. During construction, labor and technicians probably will come from as far away as Syracuse (70 miles to the south) and Massena (70 miles to the northeast).

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TABLE 4E-3 (concluded)

SUMMARY OF THE ON-POST ENVIRONMENTAL AND SECONDARY SOCIOECONOMIC CONSEQUENCES OF THE FORT DRUM-FORT BENNING STATIONING ALTERNATIVE I

Category	Fort Drum	Fort Benning
Solid and Hazardous Waste Disposal	Current landfill permit expires in December 1985. New site or alternative disposal method is required.	Solid waste generation could increase by almost 8 percent and would decrease the life expectancy of the landfill by 0.3 years. Management of increased quantities of other wastes would not cause any significant impact.
Housing	Construction of 2,990 housing units on-post, almost 10 times the number of existing units, construction of almost 1 million square feet of new barracks space.	Six percent increase in number of personnel living on-post would require construction of bachelor housing units.
Schools	Construction of two elementary schools on-post to meet increased demand by 3,500 school age children.	No additional students would attend schools on-post under this alternative.
Health Care	Construction of hospital and dental clinic on post; addition of 392 medical staff to run the new facilities.	The additional number of military personnel and dependents could be handled, but would require some utilization of trailers or space in other buildings on-post for some health services. There would be increases in the number of referrals to community health services which would require additional funds.
Public Safety	Increased incidents due to significant population growth, increased problems in handling offenders not subject to the Uniform Code of Military Justice in areas of the post not covered by concurrent jurisdiction.	No significant changes in the demographic composition of the Fort Benning population.
Traffic and Transportation	The number of personal vehicles of the work force living off-post would almost double. Increased traffic flow and congestion on Nash and First Street West in afternoon and on Black River Road and First Street West in the morning.	Twenty three percent increase in military vehicles on-post and 17 percent increase in vehicles commuting to Fort Benning. This traffic is not expected to have significant impacts on the roads likely to be utilized.
Cultural Resources	Potential for disturbance or destruction of cultural resources by increased training and new construction.	Potential for disturbance or destruction of cultural resources by increased training and new construction.
Energy and Fuels	744% increase in on-post energy consumption requires expansion of energy services and fuel storage capacity. 1,150% increase in military vehicle fuel consumption.	8% increase in on-post energy usage can be accommodated without major construction. 59% increase in military vehicle fuel consumption.

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Demography

4E.8 This alternative would add 17,540 military and dependents to a population of 227,440 over three-year period for a 8 percent increase in the tri-county area. This is considerably higher than the 3 percent growth projected for the area by 1990. Of this total military and dependents population slightly more than 14,430 will be living on-post with the remaining 3,110 living in the off-post region.

Land Use

4E.9 The development resulting from a population increase of approximately 18,000 people would have a significant impact on land use in the immediate area of the installation. Although housing, health care, and elementary schools will be provided on-post, the increased demand for clothing and other retail stores, entertainment, and other services generated by the added population will greatly stimulate commercial development in the area. In addition, approximately 890 families will need off-post housing.

4E.10 The most likely areas to be impacted by strip development are on those roads leading from the post. The area which is likely to be impacted by Fort Drum, as discussed in Jefferson County's Land Use Plan, is along NYS Route 3 and the Black River which connects the Carthage-West Carthage area and the Village of Black River. Along this route lies the Villages of Herrings and Deferiet and the Hamlets of Great Bend and Felt Mills. The type of strip development that could spring up in this area would be directed a young, military population, including, for example, discount stores, fast food restaurants, 24-hour convenience stores, pawn shops, auto dealers, and night clubs.

4E.11 Although the urban area of Watertown City has zoning regulations, many of the villages and towns around the installation have little or no planning regulations. Rapid development requires a strong planning effort to prevent haphazard or undesirable development patterns. Jefferson County has the most communities with zoning regulations in place. Of the 18 villages and towns adjoining or in the immediate area of the post, 11 or 61 percent have zoning regulations. In the same areas however only 4 communities have subdivision regulations. Overall in Jefferson County, approximately 57 percent of the villages and towns have zoning regulations. However in Lewis County only 38 percent of the towns and villages have zoning regulations. Of the 11 communities in St. Lawrence County most likely to be affected by changes at Fort Drum only Gouverneur Village has zoning regulations. The town of Fowler has implemented some land use planning regulations affecting residential development such as construction and sanitary codes and set back requirements but there are no similar regulations for commercial development.

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4E.11a Although comprehensive land use plans have been developed in Jefferson and St. Lawrence Counties, these serve only as guidelines for local towns and villages where actual planning authority rests. St. Lawrence County's Planning Board in their comprehensive plan describe planning efforts in that county as follows: "land use regulations and decisions tend to permit the economy to dictate the location, composition and overall pattern of development, rather than to establish and follow sound land use

priorities and principles" (St. Lawrence County, 1978). The Thousand Island Park areas could also experience increased use from the added population.

Noise

4E.12 The existing training mission at Fort Drum would remain basically unchanged, with increases only in uses of helicopters and smaller weapons. There would be no changes in firing of 8-inch and 155 mm guns and 105 mm tank guns. There would be 10 percent or less increases in firing of 105 mm howitzers, and moderate increases in firing of smaller weapons which usually are not heard more than 1000 m from the firing point. Peak noise levels, therefore, would not increase; rather the major change would be in the frequency of occurrences with more nightime and winter season firing, which would raise average noise levels. The greatest noise effects would be on villages near the range areas, including Natural Bridge, Antwerp, and Philadelphia.

4E.13 If a light infantry division minus an infantry brigade and the combat aviation brigade is stationed at Fort Drum, simulation modeling of noise effects would be conducted as part of the Army's ongoing noise assessment program.

Regional Economic Activity

4E.14 The stationing at Fort Drum would have a direct effect upon the tri-country region composed of Jefferson, Lewis, and St. Lawrence Counties. There would be increases of approximately 7,830 military employees and 1,410 civilian employees, and increased purchases of local services and supplies . There also will be a four-year period of new construction and rehabilitation that will affect the tri-county region and also three counties to the south--Onondaga, Oswego, and Onieda Counties. In addition, there would be added regional economic activity caused by multiplier effects.

4E.14a It is likely that some of the civilian jobs created as a result of the stationing activity could be filled be spouses of incoming military personnel. As described in Appendix L about 36 percent of the spouses of Army enlisted men and 35 percent of Army officer spouses are members of the civilian workforce (Doering and Hutzler, 1982).

4E.15 The Economic Impact Forecast System (EIFS) was used to predict the economic effects of adding a full division at Fort Drum, but was not run for other alternatives. It is assumed, however, that the economic effects of this alternative would also be significant and slightly less than the values projected for a full division.

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4E.16 Expected increases will far exceed historical rates of change. The changes will reduce the high unemployment in the area, but can be expected to be inflationary. It also is necessary to consider that the increase of military personnel will bring with it an increase of nearly 4,500 spouses of military, approximately half

of whom can be expected to be seeking employment on the Fort or in the new jobs that will be created in the private sector.

Air Quality

4E.17 Present levels of air pollutants in the region are well below New York State Ambient Air Quality Standards (NYSAAQS). Pollution emissions, as a result of increased populations and activities, are expected to be from heating equipment for Fort Drum facilities and housing, heating for off-post housing and commercial facilities, and automobile emissions. Specific amounts of emissions from the Fort's facilities are discussed in the subsection of this report on installation air emissions. Given the good air quality in the area state air quality agency officials do not expect that the addition of more than 17,000 people would cause any serious degradation of the regional air quality (Prosser, 1984).

Water Supply

4E.18 There would be 890 families living off-post under this alternative, representing a total of about 3,110 people. If many of the families settle in jurisdictions with limited municipal water service there could be a serious distribution problem. Although surface and ground water in the region are more than adequate to supply expanded populations and activities, some small community water supply systems in the region are not adequate. In addition, new business development in these areas would put additional pressure on the water distribution system. Construction in areas without municipal water will have to include provision of a source of water.

Wastewater Disposal

4E.19 The situation with wastewater systems is much the same as it is with water supply--some of the present systems are not sized for expanded operation. If residential and commercial development is concentrated in areas with municipal services, it will be necessary to renovate and expand some of the community wastewater systems or to build new ones. Because community wastewater systems generally are built with revenue bonds or general obligation bonds on which the existing users also are required to pay, it can be expected that taxes and (or) use fees will increase for the present property owners and users.

4E.20 A substantial amount of housing would be expected to develop in strips along existing roads, especially in areas where zoning is poor or uninforced. Most of this housing would have

SUPERSEDED
AUG 1984

individual supply wells and septic systems which are unregulated or poorly regulated. Depending upon density and separation factors, such small individual septic systems often present a threat for contamination of drinking water supplies.

Solid Waste Disposal

4E.21 As stated in chapter 3, a regional problem with finding suitable landfill sites because of the highly permeable soils. The addition of 890 military families off-post plus the greatly expanded commercial activity would only aggravate this problem. The most workable solutions, which will be used in St. Lawrence County and are being considered for Jefferson County, probably are energy-recovery incineration facilities.

Housing

4E.22 The stationing of a light infantry division minus one infantry brigade at Fort Drum would have an impact on the regional housing market. Although the stationing alternative includes the construction of about 2,990 housing units on-post, this would still force approximately 890 military families to find housing off-post. There could be some additional short-term pressure on local housing since on-post construction is not due to be completed until after all of the troops have arrived on-post. This would result in either involuntary separation of military families or increased demand for off-post housing.

4E.23 There also would be an increase in civilian population in the area attracted by the increased economic activity generated with the influx of military personnel. The existing shortage of rental housing in the area generally can be attributed to the lack of demand for new housing due to a stable population and the large percentage of substandard housing which averages 19 percent of the total market as compared to 5.1 percent for the State (Black River-St. Lawrence Planning, 1976).

4E.24 Although the Housing Referral Service on-post has generally been able to meet the demand for off-post housing, they have experienced the problem of finding suitable housing. However, the community is reported to be making a considerable effort to assist in off-post housing, with support from state and local officials (Williams, 1980). Local officials contacted concerning the stationing alternative expressed confidence that, given the new on-post housing and phased stationing of division troops, the community would be able to respond to the demand for housing. In light of the 17.1 percent unemployment rate in Jefferson County,

officials there thought the economic benefits would outweigh any land use problems generated by the new housing construction (Jefferson County Planning Department, Greater Watertown Chamber of Commerce, 1984).

Schools

4E.25 This alternative at Fort Drum would involve approximately 3,500 additional school age dependents of military personnel (assuming a school age dependent ratio of .90 per married troop). One half of this number or 1,750 students, are assumed would be elementary school age with the other half being junior and senior high school age. Current excess capacity for the nine public schools in the vicinity of the installation is 4,787. The proposed action includes the construction of two elementary schools on-post. This would provide sufficient capacity for the slightly more than 1,750 elementary school children residing on-post. Since all on-post children are currently attending area schools, this would remove approximately 260 students currently attending elementary schools in the area. All 1,750 junior and senior high school students would have to attend area schools. The proposed location for new division housing on-post would mean these students would attend Carthage and Indian River schools where there is a total excess capacity of 294. Sufficient capacity is available in area high schools to meet the demand although school officials may need to send some students to schools outside their resident district.

Health Care

4E.26 Implementation of this alternative would add 17,540 people (military and dependents) to the population eligible for military-provided health services. The stationing alternative includes the construction of a hospital and dental clinic on-post to handle the increased demand for health services. Local hospital officials have expressed concern that construction of a hospital on-post would have a negative impact on regional health care facilities (Seguin, 1984; Bellinger, 1984). Jefferson and Lewis County hospitals have been instructed by the Federal Health Systems Agency to deactivate 93 acute care beds by the end of 1984. Fifty of these beds must come from the maternity and pediatric departments which are underused as a result of declining birth rates and increased elderly in the area. At Mercy Hospital average occupancy is 28 percent for maternity and 43 percent for pediatric beds. The loss of patients from Fort Drum would very likely require additional reductions in service. Local hospital officials believe that community facilities could be increased to meet the health care needs of an expanded population at Fort Drum. Local officials are

individual supply wells and septic systems which are unregulated or poorly regulated. Depending upon density and separation factors, such small individual septic systems often present a threat for contamination of drinking water supplies.

Solid Waste Disposal

4E.21 As stated in chapter 3, there is a regional problem with finding suitable landfill sites because of the highly permeable soils. The addition of 890 military families off-post plus the greatly expanded commercial activity would only aggravate this problem. The most workable solutions, which will be used in St. Lawrence County and are being considered for Jefferson County, probably are energy-recovery incineration facilities.

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SUPERSEDED
AUG 1984

also concerned that the use of a significant number of civilian nurses, technicians, and other staff on-post would drain qualified staff from local hospitals which cannot compete with the Federal pay scale (Seguin, 1984; Bellinger, 1984). About 33 percent of the required medical personnel on-post would be civilians.

4E.27 The short-term increased demand for health care caused by the arrival of all military personnel prior to when the hospital is scheduled for completion probably could be accommodated by existing area facilities. However, local hospitals would be required to hire additional staff which would then need to be cut back when the hospital on-post became operational. In addition a permanent, full-time ambulance service would probably be needed between the installation and local hospitals to serve the increased demand. If the Army takes some interim measures to meet health care needs on-post using temporary facilities this impact on local hospitals would be greatly reduced.

Cultural Resources

4E.28 There is a potential for disturbance or destruction of cultural resources due to private residential or commercial development that could occur as a result of the stationing alternative.

Fort Drum, New York

4E.29 The most pronounced effects of a new light infantry division will be felt directly on Fort Drum. On the facility there will be increased traffic, greater demands for family housing, and needs for schooling, health services, recreational facilities, and all utilities. The permanent population will expand greatly and it will be necessary to construct military facilities, housing, facilities for supporting services, and utilities. A listing of the planned construction activities is given in Appendix K.

Geology, Minerals, and Soils

4E.30 Two major effects probably would be:

1. Increased erosion in poorly protected regions, and

2. Increased quarrying of rock and gravel.

Increased erosion will be associated directly with the overall increase in the numbers of troop-days in the field and with increases in the lengths of the seasons in which activities take

place. As a result of these factors, there will be more ground traffic during the wet winter and spring periods when vegetation can be easily damaged. Furthermore, it will be more difficult for ground-cover vegetation to be reestablished in damaged areas. In addition, there would be increased quarrying of rock and gravel on the installation for the construction of roads and runways.

Biological Environment

4E.31 Terrestrial Ecosystems. Conversion of undeveloped lands to building areas for military facilities and housing will destroy approximately 230 acres of primarily woodlands on Fort Drum. These losses, however, are small in comparison with the total amount of habitat in the region of the Fort. It therefore can be concluded that the change will not create a significant stress on the regional terrestrial ecosystem.

4E.32 There will be greater pressure on wildlife because of the amount of year-round and nighttime field activities. Whereas Army training activities have been relatively minor during early spring breeding seasons, for example, much more activity now can be expected during these times. Deer wintering grounds also will be subject to disturbance and disruption by wintertime training activities unless special consideration is given to the areas. In addition, it is expected that the light infantry division will do extensive practice to become proficient at night fighting. This could disturb wildlife at rest and also disturb the activities of nocturnal animals.

4E.33 Aquatic Ecosystems. New housing to be constructed on about 200 acres to the northwest of the cantonment area will encroach upon or otherwise be very close to existing wetlands. Adverse effects will be mitigated, in part, by buffer zones to protect stream habitats. Also, encroachment upon wetlands is subject to State review and permit requirements. As in the case of terrestrial habitat, there are abundant wetlands in the region and the overall effects of encroachment and crowding would not have a significant effect on the total regional availability of aquatic habitat.

4E.34 Stream crossings, especially with vehicles, have damaged spawning areas and other elements of stream environments. The major offenders, however, have been tracked vehicles which will not be part of a light infantry division. Although stream damage undoubtedly will occur, the amounts probably will not exceed the amounts that Fort Drum has experienced in the past.

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4E.27 The short-term increased demand for health care caused by the arrival of all military personnel prior to when the hospital is scheduled for completion probably could be accommodated by existing area facilities. However, local hospitals would be required to hire additional staff which would then need to be cut back when the hospital on-post became operational. In addition a permanent, full-time ambulance service would probably be needed between the installation and local hospitals to serve the increased demand. If the Army takes some interim measures to meet health care needs on-post using temporary facilities this impact on local hospitals would be greatly reduced.

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SUPERSEDED
AUG 1984

4E.35 Threatened and Endangered Species. The Office of Endangered Species, U.S. Fish and Wildlife Service has advised that there are no threatened or endangered species known to be resident on the installation. Transient species would not be significantly affected (Mallory, 1984).

On-Post Population

4E.36 The work force population would increase from 1,030 to 8,860 military and from 920 to 2,330 civilian employees. Under this alternative 2,990 family housing units and approximately 10,300 barrack spaces will be constructed. This means that the on-post daytime population would be about 19,518 not counting visitors, and the on-post 24-hour population would be 16,035. In addition, during summer training peaks another 7,500 soldiers would be added to the population on-post.

4E.37 Current proposed timing of barracks and housing construction and the stationing of troops at Fort Drum could result in a serious short-term lack of housing space. Existing adequate barrack spaces number a maximum of 864 (90 sq. ft. per soldier), 65 percent of which are being utilized. There are an additional 10,330 spaces available in WWII barracks which are of wooden, open bay construction. Rehabilitation is scheduled for the older barracks but it will not be completed until FY 87. Construction of family housing will not be completed before FY 87 as well, and the new barracks construction is not scheduled to begin until FY 87. However, all of the division troops are scheduled to be stationed on-post prior to the end of FY 87. By the end of FY 87 then, the military population will be 8,860. It is possible that a majority of these troops would have to be temporarily quartered in existing WWII barracks. The maximum quartering figure used for planning intensive training and mobilization at Fort Drum is 21,400 persons. This is based on 60 sq.ft. of space per soldier at a density of 60 persons per barracks.

4E.38 The above population estimates do not account for medical personnel who would be needed to staff the hospital that is scheduled to be constructed on-post and become operational in FY 1989 or 1990. Based on the increased military population an estimated 172 medical personnel would be needed which includes 115 military and 57 civilian staff.

Land Use

4E.39 The major land use changes to result from the proposed stationing of a light infantry division at Fort Drum are:

- o Approximately 200 acres of land that now is wooded will be converted to housing,
- o Approximately 100 acres will be paved for roads, parking areas, and other uses,
- o Increased year-round army field activity will reduce the amount of public hunting that can be permitted on the installation, especially in the areas northeast, east, and southeast of the main impact area, and
- o Increased year-round army field activity will reduce lumbering on the installation, or make it more difficult to schedule and manage.

Noise

4E.40 The configuration of Fort Drum is such that the greatest noise effects of Army activities (weapons firing and aircraft) are east of the cantonment area and consequently are heard, not on-post, but in the communities near the firing ranges. The pattern is expected to remain the same after a light infantry division is added. As was stated in the discussion of regional noise a light infantry division does not use the same large caliber weapons that have resulted in problems in the past.

Air Quality

4E.41 Fort Drum already is planning to add a new central heating plant with a capacity of 50 million Btu per hour (MBtu/hr), to be fueled mainly with wood chips. The new plant will be equipped to remove particulates using a mechanical separator. Expected emissions when operating at full capacity will be 24.1 pounds per hour (lb/hr) of particulates, 9.6 lb/hr of sulfur dioxide, 27.0 lb/hr of nitrogen oxides, and 3.32 lb/hr of carbon monoxide (NUS Corporation, 1984).

4E.42 This power plant, however, would not meet the energy needs for the new light infantry division. It is estimated that an additional 110 MBtu/hr plant (probably coal-fired) would be required in addition to the planned new heating plant described above. Total emissions, therefore, would be approximately 3 times those given above for a 50 MBtu/hr plant.

Water Supply

4E.43 With added Fort Drum population and activities, a total water supply of approximately 3.6 million gallons per day (mgd)

poorly regulated. Depending upon density and separation factors, such small individual septic systems often present a threat for contamination of drinking water supplies.

Solid Waste Disposal

4D.22 As stated in Chapter 3, a regional problem exists with finding suitable landfill sites because of the highly permeable soils. The addition of 1,030 military families off-post plus the greatly expanded commercial activity would only aggravate this problem. The most workable solutions, which will be used in St. Lawrence County and are being considered for Jefferson County, probably are energy-recovery incineration facilities.

Housing

4D.23 The stationing of a light infantry division minus one infantry brigade at Fort Drum would have an impact on the regional housing market. Although the stationing alternative includes the construction of 3,453 housing units on-post, this would still force approximately 1,030 military families to find housing off-post. There could be some additional short-term pressure on local housing since on-post construction is not due to be completed until after troops have arrived on-post. This would result in either involuntary separation of military families or increased demand for off-post housing.

4D.24 There also would be an increase in civilian population in the area attracted by the increased economic activity generated with the influx of military personnel. The existing shortage of rental housing in the area generally can be attributed to the lack of demand for new housing due to a stable population and the large percentage of substandard housing which averages 19 percent of the total market as compared to 5.1 percent for the State (Black River-St. Lawrence Planning, 1976).

4D.25 Although the Housing Referral Service on-post has generally been able to meet the demand for off-post housing, they have experienced the problem of finding suitable housing. However, the community is reported to be making a considerable effort to assist in off-post housing, with support from state and local officials (Williams, 1980). Local officials contacted concerning the stationing alternative expressed confidence that, given the new on-post housing and phased stationing of division troops, the community would be able to respond to the demand for housing. In light of the 17.1 percent unemployment rate in Jefferson County, officials there thought the economic benefits would outweigh any land use problems generated by the new housing construction

(Jefferson County Planning Department, Greater Watertown Chamber of Commerce, 1984).

Schools

4D.26 The division minus an infantry brigade alternative at Fort Drum would involve approximately 4,030 additional school age dependents of military personnel (assuming a school age dependent ratio of .90 per married troop). One half of this number or 2,015 students are assumed to be elementary school age with the other half being junior and senior high school age. Current excess capacity for the nine public schools in the vicinity of the installation is 4,787. However, the proposed action includes the construction of two elementary schools on-post. This would provide sufficient capacity for the slightly more than 2,000 elementary school children residing on-post. Since all on-post children are currently attending area schools, this would remove approximately 260 students currently attending elementary schools in the area. All 2,015 junior and senior high school students would have to attend area schools. The proposed location of new division housing on-post would mean these students would attend Carthage and Indian River schools where there is a total excess capacity of 294. Sufficient capacity is available in area high schools to meet the demand although school officials may need to send some students to schools outside their resident district.

Health Care

4D.27 Implementation of this alternative would add 20,160 people (military and dependents) to the population eligible for military-provided health services. The stationing alternative includes the construction of a hospital and dental clinic on-post to handle the increased demand for health services. Local hospital officials have expressed concern that construction of a hospital on-post would have a negative impact on regional health care facilities (Seguin, 1984; Bellinger, 1984). Jefferson and Lewis County hospitals have been instructed by the Federal Health Systems Agency to deactivate 93 acute care beds by the end of 1984. Fifty of these beds must come from the maternity and pediatric departments which are underused as a result of declining birth rates and increased elderly in the area. At Mercy Hospital average occupancy is 28 percent for maternity and 43 percent for pediatric beds. The loss of patients from Fort Drum would very likely require additional reductions in service. Local hospital officials believe that community facilities could be increased to meet the health care needs of an expanded population at Fort Drum. Local officials are also concerned that the use of a significant number of civilian nurses, technicians, and other staff on-post would drain qualified

staff from local hospitals which cannot compete with the Federal pay scale (Seguin, 1984; Bellinger, 1984). About 33 percent of the required medical personnel on-post would be civilians.

4D.28 The short-term increased demand for health care caused by the arrival of all military personnel prior to when the hospital is scheduled for completion probably could be accommodated by existing area facilities. However, local hospitals would be required to hire additional staff which would then need to be cut back when the hospital on-post became operational. In addition a permanent, full-time ambulance service would probably be needed between the installation and local hospitals to serve the increased demand. If the Army takes some interim measures to meet health care needs on-post using temporary facilities this impact on local hospitals would be greatly reduced.

Cultural Resources

4D.29 There is a potential for disturbance or destruction of cultural resources due to private residential or commercial development that could occur as a result of the stationing alternative.

Fort Drum, New York

4D.30 The most pronounced effects of a new light infantry division will be felt directly on Fort Drum. On the facility there will be increased traffic, greater demands for family housing, and needs for schooling, health services, recreational facilities, and all utilities. The permanent population will expand greatly and it will be necessary to construct military facilities, housing, facilities for supporting services, and utilities.

Geology, Minerals, and Soils

4D.31 Two major effects probably would be:

1. Increased erosion in poorly protected regions, and

2. Increased quarrying of rock and gravel.

Increased erosion will be associated directly with the overall increase in the numbers of troop-days in the field and with increases in the lengths of the seasons in which activities take place. As a result of these factors, there will be more ground traffic during the wet winter and spring periods when vegetation can be easily damaged. Furthermore, it will be more difficult for ground-cover vegetation to be reestablished in damaged areas. In

addition, there would be increased quarrying of rock and gravel on the installation for the construction of roads and runways.

Biological Environment

4D.32 Terrestrial Ecosystems. Conversion of undeveloped lands to building areas for military facilities and housing will destroy approximately 230 acres of primarily woodlands on Fort Drum. These losses, however, are small in comparison with the total amount of habitat in the region of the Fort. It therefore can be concluded that the change will not create a significant stress on the regional terrestrial ecosystem.

4D.33 There will be greater pressure on wildlife because of the amount of year-round and nighttime field activities. Whereas Army training activities have been relatively minor during early spring breeding seasons, for example, much more activity now can be expected during these times. Deer wintering grounds also will be subject to disturbance and disruption by wintertime training activities unless special consideration is given to the areas. In addition, it is expected that the light infantry division will do extensive practice to become proficient at night fighting. This could disturb wildlife at rest and also disturb the activities of nocturnal animals.

4D.34 Aquatic Ecosystems. New housing to be constructed on about 230 acres to the northwest of the cantonment area will encroach upon or otherwise be very close to existing wetlands. Adverse effects will be mitigated, in part, by buffer zones to protect stream habitats. Also, encroachment upon wetlands is subject to State review and permit requirements. As in the case of terrestrial habitat, there are abundant wetlands in the region and the overall effects of encroachment and crowding would not have a significant effect on the total regional availability of aquatic habitat.

4D.35 Stream crossings, especially with vehicles, have damaged spawning areas and other elements of stream environments. The major offenders, however, have been tracked vehicles which will not be part of a light infantry division. Although stream damage undoubtedly will occur, the amounts probably will not exceed the amounts that Fort Drum has experienced in the past.

4D.36 Threatened and Endangered Species. The Office of Endangered Species, U.S. Fish and Wildlife Service, has advised that there are no threatened or endangered species known to be resident on the installation. Transient species would not be significantly affected (Mallory, 1984).

On-Post Population

4D.37 The work force population would increase from 1,030 to 9,990 military and from 920 to 2,410 civilian employees. Under this alternative 3,453 family housing units and approximately 11,500 barrack spaces will be constructed. This means that the on-post daytime population would be about 21,820 not counting visitors, and the on-post 24-hour population would be 19,210. In addition, during summer training peaks another 7,500 soldiers would be added to the population on-post.

4D.38 Current proposed timing of barracks and housing construction and the stationing of troops at Fort Drum could result in a serious short-term lack of housing space. Existing adequate barrack spaces number a maximum of 864 (90 sq. ft. per soldier), 65 percent of which are being utilized. There are an additional 10,330 spaces available in WWII barracks which are of wooden, open bay construction. Rehabilitation is scheduled for the older barracks but it will not be completed until FY 87. Construction of family housing will not be completed before FY 87 as well, and the new barracks construction is not scheduled to begin until FY 87. However over 51 percent of the division troops are scheduled to be stationed on-post prior to FY 87 with the remaining 4,374 to come on-post during FY 1987. By the end of FY 1987 then, the military population will be 9,990. It is possible that a majority of these troops would have to be temporarily quartered in existing WWII barracks. The maximum quartering figure used for planning intensive training and mobilization at Fort Drum is 21,400 persons. This is based on 60 sq. ft. of space per soldier at a density of 60 persons per barracks.

4D.39 The above population estimates do not account for medical personnel who would be needed to staff the hospital that is scheduled to be constructed on-post and become operational in FY 1989 or FY 1990. Based on the increased military population, an estimated 520 medical personnel would be needed, which includes 300 military and 220 civilian staff.

Land Use

4D.40 The major land use changes to result from the proposed stationing of a light infantry division at Fort Drum are:

- Approximately 230 acres of land that now is wooded will be converted to housing,
- Approximately 120 acres will be paved for roads, runways, parking areas, and other uses,

- o Increased year-round army field activity will reduce the amount of public hunting that can be permitted on the installation, especially in the areas northeast, east, and southeast of the main impact area, and

- o Increased year-round army field activity will reduce lumbering on the installation, or make it more difficult to schedule and manage.

Noise

4D.41 The configuration of Fort Drum is such that the greatest noise effects of Army activities (weapons firing and aircraft) are east of the cantonment area and consequently are heard, not on-post, but in the communities near the firing ranges. The pattern is expected to remain the same after a light infantry division minus an infantry brigade is added. As was stated in the discussion of regional noise, a light infantry division does not use the large caliber weapons that have resulted in problems in the past.

Air Quality

4D.42 Fort Drum already is planning to add a new central heating plant with a capacity of 50 million Btu per hour (MBtu/hr), to be fueled mainly with wood chips. The new plant will be equipped to remove particulates using a mechanical separator. Expected emissions when operating at full capacity will be 24.1 pounds per hour (lb/hr) of particulates, 9.6 lb/hr of sulfur dioxide, 27.0 lb/hr of nitrogen oxides, and 3.32 lb/hr of carbon monoxide (NUS Corporation, 1984).

4D.43 This power plant, however, would not meet the energy needs for the new light infantry division minus an infantry brigade. It is estimated that an additional 119 MBtu/hr plant (probably coal-fired) would be required in addition to the planned new heating plant described above. Total emissions, therefore, would be approximately 3 times those given above for a 50 MBtu/hr plant.

Water Supply

4D.44 With added Fort Drum population and activities, a total water supply of approximately 4.1 million gallons per day (mgd) would be required, an increase of 0.3 mgd over the present capacity of 3.8 mgd. This would be accomplished by adding approximately five new wells, which would provide the required new capacity plus enough reserve capacity to allow for taking some of the supply wells out of service for maintenance or to minimize drawdown. Considering the overall abundance of

ground water on the installation and in the region, there would not be any detrimental effects from developing the additional supply.

Wastewater Disposal

4D.45 A total treatment capacity of about 2.9 mgd would be required, which is less than the present primary treatment capacity of 4 mgd, but is far more than the secondary capacity of 1.1 mgd. Fort Drum has plans to increase the treatment capacity to meet these requirements. The new plant will increase the discharge of secondary-treated effluent into the Black River. There is currently no effluent problem in the Black River and it is expected the new plant will be within National Pollution Discharge Elimination System (NPDES) limitations.

Solid and Hazardous Waste Disposal

4D.46 As stated previously, Fort Drum and the surrounding region have problems with finding suitable landfill sites. Furthermore, Fort Drum's permit for its present landfill site will expire in December 1985. It is necessary, therefore, whether or not a light infantry division is stationed at Fort Drum, that the installation develop solutions that can be designed, built, and put in operation before December 1985. Whatever the solution devised (e.g., a suitably sealed landfill, or incineration facilities, on or off-post), the facility will be sized to meet the required needs.

Housing

4D.47 Approximately 70 percent of the current permanent military personnel assigned to Fort Drum reside on-post with no excess living quarters available. The proposed stationing alternative includes the construction of 3,453 family housing units to meet the needs of 90 percent of those eligible among division and support personnel. Although this would have a significant short-term impact during construction, the proposed site for the housing is next to existing housing, in an area not used for training. There would be a short-term shortage of family housing since all construction will be completed in FY 89 or later. The first significant number of military (2,914) would be stationed on-post in FY 86. In addition, 1,669 military personnel would be stationed at the installation in FY 84 and FY 85. Construction of 1,061,620 sq. ft. of new barracks space is not scheduled to begin until FY 87. All military personnel are scheduled to be on-post by the end of that fiscal year. A majority of these troops would be required to live in existing WWII wooden, open bay barracks which are substandard by current Army standards, for two years or more

until family housing and barracks construction and rehabilitation is completed. The only long-term impacts on-post would be in land use in the new housing site, since neither the current mission nor future operations would be affected by the new housing construction.

Schools

4D.48 The division minus an infantry brigade alternative at Fort Drum would involve approximately 4,030 additional school age dependents of military personnel (assuming a school age dependent ratio of .90 per married troop). The Army's proposed stationing alternative includes the construction of two elementary schools on-post totaling 81,164 square feet. Assuming 770 square feet per classroom, as is required by New York State, this would mean approximately 100 classrooms accommodating slightly more than 2,500 students (25 per room). If 50 percent of school age dependents are assumed to be in elementary school, this would mean approximately 2,015 students in grades K thru 6. Since not all school age dependents will live on-post and attend post schools (housing is provided for only 90 percent of those eligible) the proposed facilities should easily meet the projected demand for classroom space. All junior and senior high school students would attend area schools, the impacts of this are discussed in the regional impacts section.

Health Care

4D.49 Implementation of this alternative would add 20,160 people (military and dependents) to the population eligible for military-provided health services. Based on data from a comparably sized post, this size population would average approximately 750 clinic visits a day (includes retirees and retiree dependents) and an average daily admission rate to acute care beds of 10. The clinic at Fort Drum is currently handling 70 visits a day on average and has no acute care beds available (Poulton, 1984). To accommodate this significant increase in demand for health care the proposed action would include the construction of a hospital with a total area of 86,650 sq. ft. In addition, a dental clinic with an area of 16,361 sq. ft. would be constructed. Construction would begin in FY 87. This would mitigate the long-term impacts on the installation health care requirements. However, there would be a short-term strain on available health care services prior to and during hospital construction since all division and support personnel are scheduled to be stationed on-post by the end of FY 1987. The current estimate of when the hospital would be operational is FY 1989 or FY 1990 (Directorate of Engineering and Housing, 1984). Health Services Command is investigating how health services would be provided prior to the hospital completion. One

option being considered is the renovation of a deactivated World War II hospital on-post. A detailed engineering study by Fort Drum facilities engineers has been carried out within the past year on the cost of renovating the existing hospital buildings. However this study assessed only the renovation cost and not any equipment or supply requirements. In addition, the construction of an operating room was not considered.

Public Safety

4D.50 Stationing of a division minus an infantry brigade at Fort Drum would likely result in significant impacts on public safety on-post and in the Fort Drum area. Several factors would contribute to this impact including: (1) the large increase in population from 1,030 to 9,990 military; (2) a change in the type of military personnel from largely administrative to combat units; and (3) the lag time for the local communities economic and social infrastructure to meet the demands of a significantly increased permanent military population. The garrison's military police and judge advocate office personnel would be increased to meet the new demand and construction of additional detention space will be required. There could also be a considerable burden put on local law officials since on-post the military has concurrent jurisdiction in only a small part of the entire installation in a zone surrounding the cantonment area. Outside this area, military police may only detain people not subject to the Uniform Code of Military Justice who violate state laws on the installation and call the proper state or local police to take the offender into custody. Traffic law violations and criminal offenses committed upon the installation by persons not subject to the Uniform Code have long been a law enforcement problem at Fort Drum. The Judge Advocate's office has requested of the state that concurrent jurisdiction be given on the entire installation but as yet no action has been taken (Major Key, 1984).

As described in Appendix M, most crimes committed by Army personnel in the continental United States are confined to the installation. Further, Army crime rates in general have been declining. Between 1980 and 1983 the most common offenses committed by Army personnel, those against property, declined by 26%. Marijuana use and possession, the second most common offense declined by 64%, while crimes of violence, ranking third dropped 42% (U.S. Army Office of the Deputy Chief of Staff for Personnel, 1984). Although Army crime rates are not directly comparable to national trends, more arrests per 1000 of U.S. males 18 to 22 years versus Army personnel were made for crimes against property, drug offenses and crimes of violence in 1982. In the event of troop stationing, the actual number of crimes could increase, yet as detailed in Appendix M most of the increase probably would be concentrated on post.

Traffic and Transportation

4D.51 There would be two sources of increased transportation and transportation-related impacts in the Fort Drum area. The additional military vehicles and personnel stationed on-post would greatly increase traffic on the installation. The personal vehicles owned by the new population would also increase off-post transportation in the vicinity of Fort Drum. Increased traffic flow on and off-post would be expected to impact those routes which are currently most heavily used: Nash Boulevard and First Street West in the afternoon and Black River Road and First Street West in the morning. Traffic flow at Gates 1, 2, and 3 as presented in Chapter 3 could expect to increase in proportion to the increased

work force population living off-post. New road construction will take place in the area of the new housing units to be constructed on-post. Off-post the most serious impacts resulting from increased vehicular traffic should be experienced on State Highway 3 and U.S. Highway 11 with lesser impacts on County Highway 52 (Pearl Street) in the Watertown-Fort Drum corridor. It should be noted that New York State's Department of Transportation has scheduled a project for the reconditioning and preservation of the Pearl Street and Route 283 corridor to Fort Drum. The project is aimed at highway update with the reconstruction of the urban section in the City of Watertown and resurfacing of existing concrete pavement. The project has a tentative letting date scheduled for April 1985.

Cultural Resources

4D.52 In compliance with existing regulations the National Park Service has contracted for a cultural resources overview and management plan for Fort Drum. The work, which is scheduled to be completed in October 1984, will include the formulation of a predictive model of cultural resource distribution and density, and management recommendations to assist Fort Drum in considering cultural resources in their planning process. Two major historic sites on-post, the LeRay Mansion, listed on the National Register, and the Iroquois village site, nominated to the National Register, have been placed off limits to Army maneuvers. Given the potential for additional as yet undiscovered cultural resources on the post, there is a potential for impact on significant cultural resources under this alternative.

4D.53 Although the exact location and nature of many possible cultural resources, particularly archeological resources, is unknown, the potential impacts of the proposed action can be generally discussed. Basically, any action which produces ground disturbances in any form would have a potential for disturbing an archeological resource, thereby destroying data. Construction of new buildings and facilities, and establishment of roads include such elements as excavation, grading, filling or stockpiling of materials. All of these elements have a potential for disturbance or destruction of archeological materials. Renovation of existing buildings or demolition can damage and destroy significant historic structures.

4D.54 Many training activities, including maneuvering of vehicles and digging of foxholes, cause ground disturbances that have a potential for damaging or destroying an archaeological resource. Establishment of new training areas or increases in land utilization frequency for training over current levels can increase the potential for impacts to undisturbed cultural resources.

4D.55 Considerations will be given to identifying potential cultural resources, as well as protecting those known to exist. Authority for these actions are found in Army Regulation AR-420-40, Facilities Engineering, Historic Preservation (April 15, 1984) effective 15 May 1984. The procedures for accomplishing these

measures are detailed in the Army Technical Manual TM-5-801-1, Historic Preservation-Administrative Procedures and TM-5-801-2, Historic Preservation-Maintenance Procedures. In regard to the installation, the prime limitation would be to prohibit any destruction or alteration of all or part of any significant site through whatever measures are necessary (e.g., establishment of limited-use areas). It should be noted that it is always possible for studies to miss an archaeological site, particularly one which shows little or no surface evidence of its presence. Because of this, all construction contracts must allow for this possibility by specifying that, in the event that a suspected archaeological site is encountered during construction or some other form of activity, operations in the area would be suspended until the site is investigated by a professional archaeologist. This construction contract provision is required by 32 CFR 650.192, Department of the Army, Environmental Protection and Enhancement, Peacetime Responsibilities, Historic Preservation, Archaeological Sites (March 15, 1978). Similarly, training activities that involve the use of new areas or the increased use of areas presently used may uncover evidence of archaeological sites that was not uncovered by prior studies. Officers in charge of field activities should be made aware of this possibility and procedures should be established whereby the officer could inform the installation's Historic Preservation Committee of any finds so that the committee may take appropriate measures to avoid the accidental destruction of a site. Additionally, since the looting of sites by irresponsible persons can be a problem, security measures should be instituted to prevent destruction of archaeological data in this manner.

FORT CAMPBELL, KENTUCKY-TENNESSEE AND THE HOPKINSVILLE (KY)--CLARKSVILLE (TN) REGION

4D.56 The stationing alternative of an infantry brigade at Fort Campbell, together with other actions planned for the post within the timeframe 1984 through 1989, would add as many as 3,500 military troops, civilians, and their dependents to the region. Such an increase in population can provide benefits to a community in terms of increased business volume, personal income, tax revenues, and jobs. Although the influx would be spread out over the six years, some pressure may be placed on local and regional resources. A summary of impacts is provided in Tables 4D-2 and 4D-3.

Hopkinsville (KY)--Clarksville (TN) Region

4D.57 Examined in this section are the off-post impacts that could result from the stationing of a light infantry brigade at Fort Campbell. Essentially most of the potential impacts which are summarized are "worst case impacts" resulting from the use of

information based on authorized strength levels. The actual troop strengths of posts usually are less than authorized levels, and actual impacts should be somewhat less than those described.

Biological Environment

4D.58 No major impact on the biological environment surrounding Fort Campbell is expected from the stationing alternative, since there would be little new off-post development. Although nighttime maneuvers are expected to be more frequent under the stationing alternative, the minor effects would largely be confined to the post where wildlife (especially deer) have become accustomed to such noise and activity (Fort Campbell, 1981; Harschbarger, 1984). Minor increased recreational use could be expected of Barkley and Kentucky Lakes and the Land Between the Lakes Recreation Area west of the region.

Demography

4D.59 Stationing of a light infantry brigade at the post, coupled with drawdown in existing units to take place between FY 84 and FY 89, would lead to a net authorized troop strength increase of 1,150. This action would effectively change authorized troop strength at Fort Campbell from an FY 83 level of 22,210 to an FY 89 level of 23,360.

4D.60 Four hundred unmarried enlisted personnel would live on-post, while married personnel and bachelor officers would live in area communities. In the case of married personnel, this would be due to insufficient on-post housing, while for bachelor officers, it would be a matter of preference. Dependents accompanying incoming troops would increase the regional population by approximately 1,640 people. Department of the Army civilian employee positions at the post would increase by 50 and, thus, could also result in a net population gain for the region to the extent that these positions are filled by in-migrants.

4D.61 By comparison, the regional population is projected to increase approximately 27,000 to a 1990 total of 195,260. The addition of the 2,790 military personnel and their dependents would represent ten percent of the projected increase and less than two percent of the regional total.

4D.62 Incoming troops and dependents would have similar socio-economic characteristics as those now at Fort Campbell. Consequently, there should be little or no change in the area's demographic profile.

Land Use

4D.63 Regional land use effects associated with the stationing alternative would include some increases in residential and commercial development and the possible acquisition of additional lands by Fort Campbell for training areas. Residential and commercial development would likely occur as an extension of the U.S. Route 41-A corridor and in the vicinity of Hopkinsville. The increase in housing demand is estimated at a minimum of 700 units assuming no additional construction of on-post military family housing before FY 89. Commercial development would occur in the service sector as a response to the increase in the regional income. This development would be regulated by zoning and subdivision regulations in Montgomery County. Christian County has zoning, but only in urban areas.

4D.64 Fort Campbell currently has a deficit in range, impact, and maneuver areas given its current tenants and mission. The stationing of a light infantry brigade at the post would increase this deficit to between 20,000 and 30,000 acres. This deficit would require acquisition of additional acreage or increased off-post training activities at other military installations. On-post land currently used for forest and wildlife management and agriculture could be converted into additional maneuver areas. No plans currently exist for post expansion. However, if acquisition of additional acreage were to occur adjacent to the northern or southern boundaries of the post prime farmlands in active use would be lost. Acquisition of land on the post's western boundary has been considered before, but has met with opposition from area residents who have been relocated here as the result of an earlier post expansion and the creation of the Land Between the Lakes Recreation area.

Noise

4D.65 Training of the light infantry brigade would be similar to that currently conducted by the 101st Airborne Division. Primary noise sources would continue to be helicopters, weapons firing, and ordnance detonation. Assuming that these activities would be restricted to existing range, maneuver and impact areas, any increases in day-night (L_{dn}) noise levels at off-post locations would be limited to areas adjacent to the western boundary of the post. As noted in Section 3, the rural communities of LaFayette, Roaring Springs, and Big Rock are already adversely affected by blast noise. Estimation of potential noise increases cannot be made at this time because no training schedule has been established for the brigade. Should the brigade be stationed at Fort Campbell,

simulation modeling would be conducted as part of the Army ongoing noise assessment program.

Regional Economic Activity

4D.66 The stationing alternative would have a direct effect upon the four county regional economy through a net increase in on-post military and civilian employment of 1200, construction activity to support this increase totalling $26.0 million and an annual increase in purchases by the installation of $707,850 in regionally supplied goods and services. Additional economic benefits would accrue to the region through indirect economic activity resulting from multiplier effects

4D.66a It is likely that some of the civilian jobs created as a result of the stationing activity could be filled be spouses of incoming military personnel. As described in Appendix L about 36 percent of the spouses of Army enlisted men and 35 percent of Army officer spouses are members of the civilian workforce (Doering and Hutzler, 1982).

4D.67 The Economic Impact Forecast System (EIFS) has been used to estimate changes in total business volume and personal income within the region. Model outputs associated with mission change and construction resulting from the stationing alternative are displayed in Table 4D-4. Model outputs for mission change are expressed as permanent increases which reoccur on an annual basis over the life of the stationing alternative. Outputs associated with construction are the highest estimated values which could occur for the parameters in a single year over an expected five year construction period (FY 85-FY 89).

4D.68 Interpretation of changes in these parameters is possible through comparison of the percent change values associated with each parameter and the rational threshold value (RTV). Percent change value is that fraction of the regional total for a parameter that is attributable to the stationing alternative. The RTV is the maximum historical percentage fluctuation from yearly average change rates for each parameter. Percent change values which approach or exceed RTV values for one or more paramters may be considered as regional stress equal to or greater than that experienced over the period for which the RTV has been calculated (1965-78). Comparison of the percent change and RTV values in Table 4D-4 shows that the stress generated by the stationing alternative is well within the bounds of that experienced in the past.

4D.69 A printout of the EIFS model inputs and outputs is provided in Appendix D and a brief explanation of the model is found in Appendix I.

Air Quality

4D.70 The four county region is in attainment of federal and state air quality standards. The proposed action would increase the number of mobile and stationary sources on the post and in the

SUPERSEDED
AUG 1987

TABLE 4D-4

ECONOMIC EFFECT OF THE PROPOSED STATIONING ALTERNATIVE ON THE HOPKINSVILLE, KENTUCKY - CLARKSVILLE, TENNESSEE REGION[a]

Category	Highest One-Time Annual Change Due to Construction		Recurring Annual Change Due to Proposed Stationing		Rational Threshold Value	
	Amount of Change	Percent Change	Amount of Change	Percent Change	Negative	Positive
Total business volume	$4,761,000	+0.3	$19,105,000	+1.3	-6.9	9.4
Local personal income	$1,653,000	+0.1	$24,597,000	+2.0	-5.7	8.1
Employee equivalent[b]	95	+0.2	1,429	+2.3	-3.4	14.2

[a]All changes in 1984 dollars.

[b]Added personal income is equivalent to the average annual salaries of the number of persons shown.

region, but these increases would have a negligible effect on air quality. Mobile sources would increase by approximately 280 military vehicles and 1,200 privately-owned vehicles. This would be less than a five percent increase over the present number of vehicles registered on-post. Stationary sources would be comprised mostly of home heating units. Off-post, these could number as many as 754 units, based on projected housing demand, or approximately one percent of the 1980 regional housing stock. Individual home heating units are not regulated air pollution sources. Air quality effects due to on-post point sources are addressed under Air Emissions, Fort Campbell.

Water Supply

4D.71 The number of individuals living off-post as a result of the proposed action would represent less than nine percent of the projected regional increase in population, and would represent less than one percent of the regional population in 1990. Due to the relatively small number of individuals expected to live off-post and their likely diffusion throughout urban and rural areas surrounding the post (Clarksville, Hopkinsville, Oak Grove, Pembroke, etc.), it is unlikely that severe stress on off-post water supply systems (which currently have considerable excess capacity) would result from the proposed stationing action.

Wastewater Disposal

4D.72 Due to the relatively small number of individuals expected to live off-post and their likely diffusion throughout urban and rural areas surrounding the post, and the expansion and upgrading of local wastewater collection and treatment systems currently underway or planned, it is unlikely that severe stress on off-post wastewater systems would result from the proposed stationing action.

Solid Waste Disposal

4D.73 Due to the relatively small number of individuals expected to live off-post and their likely diffusion throughout urban and rural areas surrounding the post, it is unlikely that severe stress would be placed on local solid waste disposal systems as a result of the proposed stationing action.

Housing

4D.74 The net increase in the regional population of approximately 2,790 military personnel and dependents could generate a demand for 754 housing units and 400 barrack spaces. The 754

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TABLE 4D-4

ECONOMIC EFFECT OF THE PROPOSED STATIONING ALTERNATIVE ON THE HOPKINSVILLE, KENTUCKY - CLARKSVILLE, TENNESSEE REGION[a]

Category	Highest One-Time Annual Change Due to Construction		Recurring Annual Change Due to Proposed Stationing		Rational Threshold Value	
	Amount of Change	Percent Change	Amount of Change	Percent Change	Negative	Positive
Total business volume	$4,761,000	+0.3	$19,105,000	+1.3	-8.4	13.0
Local personal income	$1,653,000	+0.1	$24,597,000	+2.0	-7.6	12.4
Employee equivalent[b]	95	+0.2	1,429	+2.3	-1.8	6.7

[a]All changes in 1984 dollars.

[b]Added personal income is equivalent to the average annual salaries of the number of persons shown.

units represent only one percent of the 1980 regional housing stock and approximately seven percent of the projected 1980-1990 increase in housing. However, without additional construction of military family housing, this increase demand would only serve to worsen the 1,000-plus dwelling unit deficiency calculated to exist for Fort Campbell personnel on the basis of cost, distance, and substandard conditions.

Schools

4D.75 Approximately 590 school aged children would be brought into the region as a result of the stationing alternative. Without additional construction of on-post family housing, these students would most likely be enrolled in Christian and Montgomery County schools. As noted in Chapter 3, Christian County has been experiencing declining enrollments and thus this influx would not pose a problem. However, Montgomery County schools in the vicinity of Fort Campbell are currently experiencing overcrowding which would be worsened by additional enrollments.

Health Care

4D.76 All military personnel and dependents moving into the region would be eligible for dental and medical treatment at on-post facilities. As is the current practice, most future patient referrals under CHAMPUS would be to Nashville area medical facilities.

Cultural Resources

4D.77 There is a potential for disturbance or destruction of cultural resources due to private residential or commercial development that would occur as a result of the proposed alternative.

Fort Campbell, Kentucky-Tennessee

4D.78 Examined in this section are the on-post impacts that could result from the stationing of a light infantry brigade at Fort Campbell. The areas where significant impacts would occur include on-post land use, noise, water supply, wastewater disposal, housing, schools, and traffic.

Geology, Minerals and Soils

4D.79 The stationing of a light infantry brigade at Fort Campbell is not expected to result in significant impacts on mineral resources or soils. The training and maneuvering activities would increase, but would be similar to those of the 101st Airborne

Division, currently stationed at the post. The brigade would not utilize heavy tracked vehicles.

Biological Environment

4D.80 Terrestrial Ecosystems. Most of the wildlife found in the Fort Campbell area are grazers (deer), small game (rabbits, squirrels), and upland game birds (quail, doves, turkeys) that are somewhat tolerant of human activities. The destruction of existing wildlife habitat would not occur, because no new ranges, impact, or maneuvering areas are planned. The only impact would be increased noise-generating helicopter activity. The noise can cause wildlife to leave the area temporarily until the noise is eliminated or the animals become accustomed to it. Except when in their immediate vicinity, much of the wildlife (except deer) have become so accustomed to helicopter activity they tend to ignore it. Any stress placed on adjacent areas because of game movement is minimal (Fort Campbell, 1981; Harschbarger, 1984).

4D.81 Increased frequency in use of training areas on-post resulting from the proposed action could restrict hunting activities. The increased frequency of use also could constrain prescribed burning used to reduce undesirable shrub and tree species, to prepare seedbeds for the regeneration of fire tolerant species (primarily pine), to control the spread and severity of forest diseases and wildfires, and to improve wildlife habitat. The proposed action is not expected to introduce presently undisturbed areas to new disturbance.

4D.82 Aquatic Ecosystems. The point and non-point sources of pollution from the installation are currently under good control. Erosion control has been achieved by systematic revegetation of cleared land areas, the use of mulches on freshly seeded areas, and the diversion of runoff in stabilized ditches to prevent gully erosion. These activities should provide the requisite measures necessary to minimize soil erosion and attendant pollution problems. No major impacts to aquatic ecosystems are expected to occur as a result of the stationing action.

4D.83 Threatened and Endangered Species. The activities associated with the proposed stationing action are not expected to impact threatened and endangered species. The U.S. Fish and Wildlife Service has identified four such species (see Section 3.0) which may be present on Fort Campbell (gray bat, Indiana bat, bald eagle, and the red-cockaded woodpecker). Based on observations by Fort Campbell foresters, none of these species have been sighted in any area of the post.

4D.84 There are no known caves on Fort Campbell which are habitats for bats. Only one large cave is present. It is located north of Angels Road directly north of the Bastogne drop zone. It is considered a "dry" cave, about five to six feet in height and 20 feet deep. No other caves are known to exist. Where limestone outcrops occur, underground drainage exits through thin fissures between rock strata.

4D.85 Nesting pairs of the bald eagle have been observed and are protected in the Land Between the Lakes Recreation Area (U.S. Army Corps of Engineers, Nashville District, 1975). It is conceivable that they could fly over the post.

4D.86 The post is near the northern edge of the range of the red-cockaded woodpecker. It frequents large (generally about 60 years or older) pine trees (preferably loblolly pine) in thick stands. The stands of pines on the post are mostly of loblolly pine that have been planted as part of a reforestation program which began in the mid-1950's. Prior to 1940, most of the land on the post had been cleared for farming. The foresters on the post are aware of the habitat needs of the woodpecker. Some maturing stands of the loblolly pine on Fort Campbell may be ideal habitat for the red-cockaded woodpecker in the future years.

4D.87 The Office of Endangered Species, U.S. Fish and Wildlife Service agrees that the proposed alternative would not affect any endangered or threatened species at Fort Campbell.

On-Post Population

4D.88 The stationing alternative in conjunction with drawdown expected among existing tenants would result in a net increase in the military population of 1,150 over a six-year period. This would effectively increase the post's authorized military strength from 22,210 in FY 83 to 23,360 in FY 89. During this same period, civilian employees of the Department of the Army would increase by 50. Without construction of additional family housing, and bachelor enlisted and officer quarters, the increase in the post's full-time population would be limited to enlisted personnel living in barracks. This increase is estimated to be 400 on the assumption that married enlisted personnel would be living off-post. The post's daytime population would increase by the number of civilians and military personnel noted above and the use of the post's facilities by an estimated increase in the off-post dependent population of 1640.

Land Use

4D.89 On-post land use effects associated with the stationing alternative include construction of new post facilities to support the light infantry brigade and more intensive use of maneuver and range areas.

4D.90 Construction projects include brigade headquarters, mess and motor pool facilities and battalion and company administrative and supply areas totaling 203,250 square feet. No additional barracks space would have to be constructed given the post's current excess.

4D.91 Training requirements for the brigade would be similar to those of the post's major tenant, the 101st Airborne Division. Maneuver areas have a current utilization rate of 104 percent and with the addition of the light infantry brigade, this rate should increase by another 25 percent (Eaves, 1984). Range utilization would also increase with the effects upon capacity varying from range to range. As noted previously, some of the post's ranges are curently at capacity.

Noise

4D.92 The stationing alternative would increase the frequency with which aircraft, weapons, and blast noise is experienced and thus potentially increase present day-night noise levels. While the light infantry brigade would not be bringing an aviation component to the post, helicopers already supporting the 101st Airborne Division would likely also be used in some of the brigade's exercises, thus increasing the overall number of aircraft operations in the post's airspace. Utilization of existing ranges and impact areas would also increase by an estimated 25 percent. Night training operations are currently carried out on-post and would also increase in frequency. If the brigade is stationed at Fort Campbell, a training schedule would be established and simulation modeling conducted as part of the Army's ongoing noise assessment program.

Air Quality

4D.93 The stationing alternative would result in an increase in both point and mobile source emissions on-post. Point source emissions would increase as the result of heating requirements for 203,250 square feet of new construction required by the light infantry brigade while higher mobile source emissions would reflect an increase in military and civilian vehicles.

4D.94 At a figure of 225 KBTU/sq. ft/yr, the new construction would represent an increase of 2.7 percent in energy consumption for heating over FY 83 levels. Assuming a proportional increase in air emissions, the post's point source pollutant burden would increase as shown in Table 4D-5.

4D.95 The military vehicle population at the post would increase by 280 or approximately 4.5 percent over the FY 83 total. Privately owned vehicles registered on-post would increase by an estimated 1,200 or approximately 4.7 percent over the FY 83 total assuming the current ratio of 1.03 registered vehicles to military and civilian employees can be applied. Baseline mobile source data are not available for the post.

Water Supply

4D.96 For 1983, the existing effective population (full-time military and dependents residing on-post and a part-time population of military and civilian employees living off-post) for Fort Campbell was estimated to be 32,300. The capacity of existing water storage facilities limits Fort Campbell's effective population to 31,500 (e.g., to provide adequate water for 24 hours under emergency conditions and fire control; Miller/Wihry, Inc., 1983).

4D.97 Using a ratio of effective population to military of 1.4 (ratio for 1983), the effective population on-post anticipated for 1989 would be about 32,700. An additional water storage tank would be needed to meet future needs (Harland Bartholomew and Associates, Inc., 1982). Other existing water supply systems are adequate for the anticipated effective population. For example, the maximum effective population served by the existing treatment plant is 46,000, the distribution system is 50,000, and the raw water transmission system is 58,100 (Miller/Wihry, Inc., 1983).

Wastewater Disposal

4D.98 Based on plans for future development, the Fort Campbell sewage treatment system will be near theoretical capacity in 1987 based on the design flow of about 4.1 million gallons per day (see Section 3.0) (Harland Bartholomew and Associates, Inc., 1983). A study of the expansion capability of the system has shown that the existing system is limited by its collection capacity to serve a maximum effective population of 36,300 (Miller/Wihry, Inc., 1983). The proposed stationing action and other changes in personnel on-post, projected (through 1989) as part of this alternative, are expected to result in an effective population below this level. However, utilizing a maximum daily water consumption rate of 210 gallons per capita per day, a projected effective population of

SUPERSEDED
AUG 1984

TABLE 4D-5

POINT SOURCE EMISSION TOTALS (TONS/YR)
FOR FORT CAMPBELL, KENTUCKY

	Pollutant				
	TSP	SO_2	NO_x	CO	HC
FY83 Total	2.00	23.61	39.21	14.77	0.77
Increase Due to Brigade	0.05	0.64	1.06	0.40	0.03

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32,700 (resulting from the proposed action), and a 60 percent ratio of daily water consumption and sewage flow (see Section 3.0), the projected sewage flow would be about 4.1 million gallons per day. Thus, the capacity of the sewage treatment system may be reached by 1989. A study may be required to determine sewage system capacity requirements after 1989. However, the existing system appears to be adequate to serve the projected effective population resulting from this alternative.

Solid and Hazardous Waste Disposal

4D.99 Fort Campbell's solid waste disposal system and hazardous waste collection and storage procedures appear to be adequate for the foreseeable future. The system of waste management should easily accomodate wastes associated with the slight increase in the effective population of the post associated with this alternative.

Housing

4D.100 The proposed action and concurrent drawdown among existing units at Fort Campbell would result in a net increase of 1,150 military personnel by FY 89. For planning purposes, it is estimated that 654 of these will be married. The 500 bachelor personnel are expected to be composed of 100 officers and 400 enlisted.

4D.101 Given that on-post married housing is not sufficient to meet the needs of the existing post population, any increase in demand would of necessity go unmet. The post is currently a candidate for 300 units of Section 802 (Military Family Housing Rental Assurance Program) housing. However, it is too early in the planning process to determine whether or not the housing would be constructed or, if constructed, whether it would be located on-post or in the surrounding community.

4D.102 In contrast, there presently exists an excess of 2,300 permanent barracks spaces and so the anticipated increase of 400 personnel could be accommodated. However, allocating barracks space for the light infantry brigade as a unit would likely require reallocation of barracks space among existing units on-post or increased use of temporary barracks.

4D.103 Bachelor officers have the option to live off-post and most do. Consequently, there would be little increased demand for BOQ space, most of which is currently being made available to married officers who are not accompanied by their families (Bonner, 1984).

Schools

4D.104 The existing on-post school population is not likely to change in number during the FY 84 to FY 89 period unless additional units of military family housing are constructed on-post. If 300 units of Section 802 housing were constructed on-post, the post's school population would increase by 270. This increase would worsen the overcrowding currently experienced in the post's elementary schools and partially offset the decrease in overcrowding in junior and senior high schools which will occur with the opening of the post's new 800 student high school.

Health Care

4D.105 A net increase of 2,790 military personnel and dependents by FY 89 would be a 4 percent increase in the post's FY 83 inpatient catchment area population of 67,930. With a present utilization rate of 73 percent of capacity (as calculated in terms of bed-days), this increase would not adversely affect inpatient care. However, it could place some strain on outpatient clinics which are nearing capacity and dental facilities which have been determined to be over capacity on the basis of available dental chairs.

Public Safety

4D.106 The light infantry brigade would have a military police platoon as one of its components. This platoon would consist of one officer and 20 enlisted personnel. The addition of these personnel would mean that law enforcement would not be adversely affected as a result of the projected FY 84-FY 89 increase in the post's population.

4D.106a As described in Appendix M, most crimes committed by Army personnel in the continental United States are confined to the installation. Further, Army crime rates in general have been declining. Between 1980 and 1983 the most common offenses committed by Army personnel, those against property, declined by 26 percent. Marijuana use and possession, the second most common offense declined by 64 percent, while crimes of violence, ranking third dropped 42 percent (U.S. Army Office of the Deputy Chief of Staff for Personnel, 1984). Although Army crime rates are not directly comparable to national trends, more arrests per 1000 of U.S. males 18 to 22 years versus Army personnel were made for crimes against property, drug offenses and crimes of violence in 1982. In the event of troop stationing, the actual number of crimes could increase, yet as detailed in Appendix M most of the increase probably would be concentrated on post.

REVISED 1984

4D.107 As noted in Chapter 3, the post fire department is understaffed and underequipped. The addition of 203,250 square feet of building space to support the light infantry brigade would worsen existing deficiencies.

Traffic and Transportation

4D.108 Airfields. The light infantry brigade would not include an aviation component and thus the number of aircraft at Fort Campbell is not expected to change as a result of this action. However, it is expected that helicopters presently supporting the 101st Airborne Division would also be used in some brigade training exercises. This would increase the total number of aircraft operations in Fort Campbell airspace.

SUPERSEDED
AUG 1984

4D.109 Roadways. The brigade would increase the post's military vehicle population by 280. Net increases in military and civilian personnel during the FY 84-FY 89 period are estimated to increase the number of privately owned vehicles registered on-post by 1,200. These increases represent less than 5 percent of the post's existing military and privately-owned vehicle populations.

4D.110 Traffic studies conducted in 1978 suggest that the combined military and civilian employee population generated 0.2 peak hour and 2.33 daily vehicle trips per person through the post's gates (Harland Bartholomew and Associates, 1982). Applying these same trip generation rates to the 1,200 military and civilian employees to be added to the post's population suggests that peak hour traffic volumes at the post's gates would increase by 240 and that daily volumes at these locations would increase by 2,800. These increases are not of a magnitude that would substantially affect on-post intersection or roadway capacity. They would, however, aggravate parking problems, especially in areas of the post that provide commercial and community center facilities.

4D.111 During rush hours, the 240 vehicle increase would not appreciably affect delays experienced at gate areas. The increase in off-peak traffic flow through the gates would likewise have little effect. Traffic flows within the U.S. 41-A corridor would increase as a result of traffic entering and exiting the post. The anticipated increase in average daily traffic in this corridor would be equivalent to 10 percent of the 1981 daily volume. This 10 percent increase coupled with continuing growth in the corridor would worsen the problems noted in Chapter 3.

Cultural Resources

4D.112 Fort Campbell has initiated an extensive survey of its cultural resources. Three major phases of the study are ongoing inventory and evaluation; compliance with federal, state, and post regulations; and protection of known significant properties. Measures are being taken to discourage relic hunters; to educate Army personnel and civilians of relevant prohibitions and penalties; to restrict knowledge of the location of significant properties; to avoid activities which erode the ground surface of archaeological sites, and to promote sod and other vegetative growth to conceal significant cultural sites identified by the ongoing inventory (O'Malley, et al., 1983, Harschbarger, 1984).

4D.113 Significant archaeological and historic resources are known to exist within Fort Campbell, and a potential exists for additional, as yet undiscovered, resources. Given the construction

and increased training proposed, the potential exists for some impact on significant cultural resources.

4D.114 Although the exact location and nature of many possible cultural resources, particularly archeological resources, is unknown, the potential impacts of the proposed action can be generally discussed. Basically, any action which produces ground disturbances in any form would have a potential for disturbing an archeological resource, thereby destroying data. Construction of new buildings and facilities, and establishment of roads include such elements as excavation, grading, filling or stockpiling of materials. All of these elements have a potential for disturbance or destruction of archeological materials. Renovation of existing buildings or demolition can damage and destroy significant historic structures.

4D.115 Many training activities, including maneuvering of vehicles and digging of foxholes, cause ground disturbances that have a potential for damaging or destroying an archaeological resource. Establishment of new training areas or increases in land utilization frequency for training over current levels can increase the potential for impacts to undisturbed cultural resources.

4D.116 Considerations will be given to identifying potential cultural resources, as well as protecting those known to exist. Authority and procedures for these actions are found in Army Regulation AR-420-40, Facilities Engineering, Historic Preservation (April 15, 1984) effective 15 May 1984. The procedures for accomplishing these measures are detailed in the Army Technical Manual TM-5-801-1, Historic Preservation-Administrative Procedures and TM-5-801-2, Historic Preservation-Maintenance Procedures. In regard to the installation, the prime limitation would be tc prohibit any destruction or alteration of all or part of any significant site through whatever measures are necessary (e.g., establishment of limited-use areas). It should be noted that it is always possible for studies to miss an archaeological site, particularly one which shows little or no surface evidence of its presence. Because of this, all construction contracts must allow for this possibility by specifying that, in the event that a suspected archaeological site is encountered during construction or some other form of activity, operations in the area would be suspended until the site is investigated by a professional archaeologist. This construction contract provision is required by 32 CFR 650.192, Department of the Army, Environmental Protection and Enhancement, Peacetime Responsibilities, Historic Preservation, Archaeological Sites (March 15, 1978). Similarly, training activities that involve the use of new areas or the increased use of areas presently used may uncover evidence of archaeological sites

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4D.113 Significant archaeological and historic resources are known to exist within Fort Campbell, and a potential exists for additional, as yet undiscovered, resources. Given the construction

that was not uncovered by prior studies. Officers in charge of field activities should be made aware of this possibility and procedures should be established whereby the officer could inform the installation's Historic Preservation Committee of any finds so that the committee may take appropriate measures to avoid the accidental destruction of a site. Additionally, since the looting of sites by irresponsible persons can be a problem, security measures should be instituted to prevent destruction of archaeological data in this manner.

ENERGY AND FUELS ANALYSIS

4D.117 Th anticipated changes in energy and fuel consumption at each of the ..cs involved in this alternative are summarized in Table 4D-6. The methodology for the derivation of these estimates is presented in Appendix H.

4D.118 Increased gasoline consumption for private vehicles owned by military personnel is based on 16,200 additional vehicles at the forts, each driven an average of 9,026 miles per year with a mileage of 15.53 miles per gallon (Motor Vehicle Manufacturers Association, 1983). The resulting estimated increase in fuel consumption is 9 million gallons of gasoline per year. This consumption is an increase of 1,200 billion Btu per year, or 43 percent more fuel than is presently being consumed in the private vehicles of military personnel at the forts. The estimated number of motor vehicles and corresponding gasoline consumption in the counties adjacent to Fort Drum are 92,600 vehicles consuming 11 trillion Btu per year. The implementation of this alternative would increase local gasoline consumption by 9 percent. The corresponding estimates for Fort Campbell are 130,000 vehicles consuming 9.50 trillion Btu per year. The increase in local gasoline consumption near Fort Campbell is 1 percent.

4D.119 The increase in energy consumption for off-post housing is based on an increase of 3,600 military personnel and dependents living off-post at Fort Drum and 2,300 living off-post at Fort Campbell. The resulting fuel requirement of 380 billion Btu at Fort Drum represents a 2 percent increase in the present residential consumption of 24 trillion Btu in the counties adjacent to the installation. At Fort Campbell the resulting fuel requirement of 324 billion Btu represents a 1 percent increase in the present residential consumption of 24 trillion Btu in the counties adjacent to the installation.

4D.120 The increased requirement for on-post heating and associated energy usage is a linear extrapolation of the per capita on-post energy usage based on the effective population on-post as

TABLE 4D-6

INCREASED ENERGY REQUIREMENTS UNDER THE
FORT DRUM-FORT CAMPBELL STATIONING ALTERNATIVE

	Fort Drum	Fort Campbell
Personal Vehicles		
Increase, 10^9 Btu/yr	1,000	130
Percent[1]	870	5
Off-Post Housing		
Increase, 10^9 Btu/yr	380	320
Percent[1]	33	14
Military Vehicles		
Increase, 10^9 Btu/yr	1,120	70
Percent[1]	1,600	5
On-Post Usage		
Increase, 10^9 Btu/yr	3,400	100
Percent[1]	886	2
Total Energy Use		
Increase, 10^9 Btu/yr	4,500	300
Percent[1]	675	3
Total Annual Use, 10^9 Btu/yr	5,200	11,000
Energy Requirement per Troop 10^6 Btu/yr	519	457

[1]Percent Increase = Increased Energy Requirement x 100/Present Consumption.

SUPERSEDED
AUG 1984

defined in TB ENG 354. The projected increase of 3,400 billion Btu per year at Fort Drum is 886 percent of the current energy usage. At Fort Campbell, the projected increase of 100 billion Btu per year is 2 percent of the present energy usage. Assuming the relative proportions of fuels used at the installations remain unchanged, implementation of this alternative require the following additional amounts of fuels and energy:

	Fort Drum	Fort Campbell
Coal, tons	9,600	0
Fuel Oil, million gallons	7.93	0.06
Natural Gas, million therms	0.04	0.03
Propane, gallons	812,600	5,100
Gasoline, million gallons	3.24	0.11
Diesel Fuel, million gallons	1.76	0.13
Aviation Fuel, million gallons	3.73	0.26
Electricity, TKWH	168,300	16,600

4D.121 The 1,480 additional vehicles at Fort Drum would use 328,000 gallons of gasoline and 567,000 gallons of diesel fuel. The 220 additional vehicles at Fort Campbell would use 65,000 gallons of gasoline and 114,000 gallons of diesel fuel.

4D.122 The consumption of aviation fuel includes transport of the infantry brigade to Fort Drum once a year. The travel distance is 900 miles, requiring 70,200 gallons of JP 4. The number of additional helicopters at Fort Drum would be 100. Based on flight time of 300 hours per year and fuel consumption of 100 gallons per hour, the helicopters account for 3 million gallons of the increase in aviation fuel use at Fort Drum.

4D.123 The total additional energy requirements resulting from implementation of this alternative are 4.5 trillion Btu at Fort Drum and 0.3 trillion Btu at Fort Campbell. These requirements are 675 percent of present energy consumption at Fort Drum and 3 percent of that at Fort Campbell. The total fuel consumption per troop would change from 649 MBtu to 519 MBtu at Fort Drum, and from 467 MBtu to 457 MBtu at Fort Campbell.

4D.124 Although there would be some impact on local energy use due to implementation of this alternative, the impact on national energy use would be negligible. Personnel of the light infantry division are to be drawn from existing Army units. Therefore, there would be a decrease in energy use in the localities where the troops are presently stationed approximately equal to the impacts described here. Similarly, many of the vehicles for the light infantry

division are to be obtained from existing inventory. The only new vehicles to be added to the Army would be light trucks.

MITIGATING MEASURES

4D.125 Mitigating measures are defined as those actions that can be taken to lessen the adverse impacts resulting from implementation of the proposed action. Mitigating measures can be taken in anticipation of, concurrently with, or subsequent to the proposed action to minimize or offset undesirable impacts. Tables 4D-7 and 4D-8 describe generic mitigation measures available to the government. The measures described are potential only. No commitment is intended that these will be chosen at any specific installation. There are many variables influencing actual mitigation, including funding, timing, other Army actions, and specific environmental conditions found while the Army implements actions described here.

ADVERSE IMPACTS THAT CANNOT BE AVOIDED

4D.126 Some effects of the proposed stationing action cannot be mitigated. Those adverse impacts that cannot be avoided even after using the measures given in the Mitigating Measures tables are summarized in Table 4D-9.

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TABLE 4D-7

SUMMARY OF MITIGATING MEASURES FOR REGIONAL EFFECTS OF THE FORT DRUM-FORT CAMPBELL STATIONING ALTERNATIVE

Category	Fort Drum, New York	Fort Campbell, Kentucky
Biological Environment	Consider biological effects in selection of any off-post areas for construction activities (e.g., housing, commercial development).	No mitigating measures required because no significant impacts have been identified.
Demography	No feasible mitigating measures available.	No mitigating measures required because no significant impacts have been identified.
Land Use	Coordinated planning and regulation by local governments in region to minimize "sprawl" effects of rapid development.	Acquisition of off-post lands for training areas could be avoided by increasing the frequency with which the post's tenants participate in exercises at other military facilities.
Noise	To the extent practical restrict, reschedule, or relocate any on-post activities with a potential for regional noise conflict.	No feasible mitigating measures are available. Mitigating measures are not possible without a change in mission.
Regional Economic Activity	Institute advanced planning to allow local governments and private firms adequate time to plan for mitigation of any potentially adverse impacts.	No mitigating measures required because no significant impacts have been identified.
Air Quality	Applications for stationary source permits are subject to Prevention of Significant Deterioration (PSD) review by NYSDEC.	No mitigating measures required because no significant impacts have been identified.
Water Supply	Regulation of private septic systems to avoid ground water contamination.	No mitigating measures required because no significant impacts have been identified.
Wastewater Disposal	Permits are subject to NYSDEC review for NPDES compliance.	No mitigating measures required because no significant impacts have been identified.
Solid Waste Disposal	Implement plans being developed for area resource recovery incineration programs and facilities in Jefferson and St. Lawrence counties.	No mitigating measures required because no significant impacts have been identified.
Housing	Would construct on-post housing to lessen demand on region. Alter schedule for stationing or construction to mitigate possible short-term housing shortage.	Construction of additional military family housing would mitigate existing and projected deficits in adequate and affordable housing.
Schools	Would build elementary schools on post to mitigate pressure on region. Reassign junior and senior high school students from overcrowded to underused school districts in area. Alter schedule for stationing or construction to avoid potential short-term pressure or schools prior to school construction on post.	Construction of on-post military family housing would decrease the number of military dependents attending county schools.
Health Care	Make temporary provisions for short-term health care services prior to hospital construction on post; or alter schedule for construction to allow for hospital completion on post prior to arrival of troops.	No mitigating measures required because no significant impacts have been identified.

REVISED 1984

SUPERSEDED
AUG 1984

nurses, technicians, and other staff on-post would drain qualified staff from local hospitals which cannot compete with the Federal pay scale (Seguin, 1984; Bellinger, 1984). Almost 33 percent of the required medical personnel on-post would be civilians.

4G.28 The short term increased demand for health care caused by the arrival of 93 percent of all military personnel prior to when the hospital is scheduled for completion probably could be accommodated by existing area facilities. However, local hospitals would be required to hire additional staff which would then need to be cut back when the hospital on-post became operational. In addition a permanent, full time ambulance service would probably be needed between the installation and local hospitals to serve the increased demand. If the Army takes some interim measures to meet health care needs on-post using temporary facilities this impact on local hospitals would be greatly reduced.

Cultural Resources

4G.29 There is a potential for disturbance or destruction of cultural resources due to private residential or commercial development that could occur as a result of the stationing alternative.

Fort Drum, New York

4G.30 The most pronounced effects of a new light infantry division will be felt directly on Fort Drum. On the facility there will be increased traffic, greater demands for family housing, and needs for schooling, health services, recreational facilities, and all utilities. The permanent population will expand greatly and it will be necessary to construct military facilities, housing, facilities for supporting services, and utilities. A listing of the planned construction activities was given in Appendix K.

Geology, Minerals and Soils

4G.31 Two major effects probably would be:

1. Increased erosion in poorly protected regions, and

2. Increased quarrying of rock and gravel.

Increased erosion will be associated directly with the overall increase in the numbers of troop-days in the field and with increases in the lengths of the seasons in which activities take place. As a result of these factors, there will be more ground

traffic during the wet winter and spring periods when vegetation can be easily damaged. Furthermore, it will be more difficult for ground-cover vegetation to be reestablished in damaged areas. In addition, there would be increased quarrying of rock and gravel on the installation for construction of roads and runways.

Biological Environment

4G.32 Terrestrial Ecosystems. Conversion of undeveloped lands to building areas for military facilities and housing will destroy approximately 300 acres of primarily woodlands on Fort Drum. These losses, however, are small in comparison with the total amount of habitat in the region of the Fort. It therefore can be concluded that the change will not create a significant stress on the regional terrestrial ecosystem.

4G.33 There will be greater pressure on wildlife because of the amount of year-round and nighttime field activities. Whereas Army training activities have been relatively minor during early spring breeding seasons, for example, much more activity now can be expected during these times. Deer wintering grounds also will be subject to disturbance and disruption by wintertime training activities unless special consideration is given to the areas. In addition, it is expected that the light infantry division will do extensive practice to become proficient at night fighting. This could disturb wildlife at rest and also disturb the activities of nocturnal animals.

4G.34 Aquatic Ecosystems. New housing to be constructed on about 280 acres to the northwest of the cantonment area will encroach upon or otherwise be very close to existing wetlands. Adverse effects will be mitigated, in part, by buffer zones to protect stream habitats. Also, encroachment upon wetlands is subject to State review and permit requirements. As in the case of terrestrial habitat, there are abundant wetlands in the region and the overall effects of encroachment and crowding would not have a significant effect on the total regional availability of aquatic habitat.

4G.35 Stream crossings, especially with vehicles, have damaged spawning areas and other elements of stream environments. The major offenders, however, have been tracked vehicles which will not be part of a light infantry division. Although stream damage undoubtedly will occur, the amounts probably will not exceed the amounts that Fort Drum has experienced in the past.

nurses, technicians, and other staff on-post would drain qualified staff from local hospitals which cannot compete with the Federal pay scale (Seguin, 1984; Bellinger, 1984). Almost 33 percent of the required medical personnel on-post would be civilians.

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SUPERSEDED
AUG 1984

4G.36 Threatened and Endangered Species. The Office of Endangered Species, U.S. Fish and Wildlife Service, has advised that there are no threatened or endangered species known to be resident on the installation. Transient species would not be significantly affected (Mallory, 1984).

On-Post Population

4G.37 The work force population would increase from 1,030 to 11,780 military and from 920 to 2,470 civilian employees. Under this alternative 4,100 family housing units and approximately 14,300 barrack spaces will be constructed. This means that on-post daytime population would number about 25,350 not counting visitors, and on-post 24-hour population would be 21,407. In addition, during summer training peaks another 7,500 soldiers would be added to the population on-post.

4G.38 Current proposed timing of barracks and housing construction and the stationing of troops at Fort Drum could result in a serious short-term shortage of housing space. Existing adequate barrack spaces number a maximum of 864 (90 sq. ft per soldier), 65 percent of which are being utilized. There are an additional 10,330 substandard spaces available in World War II barracks which are of wooden, open bay construction. Rehabilitation is scheduled for the older barracks but it will not be completed until FY 87. Construction of family housing will not be completed before FY 87 as well, and the new barracks construction is not scheduled to begin until FY 87. However, all of the division troops are scheduled to be stationed on-post during FY 87. By the end of FY 1987 then, the military population will be 10,750. It is possible that a majority of these troops would have to be temporarily quartered in existing WWII barracks. The maximum quartering figure used for planning intensive training and mobilization at Fort Drum is 21,400 persons. This is based on 60 sq. ft. of space per soldier at a density of 60 persons per barracks.

4G.39 The above population estimates do not account for medical personnel who would be needed to staff the hospital that is scheduled to be constructed on-post and become operation in FY 1989 or 1990. Based on the increased military population, an estimated 239 medical personnel would be needed, which includes 160 military and 79 civilian staff.

Land Use

4G.40 The major land use changes to result from the proposed stationing of a light infantry division at Fort Drum are:

- o Approximately 280 acres of land that now is wooded will be converted to housing,

- o Approximately 120 acres will be paved for roads, runways, parking areas, and other uses,

- o Increased year-round army field activity will reduce the amount of public hunting that can be permitted on the installation, especially in the areas northeast, east, and southeast of the main impact area, and

- o Increased year-round army field activity will reduce lumbering on the installation, or make it more difficult to schedule and manage.

Noise

4G.41 The configuration of Fort Drum is such that the greatest noise effects of Army activities (weapons firing and aircraft) are east of the cantonment area and consequently are heard, not on-post, but in the communities near the firing ranges. The pattern is expected to remain the same after a light infantry division is added. As was stated in the discussion of regional noise, a light infantry division does not use the large caliber weapons that have resulted in problems in the past.

Air Quality

4G.42 Fort Drum already is planning to add a new central heating plant with a capacity of 50 million Btu per hour (MBtu/hr), to be fueled mainly with wood chips. The new plant will be equipped to remove particulates using a mechanical separator. Expected emissions when operating at full capacity will be 24.1 pounds per hour (lb/hr) of particulates, 9.6 lb/hr of sulfur dioxide, 27.0 lb/hr of nitrogen oxides, and 3.32 lb/hr of carbon monoxide (NUS Corporation, 1984).

4G.43 This power plant, however, would not meet the energy needs for a full light infantry division. It is estimated that an additional 140 MBtu/hr plant (probably coal-fired) would be required in addition to the planned new heating plant described above. Total emissions, therefore, would be approximately 4 times those given above for a 50 MBtu/hr plant.

Water Supply

4G.44 With added Fort Drum population and activities, a total water supply of approximately 4.9 million gallons per day (mgd)

REVISED 1984

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On-Post Population

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Land Use

4G.40 The major land use changes to result from the proposed stationing of a light infantry division minus the aviation brigade at Fort Drum are:

would be required, an increase of 1.1 mgd over the present capacity of 3.8 mgd. This would be accomplished by adding approximately six new wells, which would provide the required new capacity plus enough reserve capacity to allow for taking some of the supply wells out of service for maintenance or to minimize drawdown. Considering the overall abundance of ground water on the installation and in the region, there would not be any detrimental effects from developing the additional supply.

Wastewater Disposal

4G.45 A total treatment capacity of about 3.4 mgd would be required, which is less than the present primary treatment capacity of 4 mgd, but is far more than the secondary capacity of 1.1 mgd. Fort Drum has plans to increase the treatment capacity to meet these requirements. The new plant will increase the discharge of secondary-treated effluent into the Black River. There is currently no effluent problem in the Black River and it is expected the new plant will be within National Pollution Discharges Elimination System (NPDES) limitations.

Solid and Hazardous Waste Disposal

4G.46 As stated previously, Fort Drum and the surrounding region have problems with finding suitable landfill sites. Furthermore, Fort Drum's permit for its present landfill site will expire in December 1985. It is necessary, therefore, whether or not a light infantry division minus the aviation brigade is stationed at Fort Drum, that the installation develop solutions that can be designed, built, and put in operation before December 1985. Whatever the solution devised (e.g., a suitably sealed landfill, or incineration facilities, on- or off-post), the facility will be sized to meet the required needs.

Housing

4G.47 Approximately 70 percent of the current permanent military personnel assigned to Fort Drum reside on-post with no excess living quarters available. The proposed action includes the construction of 4,461 family housing units to meet the needs of 90 percent of those eligible among division and support personnel. Although this would have a significant short-term impact during construction, the proposed site for the housing is next to existing housing, in an area not used for training. There would be a short-term shortage of family housing since all construction will be completed in FY 89 or later. The first significant number of military (5.270) would be stationed on-post in FY 86. In addition 1,970 military personnel would be stationed at the installation in FY 84 and FY 85. Construction of 1,283,600 sq. ft. of new barracks

REVISED 1984

space is not scheduled to begin until FY 87. All military personnel are scheduled to be on-post by the end of that fiscal year. A majority of these troops would be required to live in existing WWII wooden, open bay barracks which are substandard by current army regulation, for two years or more until family housing and barracks construction and rehabilitation is completed. The only long-term impacts on-post would be in land use in the new housing site, since neither the current mission nor future operations would be affected by the new housing construction.

Schools

4G.48 The division minus the aviation brigade alternative at Fort Drum would involve approximately 4,790 additional school age dependents of military personnel (assuming a school age dependent ratio of .90 per married troop). The Army's proposed stationing alternatives includes the construction of two elementary schools on-post totaling 95,000 square feet. Assuming 770 square feet per classroom, as is required by New York State, this would mean approximately 120 classrooms accommodating 3,000 students (25 per room). If 50 percent of school age dependents are assumed to be in elementary school this would mean approximately 2,395 students in grades K through 6. Since not all school age dependents will live on-post and attend post schools (housing is provided for 90 percent of those eligible) the proposed facilities should easily meet the projected demand for classroom space. All junior and senior high school students would attend area schools, the impact of this is discussed in the regional impacts section.

Health Care

4G.49 Implementation of this alternative would add 24,040 people (military and dependents) to the population eligible from a comparably sized post, this size population would average approximately 980 clinic visits a day (includes retirees and retiree dependents) and an average daily admission rate to acute care beds of 14. The clinic at Fort Drum is currently handling 70 visits a day on average and has no acute care beds available (Poulton, 1984). To accommodate this significant increase in demand for health care the proposed action would include the construction of a hospital with a total area of 102,800 sq. ft. Construction would begin in FY 1987.

4G.50 In addition a dental clinic with an area of 21,100 sq ft would be built. This would mitigate the long term impacts on the installations health care requirements. However there would probably be some short term strain on available health care services

prior to and during hospital construction since 93 percent of all division and support personnel are scheduled to be stationed on-post by the end of FY 1987. The current estimates of when the hospital would be operational is FY 1989 or 1990 (Directorate of Engineering and Housing, 1984). Health Services Command is investigating how health care would be provided prior to the hospital completion. One option being considered is the renovation of a deactivated World War II hospital on-post. A detailed engineering study by Fort Drum facilities engineers has been carried out within the past year on the cost of renovating the existing hospital buildings. However this study assessed only the renovation cost and not any equipment or supply requirements. In addition the construction of an operating room was not considered.

Public Safety

4G.51 Stationing of a division minus the aviation brigade at Fort Drum would likely result in significant impacts on public safety on-post and in the Fort Drum area. Several factors would contribute to this impact including: one, the large increase in population from 1,030 to 11,780 military; two, a change in the type of military personnel from largely administrative to combat units; and three, the lag time for the local communities economic and social infrastructure to meet the demands of a significantly increased permanent military population. The garrison's military policy and judge advocate office personnel would be increased to meet the new demand and construction of additional detention space will be required. There could also be a considerable burden put on local law offices since on-post the military has concurrent jurisdiction in only a small part of the entire installation, in a zone surrounding the cantonment area. Outside this area, military police may only detain people not subject to the Uniform Core of Military Justice who violate state laws on the installation, and call the proper state or local police to take the offender into custody. Traffic law violations and criminal offenses committed upon the installation by persons not subject to the Uniform Code have been a law enforcement problem at Fort Drum. The Judge Advocate's office has requested of the state that concurrent jurisdiction be given on the entire installation but as yet no action has been taken. (Major Key, 1984).

4G.51a As described in Appendix M, most crimes committed by Army personnel in the continental United States are confined to the installation. Further, Army crime rates in general have been declining. Between 1980 and 1983 the most common offenses committed by Army personnel, those against property, declined by 26 percent. Marijuana use and possession, the second most common offense

declined by 64 percent, while crimes of violence, ranking third dropped 42 percent (U.S. Army Office of the Deputy Chief of Staff for Personnel, 1984). Although Army crime rates are not directly comparable to national trends, more arrests per 1000 of U.S. males 18 to 22 years versus Army personnel were made for crimes against property, drug offenses and crimes of violence in 1982. In the event of troop stationing, the actual number of crimes could increase, yet as detailed in Appendix M most of the increase probably would be concentrated on post.

Traffic and Transportation

4G.52 There would be two sources of increased transportation and transportation-related impacts in the Fort Drum area. The additional military vehicles and personnel stationed on-post would greatly increase traffic on the installation. The personal vehicles

owned by the new population would also increase off-post transportation in the vicinity of Fort Drum. Increased traffic flow on and off-post would be expected to impact those routes which are currently most heavily used: Nash Boulevard and First Street West in the afternoon and Black River Road and First Street West in the morning. Traffic flow at Gates 1, 2 and 3, as presented in Chapter 3, could expect to increase in proportion to the increased work force living off-post. New road construction will take place in the area of the new housing units to be constructed on-post. Off post the most serious impacts resulting from increased vehicular traffic should be experienced on State Highway 3 and U.S. Highway 11 with lesser impacts on County Highway 52 (Pearl Street) in the Watertown Fort Drum corridor. It should be noted that New York state's Department of Transportation has scheduled a project for the reconditioning and preservation of the Pearl Street and Route 283 Corridor to Fort Drum. The project is aimed at highway update with the reconstruction of an urban section in the City of Watertown and resurfacing of existing concrete pavement. The project has a tentative letting date scheduled for April 1985.

Cultural Resources

4G.53 In compliance with existing regulations the National Park Service has contracted for a cultural resources overview and management plan for Fort Drum. The work, which is scheduled to be completed in October 1984, will include the formulation of a predictive model of cultural resource distribution and density, and management recommendations to assist Fort Drum in considering cultural resources in their planning process. Two major historic sites on-post, the LeRay Mansion, on the National Register of Historic Places, and the Iroquis village site, nominated to the National Register, have been placed off limits to Army maneuvers. Given the potential for additional, as yet undiscovered, cultural resources on the post, there is a potential for impact on significant cultural resources under this alternative.

4G.54 Although the exact location and nature of many possible cultural resources, particularly archeological resources, is unknown, the potential impacts of the proposed action can be generally discussed. Basically, any action which produces ground disturbances in any form would have a potential for disturbing an archeological resource, thereby destroying data. Construction of new buildings and facilities, and establishment of roads include such elements as excavation, grading, filling or stockpiling of materials. All of these elements have a potential for disturbance or destruction of archeological materials. Renovation of existing

buildings or demolition can damage and destroy significant historic structures.

4G.55 Many training activities, including maneuvering of vehicles and digging of foxholes, cause ground disturbances that have a potential for damaging or destroying an archaeological resource. Establishment of new training areas or increases in land

utilization frequency for training over current levels can increase the potential for impacts to undisturbed cultural resources.

4G.56 Considerations will be given to identifying potential cultural resources, as well as protecting those known to exist. Authority for these actions are found in Army Regulation AR-420-40, Facilities Engineering, Historic Preservation (April 15, 1984) effective 15 May 1984. The procedures for accomplishing these measures are detailed in the Army Technical Manual TM-5-801-1, Historic Preservation-Administrative Procedures and TM-5-801-2, Historic Preservation-Maintenance Procedures. In regard to the installation, the prime limitation would be to prohibit any destruction or alteration of all or part of any significant site through whatever measures are necessary (e.g., establishment of limited-use areas). It should be noted that it is always possible for studies to miss an archaeological site, particularly one which shows little or no surface evidence of its presence. Because of this, all construction contracts must allow for this possibility by specifying that, in the event that a suspected archaeological site is encountered during construction or some other form of activity, operations in the area would be suspended until the site is investigated by a professional archaeologist. This construction contract provision is required by 32 CFR 650.192, Department of the Army, Environmental Protection and Enhancement, Peacetime Responsibilities, Historic Preservation, Archaeological Sites (March 15, 1978). Similarly, training activities that involve the use of new areas or the increased use of areas presently used may uncover evidence of archaeological sites that was not uncovered by prior studies. Officers in charge of field activities should be made aware of this possibility and procedures should be established whereby the officer could inform the installation's Historic Preservation Committee of any finds so that the committee may take appropriate measures to avoid the accidental destruction of a site. Additionally, since the looting of sites by irresponsible persons can be a problem, security measures should be instituted to prevent destruction of archaeological data in this manner.

FORT BENNING AND THE COLUMBUS, GEORGIA REGION

4G.57 Under this alternative, a combat aviation brigade would be stationed at Fort Benning. The brigade would consist of 1,230 personnel, including 270 officers and warrant officers and 960 enlisted personnel.

4G.58 Table 4G-1 indicates the total number of military personnel and civilian employees estimated to be at Fort Benning under this proposed stationing alternative for FY 1984 through

FY 1989, by year. The table also indicates the cumulative increase in military personnel and civilian employees by year. The personnel numbers in Table 4G-1 include all currently planned changes through FY 1989 in addition to the proposed alternative.

4G.59 There would be almost 26,740 military personnel and 8,150 civilian employees at Fort Benning at the end of FY 1989. This is a net increase of nearly 1,090 military personnel (4 percent) and 380 civilian employees (5 percent) compared to the March 31, 1984 baseline. It should be noted that almost 88 percent of the increase in military personnel and all of the increase in civilian employees would occur by the end of FY 1987.

4G.60 There would also be approximately 28,010 military dependents at the end of FY 1989, a net increase of about 1,540 (6 percent) compared to the baseline. The number of dependents is calculated based upon the Army-wide average of 75 percent of officers and 47 percent of enlisted personnel being married, with each married troop having 2.5 dependents.

4G.61 Since no additional family housing is to be constructed at Fort Benning and since the existing family housing is at capacity (Carmody, 1984; Hankins, 1984), it is assumed for analysis purposes that all of the additional 620 military families associated with this alternative would live off-post in the Columbus, Georgia region. On-post housing would be provided for all bachelor military personnel. Thus, there would be an estimated increase of 620 military personnel and 1,540 dependents living off-post in the region. There would also be an estimated increase of 470 bachelor military personnel living on-post at Fort Benning.

4G.62 It is assumed that all of the additional 380 civilian employees would come from the Columbus, Georgia region and thus would not pose an additional burden on the region's infrastructure. The increase in civilian employees represents less than 0.4 percent of the 96,700 people in the 1980 civilian labor force for the four county Columbus, Georgia region; 9.0 percent of the labor force was unemployed in 1980 (U.S. Department of Commerce, 1982a and 1982c).

4G.63 Tables 4G-2 and 4G-3 summarize the impacts that would occur as a result of this proposed stationing alternative. Specific impacts are discussed below.

Columbus, Georgia Region

4G.64 As discussed under the Affected Environment in Chapter 3, off-post impacts are assessed for the following

four-county assessment area: Chattahoochee, Harris and Muscogee Counties, Georgia and Russell County, Alabama. For purposes of assessing regional economic impacts only, the following seven additional counties are considered as indicated in Chapter 3: Marion, Stewart, Talbot, and Webster Counties, Georgia and Barbour, Lee, and Macon Counties, Alabama (see Figure 3-4).

4G.65 Under this alternative, it is estimated that at the end of FY 1989 there would be an increase of 620 military personnel and 1,540 military dependents living off-post in the four-county assessment area. This is a total increase of 2,160 persons living off-post. It should be noted that over 89 percent of this increase would occur by the end of FY 1987. As previously indicated, it is assumed that there would be no increase in civilian residents in the region as a result of this alternative.

4G.66 For reasons discussed under the Fort Benning Land Use section, there would not be any requirement for off-post land acquisition or leasing by Fort Benning as a result of this alternative.

4G.67 Specific impacts in the Columbus, Georgia region related to the changes under this alternative are discussed in the following sections.

Biological Environment

4G.68 No significant biological impacts are anticipated in the four-county assessment area under this alternative. As discussed in the Land Use and Housing Sections, some additional land would be required for housing and commercial development in the four-county area. This would lead to the loss of some habitat, along with the loss of some wildlife and vegetation. However, since the population increase would be about 1 percent of current levels and since less than 11 percent of the 1.0 million acres in the four-county area is commercial/residential/developed land, any such losses would not be expected to have a significant impact on the biological environment of the area.

4G.69 Wildlife populations off-post in the four-county area would not be significantly impacted by on-post activities at Fort Benning. As discussed elsewhere in this chapter (e.g., see Air Quality), on-post activities would not result in any significant changes to air quality or water quality, either on-post or off-post. Increased aircraft operations under this alternative could potentially increase noise levels off-post to the southwest of

SUPERSE...
AUG 1984

Lawson Army Airfield (see Fort Benning Noise Section). However, due to the limited area likely to be affected, this would be unlikely to result in any significant biological impacts.

Demography

4G.70 The population of the four-county assessment area was 254,660 in 1980 and is projected, as indicated in Chapter 3, to increase to 278,000 by 1990. Total population increases under this alternative would be approximately 2,630 military personnel and dependents (see Table 4G-1), or about 1 percent of current population levels and less than 1 percent of the projected 1990 levels. The largest one-year population increase, 1,780 people, would occur during FY 1987. Under this alternative, the off-post population would increase by about 2,160 military personnel and dependents, or less than 1 percent of 1980 and 1990 population levels.

Land Use

4G.71 Adequate housing is currently available for the additional 620 military families who would be living off-post. However, new construction might be necessary to house both these additional military families who would arrive under this alternative plus the increased population projected to be in the area by 1990 even without the proposed alternative (see Housing). Commercial land use changes should be relatively small since the total increase in population under this alternative (both off-post and on-post) is about 2,630 persons. This would be about a 1 percent increase in the population of the four-county assessment area.

4G.72 The City of Columbus has long considered a troop strength of 30,000 at Fort Benning for its long-range land use planning (Columbus Department of Community Development, 1977). Thus, the troop strength of 26,740 under this alternative should not cause any significant land use planning changes.

4G.73 The proposed action could also have an effect on the operation of the Columbus Airport. The airport currently ceases operations between 11:00 p.m. and 7:00 a.m. Due to the increase in night rotary-wing aircraft operations expected under this alternative (see Fort Benning Noise), it might be necessary for the Columbus Airport approach control to operate 24-hours a day to provide necessary coverage of these operations (Cardin, 1984). The night operations would be primarily within the Fort Benning boundaries. There would not be any landings or take-offs from the Columbus Airport during the 11:00 p.m. to 7:00 a.m. period.

Lawson Army Airfield (see Fort Benning Noise Section). However, due to the limited area likely to be affected, this would be unlikely to result in any significant biological impacts.

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4G.73 The proposed action could also have an effect on the operation of the Columbus Airport. The airport currently ceases operations between 11:00 p.m. and 7:00 a.m. during which time Atlanta Approach takes over watching air traffic over the Columbus and Ft. Benning area. Due to the increase in night rotary-wing aircraft operations expected under this alternative (see Fort Benning Noise), it might be necessary for the Columbus Airport approach control to operate 24-hours a day to provide necessary coverage of these operations (Cardin, 1984). The night operations would be primarily within the Fort Benning boundaries. There would not be any landings or take-offs from the Columbus Airport during the 11:00 p.m. to 7:00 a.m. period, however Columbus Approach could remain open, given notice, if necessitated by the increased air traffic (Passailaigue, 1984).

SUPERSEDED
AUG 1984

Noise

4G.74 As discussed under the Fort Benning Noise Section, off-post noise impacts resulting from this alternative would be relatively minor. Some increase in the noise level due to increased vehicular traffic would be produced on the access roads to the installation, predominantly Victory Drive (U.S. Highway 27). There could be up to a 6 percent increase in average daily traffic off-post on Victory Drive, west of Lindsey Creek Bypass (see Fort Benning Traffic and Transportation). The overall impact would be slight given the existing noise level.

4G.75 Increased aircraft operations could potentially increase noise levels off-post to the southwest of Lawson Army Airfield (see Fort Benning Noise); however, the area likely to be affected by this, if it were to occur, contains woodlands. Thus, there should not be any conflict with noise sensitive land uses.

4G.76 Other training activities under this alternative would not be likely to increase noise levels off-post (see Fort Benning Noise).

Regional Economic Activity

4G.77 The total employment increase at Fort Benning (military plus civilian) would be 51 percent of that occuring under Fort Drum-Fort Benning Stationing Alternative II, assessed in Chapter 4F, and the square footage of construction would be 71 percent. It is thus expected that changes in regional personal income, business volume, and employment would each be about 51 to 71 percent of the change under Stationing Alternative II. In such a case, all changes would be less than the corresponding Rational Threshold Value (RTV) for the region (see Table 4F-4).

Air Quality

4G.78 As discussed in the Fort Benning Air Emissions Section, the increase in emissions from Fort Benning under this alternative would not be expected to have any significant impact on air quality in the four-county assessment areas. Furthermore, the additional 2,160 military personnel and dependents who would be living off-post would represent less than a 1 percent increase in population for the area. Thus, their activities would not be expected to have any significant impact on air quality in the area.

Water Supply

4G.79 Average domestic per capita water consumption in the area is estimated to be approximately 150 gallons per day. Peak per capita consumption is estimated to be approximately 250 gallons per day based on the ratio of peak consumption to average consumption in Table 3-2 (Gaylor, 1984; Tant, 1984).

4G.80 Based on these per capita consumption figures, the 2,160 additional people living off-post under this alternative would consume between 0.3 and 0.6 mgd of water. Based on the existing water supply in the four-county assessment area (see Table 3-2), this requirement would be well below the current excess capacity and should pose no significant impacts. For example, the Columbus water treatment plant alone has excess capacity of 25 mgd for average consumption periods and 6 mgd for peak consumption periods, while the Phenix City plant has excess capacities of 12 mgd and 9.4 mgd, respectively.

4G.81 There would also be sufficient water to handle the projected increase in population in the area that is expected to occur by 1990, independent of this alternative. The projected increased population of 23,300 would require between 3.5 and 5.8 mgd of water. The excess capacity in the area is more than adequate to handle this additional requirement plus that of the stationing action.

4G.82 As indicated in Chapter 3, there are no designated Sole Source Aquifers in the area.

Wastewater Disposal

4G.83 Average domestic per capita wastewater treatment flow in the area is approximately 100 gallons per day. Peak domestic per capita flow is estimated to be about 170 gallons per day based on the ratio of peak flow to average flow (Gaylor, 1984; Tant, 1984).

4G.84 Based on these per capita wastewater flows, the 2,160 additional people living off-post would generate between 0.2 and 0.4 mgd of wastewater flow. The Columbus wastewater treatment plant alone could readily accommodate this entire requirement during both average and peak flow periods. The Phenix City plant could also readily accommodate the entire requirement during average flow periods; however, during peak flow periods (which are caused by rainfall), the plant currently resorts to controlled bypass. The plant is currently being studied for expansion.

Noise REVISED 1984

4G.74 As discussed under the Fort Benning Noise Section, off-post noise impacts resulting from this alternative would be relatively minor. Some increase in the noise level due to increased vehicular traffic would be produced on the access roads to the installation, predominantly Victory Drive (U.S. Highway 27). There could be up to a 6 percent increase in average daily traffic off-post on Victory Drive, west of Lindsey Creek Bypass (see Fort Benning Traffic and Transportation). The overall impact would be slight given the existing noise level.

4G.75 Increased aircraft operations could potentially increase noise levels off-post to the southwest of Lawson Army Airfield (see Fort Benning Noise); however, the area likely to be affected by this, if it were to occur, contains woodlands. Thus, there should not be any conflict with noise sensitive land uses.

4G.76 Other training activities under this alternative would not be likely to increase noise levels off-post (see Fort Benning Noise).

Regional Economic Activity

4G.77 The total employment increase at Fort Benning (military plus civilian) would be 51 percent of that occuring under Fort Drum-Fort Benning Stationing Alternative II, assessed in Chapter 4F, and the square footage of construction would be 71 percent. It is thus expected that changes in regional personal income, business volume, and employment would each be about 51 to 71 percent of the change under Stationing Alternative II. In such a case, all changes would be less than the corresponding Rational Threshold Value (RTV) for the region (see Table 4F-4).

4G.77a It is likely that some of the civilian jobs created as a result of the stationing activity could be filled be spouses of incoming military personnel. As described in Appendix L about 36 percent of the spouses of Army enlisted men and 35 percent of Army officer spouses are members of the civilian workforce (Doering and Hutzler, 1982).

Air Quality

4G.78 As discussed in the Fort Benning Air Emissions Section, the increase in emissions from Fort Benning under this alternative would not be expected to have any significant impact on air quality in the four-county assessment areas. Furthermore, the additional 2,160 military personnel and dependents who would be living off-post would represent less than a 1 percent increase in population for the area. Thus, their activities would not be expected to have any significant impact on air quality in the area.

4G.85 The projected 23,300 additional people expected in the area by 1990, independent of this alternative, would generate between 2.3 and 4.0 mgd of wastewater flow. While the excess wastewater treatment capacity in the area is adequate to handle this additional requirement plus that of the stationing action for average flow periods, the existing excess capacity would not be adequate during peak flow periods. However, Columbus is currently designing a 12 mgd expansion to its plant and Phenix City is currently studying its plant for expansion. The additional capacity being designed for the Columbus plant alone would be adequate to handle the increased flows during peak flow periods.

4G.86 Most other portions of the four-county area rely on septic tanks. Thus, any increase in population in these areas would result in an increase in the number of septic tanks. However, due to the relatively small increase in population expected in such areas, under this alternative, there should not be any significant increase in water quality impacts from any likely increase in septic tank use.

Solid Waste Disposal

4G.87 The 2,160 additional military personnel and dependents who would be living off-post represent less than a 1 percent increase in the population of the four-county assessment area. They would thus be expected to increase solid waste generation by less than 1 percent in the area and would accordingly reduce the life of the existing sanitary landfills by less than 1 percent. (This would be less than a 0.5-month reduction per 5 years of landfill life). The actual reduction in the life of each individual landfill would depend on how many people choose to live in each county.

Housing

4G.88 The Fort Benning family housing units are currently at maximum capacity. Since no additional family housing construction is planned, this analysis assumes all necessary family housing would have to be provided by the Columbus region housing market.

4G.89 Under this alternative, an additional 620 housing units would be needed to accommodate families living off-post. Present statistics indicate that the Columbus, Georgia Housing Market Area (HMA) which includes Muscogee and Chattahoochee Counties, Georgia and Russell County, Alabama, has a minimum housing surplus of 2,950 units (U.S. Department of Housing and Urban Development, 1982). Thus, there should be no significant impacts as a result of the housing requirements under this alternative.

4G.90 Natural (e.g., unrelated to this proposed stationing alternative) population growth in the region is projected to be about 23,300 people by 1990. Based on an average of 3.05 people per household in the area (U.S. Department of Commerce, 1982a and 1982c), this natural growth could require almost 7,700 additional housing units. This housing requirement plus that of the alternative would mean that almost 5,400 additional housing units would have to be constructed by 1990. Based upon past growth in the area's housing units, this requirement should not present a significant impact. Over the past several years, the HMA has been experiencing rapid growth rates in construction of single family and especially apartment units. For example, between 1980 and February 1984, the city of Columbus, Georgia alone issued a total of 3,021 residential building permits, including 1,393 for single family homes, 1,493 for apartment units and 135 for condominiums. About 45 percent of the permits were issued in 1983. In addition, there are currently a number of platted subdivisions with available utility hook-ups, for which no building permits have yet been issued (Gant, 1984). Phenix City expects about 7,000 housing starts between 1984 and 2005 (Tolbert, 1984). Furthermore, the Columbus HMA has historically been able to adjust its housing market to absorb changes in the Fort Benning population, and is expected to be able to continue to do so (Duck, 1984; Mills, 1984).

Schools

4G.91 No adverse impacts to schools are expected in the four-county assessment area under this alternative. Present levels of enrollment (for operational schools and staff) indicate a total of 9,730 excess student spaces for schools currently operating in the four counties (see Chapter 3). The Muscogee County school system alone accounts for almost 85 percent, or over 8,200 spaces, of the surplus capacity.

4G.92 Under this alternative, 560 school-aged military dependents would be added to present population levels. These school-aged dependents could be readily absorbed by existing schools without any significant impact.

Health Care

4G.93 There would be about 2,630 additional military personnel and dependents under this alternative. Based on a military population (active and retired, plus dependents) of 82,450 currently served by Fort Benning (see Table 3-3), this would represent about a 3 percent increase in the military population served by Fort Benning. This increased population could thus result in about a

3 percent increase in the 6,700 CHAMPUS and supplemental care referrals made annually to local (Columbus-Phenix City) health services.

4G.94 Based on an 80 percent occupancy rate representing full capacity (Thornton, 1984), the four area hospitals currently have an excess capacity equal to 11 percent of their current beds and 17 percent of their licensed beds (see Chapter 3, Columbus, Georgia Region, Health Care). Since the additional 2,630 people under this alternative would represent about a 1 percent increase in the area's population, the additional referrals should not pose a significant impact even with the projected natural population growth.

Cultural Resources

4G.95 There is a potential for disturbance or destruction of cultural resources due to private residential or commercial development that could occur as a result of the proposed stationing alternative.

Fort Benning, Georgia

4G.96 Under this alternative, it is estimated that there would be almost 26,740 military personnel and 8,150 civilian employees at Fort Benning at the end of FY 1989 (see Table 4G-1). This is a net increase of about 1,090 military personnel (4 percent) and 380 civilian employees (5 percent) compared to the March 31, 1984 baseline. Approximately 91 percent of the total increase would occur by the end of FY 1987.

4G.97 As previously indicated, there would be no increase in the number of married military personnel and dependents living on-post. However, it is estimated that an additional 470 bachelor military personnel would be living on-post. This would represent an increase of less than 2 percent in the total military population living on-post compared to the baseline.

4G.98 To accommodate the additional population and mission change, there would be construction activities on-post under this alternative. Construction would likely include cantonment type facilities (e.g., barracks), vehicle maintenance facilities, utility support systems (e.g., electricity and sanitary sewer distribution), warehouses, a telephone exchange building, a stinger/redeye simulator facility, and road improvements. Such construction is not expected to exceed 0.5 million square feet of facilities. Essentially all construction would occur in the Harmony Church area, most likely in the northern portion of Harmony Church. In addition,

there would be construction of rotary-wing aircraft maintenance facilities and possibly helipads and taxiways at Lawson Army Airfield. Such construction would be within the existing perimeter of the airfield fence. There would not be any construction of new ranges or training areas, nor would there be any new impact areas (Caldwell, 1984).

4G.99 With regard to training, there would be increased utilization of the existing training areas and ranges. However, there would not be any increase in annual training days above the current baseline level of 242 days (Caldwell, 1984). Training activities on the ground would be essentially the same as those that currently occur at Fort Benning. There would be a significant increase in rotary-wing aircraft flights, including night flights (Cardin, 1984; Caldwell, 1984). There would not be any increase in artillery firing activities (Caldwell, 1984).

4G.100 There would be an increase of 100 rotary-winged aircraft and 220 trucks on-post under this alternative. This would represent a 200 percent increase in the number of rotary-wing aircraft and a 7 percent increase in the number of wheeled vehicles. There would be no increase in the number of tracked vehicles on-post compared to the baseline. The total number of tracked and wheeled vehicles on-post would increase by almost 6 percent.

Geology, Minerals and Soils

4G.101 Construction activities associated with this alternative include approximately 0.5 million square feet of buildings, 3 to 5 miles of new roads, and possibly some helipads and taxiways. Most construction would occur in Harmony Church, most likely in the northern end, with some additional construction within the fence at Lawson Army Airfield.

4G.102 Construction materials would include sand, gravel and crushed stone for use as base course material for roads, helipads and taxiways, and as aggregate for the construction. If a typical new road requires 6 inches of base course material, paved roads of 20 to 36 foot widths (widths now typical on the installation) would require approximately 2,000 to 3,500 cubic yards of sand and gravel as base course material per mile of road. There are several sand and gravel pits now being used on-post and several possible pit or quarry development sites have been identified which could serve as sources of the construction materials required (U.S. Army Engineer Topographic Laboratories, 1976).

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there would be construction of rotary-wing aircraft maintenance facilities and possibly helipads and taxiways at Lawson Army Airfield. Such construction would be within the existing perimeter of the airfield fence. There would not be any construction of new ranges or training areas, nor would there be any new impact areas (Caldwell, 1984).

4G.99 With regard to training, there would be increased utilization of the existing training areas and ranges. However, there would not be any increase in annual training days above the current baseline level of 242 days (Caldwell, 1984). Training activities on the ground would be essentially the same as those that currently occur at Fort Benning. There would be a significant increase in rotary-wing aircraft flights, including night flights (Cardin, 1984; Caldwell, 1984). There would not be any increase in artillery firing activities (Caldwell, 1984).

4G.100 There would be an increase of 100 rotary-winged aircraft and 240 trucks on-post under this alternative. This would represent a 200 percent increase in the number of rotary-wing aircraft and a 7 percent increase in the number of wheeled vehicles. There would be no increase in the number of tracked vehicles on-post compared to the baseline. The total number of tracked and wheeled vehicles on-post would increase by about 6 percent.

Geology, Minerals and Soils

4G.101 Construction activities associated with this alternative include approximately 0.5 million square feet of buildings, 3 to 5 miles of new roads, and possibly some helipads and taxiways. Most construction would occur in Harmony Church, most likely in the northern end, with some additional construction within the fence at Lawson Army Airfield.

4G.102 Construction materials would include sand, gravel and crushed stone for use as base course material for roads, helipads and taxiways, and as aggregate for the construction. If a typical new road requires 6 inches of base course material, paved roads of 20 to 36 foot widths (widths now typical on the installation) would require approximately 2,000 to 3,500 cubic yards of sand and gravel as base course material per mile of road. There are several sand and gravel pits now being used on-post and several possible pit or quarry development sites have been identified which could serve as sources of the construction materials required (U.S. Army Engineer Topographic Laboratories, 1976).

4G.103 Impacts to soils could potentially occur as a result of construction activities and from increased uses of existing maneuvering areas. A major portion of the installation contains poorly graded sandy soils that are susceptible to erosion. In many training areas, erosion has become a problem. Under this alternative there would be approximately an 11 percent increase in the use of existing training areas (see Land Use) and no increase in tracked vehicles. Thus, there should not be any significant increase in the potential for soil erosion as a result of increased usage of maneuvering areas. Natural reseeding is the most common method currently utilized for erosion control, but where necessary, checkdams, water bars, seedings, etc. are implemented to control erosion. Land utilization is currently rotated to reduce wear on vegetation, thus reducing the potential for erosion.

4G.104 All construction would occur within existing cantonment and built-up areas (i.e., Harmony Church and Lawson Army Airfield). There could be potential soil impacts due to erosion in the areas of contruction activities. However, the requisite measures necessary to minimize soil erosion and attendant pollution problems would be utilized during construction.

4G.105 Due to the location of construction areas and the small increase in the frequency of utilization of the existing maneuvering areas, the changes under this alternative should not cause any irrevocable alterations to prime farmlands on Fort Benning.

Biological Environment

4G.106 Under this alternative, only existing training areas would be utilized. There would be no construction of new areas. The frequency of utilization is expected to increase from current levels of 86 percent utilization to almost 95 percent (an 11 percent increase over current levels) with the addition of the combat aviation brigade (see Land Use).

4G.107 The increased frequency of training activities could potentially contribute to existing training activities that damage vegetative covering, disturb wildlife habitat, increase the frequency of wild fires, cause soil erosion, and decrease the space available for propagation of natural species (Fort Benning Directorate of Engineering and Housing, 1983).

4G.108 Construction related to this alternative would occur primarily the Harmony Church area, with some additional construction at Lawson Army Airfield. These are both presently developed areas. Potential biological impacts resulting from training and construction activities are discussed in the following sections.

4G.109 Terrestrial Ecosystems. The construction activities associated with this alternative include cantonment facilities, support facilities and roads. The majority of this construction would occur at the existing cantonment area of Harmony Church; with some support facilities (e.g., rotary-wing aircraft maintenance facilities and possibly helipads and taxiways), being built at areas within the fence enclosing Lawson Army Airfield. Construction at Harmony Church would occur within the cantonment area and would require removing some trees between existing buildings. This construction would not cause any significant impacts to wildlife.

4G.110 No construction of additional ranges or training areas would be expected under this alternative. However, training and range-use frequency would increase by about 11 percent. There would be no additional tracked vehicles. As a result, impacts that could potentially result from increased vehicle operation and maneuvering activities, including increased soil erosion and changes in vegetation, habitat, and noise, should not be significant, especially since maneuvering areas would not be expanded from current levels.

4G.111 While additional noise from increased maneuvering and training of the brigade is expected to be small, the increase in noise, depending upon the duration and frequency of occurrence, could potentially affect the wild turkey population on Fort Benning. The wild turkey population has been determined to be sensitive to such environmental changes and could be adversely impacted. For example, impacts on the population have been noted in the past when activity levels, such as rotary-wing aircraft operations, have significantly increased for extended periods of time. The population on-post has declined at such times, but has recovered after cessation of such activities (Dunn, 1984; Greenley, 1984; Land, 1984).

4G.112 On the other hand, the white-tail deer population residing on Fort Benning has historically adjusted to mission changes over the years and no adverse impacts would be expected under this alternative (Fort Benning Directorate of Engineering, 1983).

4G.113 In March of 1984, there were 48 wildfires on Fort Benning; estimates of 400 fires for all of 1984 represent almost a 45 percent increase over the 1978 number of wildfires (Greenley, 1984). Wildfires are caused primarily by the combat training exercises on-post using pyrotechnics of various sorts. The number of wildfires on-post could increase proportionally to the 11 percent increase in the utilization of training areas. Furthermore, the

time available for controlled burning, which is used to mitigate the impacts of such wildfires, could be reduced as a result of the increased utilization of the maneuver area. Increases in wildfire could adversely affect present and future hardwood populations (Greenley, 1984). If this alternative becomes effective, it could be necessary to employ a "standby crew" of firefighters, whose exclusive responsibility would be to respond to and extinguish increased wildfires on the installation, since the personnel currently responsible for this activity are working at full capacity. The potential for large uncontrolled fires would be reduced by prescribed controlled burning, which reduces ground cover accumulation as well as improving habitat for several timber and game species. The controlled burning season of the forest management office is presently December through March. It may be necessary to extend this time period to effectively reduce the number of uncontrolled fires.

4G.114 Aquatic Ecosystems. No significant impacts to aquatic ecosystems would be expected under this alternative. No new river crossing maneuvering areas would be added. Increased training activities and construction activities at Harmony Church and Lawson Airfield would not be likely to significantly increase effluent pollutant discharges to the aquatic ecosystem.

4G.115 Threatened and Endangered Species. One endangered species, the red-cockaded woodpecker (Picoides borealis), is known to reside on Fort Benning. While this species has endangered status throughout its range, it is locally abundant on-post due principally to the presence of preferred habitat (i.e., mature pines infected with red heart disease). Under the current management program of Fort Benning, nest trees are identified, marked, and protected from disturbance in accordance with the Endangered Species Act of 1973, as amended, (16 U.S.C. 1531-1543, 87 Stat 884), and activities such as maneuvering and construction are modified as necessary to prevent habitat destruction. As long as these management practices continue, there would likely be no significant impacts to the red-cockaded woodpecker from this alternative.

4G.116 The American alligator, Alligator mississippiensis which is endangered has been occasionally sighted on the installation, in the area of Lake W.F. George. It has not been determined whether the alligator now inhabits Fort Benning (Divinyi, 1984). Wet marshy areas which the alligator would inhabit on the installation are not suitable or utilized for troop training and maneuvers or construction. Projects which fall on the floodplain or in wetlands (which require Section 404 permits) are reviewed as required, at which time the presence or absence of the alligator is noted.

4G.117 The Office of Endangered Species of the U.S. Fish and Wildlife Service agrees that this alternative would not affect any endangered species.

On-Post Population

4G.118 Under this alternative, there would be almost 26,740 military personnel and 8,150 civilian employees at Fort Benning at the end of FY 1989 (see Table 4G-1). This would be a net increase of about 1,090 military personnel (4 percent) and 380 civilian employees (5 percent) compared to the March 31, 1984 baseline. Approximately 91 percent of the total increase would occur by the end of FY 1987.

4G.119 There would be no change in the number of married military personnel and dependents living on-post. However, it is estimated that an additional 470 bachelor military personnel would be living on-post. This would represent an increase of less than 2 percent in the total military population living on-post compared to the baseline. The total population living on-post would be approximately 30,170.

4G.120 The effective population of Fort Benning, defined as the number of military, dependents and civilians living on-post (resident population) plus one-third of the number of personnel working on-post but living off-post, would increase under this alternative by 800, or about 2 percent over current levels. The effective population would be 35,400. This effective population is used in subsequent sections of this analysis to determine utilization and adequacy of resources (e.g., water treatment) at Fort Benning.

Land Use

4G.121 Fort Benning would have adequate land to provide the necessary space for both maneuvering/training areas and facilities for a combat aviation brigade. Maneuvering/training areas currently consist of over 121,900 usable acres, all of which are contiguous. Under this alternative, about 126,900 acres per day would be required for maneuvering/training. The average utilization of existing maneuvering/training areas would increase to 95 percent from the current 86 percent, based on a training level of 242 days per year (Caldwell, 1984). This would be about an 11 percent increase over current rates. No additional maneuvering areas or ranges would have to be constructed, although there could be some slight modifications to a few existing ranges.

REVISED 1984

4G.122 The increased utilization of the maneuver areas for training purposes would have an impact on other activities currently carried out on the same lands. These activities include controlled burning for forest management purposes, timber harvesting, and hunting. There would be reductions in the time presently available for such activities. Measures to mitigate such impacts are discussed under Biological Environment.

4G.123 The combat aviation brigade would be located within the existing Harmony Church cantonment area. Troops would live in the temporary World War II barracks in Harmony Church until new barracks could be constructed for them in Harmony Church, which would be late 1988 or 1989 at the earliest. (Ten battalions of recruits previously utilized the barracks in Harmony Church. They are currently in the process of being moved to the Sand Hill area, as new barracks are constructed there. Barracks in Sand Hill currently house 6 of the 10 battalions, with additional barracks becoming available in 1987 and 1988. By 1992 at the latest, all recruits should be moved from Harmony Church to Sand Hill under current plans. This relocation of recruits is not related to this proposed stationing alternative.)

4G.124 Most additional construction would occur in the north end of Harmony Church, although there would be some construction at Lawson Army Airfield. Up to 0.5 million square feet of buildings, 3 to 5 miles of new roads (all within Harmony Church), and possibly some helipads and taxiways would be constructed. The land necessary for this construction is available and should not present any significant land use problems.

Noise

4G.125 Increases in noise levels, both off post and on post, as a result of this proposed stationing alternative cannot be determined until a training schedule has been established for the combat aviation brigade. Should the brigade be stationed at Fort Benning, simulation modeling of noise effects would be conducted as part of the Army's on-going noise assessment program.

4G.126 Two of the major sources of noise at Fort Benning (i.e. aircraft operations and vehicular traffic) would increase under this alternative.

4G.127 The number of rotary-wing aircraft would increase 200 percent, to 150 from the current 50. While there could be a 200 percent increase in the number of rotary-wing aircraft, it is estimated that the number of rotary wing aircraft flights could

REVISED 1984

increase by 300 percent. In addition, the number of Air Force flights (heavy aircraft) could increase by 1 to 2 percent; the number of rotary-wing aircraft flights at night could increase to between 25 and 50 per week from the current three (Cardin, 1984). For the 12-month period from April 1983 to March 1984, there were 2,670 heavy aircraft operations (take-offs or landings), 24,550 light aircraft operations, and 3,060 rotary-wing aircraft operations at Lawson Army Airfield (Ellis, 1984). Under this alternative, it is estimated that there could thus be a 30 percent increase in aircraft operations, to 39,500 from the current 30,300. This would result in an increase in the frequency of noise generation by aircraft operations.

4G.128 A zone II contour indicates a noise level between 65 and 75 decibels day-night level (dB DNL) and is considered "normally unacceptable" for noise sensitive land uses such as housing, hospitals, schools, etc. (U.S. Army Environmental Hygiene Agency, 1982). In developing ICUZ noise contours for Fort Benning (see Chapter 3, Affected Environment), the U.S. Army Environmental Hygiene Agency (1982) indicated that increased flight operations from Lawson Army Airfield could expand a zone II contour off-post near the southwest boundary of Fort Benning (see Appendix C). The increased aircraft operations under this alternative could have the potential to expand this zone II contour off-post. However, the off-post land use in that area is woodlands and thus there should not be any significant impacts even if this were to occur.

4G.129 Artillery operations would not increase under this alternative. There would be some increase in range use, but this should not result in any significant increase in noise levels.

4G.130 The ICUZ contours for Fort Benning indicate that existing armor and artillery operations produce a zone II contour extending off-post near the northeast boundary of Fort Benning. This zone II contour results predominantly from tanks and 500-pound bombs and would not be expected to be expanded by operations under this alternative. Furthermore, no noise sensitive land uses are currently present within the zone.

4G.131 There would be approximately a 6 percent increase in total military vehicles (tracked and wheeled), to 4,160 from the current 3,920. Private vehicles on-post could increase approximately 4 percent, (see Energy and Fuels Analysis). This would result in an increase in the frequency of noise from vehicular operations. Also, noise levels on some access roads to the post, primarily Victory Drive, would likely increase (see Traffic and Transportation). However, the overall impact would be expected to be slight, given the existing noise level.

4G.132 No noise complaints were received by Fort Benning during 1983 and 1984 (Divinyi, 1984).

Air Quality

4G.133 Increases in air pollutant emissions would result from increases in space heating requirements, increases in military and private vehicles, and increased aircraft operations.

4G.134 Construction requirements could result in up to an additional 0.5 million square feet of space that needs to be heated, or cooled. This would represent less than a 3 percent increase over the existing 19.4 million square feet of space (Robert and Company, 1982a), and would be expected to produce a similar increase in pollutant emissions. The estimated 30 percent increase in aircraft operations, 6 percent increase in military vehicles, and 4 percent increase in private vehicles on-post (see Noise) would also be expected to produce proportionate increases in pollutant emissions.

4G.135 Based on the emissions data in Tables 3-4 and 3-5, the increase in emission sources could result in total air pollutant emissions from Fort Benning being increased annually on the order of 30 tons of particulates (17 percent), 20 tons of sulfur oxides (3 percent), 230 tons of carbon monoxide (12 percent), 20 tons of hydrocarbons (10 percent), and 40 tons of nitrogen oxides (5 percent).

4G.136 The increases in emissions from changes under this alternative would not be expected to have any significant impact on air quality in the four-county assessment area (Kemerick, 1984; Yeast, 1984).

Water Supply

4G.137 For the one-year period March 1983 through February 1984, average daily water demand was 7.3 mgd for Fort Benning, which is the same as the average daily demand for the six-year period July 1976 through September 1982 (Harland Bartholomew and Associates, Inc., 1983). The peak daily demand during the one-year period was 13.0 mgd in August 1983. Based on the Fort Benning effective population of about 34,000 (see Table 3-3), the average per capita water demand is approximately 220 gpd and the peak per capita water demand is approximately 390 gpd.

4G.138 The present capacity of the water treatment plant is 18 mgd. Based on the current average per capita water consumption, the plant can support an effective population of 81,800 users.

Based on the current peak per capita water consumption, the plant can support an effective population of 46,200 users.

4G.139 Under this alternative, the effective population of Fort Benning would be approximately 35,400 users. This would be well below the existing capacity, and there should be no adverse impact on the water supply.

Wastewater Disposal

4G.140 Fort Benning has two wastewater treatment plants. Plant 1 serves Harmony Church, Sand Hill, Kelley Hill, Fort Benning Mall, Martin Army Hospital, Custer Road Family Housing, Bouton Heights Family Housing, and the extreme northeast portion of the Main Post family housing area. This plant has a hydraulic capacity of 4.6 mgd. The average daily flow for Plant 1 during the one-year period from March 1983 through February 1984 was 2.2 mgd and the peak daily flow was 3.4 mgd. Assuming that 55 percent of the effective post population is served by Plant 1 and that the infiltration rate is 0.8 mgd (Harland Bartholomew and Associates, Inc., 1983), the average per capita flow is approximately 80 gpd for this period and the peak per capita flow is approximately 140 gpd.

4G.141 Plant 2 serves the Main Post and Lawson Army Airfield. This plant has a hydraulic capacity of 3.8 mgd. The average daily flow during the above one-year period was 2.3 mgd and the peak daily flow was 3.6 mgd. Assuming that 45 percent of the effective post population is served by Plant 2 and that the infiltration rate is 0.4 mgd (Harland Bartholomew and Associates, Inc., 1983), the average per capita flow is approximately 120 gpd for this period and the peak per capita flow is approximately 210 gpd. For Plants 1 and 2 combined, the average per capita flow is approximately 100 gpd and the peak flow is approximately 170 gpd.

4G.142 The combat air brigade included under this proposed stationing alternative is expected to be located in Harmony Church, the area served by Plant 1. Based on an infiltration rate of 0.8 mgd and the current average per capita flow of 80 gpd, Plant 1 can support an effective population of 47,500 users. Based on the infiltration rate and the current peak per capita flow of 140 gpd, Plant 1 can support an effective population of over 27,100 users.

4G.143 Assuming 55 percent of the current effective post population is served by Plant 1, there is currently an effective population of 19,100 using the plant. Under this alternative, the effective population of Fort Benning would increase by about 800 people. Thus, the effective population using Plant 1 would be

about 19,900. This is well below the existing capacity, and there should be no adverse impacts on water treatment or to water quality under this alternative.

Solid and Hazardous Waste Disposal

4G.144 Fort Benning currently generates about 590,000 cubic yards of non-compacted refuse per year, with a per capita generation of 17.1 cubic yards per year. The new landfill has a projected life of 5.3 years.

4G.145 Based on an effective population of 35,400 at the end of FY 1989 under this alternative, solid waste generation would increase by less than 3 percent to 605,300 cubic yards of non-compacted refuse per year. Based on this increase, the life expectancy of the landfill would decrease less than 0.2 years to a life expectancy of over 5.1 years. However, since most of the population increase would not occur until 1986-1987, there would be little change in use of the landfill until that time and thus the life expectancy of the landfill would decrease by only about half this amount to 5.2 years.

4G.146 There would be an increase in the generation of hazardous wastes (primarily spent solvents, corrosive wastes, and waste explosives), waste oil, and infectious and pathological wastes. Based on a 4 percent increase in the military personnel at Fort Benning, a 6 percent increase in military vehicles, and a 30 percent increase in aircraft operations, it is estimated that generation of hazardous wastes could increase by between 6 to 30 percent, generation of waste oil by between 6 to 30 percent, and generation of infectious wastes by 4 percent. Under this assumption, hazardous waste generation would increase by less than one ton per year and waste oil generation could increase by 4,500 to 34,000 gallons per year. Management of these quantities of waste would not be expected to pose a significant threat to the environment.

Housing

4G.147 Fort Benning family housing units are presently at full occupancy and no additional units are expected to be constructed. Thus, all additional family housing requirements under this alternative would have to be provided from the surrounding communities markets. Impacts from this are discussed under the Columbus, Georgia Region Housing Section.

SUPERSEDED
AUG 1984

4G.148 It is assumed under this alternative, that all 470 additional bachelor military personnel would be housed on-post, in Harmony Church. This would require the construction of barracks for 470 bachelor military personnel in the Harmony Church Cantonment area. However, such barracks could not be completed until late 1988 or 1989 at the earliest. Until such time as construction could be completed, bachelor military personnel would utilize the existing World War II temporary barracks in Harmony Church.

Schools

4G.149 No adverse impacts to Fort Benning schools would occur under this alternatave. Currently, only military dependents living on-post attend schools on Fort Benning. Since all additional family housing would be located off-post, no increase in the Fort Benning school enrollment would result from this alternative.

Health Care

4G.150 Under this alternative there would be an increase of 2,630 military personnel and dependents. Assuming sufficient additional medical staffing were provided, Martin Army Community Hospital has sufficient capacity available to handle this increase (Thornton, 1984).

Public Safety

4G.151 This alternative would not likely result in any significant adverse impact on public safety. There would not be any significant changes in the demographic composition (age, education, income) of the traditional Fort Benning military population. Fort Benning has traditionally been the home of infantry units and surrounding communities have a well established infrastructure for accommodating a military community. Based on the crime statistics presented in Chapter 3, Affected Environment, there could be an annual increase (on-post plus off-post) of about 5 crimes of violence, 60 crimes against property, and 30 drug offenses. Each of these would represent about a 4 percent increase over the current situation.

Traffic and Transportation

4G.152 There would be two sources of increased transportation and transportation-related impacts in the Fort Benning area. The additional military vehicles and personnel stationed at Fort Benning would result in an increase in on-post military transportation

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4G.151a As described in Appendix M, most crimes committed by Army personnel in the continental United States are confined to the installation. Further, Army crime rates in general have been declining. Between 1980 and 1983 the most common offenses committed by Army personnel, those against property, declined by 26 percent. Marijuana use and possession, the second most common offense

declined by 64 percent, while crimes of violence, ranking third dropped 42 percent (U.S. Army Office of the Deputy Chief of Staff for Personnel, 1984). Although Army crime rates are not directly comparable to national trends, more arrests per 1000 of U.S. males 18 to 22 years versus Army personnel were made for crimes against property, drug offenses and crimes of violence in 1982. In the event of troop stationing, the actual number of crimes could increase, yet as detailed in Appendix M most of the increase probably would be concentrated on post.

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SUPERSEDED
AUG 1984

activities, and the private vehicles owned by the additional personnel would result in an increase in off-post transportation activity in the vicinity of Fort Benning.

4G.153 Military vehicles on-post would increase by about 6 percent. To the extent that they were used on the Main Post, there would be an increase in the existing traffic congestion. Their use elsewhere on-post should not result in any significant traffic impacts.

4G.154 There would be an additional 620 military personnel and 380 civilians living off-post and commuting to the post. Based on a vehicle occupancy ratio of 1.28 (Military Traffic Management Control, 1982), this would result in approximately 780 additional vehicles per day commuting to Fort Benning. This would be about an 7 percent increase in traffic commuting to Fort Benning.

4G.155 Since most of this additional traffic would be directed toward the Harmony Church area, there should be little impact on traffic congestion either off-post or on-post if Victory Drive, the most likely route, were to be used, since it is far from capacity (Armstrong, 1984). Assuming all the increase in commuter traffic occurred along Victory Drive, there could be a 6 percent increase in average daily traffic on Victory Drive west of Lindsey Creek Bypass and a 10 percent increase east of Lindsey Creek Bypass. The existing "ridesharing" program could further reduce the potential for increases in traffic congestion.

4G.156 Increased transportation would have a minor impact on water quality in the area. Runoff from paved surfaces contains oil, grease, other hydrocarbons, and heavy metals, such as lead, released by vehicular exhausts. Data are not available to estimate the magnitude of any such increased releases or the potential for such pollutants to be carried into surface waters or ground water by runoff. However, based on over 150,000 registered vehicles in the four county area (see Appendix H), any increase in such releases would be minor.

Cultural Resources

4G.157 Professional knowledge of the terrain and the prehistoric habitation patterns of the area, together with the knowledge derived from archaeological sites on the installation and in surrounding areas, indicates that archaeological sites are present on the installation. To date, over 10,000 acres have been surveyed on-post, and over 150 sites have been identified. (Mullen, 1984). The National Register property Riverside is located

on the post, as are other potentially significant structures. Fort Benning is considered to have a high potential for significant, as yet undiscovered, archaeological resources and a potential exists for impacts on significant cultural resources under this alternative.

4G.158 Although the exact location and nature of many possible cultural resources, particularly archeological resources, is unknown, the potential impacts of the proposed action can be generally discussed. Basically, any action which produces ground disturbances in any form would have a potential for disturbing an archeological resource, thereby destroying data. Construction of new buildings and facilities, and establishment of roads include such elements as excavation, grading, filling or stockpiling of materials. All of these elements have a potential for disturbance or destruction of archeological materials. Renovation of existing buildings or demolition can damage and destroy significant historic structures.

4G.159 Many training activities, including maneuvering of vehicles and digging of foxholes, cause ground disturbances that have a potential for damaging or destroying an archaeological resource. Establishment of new training areas or increases in land utilization frequency for training over current levels can increase the potential for impacts to undisturbed cultural resources.

4G.160 Considerations will be given to identifying potential cultural resources, as well as protecting those known to exist. Authority for these actions are found in Army Regulation AR-420-40, Facilities Engineering, Historic Preservation (April 15, 1984) effective 15 May 1984. The procedures for accomplishing these measures are detailed in the Army Technical Manual TM-5-801-1, Historic Preservation-Administrative Procedures and TM-5-801-2, Historic Preservation-Maintenance Procedures. In regard to the installation, the prime limitation would be to prohibit any destruction or alteration of all or part of any significant site through whatever measures are necessary (e.g., establishment of limited-use areas). It should be noted that it is always possible for studies to miss an archaeological site, particularly one which shows little or no surface evidence of its presence. Because of this, all construction contracts must allow for this possibility by specifying that, in the event that a suspected archaeological site is encountered during construction or some other form of activity, operations in the area would be suspended until the site is investigated by a professional archaeologist. This construction contract provision is required by 32 CFR 650.192, Department of the Army, Environmental Protection and Enhancement, Peacetime Responsibilities, Historic Preservation, Archaeological Sites

activities, and the private vehicles owned by the additional personnel would result in an increase in off-post transportation activity in the vicinity of Fort Benning.

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4G.154 There would be an additional 620 military personnel and 380 civilians living off-post and commuting to the post. Based on a vehicle occupancy ratio of 1.28 (Military Traffic Management Control, 1982), this would result in approximately 780 additional vehicles per day commuting to Fort Benning. This would be about an 7 percent increase in traffic commuting to Fort Benning.

4G.155 Since most of this additional traffic would be directed toward the Harmony Church area, there should be little impact on traffic congestion either off-post or on-post if Victory Drive, the most likely route, were to be used, since it is far from capacity (Armstrong, 1984). Assuming all the increase in commuter traffic occurred along Victory Drive, there could be a 6 percent increase in average daily traffic on Victory Drive west of Lindsey Creek Bypass and a 10 percent increase east of Lindsey Creek Bypass. The existing "ridesharing" program could further reduce the potential for increases in traffic congestion.

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4G.157 Professional knowledge of the terrain and the prehistoric habitation patterns of the area, together with the knowledge derived from archaeological sites on the installation and in surrounding areas, indicates that archaeological sites are present on the installation. To date, over 10,000 acres have been surveyed on-post, and over 150 sites have been identified. (Mullen, 1984). The National Register property Riverside is located

(March 15, 1978). Similarly, training activities that involve the use of new areas or the increased use of areas presently used may uncover evidence of archaeological sites that was not uncovered by prior studies. Officers in charge of field activities should be made aware of this possibility and procedures should be established whereby the officer could inform the installation's Historic Preservation Committee of any finds so that the committee may take appropriate measures to avoid the accidental destruction of a site. Additionally, since the looting of sites by irresponsible persons can be a problem, security measures should be instituted to prevent destruction of archaeological data in this manner.

ENERGY AND FUELS ANALYSIS

4G.161 The anticipated changes in energy and fuel consumption at each of the forts involved in this alternative are summarized in Table 4G-4. The methodology for the derivation of these estimates is presented in Appendix H.

4G.162 Increased gasoline consumption for private vehicles owned by military personnel is based on 18,000 additional vehicles at the two forts, each driven an average of 9,026 miles per year with a mileage of 15.53 miles per gallon (Motor Vehicle Manufacturers Association, 1983). The resulting estimated increase in fuel consumption is 10 million gallons of gasoline per year. This consumption is an increase of 130 billion Btu per year, or 4 percent more fuel than is presently being consumed in the private vehicles of military personnel at the forts. The estimated number of motor vehicles and corresponding gasoline consumption in the counties adjacent to Fort Drum are 92,600 vehicles consuming 11 trillion Btu per year. The implementation of this alternative would increase local gasoline consumption by 10 percent. The corresponding estimates for Fort Benning are 152,600 vehicles consuming 17 trillion Btu per year. The increase in local gasoline consumption near Fort Benning is 1 percent.

4G.163 The increase in energy consumption for off-post housing is based on an increase of 4,100 military personnel and dependents living off-post at Fort Drum and 2,100 living off-post at Fort Benning. The resulting fuel requirement of 430 billion Btu at Fort Drum represents a 2 percent increase in the present residential consumption of 24 trillion Btu in the counties adjacent to the installation. At Fort Benning, the resulting fuel requirement of 210 billion Btu represents a 1 percent increase in the present residential consumption of 26 trillion Btu in the counties adjacent to the installation.

SUPERSEDED
AUG 1984

TABLE 4G-4

INCREASED ENERGY REQUIREMENTS UNDER THE
FORT DRUM-FORT BENNING STATIONING ALTERNATIVE III

	Fort Drum	Fort Benning
Personal Vehicles		
Increase, 10^9 Btu/yr	1,180	120
Percent[1]	996	4
Off-Post Housing		
Increase, 10^9 Btu/yr	430	210
Percent[1]	38	10
Military Vehicles		
Increase, 10^9 Btu/yr	830	520
Percent[1]	1,180	60
On-Post Usage		
Increase, 10^9 Btu/yr	3,900	540
Percent[1]	1,011	13
Total Energy Use		
Increase, 10^9 Btu/yr	4,730	1,060
Percent[1]	708	10
Total Annual Use, 10^9 Btu/yr	5,400	11,190
Energy Requirement per Troop 10^6 Btu/yr	478	429

[1]Percent Increase = Increased Energy Requirement x 100/Present Consumption.

REVISED 1984

TABLE 4G-4

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Percent[1]	38	10
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Increase, 10^9 Btu/yr	830	520
Percent[1]	1,180	60
On-Post Usage		
Increase, 10^9 Btu/yr	3,900	100
Percent[1]	1,011	2
Total Energy Use		
Increase, 10^9 Btu/yr	4,730	1,060
Percent[1]	708	10
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Energy Requirement per Troop 10^6 Btu/yr	478	429

[1]Percent Increase = Increased Energy Requirement x 100/Present Consumption.

SUPERSEDED
AUG 1984

4G.164 The increased requirement for on-post heating and associated energy usage is a linear extrapolation of the per capita on-post energy usage based on the effective population on-post as defined in TB ENG 354. The projected increase of 3,900 billion Btu per year at Fort Drum is 1,011 percent of the current energy usage. At Fort Benning, the projected increase of 540 billion Btu per year is 13 percent of the present energy usage. Assuming the relative proportions of fuels used at the installations remain unchanged, implementation of this alternative require the following additional amounts of fuels and energy:

	Fort Drum	Fort Benning
Coal, tons	11,300	0.39
Fuel Oil, million gallons	9.30	0.21
Natural Gas, million therms	0.04	0.23
Propane, thousand gallons	950	150
Gasoline, million gallons	3.70	0.25
Diesel Fuel, million gallons	1.90	0.24
Aviation Fuel, million gallons	0.83	3.60
Electricity, TKWH	191,500	23,300

4G.165 The 1,420 additional vehicles at Fort Drum would use 341,000 gallons of gasoline and 589,000 gallons of diesel fuel. The 190 additional vehicles at Fort Benning would use 53,000 gallons of gasoline and 93,000 gallons of diesel fuel.

4G.166 The consumption of aviation fuel includes transport of the aviation brigade to Fort Drum once a year. The travel distance is 1,175 miles, requiring 46,000 gallons of JP 4. The number of additional helicopters at Fort Benning would be 100. Based on flight time of 300 hours per year and fuel consumption of 100 gallons per hour, the helicopters account for 3 million gallons of the increase in aviation fuel use at Fort Benning.

4G.167 The total energy requirements resulting from implementation of this alternative are 4.73 trillion Btu at Fort Drum and 1.06 trillion Btu at Fort Benning. These requirements are 708 percent of present energy consumption at Fort Drum and 10 percent of that at Fort Benning. The total fuel consumption per troop would change from 649 MBtu to 478 MBtu at Fort Drum, and from 405 MBtu to 429 MBtu at Fort Benning.

4G.168 Although there would be some impact on local energy use due to implementation of this alternative, the impact on national energy use would be negligible. Personnel of the light infantry division are to be drawn from existing Army units. Therefore, there

would be a decrease in energy use in the localities where the troops are presently stationed approximately equal to the impacts described here. Similarly, many of the vehicles for the light infantry division are to be obtained from existing inventory. The only new vehicles to be added to the Army would be light trucks.

MITIGATING MEASURES

4G.169 Mitigating measures are defined as those actions that can be taken to lessen the adverse impacts resulting from implementation of the proposed action. Mitigating measures can be taken in anticipation of, concurrently with, or subsequent to the proposed action to minimize or offset undesirable impacts. Tables 4G-5 and 4G-6 describe generic mitigation measures available to the government. The measures described are potential only. No commitment is intended that these will be chosen at any specific installation. There are many variables influencing actual mitigation, including funding, timing, other Army actions, and specific environmental conditions found while the Army implements actions described here.

ADVERSE IMPACTS THAT CANNOT BE AVOIDED

4G.170 Some effects of the proposed stationing action cannot be mitigated. Those residual adverse impacts that cannot be avoided even if the measures given in the Mitigating Measures tables are used are summarized in Table 4G-7.

REVISED 1984

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	Fort Drum	Fort Benning
Coal, tons	11,300	0.39
Fuel Oil, million gallons	9.30	0.21
Natural Gas, million therms	0.04	0.23
Propane, thousand gallons	950	150
Gasoline, million gallons	3.70	0.25
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Electricity, MWH	191,500	23,300

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SUMMARY OF MITIGATING MEASURES FOR REGIONAL EFFECTS OF THE FORT DRUM-FORT BENNING ALTERNATIVE III

Category	Fort Drum, New York	Fort Benning, Georgia
Biological Environment	Consider biological effects in selection of any off-post areas for construction activities (e.g., housing, commercial development).	Consider biological impacts in selection of any off-post areas for construction activities (e.g., housing, commercial development).
Demography	No feasible mitigating measures available.	No mitigating measures required because no significant impacts have been identified.
Land Use	Coordinated planning and regulation by local governments in region to minimize "sprawl" effects of rapid development.	No mitigating measures required because no significant impacts have been identified.
Noise	To the extent practical, restrict, reschedule, or relocate any on-post activities with a potential for regional noise conflict.	Re-evaluate Installation Compatible Use Noise Zone (ICUZ) contours with regard to proposed activities; to extent practical restrict, reschedule, or relocate any activities with a potential for noise conflict.
Regional Economic Activity	Institute advanced planning to allow local governments and private firms adequate time to plan for mitigation of any potentially adverse impacts.	No mitigating measures required because no significant impacts have been identified.
Air Quality	Applications for stationary sources permits are subject to prevention of significant deterioration (PSD) review by NYSDEC.	No mitigating measures required because no significant impats have been identified.
Water Supply	Regulation of private septic systems to avoid ground-water contamination.	No mitigating measures required because no significant impacts have been identified.
Wastewater Disposal	Permits are subject to NYSDEC review for NPDES compliance.	Continue on-going design activities related to expansion of Columbus wastewater treatment plants; continue study of need for expansion of Phenix City wastewater treatment plant.
Solid Waste Disposal	Implement plans being developed for area resource recovery incineration programs and facilities in Jefferson and St. Lawrence counties.	Implement the joint solid waste incineration - steam generation facility being contemplated for construction by Fort Benning and the city of Columbus, Georgia.
Housing	Would construct on-post housing to lessen demand on region. Alter schedule for stationing or construction to mitigate possible short-term housing shortage.	Any potential shortfall in housing would occur as a result of natural population growth unrelated to this alternative; on-going planning and construction activities in the area should alleviate any potential shortage; if necessary, additional family housing units could be constructed on post.
Schools	Would build elementary schools on post to mitigate pressure on region. Reassign junior and senior high students from overcrowded to underused school districts in area. Alter schedule for stationing or construction to avoid potential short-term pressure on schools prior to school construction on post.	No mitigating measures required because no significant impacts have been identified.
Health Care	Make temporary provisions for short-term health care services prior to hospital construction on post; or alter schedule for construction to allow for hospital completion on post prior to arrival of troops.	No mitigating measures required because no significant impacts have been identified.

TABLE 4G-6

SUMMARY OF MITIGATING MEASURES FOR ON-POST EFFECTS OF THE FORT DRUM-FORT BENNING STATIONING ALTERNATIVE III

Category	Fort Drum, New York	Fort Benning, Georgia
Geology, Minerals and Soils	Institute land use planning in training areas to control erosion through measures such as land use, rotation, revegetation, and location of maneuvering areas; continue current erosion control program.	Initiate land-use planning on training areas to control erosion through measures such as land use rotation, revegetation, and location of maneuvering areas; continue current erosion control measures such as check dams, water bars, and seeding; use applicable erosion control barriers and procedures in new construction areas.
Biological Environment Terrestrial Ecosystems	Continue implementation by Fort Drum Land Management Branch of its Natural Resources Management Program.	Update and continue to use Fort Benning Natural Resources Management Plan; employ stand-by crew of firefighters to handle likely increase in wildfires on post; extend current controlled burning season (December through March) to compensate for reduction in time available for controlled burning during this period due to increased utilization of woodlands for training activities use of erosion control methods discussed for land use.
Aquatic Ecosystems	Continue implementation by Fort Drum Land Management Branch of its Natural Resources Management Program.	No mitigating measures required because no significant impacts have been identified.
Threatened/Endangered Species	No mitigating measures required because no significant impacts impacts were identified.	Continue current protection measures related to red-cockaded woodpecker on post; determine whether American alligator inhabits or could potentially inhabit post and implement any necessary protection procedures.
On-Post Population	Alter construction schedule or troop stationing to avoid short-term pressures and involuntary separation of military families.	No mitigating measures required because no significant impacts have been identified.
Land Use	Continue implementation by Fort Drum Land Management Branch of its Natural Resources Management Program.	No mitigating measures required because no significant impacts have been identified.
Noise	Helicopter flights generally are restricted from cantonment and housing areas. Further mitigation is not possible without a a change in mission.	Re-evaluate Installation Compatible Use Noise Zone (ICUZ) contours with regard to proposed activities; to extent practical restrict, reschedule, or relocate any activities with a potential for noise conflict.
Air Quality	New stationary facilities to have particulate controls and are subject to review by NYSDEC for PSD. Institute redesharing program to decrease mobile source emissions.	Continue current energy conservation efforts and expand existing energy monitoring control system to additional buildings on post; expand solar pond capacity; increase use of existing "ridesharing" program.

TABLE 4G-6 (Concluded)

SUMMARY OF MITIGATING MEASURES FOR ON-POST EFFECTS OF THE FORT DRUM-FORT BENNING STATIONING ALTERNATIVE III

Category	Fort Drum, New York	Fort Benning, Georgia
Water Supply	Would need six new wells to meet increased demand.	No mitigating measures required because no significant impacts have been identified.
Wastewater Disposal	New wastewater treatment plant would be built to adequate size, subject to NPDES permit and NYSDEC regulations.	No mitigating measures required because no significant impacts have been identified.
Solid and Hazardous Waste Disposal	Implement proposed coopertive effort with Jefferson County in development of resource recovery incineration facilities. Institute efforts to reduce the generation of solid wastes on post.	Continue on-going efforts to reduce generation of solid waste on post and to increase recycling of those solid wastes that are generated; continue on-going efforts to replace hazardous materials, such as specific hazardous solvents, with equivalent non-hazardous materials; implement the joint solid waste incineration-steam generation facility being contemplated for construction by Fort Benning and the city of Columbus, Georgia.
Housing	Would construct approximately 4,100 housing units on post to to meet 90% of demand for those eligible; 1,283,600 ft^2 of new barracks space 176,300 ft of new BOQ.	Accelerate construction of additional bachelor quarters on post; construct additional family housing units on post if sufficient units were not available offpost.
Schools	Would construct two elementary schools on post totaling 95,000 ft^2 to meet increased demand.	No mitigating measures required because no significant impacts have been identified.
Health Care	Would construct a hospital on post totaling 102,800 ft^2, and a 22,100 ft^2 dental clinic to meet new demand for health services.	Provide additional staffing necessary for expansion of beds.
Public Safety	Increase MP staff and Judge Advocates staff to meet new demands.	No mitigating measures required because no significant impacts have been identified.
Traffic and Transportation	Implement recently completed "Traffic Engineering Planning Study" to reduce peak loads. Undertake survey of new traffic flow patterns following proposed stationing. Implement staggered work hours, encourage car pools.	Increase use of existing "ridesharing" program; accelerate the implementation of the recommendations made by the Military Traffic Management Command with regard to improving traffic circulation on post and off post.
Cultural Resources	Consideration of potential cultural resources, including, if necessary, identification and evaluation. Protection of significant cultural resources.	Complete and implement Cultural Resources Management Plan; accelerate on-going cultural and historical surveys of Fort Benning. Consideration of potential cultural resources, including, if necessary, identification and evaluation. Protection of significant cultural resources.

TABLE 4C-7

SUMMARY OF ADVERSE IMPACTS THAT CANNOT BE AVOIDED UNDER THE FORT DRUM-FORT BENNING STATIONING ALTERNATIVE III

Category	Fort Drum and Surrounding Region	Fort Benning and Surrounding Region
Geology, Minerals and Soils	Increased erosion because of increased troop days in field.	Disturbance to soils, both on-post and off-post, would occur as a result of construction; increased potential for soil erosion as a result of construction activities and 11 percent increase in frequency of utilization of existing training areas on-post.
Biological Environment	Over 350 acres or wildlife habitat lost to construction on-post. Increase in frequency of wildfires on-post due to increases in training activity.	Small loss of habitat due to any off-post construction; slight increase in habitat disturbance due to 11 percent increase in utilization of maneuvering/training areas; potential for decline in wild turkey population on-post (not an endangered or threatened species); increase in frequency of wildfires on-post due to increases in training.
Demography	None.	None.
Land Use	None.	Eleven percent increase in utilization of maneuvering/training areas would correspondingly reduce the time the area was available for other uses (e.g., recreation, controlled burning).
Noise	Increased frequency of training activity could increase noise complaints.	Slight increase in frequency of activities that generate noise.
Air Quality	Emissions during construction, and increased long-term emission due to more automobiles, power plants.	Slight increase in the emission of air pollutants; this would not cause any air quality standards to be violated.
Water Supply	Increased effluent discharge to Black River.	None.
Wastewater Disposal	None.	None.
Solid and Hazardous Waste Disposal	None.	Very slight decrease in life of existing landfills.
Housing	None.	None.
Schools	None.	None.

SUPERSEDED AUG 1984

TABLE 4G-7

SUMMARY OF ADVERSE IMPACTS THAT CANNOT BE AVOIDED UNDER THE FORT DRUM-FORT BENNING STATIONING ALTERNATIVE III

Category	Fort Drum and Surrounding Region	Fort Benning and Surrounding Region
Geology, Minerals and Soils	Increased erosion because of increased troop days in field.	Disturbance to soils, both on-post and off-post, would occur as a result of construction; increased potential for soil erosion as a result of construction activities and 11 percent increase in frequency of utilization of existing training areas on-post.
Biological Environment	400 acres of wildlife habitat lost to construction on-post. Increase in frequency of wildfires on-post due to increases in training activity.	Small loss of habitat due to any off-post construction, slight increase in habitat disturbance due to 11 percent increase in utilization of maneuvering/training areas; potential for decline in wild turkey population on-post (not an endangered or threatened species); increase in frequency of wildfires on-post due to increases in training.
Demography	None.	None.
Land Use	None.	Eleven percent increase over current utilization of maneuvering/training areas would correspondingly reduce the time the area was available for other uses (e.g., recreation, controlled burning).
Noise	Increased frequency of training activity could increase noise complaints.	Slight increase in frequency of activities that generate noise.
Air Quality	Emissions during construction, and increased long-term emission due to more automobiles, power plants.	Slight increase in the emission of air pollutants; this would not cause any air quality standards to be violated.
Water Supply	Increased effluent discharge to Black River.	None.
Wastewater Disposal	None.	None.
Solid and Hazardous Waste Disposal	None.	Very slight decrease in life of existing landfills.
Housing	None.	None.
Schools	None.	None.

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TABLE 4G-7 (concluded)

SUMMARY OF ADVERSE IMPACTS THAT CANNOT BE AVOIDED UNDER THE FORT DRUM-FORT BENNING STATIONING ALTERNATIVE III

Category	Fort Drum and Surrounding Region	Fort Benning and Surrounding Region
Health Care	None.	None.
Public Safety	None.	None.
Traffic and Transportation	None.	Additional traffic at peak periods.
Cultural Resources	Potential loss or disturbance of significant cultural resources.	Potential loss or disturbance of significant cultural resources.
Relationship Between Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity	Disturbance of vegetation, wildlife and habitat as a result of construction and increased training activities. Increases in air emissions, however, air quality standards would not be biolated. Soil loss due to. increased potential for erosion.	Disturbance of vegetation, wildlife and habitat as a result of construction and increased training activities. Increases in air emissions, however, air quality standards would not be violated. Soil loss due to increased potential for erosion.
Irreversible and Irretrievable Commitment of Resources	Some materials and fuels used for construction would be irretrievably lost. Also, capital used for construction would be lost to other uses. Increased erosion would lead to loss of soils. Archaeological sites could be accidentally lost or damaged through construction or training activities Rural quality could be affected in those communities with increased population.	Some materials and fuels used for construction would be irretrievably lost. Also, capital used for construction would be lost to other uses. Increased erosion would lead to loss of soils. Archaeological sites could be accidentally lost or damaged through construction or training activities.

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CHAPTER 5

LIST OF PREPARERS AND REVIEWERS

5.1 This environmental impact statement has been prepared by the U.S. Army Corps of Engineers, Mobile District under the project management of Mr. James Hildreth. Assistance to the Mobile District was provided by the staff of the MITRE Corporation, McLean, Virginia. Review of materials prior to publication of the environmental impact statement was provided by personnel of various U.S. Army elements. A list of those providing assistance in preparation and review is provided in Table 5-1.

763

TABLE 5-1

LIST OF PREPARERS

Preparer	Experience or Affiliation	Report Contribution
Wade H.B. Smith Ph.D., Ecology The MITRE Corporation	8 years experience as Project Staff and Project Leader for The MITRE Corporation on environmental studies and impact statements related to realignment of military activities, energy development, dredged material disposal, hazardous waste disposal, recreational developments in aquatic environments and wastewater disposal. 4 years experience in field studies of the effects of cooling water discharges on marine ecosystems.	MITRE Project Manager; Parts of Chapters 1, 2
Leo J. Boberschmidt B.S., Geology/Anthropology The MITRE Corporation	11 years experience as Environmental Systems Scientist for the MITRE Corporation, involved in the environmental analysis of construction and energy development projects and hazardous and radioactive waste disposal programs. In support of NEPA activities, has developed impact assessment methodologies and performed environmental impact analysis of a wide variety of site-specific, regional, national, programmatic, and legislative activities. 8 years experience as researcher/ cartographer responsible for research and preparation of maps, scientific graphics, and historical reconstructions.	Chapters 3 and 4B (Fort Ord and region) - Biological Environment - Demography, On-Post Population - Land Use - Regional Economic Activity - Housing - Schools - Health Care - Public Safety - Cultural Resources - Mitigating Measures - Unavoidable Adverse Impacts
Richard D. Brown Ph.D. Limnology The MITRE Corporation	9 years experience as Department Staff and Project Manager for The MITRE Corporation on health and environmental effects studies related to energy development, environmental monitoring. 4 years prior experience in field studies of effects of large-scale development and in support of NEPA activities.	Chapters 3 and 4D (Fort Campbell and region) - Introduction - Biological Environment - Water Supply - Solid Waste Disposal - Geology, Minerals and Soils - Cultural Resources - Mitigating Measures - Unavoidable Adverse Impacts

TABLE 5-1 (Continued)

LIST OF PREPARERS

Preparer	Experience or Affiliation	Report Contribution
Elaine G. Carlson M.A., Public Policy Analysis The MITRE Corporation	10 years experience as researcher/analyst of public policy issues and impacts for Federal legislative committees and executive agencies. Includes, most recently, the analysis of socioeconomic impacts of a baseline technology assessment of high energy density batteries.	Chapters 3, 4C, 4D, 4E, 4F, 4G (Fort Drum and region) - Demography, on-post population - Land Use - Housing - Schools - Health Care - Public Safety - Traffic and Transportation - Cultural Resources - Mitigating Measures - Unavoidable Adverse Impacts
Nancy L. Cichowicz M.S., Geology; M.S., Water Resources Management The MITRE Corporation	2 years experience as Technical Staff for The MITRE Corporation on projects involving the study of ground-water contamination by field activities, remote sensing techniques, and computer modeling and the assessment of the environmental impacts of resource recovery facilities. 3 years experience as hydrologist responsible for field investigations of the effects of industrial waste disposal upon adjacent resources. 2 years experience as exploration geophysicist responsible for assisting in the discovery of new areas for oil/gas exploration.	Chapters 3 and 4B (Fort Ord, Fort Hunter Liggett and region) - Climate - Geology, Minerals and Soils - Noise - Air Quality - Water Supply - Wastewater Disposal - Geology, Minerals and Soils - Solid and Hazardous Waste Disposal - Traffic and Transportation - Mitigating Measures - Unavoidable Adverse Impacts

TABLE 5-1 (Continued)

LIST OF PREPARERS

Preparer	Experience or Affiliation	Report Contribution
John F. Ficke B.S. Civil Engineering; M.S. Hygiene Public Health	25 years experience as systems engineer, The MITRE Corporation; Senior staff member for Environmental Data and Monitoring, President's Council on Environmental Quality; Branch Chief and Acting Division Director, U.S. Environmental Protection Agency; and Hydrologist and Hydraulic Engineer, U.S. Geological Survey. Broad experience in environmental monitoring and assessment, including air, water, economic effects, and toxic chemicals. Registered professional engineer in California and Indiana.	Chapters 3, 4C, 4D, 4E, 4F, 4G (Fort Drum and region) - Introduction - Climate - Biological Environment - Land Use - Noise - Regional Economic Activity - Air Quality and Emissions - Water Supply - Wastewater Disposal - Solid and Hazardous Waste Disposal - Mitigating Measures - Unavoidable Adverse Impacts
Stuart A. Haus M.S.E. Operations Research The MITRE Corporation	15 years experience with the MITRE Corporation, including 12 years experience as Project Staff and Project Leader on environmental studies and impact statements related to hazardous waste management, hazardous waste regulatory development, synthetic fuels development, energy facility construction, water-related construction projects, and abandoned waste sites.	Chapter 3, 4E, 4F, 4G (Fort Benning and region) - Climate - Geology, Minerals and Soils - Land Use - Noise - Regional Economic Activity - Air Quality - Water Supply - Wastewater Disposal - Solid and Hazardous Waste Disposal - Health Care - Public Safety - Traffic and Transportation - Mitigating Measures - Unavoidable Adverse Impacts

TABLE 5-1 (Continued)

LIST OF PREPARERS

Preparer	Experience or Affiliation	Report Contribution
Laura R. Jones B.S. Biology The MITRE Corporation	Five years experience as Technical Associate in Environmental Division. Experience includes analyses of pollutant emissions from energy projects for EPA's Office of Exploratory Research, design of Canadian Air Pollutant Emissions system and other data bases and preparation of socioeconomic impacts assessment resulting from construction of high-level nuclear waste repository in Southern Nevada.	Chapter 3, 4E, 4F, 4G (Fort Benning and region) - Biological Environment - Housing - Schools - Cultural Resources
Stephen H. Lubore Ph.D. Operations Research The MITRE Corporation	13 years experience in planning, organizing and directing environmental studies and preparation of NEPA documentation. 27 years of professional experience.	Review.
George A. Malone B.S. Chemistry, Chemical Engineering The MITRE Corporation	12 years experience as a project engineer and project manager in energy technology and resource development. Experience includes synthetic fuels technology development, coal and petroleum resource assessment, industrial and utility power generation design, combustion environmental control systems design, environmental impact analysis for oil, gas and coal resource development and utilization, technology development for unconventional gas resource development.	Chapters 3, 4A, 4B (Fort Lewis subinstallations and region) - Climate - Geology, Minerals and Soils - Air Quality - Water Supply - Wastewater Disposal - Solid and Hazardous Wastes - Traffic and Transportation - Mitigating Measures - Unavoidable Adverse Impacts
Tina S. McDowell B.A. Anthropology The MITRE Corporation	5 years experience as a Technical Associate and as a member of the Technical Staff of the MITRE Corporation analyzing social, economic, and cultural effects from domestic energy-related projects and for various Federal initiatives affecting foreign countries.	Chapter 3, 4A, 4B (Fort Lewis subinstallations and region) - Introduction - Biological Environment - Demography, on-post population - Land Use - Regional Economic Activity - Housing - Schools - Public Safety - Cultural Resources - Mitigating Measures - Unavoidable Adverse Impacts

TABLE 5-1 (Continued)

LIST OF PREPARERS

Preparer	Experience or Affiliation	Report Contribution
Brian H. Price M.S. Management The MITRE Corporation	10 years experience preparing and managing environmental impact and technology studies. Major EIS responsibility for port development, construction of bridges and expressways, wetlands management programs, air pollutant emissions modeling, acid precipitation modeling program development.	Reviewer
Sharon Saari M.S. Wildlife Management The MITRE Corporation	15 years experience ecology, natural resources planning, including 10 years NEPA process and EIS preparation. Have prepared over 50 articles and reports and one book on Environmental Impact Data Book. Present position of Environmental Systems Scientist 10 years.	Chapters 3 and 4A (Fort Richardson and region) - Climate - Geology, Minerals and Soils - Biological Environment - Demography, on-post population - Land Use - Noise - Air Quality - Water Supply - Wastewater Disposal - Solid and Hazardous Waste Disposal - Housing - Schools - Health Care - Public Safety - Traffic and Transportation - Cultural Resources

TABLE 5-1 (Continued)

LIST OF PREPARERS

Preparer	Experience or Affiliation	Report Contribution
Jan F. Sassaman Ph.D. Zoology The MITRE Corporation	Six Years experience as Project Staff and and Project Leader for the MITRE Corporation on environmental studies and impact statements related to military realignment actions, oil and gas development, hydropower development, coal gasification, hazardous waste, and pesticides. Seven years teaching experience as Professor of Environmental Science, Unity College, Maine.	Chapter 3 and 4A (Fort Wainwright and region) - Climate - Geology, Minerals and Soils - Biological Environment - Demography, on-post population - Land Use - Noise - Air Quality - Wastewater Disposal - Water Supply - Solid and Hazardous Waste Disposal - Housing - Schools - Health Care - Public Safety - Traffic and Transportation - Cultural Resources
Daniel A. Schultz M.U.P. Urban Planning The MITRE Corporation	6 years experience as Task Leader and Project Staff for The MITRE Corporation on environmental studies of energy-related and community development projects. Impact assessment tasks have included: air quality modeling, noise measurement, trip generation and roadway capacity analysis, labor demand and population growth estimation, community facilities and services needs projections, and project-level engineering economic analysis. 4 years with other firms preparing environmental impact statements for highway projects.	Chapter 3 and 4D (Fort Campbell and region) - Climate - Demography, on-post population - Land Use - Regional Economic Activity - Air Quality - Housing - Schools - Health Care - Public Safety - Traffic and Transportation
Gregory A. Vogel M.S. Chemical Engineering The MITRE Corporation	5 years experience as chemical engineer specializing in hazardous waste management and incineration. 10 years experience as an analytical chemist analyzing samples for priority pollutants and regulatory compliance.	Chapters 3, 4A, 4B, 4C, 4D, 4E 4F, 4G, Appendix H - Energy Usage - Energy and Fuels Analysis

TABLE 5-1 (Continued)

LIST OF PREPARERS

Preparer	Experience or Affiliation	Report Contribution
Ms. Neta Adams	U.S. Army Forces Command, Deputy Chief of Staff Comptroller, Programming and Cost Analysis Division	Reviewer
Col. James Andrews	Office of the Assistant Chief of Engineers, Installation Planning Division	Reviewer
Dr. Harold Balbach	Principal Investigator, Environmental Resources Team, U.S. Army CERL	Reviewer; EIFS model runs
Mr. Laren D. Bates	Attorney Advisor, Office of the Staff Judge Advocate, U.S. Army Forces Command	Reviewer
Ms. Karen S. Byers	Attorney Advisor, Office of the Staff Judge Advocate, U.S. Army Forces Command	Reviewer
Dr. Charles Calmbacher	Environmentalist, U.S. Army Forces Command, DCS Engineer	Reviewer; prepared Appendix J
Mr. Richard F. Chambers	Deputy Chief of Staff Comptroller, Programming and Cost Analysis Division, U.S. Army Forces Command,	Reviewer
Mr. Steve Douglas	Research Associate, Modeling and Simulation Team, U.S. Army CERL	Reviewer; EIFS model runs
Mr. John Fittipaldi	Principal Investigator, Modeling and Simulation Team, U.S. Army CERL	Reviewer; EIFS model runs
Maj. Robert Flocke	Office of the Chief of Public Affairs, Policy and Plans Division	Reviewer
Mr. John T. Giambruno	FS&S Division, Headquarters U.S. Army Forces Command	Reviewer
Mr. Warren Harris	Headquarters TRADOC, Deputy Chief of Staff Resource Management, Concise Special Planning Group	Reviewer
Col. J. Earl Herndon, Jr.	Chief, Sanitary Engineering Section, Office of the Surgeon General	Reviewer
Mr. James B. Hildreth	Chief, Environmental Quality Section, Mobile District Corps of Engineers	Reviewer; Corps of Engineers Project Manager

TABLE 5-1 (Continued)

LIST OF PREPARERS

Preparer	Experience or Affiliation	Report Contribution
Lt. Col. Robert E. Hunt	Headquarters TRADOC, Deputy Chief of Staff Resource Management, Concise Special Planning Group	Reviewer
Lt. Col. Kenneth Keefe	Office of the Chief of Staff, Army Management Directorate, Coordination Analysis and Reports Division	Reviewer
Mr. Robert H. LaCoy	Chief Force Structures and Stationing, U.S. Army Forces Command	Reviewer
Mr. Jack Mallory	Ecologist, Mobile District Corps of Engineers	Reviewer
Mr. Calvin R. McCulley	Headquarters U.S. Army Forces Command, Deputy Chief of Personnel Manpower Managment Division	Reviewer
Mr. Donald McMenamin	Headquarters U.S. Army Forces Command, Deputy Chief of Staff Engineer, Resources Management Division	Reviewer
Lt. Col. Dale F. Means	Office of the Chief of Staff, Army, Program Analysis and Evaluation Directorate, Program Development Division	Reviewer
Lt. Col. Randall B. Medlock	Office of the Chief of Staff, Army, Program Analysis and Evaluation Directorate, Manpower and Force Program Analysis Division	Reviewer
Mr. Jerome J. Nielsen	Archaeologist, Mobile District Corps of Engineers	Reviewer
Mr. Steve A. Nixon	Trial Attorney, Office of the Judge Advocate General, Regulatory Law Division	Reviewer
Mr. John W. Rushing	Assistant Chief, Planning Division, South Atlantic Division Office, Corps of Engineers	Reviewer
Mr. Robert Russell	U.S. Army Forces Command, DCS Engineer C, Housing Branch	Reviewer

TABLE 5-1 (Concluded)

LIST OF PREPARERS

Preparer	Experience or Affiliation	Report Contribution
Col. Michael Sisk	Assistant Secretary of the Army (Installations and Logistics), Office of Environment, Safety and Occupational Health	Reviewer
Mr. James W. Stirling	Deputy Counsel, South Atlantic Division, Management Branch	Reviewer
Mr. Jim Tarlton	HQDA, DAEN-ZCH-M Housing Division, Management Branch	Reviewer
Mr. Thomas T. Traceski	Office of the Assistant Chief of Engineers, Army Environmental Office	Reviewer
Lt. Col. William Whittle	Office of the Deputy Chief of Staff for Operations and Plans, Light Infantry Division Task Force	Reviewer
Mr. Lance D. Wood	Office of the Chief Counsel, Assistant Chief Counsel for Environmental Law and Regulatory Programs, USACE	Reviewer

CHAPTER 6

PUBLIC INVOLVEMENT

6.1 The public has been involved in the preparation of the draft environmental impact statement since the Notice of Intent to Prepare an Environmental Impact Statement was published in the Federal Register, Volume 49, Number 68 on 4 April 1984. A preliminary scoping report on the possible issues of concern at each of the installations involved in the stationing study was prepared by the Mobile District and released for review by the public, federal and state agencies on 6 April 1984. Official public scoping meetings were held near the effected installations during 16-19 April 1984:

Meeting Location	Date
Columbus, Georgia (Fort Benning)	16 April 1984
Clarksville, Tennessee (Fort Campbell)	17 April 1984
Fort Lewis, Washington	18 April 1984
Watertown, New York (Fort Drum)	18 April 1984
Fairbanks, Alaska (Fort Wainwright)	18 April 1984
Salinas, California (Fort Ord)	19 April 1984
Anchorage, Alaska (Fort Richardson)	19 April 1984

Reports of the scoping meetings were available on 2 May 1984 and are available for the cost of reproduction upon request to the Mobile District, Corps of Engineers.

6.2 During the period 4-13 April 1984, teams of professionals of The MITRE Corporation, McLean, Virginia, under contract to the Mobile District to assist in the preparation of the draft environmental impact statement, visited each installation to meet with Army, federal, state, local and community groups to collect data and identify concerns and issues.

6.3 Personal and letter contacts have been made with each responsible Office of Endangered Species, U.S. Fish and Wildlife Service and with state and federal officials responsible for cultural and historic resources.

6.4 Notice of the schedule of public hearings to be held upon completion of the draft environmental impact statement was released on 8 May 1984. Notice of the availability of the draft environmental impact statement was published in the Federal Register on 25 May 1984.

6.5 Public hearings on the draft environmental impact statement were held between 11 June and 21 June 1984 at the following locations:

Meeting Location	Date
Columbus, Georgia (Fort Benning)	11 June 1984
Clarksville, Tennessee (Fort Campbell)	12 June 1984
Watertown, New York (Fort Drum)	13 June 1984
Monterey, California (Fort Ord)	18 June 1984
Tacoma, Washington (Fort Lewis)	19 June 1984
Anchorage, Alaska (Fort Richardson)	20 June 1984
Fairbanks, Alaska (Fort Wainwright)	21 June 1984

Copies of the public hearing record which contains the transcript of oral testimony and all written statements are available for the cost of reproduction upon request to the Mobile District, Corps of Engineers. Notice of the availability of the final environmental impact statement was published in the Federal Register.

DRAFT ENVIRONMENTAL IMPACT STATEMENT MAILING LIST

6.6 Copies of the draft environmental impact statement were sent to the following elected officials, agencies, organizations, the media and individuals. In addition, copies were sent to libraries in the vicinity of each installation.

Forts Wainwright, Greely, and Richardson, Alaska

Congress

Honorable Frank H. Murkowski
Honorable Ted Stevens
Honorable Don Young

Governor

Honorable Bill Sheffield

Federal Agencies

U.S. Fish and Wildlife Service
U.S. Department of Housing and Urban Development
U.S. Bureau of Land Management
U.S. National Park Service
U.S. Environmental Protection Agency, Region X
U.S. Federal Energy Regulatory Commission
U.S. Bureau of Indian Affairs

Federal Agencies (Concluded)

U.S. General Services Administration
U.S. Forest Service
U.S. Department of Agriculture
Federal Information Center
U.S. Minerals Management Service
U.S. Federal Highway Administration
U.S. National Ocean Survey, Pacific Marine Center

State Agencies

State Clearinghouse
State-Federal Coordinator
Alaska Department of Community & Regional Affairs
Alaska Department of Natural Resources

Organizations

Arctic Environmental Research Lab
Northern Alaska Environmental Center
Alaska Center for the Environment
Trustees for Alaska
Arctic Environmental Information and Data Center
National Audubon Society
Sierra Club
University of Alaska, Institute of Water Resources
Alaska Railroad
Friends of the Earth
The Wildlife Society
League of Women Voters
Alaskan Conservation Foundation

Media

Anchorage Daily News
The Associated Press
Phoenix Log
Anchorage Times
News Miner
All-Alaska Weekly
Tundra Times

Individuals

Ronald Coril
Leo Cross
Jeanette MacNeille
Charity Fechter
William Phillips
Michael Travis
James Drew
Marsha Schnerder
James Messer
Ralph Seekin
Ernest Carlson, Jr.
Bill Zybach
Edward Christiansen
Donna Brady
Monte Shade
Jerry Pratier
Peter Buist
William Wood
Randall L. Zarake
Stephen Brown
Balod Mac
Stan Praputnik
David Leone
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Fran Frey
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Fort Benning, Georgia

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Honorable Mack Mattingly
Honorable Jeremiah A. Denton
Honorable Howard T. Heflin
Honorable Richard Ray
Honorable Bill Nichols

Governor

Honorable George C. Wallace
Honorable Joe Frank Harris

Federal Agencies

U.S. Department of Housing and Urban Development
8th Coast Guard District
U.S. Federal Highway Administration
U.S. Federal Railroad Administration, Region III
U.S. Environmental Protection Agency, Region IV
U.S. Soil Conservation Service
U.S. National Marine Fisheries Service
U.S. Department of Transportation, Region IV
U.S. Food and Drug Administration
U.S. Federal Power Commission
U.S. Center for Disease Control
U.S. Fish and Wildlife Service
U.S. National Park Service

State Agencies

Georgia State Clearinghouse
Alabama State Clearinghouse
Alabama Historical Commission

Organizations

Sierra Club
Georgia Waterline
Environmental Information Center, Inc.

Organizations (Concluded)

Environmental Law Society
Auburn University
School of Agriculture & Ag
Experiment Station
National Audubon Society
National Wildlife Federation
Georgia Power Company
Wildlife Management Institute
Atlanta Audubon Society
The Georgia Conservancy, Inc.

Media

Enquirer & Ledger
Times Recorder
Albany Herald
Cordele Dispatch
Phenix Citizen
Opelika-Auburn News
WKCG-WCGQ
WTVM-Channel 9
WLTZ-38

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Fort Campbell, Kentucky

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Honorable Howard Baker
Honorable James Sasser
Honorable Wendell H. Ford
Honorable Carroll Hubbard, Jr.
Honorable Donald K. Sundquist
Honorable Ed Jones

Governor

Honorable Lamar Alexander
Honorable Martha Lane Collins

Federal Agencies

U.S. National Park Service
U.S. Federal Emergency Management Agency
U.S. Federal Highway Administration
Tennessee Valley Authority
U.S. Federal Highway Administration
U.S. Coast Guard
U.S. National Weather Service
U.S. General Services Administration
U.S. Fish & Wildlife Service
U.S. Forest Service

State Agencies

Kentucky Conservation Commission
Tennessee Wildlife Resources Agency
Kentucy Department of Natural Resources & Environmental Protection
Kentucky State Clearinghouse
Tennessee State Planning Office
Tennessee Historical Commission

Organizations

Hopkinsville, Kentucky Chamber of Commerce
Tennessee River Valley Association
Wildlife Management Institute
Tennessee Natural Heritage Program
Tennessee Environmental Council
Sierra Club
Environmental Defense Fund

Media

Leaf-Chronicle
Kentucky New Era
WDNX-Radio

Individuals

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Daniel P. McLaughlin
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Fort Drum, New York

Congress

Honorable Daniel P. Moynihan
Honorable Alfonse M. D'Amato
Honorable David O'B Martin
Honorable George C. Wortley
Honorable Joseph P Addabbo

Governor

Honorable Mario Cuomo

Mayor

Honorable George H. Carroll
Honorable T. Urling Walker

Federal Agencies

U.S. Department of Housing and Urban Development
U.S. Department of Health and Human Services, Region II
U.S. Department of the Interior
Federal Emergency Management Agency
U.S. Department of Agriculture
Federal Energy Regulatory Commission
U.S. Fish and Wildlife Service
National Park Service
U.S. Bureau of Sport Fish and Wildlife
U.S. Geological Survey
Federal Highway Administration
Sea Grant Advisory Service
U.S. Environmental Protection Agency
U.S. Department of Transportation

State Agencies

New York State Commerce Department
New York State Department of Transportation
New York State Environmental Conservation Department
New York State Police
New York State Bureau of Environmental Protection
State Fish and Wildlife Management Board
State Clearinghouse NYS Planning and Development
New York State Office of Parks, Recreation, and Historic Preservation

Regional/Local Agencies

St. Lawrence County Planning Board
St. Lawrence-Eastern Ontario Commission
Black River - St. Lawrence Resource Conservation and Development Council
Jefferson County Planning Department
St. Lawrence County Environmental Management Council
Lewis County Plannning Board
St. Lawrence - Franklin Regional Water Resources Board
Oneida Board of Coop Educational Services
Superintendent of Schools, Watertown, NY
Jefferson County Council of Social Agencies
Northeast Association of Fish and Wildlife Resource Agencies
Jefferson County Board of Supervisors
Lewis County Board of Legislators
St. Lawrence County Legislature
City Manager, Watertown, NY
Carthage Central Schools

Organizations

Lewis County Chamber of Commerce
Jefferson County Chamber of Commerce
Greater Watertown Chamber of Commerce
Oswego Chamber of Commerce
Clayton Chamber of Commerce
St. Lawrence County Chamber of Commerce
Carthage Chamber of Commerce
Jefferson County Historical Society
Watertown Foundation
American Association for Conservation Information
Canada-U.S. Environmental Council
The National Wildlife Federation
The Nature Conservancy
The Conservation Foundation
National Audubon Society
League of Women Voters of New York State
Trout Unlimited
State University of New York College of Environmental Science and Forestry (Syracuse)
Group Against Seaway Pollution
New York State Association of Conservation Clubs
American Scenic and Historic Preservation Society
Friends of the Earth
New York State Association of Conservation Commissions
New York State Conservation Council
Thousand Islands Concerned Citizens
St. Regis Mohawk Tribe
Natural Resources Defense Council
Environment One Corporation
Izaak Walton League of America
Sierra Club
National Association of Conservation Districts
Lewis County Historical Society
League of Women Voters

Media

Watertown Daily Times

Individuals

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Honorable Norman Dicks

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Mayor, City of Olympia
Mayor, City of Tacoma
Mayor, City of Roy
Mayor, City of DuPont
Mayor, City of Steilacoom
Mayor, City of Yelm
Mayor, City of Moxee

Federal Agencies

U.S. Environmental Protection Agency, Region X
U.S. Fish and Wildlife Service
U.S. Bureau of Reclamation
U.S. National Marine Fisheries Service
U.S. Federal Highway Administration
U.S. Department of Agriculture
U.S. Forest Service
Bonneville Power Administration
U.S. Public Health Service, Region X
U.S. Department of Agriculture
U.S. National Park Service
U.S. Department of Energy

State Agencies

Washington State Department of Ecology
Washington State Historical Society
Governor's Office of Indian Affairs
Washington Natural Heritage Program
Department of Natural Resources
Washington Department of Fisheries
Washington Department of Game
Washington Office of Financial Management
Washington State Office of Archaeology and Historic Preservation
Washington State Department Natural Resources
Washington Department of Transportation

Regional/Local Agencies

Yakima County Conference of Governments
Grant-Lincoln-Adams Conference of Governments
Kittitas County Council of Governments
Thurston County Regional Planning Commission
Puget Sound Conference of Governments
Columbia-North Pacific Planning Office
Yakima County Planning Department
Pierce County Planning Department
Pacific NW Basins Commission
Washington Association of County Officials
City of Yakima, Community Development
Tacoma/Pierce County Consortium
Tacoma Public Works Department
Tacoma Housing Authority
City of Tacoma, Community Development
Clover Park Schools
Thurston County Planning Department

Organizations

Yakima Indian Nation
Tacoma Audubon Society
Black Hills Audubon Society
Yakima Valley Audubon Society
Nisqually Indian Tribe
Washington Archaeological Research Center
City of Yakima Chamber of Commerce
City of Ellensburg Chamber of Commerce
Chamber of Commerce
Olympia-Thurston County
Washington Recreation and Park Association
Home Builders Association of Washington
Sierra Club
Yakima Indian Tribal Council
Yakima Audubon Society
Mid Columbia Archeological Society
Sierra Club
Friends of the Earth
Herbarium, Washington State University
Small Tribes Organization of Western Washington
International Brotherhood of Electric Workers
Pierce County Central Labor Council
Lower Naches Grange No. 296

Media

Post Intelligencer
Seattle Times
Tacoma News Tribune
The Olympian
Lacey Leader
Globe-News
Pierce County Herald

Individuals

John M. Mann
N. E. Cluchey
Rex Whisnand
Nancy Moffatt
Gail Guillemette
Harry E. Lang
Dick Devlin
Mary A. Fries
Cindy Byrd
Ed C. Brello
Bill Kalenius
Jeff Korcan
Jerry Herman
Jeffrey R. Dygert

Fort Ord, California

Congress

Honorable Alan Cranston
Honorable Pete Wilson
Honorable Leon E. Panetta

Governor

Honorable George Deukmejian

Federal Agencies

Twelfth Coast Guard District
U.S. National Park Service
U.S. National Marine Fisheries Service
U.S. Federal Emergency Management Agency
U.S. Environmental Protection Agency, Region IX
Naval Facilities Engineering Command
U.S. Department of Housing and Urban Development
U.S. Department of Transportation
U.S. Department of Health and Human Services

State Agencies

State Historic Preservation Officer
California Coastal Commission
State Clearinghouse
State Resources Agency
California Department of Fish and Game

Regional/Local Agencies

Monterey City Housing Subcommittee
City of Carmel by the Sea Planning Department
California Coastal District
California Regional Water Quality Control Board, Central Coast Region
Association of Monterey Bay Area Governments
Monterey Regional Water Pollution Control Board
Monterey Peninsula Water Management District
Monterey Bay Unified Air Pollution Control District
Monterey County Board of Supervisors
Monterey Peninsula Unified School District
City of Seaside Community Development
Monterey County Planning Commission
Moss Landing Harbor District Harbor Manager
Board of Supervisors, Santa Cruz County
Salinas Board of Supervisors
City Manager, City of Monterey
City Manager, City of Pacific Grove
City Manager, City of Del Rey Oaks
City Manager, City of Seaside
City Administrator, City of Sand City
City Manager, City of Marina
Pacific Grove Unified School District

Organizations

California Coastal Conservancy
California Waterfowl Association
Northcoast Environmental Center
Sierra Club
Associated Sportsmen of California
League of Women Voters of Monterey Peninsula
Language Archives and Museum of the Presidio of Monterey
Planning & Development Department, Pebble Beach Company
Greenpeace Monterey
The Nature Conservancy
Monterey Peninsula Audubon Society
National Wildlife Federation
The California Native Plant Society
Pacific Grove Museum of Natural History
Environmental Defense Fund

Media

Monterey Peninsula Herald
Sentinel
Enterprise
Register Pajaronian & Sun
Pine Cone
Californian
Free Lance
Pacific Grove/Pebble Beach Tribune
Mercury & News
KMST-TV

Individuals

Phillis Prue
Ted Ciesla
Larry Bagley
Larry Parsons
Heinz Hormann
Carl D. Larson
David Valeska

6.7 In addition to the mailings to regional offices, the draft EIS was also sent to the national office of the following agencies or organizations.

U.S. Department of Justice
U.S. Environmental Protection Agency
U.S. Department of Agriculture
U.S. Department of Commerce
U.S. Bureau of Indian Affairs
Federal Emergency Management Administration
National Institutes of Health
U.S. Department of Energy
U.S. Department of the Interior
U.S. Department of Transportation
U.S. Department of State
U.S. Department of Health and Human Services
American River Conservation Council
National Watershed Congress
U.S. Department of Labor
United States Postal Service
Office of Coastal Zone Management
Federal Power Commission
Federal Maritime Commission
U.S. Forest Service
Coast Guard Headquarters
U.S. Department of Housing & Urban Development
U.S. Federal Energy Regulatory Commission
Appalachian Regional Commission
Natural Resources Council of America

FINAL ENVIRONMENTAL IMPACT STATEMENT MAILING LIST

6.8 Copies of the final environmental impact statement were sent to the following elected officials, agencies, organizations, and the media. In addition, copies were sent to libraries in the vicinity of each installation.

Forts Wainwright, Greely, and Richardson, Alaska

Congress

Honorable Frank H. Murkowski
Honorable Ted Stevens
Honorable Don Young

Governor

Honorable Bill Sheffield

Federal Agencies

Department of Housing & Urban Development
National Park Service
U.S. Forest Service
Federal Information Center
Federal Energy Regulatory Commission
U.S. Environmental Protection Agency
Alaska Railroad
U.S. Fish and Wildlife Service
Bureau of Land Management
General Services Administration
U.S. Department of Agriculture
Bureau of Land Management
Bureau of Indian Affairs
Federal Highway Administration

State Agencies

State Clearinghouse

Organizations

Alaska Center for the Environment
Trustees for Alaska
Arctic Environmental Information and Data Center

Media

Anchorage News
Anchorage Times
News Miner

Fort Benning, Georgia

Congress

Honorable Sam Nunn
Honorable Mack Mattingly
Honorable Jeremiah A. Denton
Honorable Howard T. Heflin
Honorable Richard Ray
Honorable Bill Nichols

Governors

Honorable George C. Wallace
Honorable Joe Frank Harris

Federal Agencies

National Marine Fisheries Service
U.S. Department of Transportation
8th Coast Guard District
Federal Highway Administration
U.S. Environmental Protection Agency
U.S. Department of Agriculture
National Park Service
U.S. Fish & Wildlife Service
U.S. Department of Housing and Urban Development
Federal Aviation Administration
Federal Railroad Administration
Food and Drum Administration
Federal Power Commission
Center for Disease Control

State Agencies

Georgia State Clearinghouse

Media

Enquirer & Ledger
Times Recorder

Fort Campbell, Kentucky

Congress

Honorable Walter D. Huddleston
Honorable Howard Baker
Honorable James Sasser
Honorable Wendell H. Ford
Honorable Carroll Hubbard, Jr.
Honorable Donald K. Sundquist
Honorable Ed Jones

Governors

Honorable Lamar Alexander
Honorable Martha Lane Collins

Federal Agencies

National Park Service
U.S. Department of Health and Human Services
U.S. Coast Guard
Federal Highway Administration
Tennessee Valley Authority
U.S. Fish and Wildlife Service
Federal Emergency Management Agency
Federal Highway Administration
U.S. Forest Service
National Weather Service
U.S. Forest Service

State Agencies

Tennessee Wildlife Resources Agency
Tennessee State Planning Office
Kentucky Conservation Commission
Tennessee Historical Commission
Kentucky State Clearinghouse
Alabama State Clearinghouse
Alabama Historical Commission
Kentucky Department of Natural Resources and Environmental Protection

Media

Leaf-Chronicle
Kentucky New Era

Fort Drum, New York

Congress

Honorable Daniel P. Moynihan
Honorable Alfonse M. D'Amato
Honorable David O'B Martin
Honorable George C. Wortley
Honorable Frank Horton
Honorable Joseph P. Addabbo

Governor

Honorable Mario Cuomo

Federal Agencies

U.S. Department of Housing and Urban Development
U.S. Environmental Protection Agency
U.S. Department of Agriculture
Federal Energy Regulatory Commission
Bureau of Sport Fish and Wildlife
Federal Highway Administration
U.S. Department of Transportation
U.S. Department of the Interior
Federal Emergency Management Agency
U.S. Fish and Wildlife Service
National Park Service
U.S. Geological Survey

State Agencies

State Clearinghouse
New York State Office of Parks, Recreation, & Historic Preservation
State Fish and Wildlife Mgmt. Bd.
New York State, Department of Environmental Conservation
New York Department of Law

Organizations

League of Women Voters of New York State

Media

Watertown Daily Times

Fort Lewis, Washington

Congress

Honorable Slade Gorton
Honorable Daniel J. Evans
Honorable Don Bonker
Honorable Sid Morrison
Honorable Norman D. Dicks

Governor

Honorable John Spellman

Federal Agencies

National Marine Fisheries Service
U.S. Fish and Wildlife Service
Environmental Protection Agency, Region X
National Marine Fisheries Service
U.S. Department of Transportation
U.S. Department of the Interior
U.S. Department of Labor
Federal Highway Administration
U.S. Forest Service
Public Health Service, Region X
Bonneville Power Administration
Bureau of Land Management
National Park Service
Bureau of Mines
Bureau of Indian Affairs
Geological Survey
U.S. Department of Energy

State Agencies

Governor's Office of Indian Affairs
Washington State Historical Society
State Historic Preservation Officer
Washington State Department of Ecology

Regional/Local Agencies

Yakima County Conference of Governments
Puget Sound Conference of Governments
Thurston County Regional Planning Council

Organizations

Yakima Indian Nation
Yakima Indian Tribal Council
Nisqually Indian Tribe
Small Tribes Organization of Western Washington

Media

Post Intelligencer
Seattle Times
Tacoma News Tribune

Fort Ord, California

Congress

Honorable Alan Cranston
Honorable Pete Wilson
Honorable Leon E. Panetta

Governor

Honorable George Deukmejian

Federal Agencies

Twelfth Coast Guard District
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service
National Marine Fisheries Service
Bureau of Reclamation
Federal Highway Administration
U.S. Department of Agriculture
U.S. Department of Health and Human Services
U.S. Department of Transportation
Naval Facilities Engineering Command
National Park Service
Advisory Council on Historic Preservation
Federal Emergency Management Agency
U.S. Environmental Protection Agency, Region IX

State Agencies

State Historic Preservation Officer
State Resources Agency
State Clearinghouse

Regional/Local Agencies

Association of Monterey Bay Area Governments
Monterey Peninsula Water Management District
Monterey Regional Water Pollution Control Board

Media

Peninsula Herald
Californian
Fort Ord Panorama and Pacific Grove/Pebble Beach Tribune

6.9 In addition to the copies sent to regional offices, copies were also sent to the following national offices.

U.S. Department of Commerce
Appalachian Regional Commission
Federal Power Commission
Advisory Council on Historic Preservation
Natural Resources Council of America
U.S. Department of the Interior
U.S. Department of Transportation
Office of Coastal Zone Management
U.S. Department of State
U.S. Department of Health and Human Services
U.S. Forest Service
U.S. Department of Justice
Federal Aviation Administration
United States Postal Service
U.S. Department of Agriculture
Coast Guard Headquarters
U.S. Department of Energy
American River Conservation Council
U.S. Department of Housing & Urban Development
National Watershed Congress
Federal Energy Regulatory Commission
Federal Emergency Management Administration
Federal Maritime Commission
National Institutes of Health
U.S. Department of Labor
U.S. Environmental Protection Agency
Bureau of Indian Affairs

SUPERSEDED
AUG 1984

APPENDIX A

RESERVED FOR COMMENTS RECEIVED ON THE DRAFT EIS

APPENDIX A

COMMENTS AND RESPONSES TO THE DRAFT ENVIRONMENTAL IMPACT STATEMENT AND SUMMARY OF PUBLIC HEARING ISSUES

Appendix A contains the letters received by the Mobile District, Corps of Engineers concerning the environmental impact statement, responses to comments included in these letters, and a summary of the public hearings held at each of the installations. The specific comments included in the submitted letters are highlighted by a line in the right margin and are identified by a specific comment number. Responses to specific comments are printed on the page opposite the comment.

The summary of each public hearing includes a listing of all persons who presented oral or written statements at the hearing and all of the issues raised that directly related to the environmental impact statement are summarized and responses are presented.

All letters received as input to the public hearing process are reproduced in full in the official public hearing record and have been used as part of the decision making documents for this action. Copies of the public hearing record which contains the transcript of oral testimony and all written statements are available for the cost of reproduction upon request to the Mobile District, Corps of Engineers.

APPENDIX A-1

COMMENTS AND RESPONSES CONCERNING ALASKA FORTS AND SUMMARY OF PUBLIC HEARING ISSUES

BILL SHEFFIELD, GOVERNOR

3301 EAGLE STREET
POUCH 7-018
ANCHORAGE, ALASKA 99510
(907) 264-2400

DEPARTMENT OF LABOR
ADMINISTRATIVE SERVICES DIVISION

James B. Hildreth
Department of the Army
Mobile District, Corps of Engineers
P.O. Box 2288
Mobile, Alabama 36628

June 25, 1984

Dear Mr. Hildreth:

I have reviewed the draft of the Environmental Impact Statement concerning the stationing of a new light infantry division and would like to make a few suggestions and point out some data needing corrections.

On page i it is stated "The large increase in regional population... would result in large short-term changes in regional economic patterns." I think long-term would be more appropriate given the size of the infantry division, their dependents, and the resulting secondary population growth that will accompany the introduction of the division. A-1

Section 3.15 Is labor force nonagricultural employment, or, are nonagricultural and uniformed military combined being referenced? A-2

Section 3.16 In 1980 Fairbanks per capita income was $13,308, not $9,823. A-3

Section 3.17 In 1981 the unemployment rate was 11.7%, in 1982 it was 13.5%, and in 1983 it was 15.1%. A-4

Section 3.71 $780 million - this must be a typographical error. A-5

Section 3.101 1980 and 1983 populations are double counted. The total Anchorage Borough population was 174,431 in 1980 and 230,846 in 1983. A-6

Section 3.106 Nonagricultural employment grew 18.7% from 1981-1983. A-7

It would have been very helpful if a population forecast had been included in the forecast section.

I hope my comments are useful.

Sincerely,

Neal Fried
Labor Economist

NF/sgw

RESPONSE TO COMMENTS

A-1. The text has been changed to indicate that the change could be long-term also.

A-2. The referenced 1980 labor force includes uniformed military. The text has been changed for clarification.

A-3. The text has been changed.

A-4. The text has been changed.

A-5. The typographical error has been corrected in the text.

A-6. Anchorage population figure has been changed.

A-7. The text has been corrected.

ALASKA PUBLIC INTEREST RESEARCH GROUP
Post Office Box 1093/Anchorage, Alaska 99510/(907) 278-3661

June 21st, 1984

Lawrence R. Green
Chief, Planning Division
Dept. of the Army
PO Box 2288
Mobile, AL 36628

Dear Mr. Green:

The Alaska Public Interest Research Group is a statewide research and advocacy organization with a membership of 400. AkPIRG was established over 10 years ago, and has had a longstanding interest in housing issues, especially as they relate to low- and moderate-income residents.

We are very concerned that should the Army station a new division here in Anchorage, the already tight low cost housing market will be squeezed to intolerable levels. This concern is not reflected in the EIS because the draft contains some glaring and inexcusable errors.

The population of the entire state of Alaska is 450,000 people, 26,000 fewer than the Anchorage population cited in the EIS . Anchorage is the largest muncipality in the nation and extends from near Palmer in the north to Girdwood in the south (approximately 80 road miles), yet the total population of the Municipality is about 230,000. A-8

You may not be aware that Anchorage has a long history of severe housing shortages. A Rent Review Board was established, at AkPIRG's urging, in 1975 to adjudicate the numerous and often violent disagreements between landlord and tenant. Under the program, housing emergencies were declared by the governor in Anchorage and Fairbanks during the pipeline years, kicking in a type of rent control. A-9

More recently, vacancy rates were at the nationally-defined crisis levels between 1980 and 1983; only recently have the rates loosened. According to the local HUD area office, vacancy rates for low-cost housing (not "public housing") continue to hover in the 3-5% range, still below the optimum.

The cost of housing is another matter. Low cost two-bedroom apartments in Anchorage start at $475 per month and average around $550. The overall average cost is about $650-$700 for two bedrooms, according to HUD statistics for May 1984. I understand that enlisted personnel often are eligible for Section 8 housing assistance. Last year, 1300 certificates were available in the state. Yet only 1000 were in use--the remainder couldn't locate housing A-10

RESPONSE TO COMMENTS

A-8. The 1980 U.S. Census population for Anchorage is 174,431. Section 3.101 has been corrected.

A-9. The EIS used HUD vacancy rates, and pointed out the housing shortage of low rent groups in 4A.101.

A-10. Section 4A.101 points out the affordability issue, and the housing shortfall is projected in 4A.131.

in Anchorage that was below the "Fair Market Rent" established by HUD. Enlisted personnel will face the same problem, while simultaneously compounding the problem.

This construction year, 99 new "low-cost" units averaging $610 a month for a two bedroom apartment have been authorized for Anchorage. How can the market accomodate 510 new families? A-11

I ran into a high level planner from the Air Force on an airplane in April. We spent two hours discussing Alaskan housing problems and his assignment—to implement a demonstration project which would develop private rental housing on the base in Fairbanks with interest rates subsidized by the Air Force. Developers would be guaranteed occupants while personnel would gain low-cost, well-constructed housing convenient to work. Fairbanks would gain construction jobs and trickle down economic benefits while avoiding the flip side of the coin: poor quality, expensive housing for residents, tight housing conditions and an overall decline in the quality of life. A-12

We urge you to consider this alternative should the Army decide to relocate troops here.

Sincerely,

Maureen Kennedy

Maureen Kennedy
Director

A-11. Sections 4A.100 and 4A.101 adequately discusses the issue of income and housing demand.

A-12. Tables 4A-9 and 4A-10 of the EIS suggest mitigation of housing shortages by implementation of a long term lease/sale agreement with private contractors.

P.O.Box 80368
College, Alaska 99708
June 29, 1984

Mr. James Hildreth
District Engineer Coordinator
U.S. Army Corp of Engineers
P.O.Box 2288
Mobile, Alabama 36628

Re: Proposal to station a new light infantry division at Fort Wainwright, Fairbanks, Alaska.

I am a long term resident of Fairbanks, Alaska arriving here in 1955. I am very much opposed to the stationing of a new light infantry division at Ft. Wainwright, Alaska. The Fairbanks community is not able to provide the infrastructure required should 16,000 military personnel and dependents be located in the Fairbanks area. While it is evident that a few would profit economically, the overwhelming effect will be a drastic decline in the quality of life for the majority of local residents. These problems are discussed in detail in the Environmental Impact Statement.

Of particular concern is the social impact on the community. The Fairbanks community presently has severe social problems as evidenced by alcoholism and drug dependency, rapid population turnover, and family instability. Additional serious social problems are associated with conflicts between rural and urban populations for subsistence resources, and adjustments of Alaska native peoples who are torn between two cultures. The severe climate in our far north community and short daylight periods during winter, tend to exacerbate these problems. Although the community is attempting to address the social problems through various programs, the community would be overwhelmed by the additional social pressures resulting from the proposed 16,000 military personnel and dependents in our community. A-13

Environmental concerns would also argue against locating the new light infantry division at Ft. Wainwright, Alaska. Air quality during the winter months presently does not meet federal standards. The hazards of ice fog and high carbon monoxide levels are intolerable with existing population and traffic volume. The air quality would deteriorate from present unacceptable levels with the additional personnel and associated activities and traffic generated by a light infantry division located in this community. A-14

Again, I am strongly against the stationing of the new light infantry division at Ft. Wainwright, Fairbanks, Alaska.

Thank you for your attention.

Sincerely,

Dorothy H. Thompson

Dorothy H. Thompson

A-13. Paragraphs 4A.34 and 4A.61 address the impacts to community and military social-service facilities that could occur as a result of the influx of families unprepared for the Alaskan winter. Possible mitigating measures are presented in Table 4A-10.

A-14. Potential air quality problems in the Fairbanks area are discussed in paragraphs 4A.20, 4A.50 and 4A.51. Possible mitigation measures are listed in Tables 4A-9 and 4A-10.

Fairbanks North Star Borough

Mayor: B.B. Allen

June 29, 1984

B. Hildreth
U.S. Army Engineer District - Mobile
P.O. Box 2288
Mobile, Alabama 36628

Dear Mr. Hildreth:

The Division of Community Planning, Fairbanks North Star Borough, has reviewed the Draft Environmental Impact Statement for stationing a new Army Light Infantry Division at Fort Wainwright, Fairbanks, Alaska. The following are my comments on the Environmental Impact Statement.

I would first like to point out an error in the report on Page 3-4, Section 3.11 and Page 4A-6, Section 4A.11. These sections state that "the Fairbanks region is growing rapidly in building constructions without the guidance and control of subdivision permits". In fact, there has been subdivision regulations in the Fairbanks North Star Borough since the early 1960's. A-15

As Planning Director for the Fairbanks North Star Borough, I am not responsible for making a statement for or against stationing a new light infantry division at Fort Wainwright. I believe that the citizens testifying at the public hearing and in writing will give you a representative cross-section of community sentiment. I must note, however, that residents of the Borough, unlike those of New York or Washington State, are not naive about projects which bring rapid population increases. Because of the oil pipeline experience, you are probably to get a greater number of residents expressing concern over a project of this nature than areas that have never experienced such rapid growth. I would like to say, however, that compared to the pipeline era, the Fairbanks North Star Borough is much better prepared and has the land development regulatory mechanisms in place to manage any foreseeable growth caused by this proposal.

On March 13, 1984, the Assembly of the Fairbanks North Star Borough adopted a Comprehensive Land Use Plan for the entire Borough to provide guidance for the social, economic and physical development of the community. This document contains up-to-date community goals and policies for land development. A-16

The Borough has also coordinated development of its Comprehensive Land Use Plan with the State of Alaska's Tanana Basin Plan which provides management direction for state-owned land.

P.O. Box 1267 Fairbanks, Alaska 99707 (907) 452-4761

A-15. Sections referenced are considered correctly stated. Working Paper 2 of the Draft Fairbanks North Star Borough Comprehensive Plan contains the following statement: "There are no building permits required and much of the subdivision of land takes place without Borough approval." The EIS states "much of the subdivision of land takes place without borough approval."

A-16. The Fairbanks North Star Borough Draft Comprehensive Land Use Plan, with supporting working papers, was used and referenced extensively in preparation of the EIS.

With the benefit of these overall guides, the Borough is presently updating its existing subdivision and zoning ordinances to make them more accurately reflect community desires. A-16 cont.

While a specific growth management strategy will have to be developed if Fort Wainwright is chosen as the light infantry division location (to address public and private participation in meeting housing and community service needs, etc.), I believe the Borough now has the policy and regulatory framework to manage any growth caused by the location of the light infantry brigade at Fort Wainwright. Thank you for the opportunity to comment. A-17

Sincerely,

Richard D. Spitler, Director
Division of Community Planning

cc: Mayor Allen
Bill Zyback
Dawn Mach

RDS/pbs

RESPONSE TO COMMENTS

A-17. Comment noted. The Borough's policy and regulatory framework for growth management is recognized.

BILL SHEFFIELD, GOVERNOR

DEPARTMENT OF MILITARY AND VETERANS AFFAIRS

OFFICE OF THE ADJUTANT GENERAL

SUITE 620 FRONTIER BUILDING
3601 "C" STREET
ANCHORAGE, ALASKA 99503
PHONE: (907) 243-0656 AUTOVON: 862-7210

OTAG

6 July 1984

Commander
U.S. Army Corps of Engineers
District Mobile
PO Box 2288
Mobile, Alabama 36628

Dear Colonel Kelly:

The Governor of Alaska, Governor Bill Sheffield, directed the Department of Military and Veterans Affairs to coordinate an inter-departmental review of the Environmental Impact Statement (EIS) as it applies to Alaska, and represent the Governor at Corps of Engineers public hearings held in Anchorage and Fairbanks. The hearing proceedings went very well in both cities. Most respondents commented favorably and several planned to communicate directly to the Corps of Engineers to provide comments on the draft EIS. All other objections were of a minor nature, especially in light of the problems apparent in the other sites being considered.

This letter also forwards supplementary environmental social and economic impact comments pertaining to the draft EIS. These comments provided herein and those communicated directly by others in Alaska, should be treated with equal constructive comment weight, in order to arrive at a final EIS statement conclusion for Alaska.

Should any additional or clarifying data be needed by the Corps of Engineers, regarding the Alaskan Option, please contact my office direct.

Respectfully,

Edward G. Pagano

EDWARD G. PAGANO
MAJOR GENERAL, AK NG
The Adjutant General

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Review of Draft Environmental Impact Statement
U.S. Army Corps of Engineers
Mobile District, May 1984

1. The following comments are provided to correct and or supplement EIS information in the U.S. Army Corps of Engineer's draft EIS of May 1984.

a. Page viii, last paragraph, line 5 through line 11. Replace the words/between sentences "There would be". . . through the last sentence of the paragraph . . ."to live in Anchorage, with the following; "Anchorage School District staff consider overcrowding of the junior high schools unlikely. The opening of new schools in the Eagle River area near Ft. Richardson, accommodations in student attendance areas and adjustments to the pupil transportation system to more fully use two existing secondary schools are available options to minimize any overcrowding problems. There would be a temporary (2-year) overcapacity of sewage treatment facilities) There would be a need for approximately 700 new off-post family housing units. The problem of affordability for enlisted married troops is offset by rent-plus housing allowance in Alaska, (E4 = $720.00/mo, E5-E7 = $1,000/mo, E8-E9 = 1,075/mo). A-18

Rationale: This statement more accurately reflects school accommodations and off-base housing "affordability" for enlisted married troops, than the draft EIS comments which states: "Temporary over crowding in schools, particularly in junion high" and . . . who could not afford to live in Anchorage," portrays. Alaska's rent-plus housing allowance coupled with attractive Alaska Housing Finance Corporation low interest loans to the military, currently allows military personnel to finance nearby high-quality off-post housing.

b. Page 3-5, paragraph 3.16, line 3. Change Fairbanks per capita income for the Borough as a whole to "$13,708.00" vice $9,823.00. A-19

Rationale: New figure as provided by the Department of Labor is more correct.

c. Page 3-19, first paragraph 3.71, line 2. Change $780 million to "$14.7 million." A-20

Rationale: The Department of Education submits the Fort Wainwright schools budget for school year 1983-84 was $14.7 million, not $780 million.

d. Page 3-19, paragraph 3.73. Add the following after the last sentence to clarify and provide expanded Public Safety Information: "The Fairbanks State Troopers Detachment enforcement personnel strength has not changed since the peak of the oil pipeline construction activities. The current strength, as it was in 6/78, is fifty four (54) personnel. There are an additional eight (8) trooper positions doing Fish and Wildlife enforcement activities in the Fairbanks/North Star Borough that are available for immediate back-up. Four (4) fixed wing aircraft and one helicopter are assigned to Fairbanks for enforcement support." A-21

Rationale: The Department of Public Safety does not feel the existing EIS statement accurately depicts law enforcement support in the Fairbanks area.

RESPONSE TO COMMENTS

A-18. School populations have been adequately addressed in 4A.102-105. Sewage treatment capacity is addressed in 4A.97. The rent-plus data has been added to 4A.101.

A-19. Text has been changed.

A-20. Text has been chnaged.

A-21. Supplementary material has been incorporated in the text at paragraph 3.73.

A-22

e. Page 3-20, paragraph 3.77, line 6. Insert between the words . . . "and airport facilities". and "Extensive studies . . . " the following sentences: "Existing plans for the future development and improvement of Alaska transportation systems in both Anchorage and Fairbanks appear to be capable of adequately handling the projected increases in traffic related to the phased stationing scenario. While some transportation projects may require their construction schedules to be accelerated somewhat, there does not appear to be a need for improvements beyond those already identified. The deep water ports of Seward and Whittier Alaska have direct rail links to both Ft. Wainwright and Ft. Richardson. Large nearby runways to these two Army bases can easily accommodate the largest of military rapid deployment transport aircraft."

Rationale: More adequately and briefly describes strategic military support transportation resources.

A-23

f. Page 3-25, last paragraph under 3.101 depicting population figures. Problem: The 1980 and 1983 populations are double counted. The total Municipality of Anchorage population was "174,431 in 1980 and 230,846 in 1983." Recommend review draft EIS sub-totals, delete the listed totals 347,986 for 1980 and 476,821 for 1983. Reformat, then retotal for correctness.

Rationale: The current area population figures are inaccurate as depicted/totaled.

A-24

g. Page 3-26, paragraph 3.106, line 4. Change 8 percent to "18.7%".

Rationale: Department of Labor statistics indicate non-agriculature employment grew 18.7% from 1981 to 1983.

A-25

h. Page 4A-12, paragraph 4A.29 Line 1. Recommend delete the word "critically".

Rationale: The new explanation of housing units to be inserted in paragraph 4A.30 does not depict a "critical housing problem" if new supply and demand conditions occur.

A-26

i. Page 4A-13, paragraph 4A.30 line 1 and line 3. Delete the word "only" from each line. In line 7 delete the word "just". After the last sentence which ends with ". . . population growth", add the following:

"Currently the Fairbanks area has an inventory of 1,336 housing units vacant and ready for occupancy. It is estimated that with the existing licensed contractors, building suppliers, labor force and financing available in the community, an additional 2,000 housing units per year could easily be constructed. This could certainly keep pace with the forecasted housing needs without increasing residential construction contractors and suppliers."

Rationale: The deletion of the words "only" and "just" coupled with the added factual information, regarding current April 1984 housing availability, more accurately describes the Fairbanks housing market and housing construction capability.

RESPONSE TO COMMENTS

A-22. The discussion in 3.77 is only a description of the existing transportation infrastructure in the Fairbanks region.

A-23. Text and numbers have been corrected.

A-24. Text and data have been corrected.

A-25. Comment noted. However, new supply and demand conditions do not alter the fact that housing has been critically short in the past.

A-26. Deletions have been made in the text. The remaining discussion is adequate.

j. Page 4A-13, paragraph 4A.32, the last sentence change to read, "Current 1984 on going construction has increased elementary school capacity by 600 and secondary school capacity by 1,000 (Arradondo, 1984). Alaska's committment to funding on base schools and the obvious outstanding statewide support for education overall, should be responsive to accommodate any anticipated influx, providing adequate lead time is provided by the Army, for new state construction capital planning."

A-27

Rationale: Nationally, Alaska had the highest expenditure per pupil in average daily membership in the public schools for school year 1982-83. The National average was $2,748. The five states with the highest expenditures were: (1) Alaska - $6,103; (2) New York - $3,888; (3) New Jersey - $3,807; (4) Delaware - $3,679; (5) Oregon - $3,399. Fairbanks public school expenditures were $5,498 per pupil in ADM for 1982-83. ("Research Memo-Estimates of School Statistics, 1982-83" National Education Association, 1201 16th Street, N.W., Washington, D.C.)

The Fairbanks North Star Borough has bonded for and constructed five new schools since 1980. State appropriations are provided annually to reimburse municipal school districts as much as 50% of the annual payments made on bonded indebtedness for school construction. There is also a state law commonly called the "Municipal Grants Act" which may be used to seek direct state appropriations to municipal governments, including capital projects funding. The mobilization schedule for the Light Infantry Division, as presented in Table 4A-1, affords two summer construction seasons, 1985 and 1986, before projected numbers of students would begin to exceed classroom space available in the district as of 1984. The school district can make immediate application for federal impact aid funds under Public Law 81-815 in anticipation of the prospective basing of the Division at Fort Wainwright. The timing would allow inclusion of funding in the President's FY 1986 budget, as well as permit consideration of requirements and possible funding through an FY 85 supplemental appropriation.

Obtaining highly qualified school teachers is not a problem. Salary and benefits packages in Alaskan school districts for teachers are among the best in the nation. Teachers must have state certification, which requires a college degree from an accredited teacher training program plus six semester hours of credit earned within five years of application. There are approximately 18,800 people certified to teach in Alaska, and about 7,000 available teaching positions in the state as of 1984.

RESPONSE TO COMMENTS

A-27. The discussion in Section 4A.32 is adequate.

LAW OFFICES OF
ALASKA LEGAL SERVICES CORPORATION
ANCHORAGE REGIONAL OFFICE
550 WEST 8TH AVENUE, SUITE 200
ANCHORAGE, ALASKA 99501
TELEPHONE (907) 272-9431

July 5, 1984

Lawrence R. Green
Chief, Planning Division
Department of the Army
Post Office Box 2288
Mobile, Alabama 36628

Attention: Environment and Resources Branch

Dear Sir:

These are our comments on behalf of our client regarding the Draft Environmental Impact Statement on the stationing of a new Army Light Infantry Division prepared in May 1984.

This office is commenting on only that portion of the draft EIS which is concerned with the redeployment of some troops from Fort Wainwright to Fort Richardson, Alaska. Our primary concern with this part of the Draft EIS is the impact on the local housing market, and thus, our clients.

There has been an inadequate assessment of the impact of the redeployment of the 1,130 troups to Fort Richardson on the housing market in the Anchorage area. First, the Draft EIS (Page 3-25) drastically misstates the population of the Anchorage area. You indicate that the Anchorage area has a 1983 estimated population region total of 476,821. In fact, this is over twice the population of the Municipality of Anchorage. Enclosed are copies of figures 1.1 and 1.2 from the census profile, Volume 1, "Population Housing of the Municipality of Anchorage" (1980). On Figure 1.1, the Municipality of Anchorage borders are indicated by a dashed line (surrounded by a blue line) and the approximate boundary of the Anchorage bowl is marked in red. As you can see, the Muncipality of Anchorage includes all of the Anchorage bowl. As Figure 1.2 indicates, Elmendorf Air Force Base and Fort Richardson also are included in census tracts within the Municipality. Thus, the correct figure for the estimated 1983 population of the Municipality of Anchorage including Fort Richardson, Elmendorf Air Force Base, Eagle River/Chugiak and Girdwood as well as the Anchorage bowl, is only 230,846. The draft EIS erroneously counts such areas as the Anchorage bowl, Fort Richardson and Elmendorf Air Force Base twice by adding these figures to the Municipality total. A-28

A-28. Text and data on pages 3-25 and 3-29 have been corrected.

Similarily, on page 3-29, the draft EIS indicates that in 1983 there was a region total of 165,818 housing units. This once again is a double count, counting the Anchorage bowl, Fort Richardson and Elmendorf and then, once again, counting the Municipality of Anchorage. The correct total figure for the region should be the figure of 81,609, listed under Muncipality of Anchorage. A-28 cont.

The Anchorage bowl is simply a geographic area within the Municipality of Anchorage and, as stated earlier, Fort Richardson, Elmendorf Air Force Base, Eagle River/Chugiak are all census tracts within the Municipality of Anchorage and are within the civil jurisdiction of the Municipality. A-29

Both of these errors, in population and housing stock, in the EIS have the effect of making the proposed redeployment of forces seem to have much less of an impact than they do because of a doubling of the perceived impacted population and housing stock.

Another inaccuracy in the Draft EIS is reflected in the figures on the number of military families and dependents to be moved from one base to another. On Page 2-7, under section 2.11, the study lists the assumptions on which the analysis is based. In relevant part, these are that (1) 75% of officers are married; (2) 47% of enlisted troops are married; (3) there will be 2.5 dependents per married soldier. Using the figures given under Fort Richardson on Table 4 A-1 (found on Page 4 A-2) for the total change, it would indicate that there will be 120 new officers and 1,010 new enlisted men stationed at Fort Richardson under this plan. Yet, it lists only a total of 510 families and 1,270 dependents as a result of this change. However, using the assumptions for the study given earlier, it should indicate that the proper figures are 565 new families and 1,412 new military dependents stationed at Fort Richardson. Once again, this type of error results in showing the impact to be less than it will actually be on the Anchorage area by this redeployment of troops. A-30

The Draft EIS also fails to provide estimates of household income for the military personnel who will be redeployed to Fort Richardson and the comparison figure for the entire Municipality of Anchorage. The Draft EIS does provide these figures for Fort Wainwright and Fairbanks. It is important to provide these figures to be able to assess what price range of housing that will be sought by the redeployed military personnel. A-31

A-29. The total population shown in the DEIS was incorrect and has been corrected. However, the number used for percentage impacts under demographics in paragraphs 4A.85 and 4A.86 was 230,846 as the Anchorage base population, not the incorrect total population given in the DEIS.

A-30. Data have been corrected. It is estimated that 510 new families will be moving to Anchorage because of the proposed action.

A-31. Additional information on income and housing demand has been added to 4A.100 on Anchorage.

From the figures given for Fort Wainwright, and from the summary provided by the draft EIS, it is clear that at least the enlisted personnel with families will need low and moderate cost housing. Furthermore, it can safely be assumed that most of these families will need two and three bedroom houses and apartments. These are the housing units (low and moderate cost two and three bedroom units) which are in shortest supply in the Municipality of Anchorage. A-32

Currently, the Alaska State Housing Authority public housing projects have a waiting list of over one year for two-bedroom units. Similarly, in the Section 8 program, Alaska State Housing Authority is no longer taking applications for two-bedroom units because its waiting list is a year long. Enlisted personnel with families would be put right in the center of this very tight housing market for these types of units. This would not only place a great burden on the military personnel, but it would be a burden on the low income civilian population in the Municipality. A-33

The serious lack of low priced housing is not being alleviated by the recent boom in building in the Municipality. Most new housing is beyond the price reach of low and moderate income families. The lowest-price condominiums available within the Municipality start at about $75,000.00, which would take a family income of at least $25,000.00 per year to be able to secure a mortgage. Similarly, most new rental housing being built will rent at around $750.00 per month, for a two-bedroom, far beyond affordability ranges for low and moderate income families such as those who would arrive at Fort Richardson under this proposed deployment.

The Draft EIS has failed to make adequate recommendations and plans for mitigating the effects on the housing market. First, reference is made in the Draft EIS to opening land on Fort Richardson for housing development. Plans for housing should be specific and concrete before any redeployment is started. Such plans should include requirements for construction of low and moderate cost housing and should include a mix of rental and owner-occupied housing. A-34

A-32. Comment noted. Anchorage housing is discussed in 4A.100-101.

A-33. Housing shortages are adequately addressed in 4A.100 and 4A.101.

A-34. The EIS points out that housing is a problem area the Army must consider if the Alaska alternative is chosen.

Second, the army should be planning to build housing for enlisted personnel with dependents at Fort Richardson if troops are redeployed there. Although an addition of 565 families to the Anchorage market is not extremely large, it could have a considerable adverse impact on the availability of low to moderate income housing in the Anchorage area because approximately 475 of the new families would be in the low to moderate income range. A-35

In conclusion, there are three major flaws in the draft EIS. First, there are gross errors in calculating the impacted population and housing stock of Anchorage, and the number of new military families. Second, it overlooks the severe shortage of low priced housing in the Anchorage market. Third, it fails to adequately address what the Army intends to do to mitigate these problems. A-36

Respectfully,

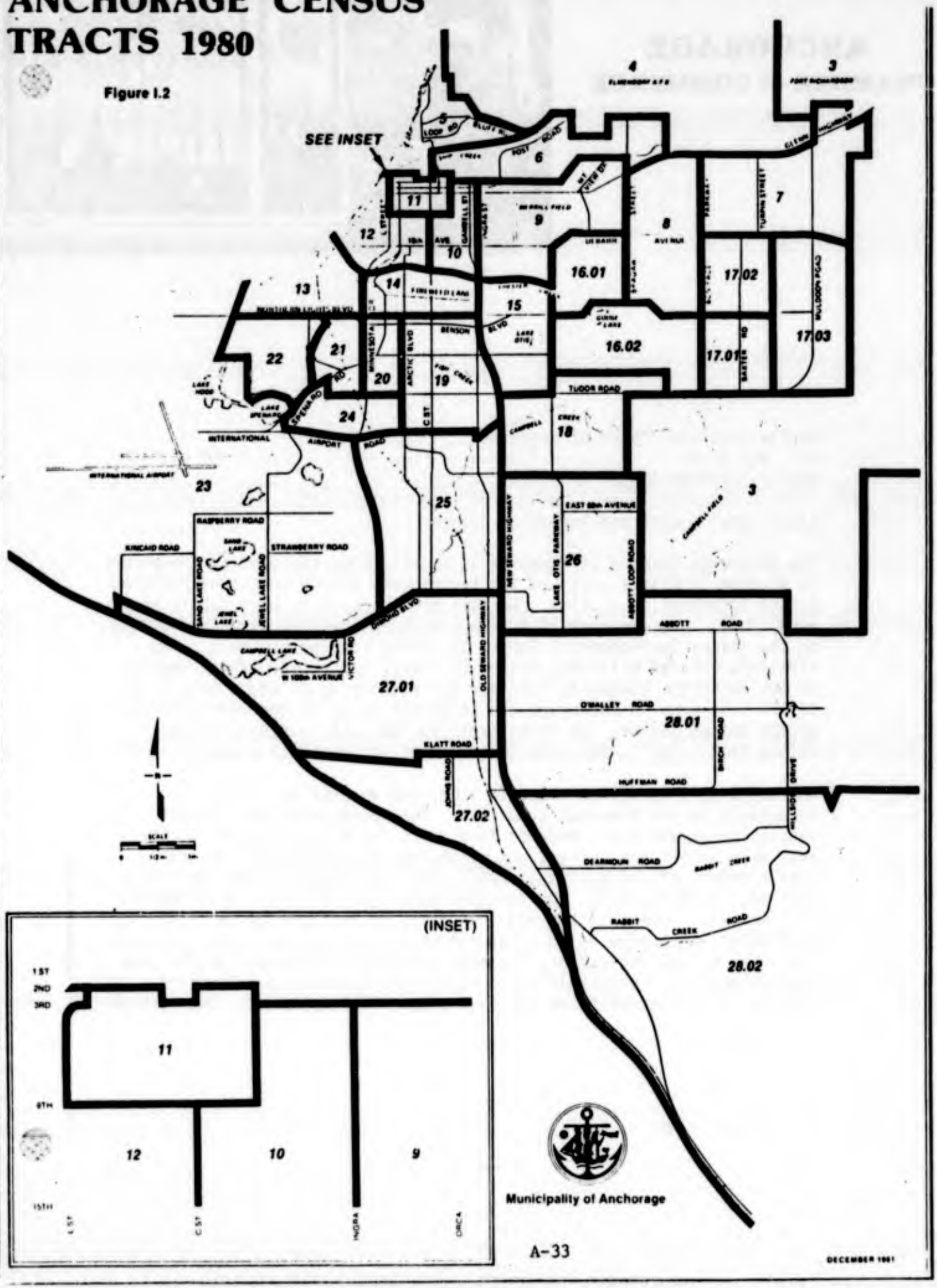
ALASKA LEGAL SERVICES CORPORATION

MONTE ENGEL
Staff Attorney

cc: Iris Lomax

ANCHORAGE CENSUS TRACTS 1980

Figure I.2



Municipality of Anchorage

DECEMBER 1981

ANCHORAGE
CHAMBER of COMMERCE



July 6, 1984

Mobile District, Corps of Engineers
P.O. Box 2288
Mobile, Alabama 36628

Attn: Environment and Resources Branch:

The Anchorage Chamber of Commerce is an active participant in the effort to station in Alaska units of the seventeenth Active Component Division (Light Infantry), U.S. Army. We have participated in both public hearings, April 19th and June 20th. We also submitted the Anchorage portion of the Alaska Environmental Impact Statement scoping document. The civilian, retired military, active military, and reserve force members of the Anchorage community consider the stationing of additional units of the U.S. Army in Anchorage and Fairbanks to be in the best interests of the United States. We emphasize: in the best interests of the United States and in the best interests of the new unit members.

Anchorage is a marvelous place to live, and we have described the advantages in our previous submittal. The approximate one percent population growth over three or four years can be absorbed by a city that grew almost one percent per month between 1980-1983. We see little effect on air quality, schools, transportation, water and waste systems. Unfortunately, you consider housing a critical factor against unit members. Homes to buy and apartments to rent are and will be available. Anchorage is an urban community, not a rural area. As such, the costs of housing reflect the city advantages offered, for the same reasons and with comparable costs to Atlanta, Denver, San Francisco, and Seattle. The figures below are from a June 30th Anchorage Times article:

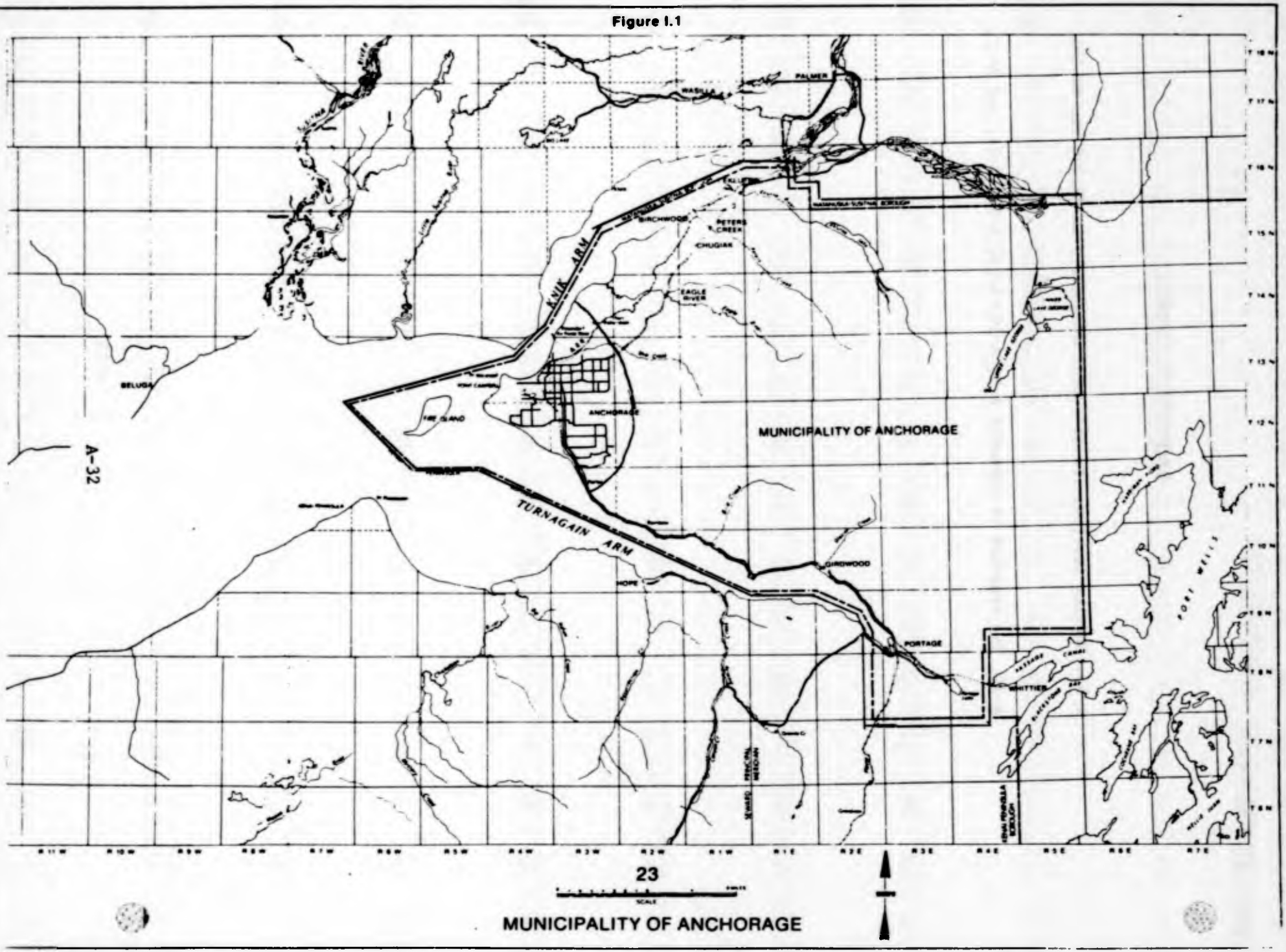
A-37

415 F STREET, ANCHORAGE, ALASKA 99501 - (907) 272-2401

A-35. Housing problems are discussed adequately in 4A.100 and 4A.101.

A-36. See response to comments A-9, A-10, A-29, A-33, A-34, and A-37.

Figure I.1


KNIK ARM
TURNAGAIN ARM
MUNICIPALITY OF ANCHORAGE
ANCHORAGE
GIRDWOOD
PORTAGE
WHITTIER
BIRCHWOOD
PETERS CREEK
CHUGIAK
EAGLE RIVER
PALMER
WASILLA
BELUGA
HOPE
FORT WILLIS
A-32
23
MUNICIPALITY OF ANCHORAGE

A-37. The DEIS used vacancy rates from HUD for 1983 (Al Robinson, 1984) for rentals. The 1984 data were not available at that time. The EIS only points out a potential problem in housing for lower grade married troops. It does not reflect a critical issue, but one which needs to be considered by the Army.

VACANCY RATES
(in percentages)

	Low Cost	Mid-Cost	High Cost	Average
1979	34.3	17.4	15.1	24.0
1980	32.0	13.8	7.4	18.9
1981	17.7	3.4	7.7	7.7
1982	1.0	1.4	1.2	1.2
1983	2.7	9.1	4.4	6.1
1984	9.9	11.4	9.1	10.2

*August through April, the most current figures available

Low cost

$280-$500---Efficiency, 1 bedroom
$501-$650---2 bedroom
$651-$750---3 bedroom
$751-$850---4 bedroom

Mid-cost

$501-$625---Efficiency, 1 bedroom
$615-$800---2 bedroom
$751-$1000--3 bedroom
$851-$1200--4 bedroom

High-cost

$626 and up-Efficiency, 1 bedroom
$801 and up-2 bedroom
$1001 and up-3 bedroom
$1201 and up-4 bedroom

Home purchases are also available to active and retired members. The unique Alaska Housing Finance Corporation loan program has been detailed earlier. Note that home loan interest rates have ranged from 10.5% to 12%, and today are at 11.625%. This is well below interest rates available in the lower 48. Your staff preparing the Draft EIS failed to consider the AHFC home loan program, and the variable housing allowances and other rental allowances available to military members in creating an excellent access to the Anchorage housing market. A-38

Our perception of the unit members attitude toward Anchorage is that individually they like it, and re-enlistment rates in both the Air Force and U.S. Army seem to be good related to the lower 48. The type and profile of the individual infantryman is that he or she wants to come to Alaska. This should be a strong factor in selecting the home for the Light Infantry Division.

The availability of housing, the positive city environment, the excellent availability of jobs for dependents, and all other factors mitigate toward the selection of Alaska to station the additional Division.

Sincerely,

Alvin H. Fleetwood

Al Fleetwood
President

sp

A-38. Low interest rates are discussed in 4A.101. The rental allowances have been added to that section.

BILL SHEFFIELD
GOVERNOR

STATE OF ALASKA
OFFICE OF THE GOVERNOR
JUNEAU

May 23, 1984

Colonel Patrick J. Kelly
Department of the Army
Mobile District, Corps
of Engineers
P.O. Box 2288
Mobile, AL 36628

Dear Colonel Kelly:

I received your letter of May 4 regarding the Environmental Impact Statement (EIS) which is in the process of being prepared as part of the Army's study on the location for the Light Infantry Division. We recently received the draft EIS, and are in the process of reviewing the document.

I have assigned this issue to Alaska's Department of Military and Veterans' Affairs. The Adjutant General and his staff will participate in the hearings on my behalf.

I appreciate receiving this information regarding the progress of the EIS and the public hearing schedule.

Sincerely,

Bill Sheffield

Bill Sheffield
Governor

Municipality of Anchorage

POUCH 6-650
ANCHORAGE, ALASKA 99502-0650
(907) 264-4431

TONY KNOWLES, MAYOR

OFFICE OF THE MAYOR

April 30, 1984

STATIONING OF U.S. ARMY LIGHT INFANTRY DIVISION

I appreciate the opportunity to express the position of the Municipality of Anchorage on the proposal to station a U.S. Army Light Infantry Division in Alaska.

First of all, we in Anchorage fully support the concept that what is best for the nation has to be the overriding consideration in the decision on where this division is stationed. The decision should be made without regard to politics.

As for the possibility of the Division coming to Alaska, we in the Municipality support it and would welcome additional servicemen and women to this area. The military has always been a good neighbor and a valued member of our community. The U.S. Army was instrumental in opening up and defending Alaska over the last hundred years and they continue to play a key role in our state. On numerous occasions the military has made significant contributions to our community during times of adversity. After the disastrous 1964 earthquake, the military was among the first on the scene to render aid and assistance. The Army has always taken an active role in community activities, including our major annual events, such as Anchorage Fur Rondezvous and the Iditarod Sled Dog Race. The U.S. Army is an integral part of our community.

The defense of strategically important Alaska is absolutely imperative. We are at the crossroads of the world, where east meets west and the vital interests of America are at stake. Deployability options, to anywhere in the world, where the vital interest of the U.S. may be at stake, are better from Alaska than from any other location. (By the way, between Ft. Richardson and Ft. Wainwright there are five nearby airports that can handle C5s).

The deployment of an Army Division to Alaska will have a substantial and positive effect on our statewide economy. Traditionally we have experienced a widely fluctuating and cyclical economy. The stabilizing effect of the Division and the several hundred civilian jobs that it will create will help anchor Alaska's economic cycles. Additionally, for every one job, military or civilian, that is provided by the Army, 1 1/2 jobs jobs are created in the civilian economy to support it. There are economic benefits associated with all segments of our society with the Alaska deployment of the Division.

Not all of the impacts of this proposal, or any other for that matter, will be positive. There could be problems associated with air quality, traffic congestion, water consumption, waste disposal, increased noise and other problems that we might expect with an increase in population. However, we feel that our ability to plan for and mitigate these adverse impacts is excellent and that there would be a net benefit to Alaska with the division stationed here. The Army itself has demonstrated a great deal of concern for the Alaska environment - it takes very seriously its custodial responsibilities over public land - and we in Alaska appreciate the Army's example in this area. A growing, healthy economy will enable us to take the steps necessary to ensure that the environment is protected.

Contained within this package are several sections dealing with specific areas of concern, such as; education, housing, recreation, the arts, transportation, and others that illustrate what we feel is the exceptional ability of Anchorage and all of Alaska to support the stationing of the Light Infantry Division in this state. These specific subject area papers go into detail on the plans and capabilities of this community in dealing with our projected population growth over the next several years.

In summary, we believe that Anchorage, and all of Alaska can provide the essential services and infrastructure necessary to support this new Army Division and that the Division's deployment here would be in the public interest. I hope you find the information in this package helpful in analyzing the environmental, social and economic impacts that the Light Infantry Division would be expected to have on Anchorage.

Tony Knowles
Mayor

BILL SHEFFIELD, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF PARKS AND OUTDOOR RECREATION

Pouch 7001
ANCHORAGE, ALASKA 99510
PHONE: (907) 276-2653

June 7, 1984

Re: 1130-2-1
3130-1 (COE)

Lawrence R. Green
Chief, Planning Division
Corps of Engineers
P.O. Box 2288
Mobile, Alabama 36629

ATTN: Environment and Resources Branch

Dear Mr. Green:

We have reviewed the Draft EIS, Stationing of a New Army Light Infantry Division. We concur with the conclusions and recommendations concerning cultural resources, and we look forward to future consultation should Alaska be chosen as a new site for stationing troops.

Sincerely,

Neil C. Johannsen
Director

By: Tim Smith
Deputy State Historic Preservation Officer

DR:clk

ALASKA STATE PARKS --
Let's Put Them on the Map!

Municipality of Anchorage

POUCH 6-650
ANCHORAGE, ALASKA 99502-0650
(907) 264-4311

ANCHORAGE ASSEMBLY

June 25, 1984

Department of the Army
Corps of Engineers, Mobile District
P. O. Box 2288
Mobile, AL 36628

Dear Sir:

Enclosed is a copy of a resolution endorsing the creation and development of the new light infantry division as proposed in the Alaska stationing alternative. This resolution was unanimously approved by the local governing body of Anchorage, Alaska on June 19, 1984.

Sincerely yours,

Rick Mystrom, Chairman
Anchorage Municipal Assembly

Enclosure

Submitted by: Chairman Mystrom
Prepared by: Clerk's Office
For Reading: June 19, 1984

ANCHORAGE, ALASKA

RESOLUTION NO. 84-178

A RESOLUTION OF THE ANCHORAGE MUNICIPAL ASSEMBLY ENDORSING THE CREATION AND DEPLOYMENT OF THE NEW LIGHT INFANTRY DIVISION AS PROPOSED IN THE ALASKA (FORT WAINWRIGHT/FORT RICHARDSON/ FORT LEWIS) STATIONING ALTERNATIVE

WHEREAS, the United States President and Congress are considering the creation of a new Light Infantry Division, and as a consequence the United States Army is evaluating the impact of stationing the proposed Light Infantry Division at locations in Alaska, Alabama, California, Georgia, Kentucky, New York, Tennessee, and Washington; and

RECALLING that the Governor of Alaska and the national congressional delegation have endorsed the stationing of the Light Infantry Division in Alaska; and

NOTING that the U. S. Army Corps of Engineers held a scoping hearing on the environmental impact of the Alaska Alternative in Anchorage on April 19, 1984 and will hold a hearing on the Draft Environmental Impact Statement on Wednesday, June 20, 1984; and

RECOGNIZING that our community, as others around the nation which are being considered, must give a clear indication of its position on the deployment, and that in order for the Alaskan Alternative to be selected the communities in the state which are impacted must indicate their commitment to and support of the suggested deployment; and

FURTHER NOTING that the Fairbanks North Star Borough Assembly, representing the community which will receive the primary impact of the deployment under the Alaska Alternative, has passed a resolution endorsing the stationing of the Light Infantry Division in Alaska; and

REALIZING that the Alaska alternative will have a positive impact on the Anchorage economy with an additional 1,130 military personnel and their 1270 dependants stationed at Fort Richardson; and

FURTHER REALIZING that supplies and services will move through or originate from the Anchorage community in support of the new troops and facilities at Fort Richardson and Fort Wainwright; and

UNDERSTANDING that the portion of the Light Infantry Division to be stationed at Fort Richardson under the Alaska Alternative will contribute to the local economy through an additional annual payroll of over 50 million annually, a projected increase in purchases by the base of 33.7 million dollars, and construction activity totaling over 41 million dollars; and

KNOWING that the military and their dependents will contribute to the social, cultural, and economic health of Alaska and recalling that the military in Alaska has always been a good and welcome neighbor; and

COMMENDING the President, the United States Congress and United States Army for considering this state for the location of a Light Infantry Division and committing their resources and time in order to visit and thoroughly evaluate our community and the military installations involved; and

STRONGLY BELIEVING that in consideration of the strategic, economic, and social objectives of the President, Congress, and the United States Army, that the Alaska Alternative for Deployment of the Light Infantry Division is the best option for the country and the new Division; and

UNDERSTANDING that Alaskans must work cooperatively and present a united front in their advocacy of this new division and its deployment in Alaska:

NOW, THEREFORE, BE IT RESOLVED that the Municipality of Anchorage join with the Governor of Alaska, Alaska's Congressional Delegation, and the Fairbanks North Star Borough in endorsing the creation and deployment of the new Light Infantry Division as proposed in the Alaska (Fort Wainwright/Fort Richardson/ Fort Lewis) Stationing Alternative.

PASSED AND APPROVED THIS 20 DAY OF JUNE, 1984.

Presiding Officer

ATTEST:

Clerk

Municipality of Anchorage

MEMORANDUM

DATE: June 19, 1984

TO: Assembly Members

FROM: Chairman Rick Mystrom

SUBJECT: Executive Summary

The Department of the Army will activate initial units of a new active component light infanty division in fiscal year 1985 (FY85) with the full division structure planned for completion by the end of FY87. The new division will be created from exiting army assets; the size of the U. S. Army will not increase as a result of this action. The new division will consist of about 10,200 military personnel, stationed in the United States. Formation of the division will occur incrementally during FY85 through FY87 as personnel and equipment become available from related Army force structure changes. Provisional organization of the Division Headquarters is expected in late FY84. Approximate cumulative personnel authorized in the division by year would be as follows:

- o Fiscal Year 1985 - 1,319
- o Fiscal Year 1986 - 6,189
- o Fiscal Year 1987 -10,218

The proposed Federal action discussed in this environmental impact statement (EIS) is the stationing of a new light infantry division at one or more appropriate Army installations in the United States. The purpose and need for stationing the new light division is self-evident, given the decision that a new light infantry division will be created. This EIS will assist Army decisionmakers in analyzing and considering environmental effects associated with each of the reasonable stationing alternatives available for the new division.

The stationing alternatives considered in detail are as follows:

o Fort Wainwright, Alaska-Fort Lewis, Washington Alternative

Alaska Alternative

Fort Wainwright	- Division minus one reinforced infantry brigade
Fort Richardson, Alaska	- Receive two battalions of the 172nd Infantry Brigade currently stationed at Fort Wainwright
Fort Lewis	- One reinforced infantry brigade

- Fort Lewis, Washington-Ford Ord, California Alternative

  Fort Lewis - Division minus one reinforced infantry brigade

  Fort Ord - One reinforced infantry brigade

- Fort Drum, New York Alternative

  Fort Drum - Full light infantry division

- Fort Drum, New York-Fort Campbell, Kentucky Alternative

  Fort Drum - Division minus one reinforced infantry brigade

  Fort Campbell - One reinforced infantry brigade

- Fort Drum, New York-Fort Benning, Georgia Alternative I

  Fort Drum - Division minus one reinforced infantry brigade and the aviation brigade

  Fort Benning - One reinforced infantry brigade and the aviation brigade

- Fort Drum, New York-Fort Benning, Georgia Alternative II

  Fort Drum - Division minus one reinforced infantry brigade

  Fort Benning - One reinforced infantry brigade

- Fort Drum, New York-Fort Benning, Georgia Alternative III

  Fort Drum - Division minus the aviation brigade

  Fort Benning - The aviation brigade

The no-action alternatives have not been analyzed in detail. It would be unreasonable to have a light infantry division without an assigned station. The alternative of not forming a new light infantry division has not been analyzed because a premise of the EIS is that the division will be formed.

FORT WAINWRIGHT, ALASKA PUBLIC HEARING

The public hearing for the Fort Wainwright portion of the Alaska stationing alternative was held on June 21, 1984 at the North Star Borough library in Fairbanks. Statements were made by the following persons:

- Major General E. G. Pagano, Adjutant General for the State of Alaska (representing the Governor)
- Bill Allen, Mayor, Fairbanks North Star Borough
- Ted Lehne, Acting Mayor, City of Fairbanks
- Steve Bainbridge, City Engineer and Port Director, City of Nenana
- Maxine Stanley, Office of Congressman Young
- Mary Lou Stealey, Office of Senator Stevens
- Marcia Cosie, Office of Senator Murkowski
- Jeff Cook, Chairman Elect, Greater Fairbanks Chamber of Commerce
- Buki Wright, President, Greater Fairbanks Chamber of Commerce
- Glen Glenzer, Deputy Commissioner, Northern Region, Alaska Department of Transportation and Public Facilities
- Doyle Ruff, Colonel, USAF (Retired), Fairbanks
- Romona McAfee, Greater Fairbanks Chamber of Commerce
- Phil Younker, Presiding Officer, Fairbanks North Star Borough Assembly
- Dave Lacey, General Manager, Dinyee Corporation
- John Alfonsi, Fairbanks
- Daniel Adams, Fairbanks
- Ms. Toni R. Harsch, Fairbanks
- Nina Mollett, Fairbanks
- Patricia Wagner, Fairbanks
- Michael J. Walleri, Fairbanks
- Patrick Vaikenburg, Fairbanks
- Stan Justice, Fairbanks
- Lori Babb, Fairbanks
- John Eubank, Fairbanks
- Dan Wetzel, Fairbanks
- Ruben Satdna, Fairbanks
- Flora Wiltse, Fairbanks
- Paul Reichardt, President, Board of Directors, Northern Alaska Environmental Center
- Ed Crain, Fairbanks
- Joseph E. Volger, Fairbanks
- John Paulsen, Fairbanks
- Kem Sibbitt, Fairbanks

- Rob Weathers, Fairbanks
- Dr. William Wood, Fairbanks
- Ken Burnley, Superintendent of Schools, Fairbanks
- Brigadier General Ed Merdes, Fairbanks
- Richard Joy, Environmental Engineer, Fairbanks North Star Borough
- Frank Chapados, Fairbanks
- Ted De Leon, Fairbanks
- Mike Herman, Fairbanks
- Drew Dix, Fairbanks
- Ted Fathauer, Fairbanks
- Bill Zyboett, Special Project's Coordinator, Fairbanks North Star Borough
- Edith Rodi, University of Alaska, Fairbanks
- Pat O'Rourke, Chancellor, University of Alaska, Fairbanks
- Michael Metty, President, Tanana Valley Community College
- Bob Thomas, Member, Board of Directors, Greater Fairbanks Chamber of Commerce
- Ronald Cork, Chief Operating Officer, Fairbanks Memorial Hospital
- Stan Bloom, Fairbanks
- Pete Buist, Fairbanks
- Elstein W. Lauesen, Fairbanks
- James F. Ostlind, Fairbanks
- Colin A. Campbell, Fairbanks
- James Lentine, Fairbanks
- Edward W. Whaley, Fairbanks
- Ron Inouye, Fairbanks
- Francis Herman, Fairbanks

The following people provided written statements for the record:

- U.S. Senator Ted Stevens
- U.S. Senator Frank H. Murkansky
- U.S. Representative Dan Young
- MG Edward G. Pagano, Adjutant General, Alaska Department of Military and Veteran Affairs
- Doyle Ruff, USAF (Retired), Fairbanks
- Paul Reichardt, President of Board of Directors, Northern Alaska Environmental Center
- Richard Joy, Environmental Engineer, Fairbanks North Star Borough
- Ted De Leon, Fairbanks
- Ronald Cook, Chief Operating Officer Fairbanks Memorial Hospital

- Michael P. Metty, Campus President, Tanana Valley Community College
- James Lentine, Fairbanks
- John Alford, University of Alaska, Fairbanks
- James Messer, Chairman, Military Affairs Committee, Fairbanks Chamber of Commerce
- Larry Kelly, Manager, Sourdough Express, Inc., Fairbanks
- John Carlson, former Mayor, Fairbanks North Star Borough
- William R. Perry, Colonel, USAF (retired), Fairbanks
- Katherine Parry, Fairbanks
- Wm. Ronald Smith, Fairbanks
- William Kopplin/Martha A. Robas, Fairbanks
- Charles H. Parr, Fairbanks
- William F. Kinn, President, Eye, Ear, Nose & Throat Clinic, Fairbanks
- Roger W. Nash, Fairbanks
- Gordon Wear, Fairbanks
- Damon Thomas, Colonel, U.S.A, (retired), Fairbanks
- Cathy McCorquodale, Fairbanks
- Ron Rafson, Fairbanks
- Sherman Carter, Executive Vice President, University of Alaska, Fairbanks
- Jan Steele, Branch Manager, Alaska Chapter, Associated General Contractors of America, Inc., Anchorage
- Ron Davis, Chairman, Fairbanks Industrial Development Corporation
- William L. Pair, Fairbanks
- Jo Scott, Producing Director and Co-Founder, Fairbanks Summer Arts Festival
- Jay Barton, President, University of Alask Statewide System
- Kenneth S. Burnley, Superintendent of Schools, Fairbanks North Star Borough School District
- Steve Slater, Fairbanks
- J. Dean Argyle, Fairbanks
- G. Andrews, Fairbanks
- Bill Beistline, President, Fairbanks Homebuilders Association, Inc.
- Ted Fathauer, Fairbanks
- Wm. Waugaman, Wood River Guides & Outfillers College, Alaska
- William H. Doolittle, Fairbanks
- Francis R. Herman, Fairbanks
- Myreda K. Herman/Francis R. Herman, Fairbanks
- Carolyn Vertin, Fairbanks
- Resolution - State of Alabama Legislature
- Resolution - Fairbanks North Star Borough
- Resolution - City of North Pole, Alaska
- Sherri Dianne McNeally, Miss Alaska USA 1984, Fort Wainwright

- Dan Alden, Fairbanks
- Roger B. Rom, Fairbanks
- Mary Jo Knabe, Vice President/General Manager, Alaskan Cable Network, Inc., Fort Wainwright
- Janet Sorice, Fairbanks
- John S. Wilkes III, Lieutenant Colonel, USA (retired), President, Alaska Professional Employees Association, Clear, Alaska
- H. Glenzer, Jr., Deputy Commissioner, Northern Region, Alaska Department of Transportation and Public Facilities
- Michael T. Cook, Partner, Main Hurdman CPAs, Fairbanks
- Michael J. Zaccardi, Anchorage
- Birch Pavelsky, Fairbanks
- Philip Moran, Fairbanks
- Janet Lokken, Fairbanks
- Thomas J. Classen, Fairbanks
- Virginia Wood, Fairbanks
- A. Harrison, Fairbanks
- Delores Noeldner, Fairbanks
- John and Jane Aspnes, Fairbanks
- Paul Berry, Fairbanks
- Nancy Rabener, Fairbanks
- W. H. Dinkins, Lieutenant Colonel U.S.A. (retired), Fairbanks
- Becky Lopes, College, Alaska
- Stanley Jacobs, Fairbanks
- Larry Johnson, Fairbanks
- Tom Edmiston, Fairbanks
- David Warren, Fairbanks
- Robert Warren, Fairbanks
- Gerald R. Van Rueden, North Pole, Alaska
- Daniel L. Callahan, Fairbanks
- Sherrell Holtshouser, Public Health Nurse, Fairbanks
- Margaret Cowan, Fairbanks
- Patricia Stark, Fairbanks
- David O. Bremen, Fairbanks
- Susan Buccos, Fairbanks
- Elizabeth M. Berry, Fairbanks
- Glynn Hoener, Fairbanks
- Judy Larquier, Fairbanks
- Joanna Roth, Institute of Marine Science, University of Alaska, Fairbanks
- Roblyn Bulstrode, Fairbanks
- Gail Padden, Fairbanks
- Celia M. Hunter, Fairbanks
- Alicia Bunce, Fairbanks
- Gail Carlo, Fairbanks
- Sheila W. Polson, Fairbanks

- Alan Batten, Fairbanks
- Leon Lynch, Fairbanks
- James E. Kowalsky, Fairbanks
- Claire E. Holland, Delta Junction, Alaska
- Cheri Gaudie, Manager, Whole Earth Exchange, Fairbanks
- Joseph Fyes, Fairbanks
- Dennis Timm, Fairbanks
- Elonore Riedel, Fairbanks
- Janet Timm, Fairbanks
- Gregory Dub, Fairbanks
- Elaine Landon, Fairbanks
- Nattalie Bradley, Fairbanks
- Dick Farris, Fairbanks
- Barbara Farris, Fairbanks
- Martha Farris, Fairbanks
- Natalia Shaw, Fairbanks
- Richard Noeldner, Fairbanks
- Dixon J. Jones, Fairbanks
- Randall R. Rogers, College, Alaska
- Nancy Lewis, Fairbanks
- Unknown
- David and Lisa Daum, Fairbanks
- Russell and Barbara Tabbert, Fairbanks
- Nancy Kuhn, Fairbanks
- Lesege Kontha, Fairbanks
- Dan McGeve, Fairbanks
- George Jarrell, Fairbanks
- Rosemarie and Robert Peterson, Fairbanks
- C. Dukeminier, Fairbanks
- Douglas McIntosh, Fairbanks
- Barbara L. Clutter, Fairbanks
- Susan Hansen, Fairbanks
- Melissa Eisele, Fairbanks
- James B. Olen, Fairbanks
- Larry D. Kaplan, Fairbanks
- Jim Weidner, Fairbanks
- Shirley Weidner, Fairbanks
- E. Pagumony, Fairbanks
- H. D. Ferbrache, Anchorage, Alaska
- George E. McLaughlin, Fairbanks
- Mary E. Green, Fairbanks
- Dave Lace, Fairbanks,
- Concerned citizen
- Laurel McLaughlin, Fairbanks
- Cindy Spanyers, College, Alaska
- Suzanne M. Munchoff, Fairbanks
- David and Darey Birchell, Fairbanks
- Mary Shields, College, Alaska

- o Sharon Snyder, Fairbanks
- o Shirley Liss, Fairbanks
- o Sarah Watson, Fairbanks
- o Alan Reed, Fairbanks
- o Jean Robbins, Fairbanks
- o Gordon Wright, Fairbanks
- o Catherine H. Curby, Fairbanks
- o Rita Louis, Fairbanks
- o Hugh Richards, Fairbanks,
- o Jeff Reistroffer, Fairbanks
- o John Haines, Fairbanks
- o Jo Going, Fairbanks
- o Roger Kaye, Fairbanks
- o Bill Wortman, Vice President, Arctic Alliance for People, Fairbanks

All letters received as input to the public hearing process are reproduced in full in the official public hearing record and have been used as part of the decision making documents for this action. Copies of the public hearing record which contain the transcript of oral testimony and all written statements are available for the cost of reproduction upon request to the Mobile District, Corps of Engineers.

The following issues directly related to the environmental impact statement were raised during the public hearing:

- o Impacts on wildlife and fisheries
- o Unsportsmanlike conduct of military personnel
- o Increased population
- o Use of State lands and funds for residences
- o Increased noise levels
- o Effects of an economic boom
- o New jobs may not go to current residents
- o Exacerbation of air quality problems
- o Detrimental effects on vehicle inspection program
- o Errors in discussion of air quality

- o Ice fog problems would be exacerbated
- o Burden on public service infrastructure
- o Increased traffic
- o Groundwater degradation
- o Exacerbation of housing shortage
- o Economics of housing construction
- o Added burden on school facilities
- o Added burden on hospitals
- o Alteration or destruction of lifestyles
- o Added burden on social service facilities
- o Increased crime
- o Error in discussion of climate
- o Error in discussion of land use
- o General impact on natural and socio-economic environment

IMPACTS ON WILDLIFE AND FISHERIES

Comment: Thirteen individuals expressed concerns relating to increased pressure on wildlife and fisheries due to increased hunting demands, conflicts between training activities and wildlife management needs, and potential degradation of the quality and quantity of hunting and trapping.

Response: Potential impacts on wildlife and fisheries resources are discussed in paragraph 4A.8.

UNSPORTSMANLIKE CONDUCT OF MILITARY PERSONNEL

Comment: Seven individuals expressed concern relating to unsportsmanlike conduct of the military, particularly with reference to disproportionate game violations compared to the civilian population.

Response: Data are not available that would indicate that military personnel are any more likely to commit violations of game law than are civilians.

INCREASED POPULATION

Comment: Twenty-two individuals expressed the concern that the increase in population in the Fairbanks region would be in excess of what the region could handle. Specific concerns associated with this issue included sudden increase in numbers, diminished quality of life, and decreased diversity due to the military role of the new people.

Response: The overall anticipated effects of the increase in population are discussed adequately throughout Section 4A. The action would be phased over a four-year period.

USE OF STATE LANDS AND FUNDS FOR RESIDENCES

Comment: One individual raised a question concerning how much State land and dollars from State permanent funds dividends would be utilized in providing residences for the new people.

Response: This question cannot be answered in the EIS since specific information on location and financing of new residences are not available.

INCREASED NOISE LEVELS

Comment: Two individuals expressed concern over increased noise due to increased training activities and vehicular traffic.

Response: Potential noise impacts and possible mitigation measures are discussed adequately.

EFFECTS OF AN ECONOMIC BOOM

Comment: Fifteen individuals expressed concerns related to a potential economic boom in the Fairbanks region. Specific concerns included: property owners and taxpayers would absorb the cost of the stationing; potential lack of trickle-down of economic benefits; effect on Fairbanks if the Army left; monetary aspects of impacts not discussed in the EIS; increased cost of living; relatively low economic status of incoming personnel; and whether or not the dollars will really stay in Alaska.

Response: The economic impacts that would result from this proposed stationing alternative are presented in Section 4A.16.

NEW JOBS MAY NOT GO TO CURRENT RESIDENTS

Comment: Six individuals expressed the concern that new jobs would not necessarily go to current residents and that military dependents would also compete in the local labor pool.

Response: An analysis of working spouses of military personnel is given in Appendix L. The text has also been changed at 4A.18a to include a discussion of this issue.

EXACERBATION OF AIR QUALITY PROBLEMS

Comment: Fourteen individuals expressed concern over the current air pollution problems in the Fairbanks area and the potential for further deterioration of air quality with the additional vehicles and residential heating needs that would result from this stationing alternative.

Response: Some changes have been made in the text. See response to ERRORS IN DISCUSSION OF AIR QUALITY.

DETRIMENTAL EFFECTS ON VEHICLE INSPECTION PROGRAM

Comment: Four individuals commented that the recently enacted vehicle inspection and maintenance program designed to reduce air pollution will be detrimentally affected because of the increase in vehicles and/or because military personnel would be exempt.

Response: Mitigation measures for air quality problems, including requirements that vehicles owned by military personnel be subject to the program, are discussed in Tables 4A-9 and 4A-10.

ERRORS IN DISCUSSION OF AIR QUALITY

Comment: One individual commented on errors in the EIS in discussions about air quality.

Response: Appropriate changes have been made in the text, comments are noted.

ICE FOG PROBLEMS WOULD BE EXACERBATED

Comment: Five individuals expressed concern over or commented about the present ice fog problem during the winter in Fairbanks and its potential exacerbation.

Response: The discussion of this present problem and its exacerbation in the EIS is adequate.

BURDEN ON PUBLIC SERVICE INFRASTRUCTURE

Comment: Twenty-one individuals expressed concern over the adequacy of one or more facets of the public service facilities in Fairbanks, and the potential burden on public services that would result from this proposed stationing alternative. Specific concerns included health care facilities, recreation services, social services, utilities, and telephones.

Response: These concerns are adequately discussed in the EIS.

INCREASED TRAFFIC

Comment: Eight individuals expressed concern over the effects the additional vehicles would have on roads and traffic in the Fairbanks area.

Response: The treatment in the EIS is adequate.

GROUNDWATER DEGRADATION

Comment: One individual expressed concern over potential degradation of groundwater quantity and quality.

Response: This issue is adequately discussed in the EIS.

EXACERBATION OF HOUSING SHORTAGE

Comment: Eight individuals expressed concern over the housing shortage in Fairbanks and the effect of the proposed stationing alternative in terms of increasing demands on housing and increasing the cost of housing.

Response: The discussion in the EIS, including mitigation measures, is adequate.

ECONOMICS OF HOUSING CONSTRUCTION

Comment: Two individuals pointed out that the Fairbanks housing is subsidized by the state, and pointed out that possible effects on this market could result if the Army leaves and that there would be an effect on the quality of services from Alaska home mortgage services.

Response: Comment noted.

ADDED BURDEN ON SCHOOL FACILITIES

Comment: Fifteen individuals raised the issue of potential overcrowding in local schools which are just now easing from an overcrowded situation with new construction.

Response: This issue has been adequately addressed in the EIS.

ADDED BURDEN ON HOSPITAL

Comment: One individual stated that Fairbanks would need a new hospital.

Response: As noted in the EIS, the military personnel would be accommodated by additions to Bassett Army Hospital that would occur with the stationing. Civilian employees that would come to Fairbanks would be accommodated by the ongoing expansion of the hospital in Fairbanks.

ALTERATION OR DESTRUCTION OF LIFESTYLES

Comment: Ten individuals observed that the increased population would detrimentally alter the quality of life and thus affect lifestyles in the Fairbanks region.

Response: Comment noted.

ADDED BURDEN ON SOCIAL SERVICE FACILITIES

Comment: Sixteen individuals raised the issue of an increased need for social service and recreationl facilities that would be especially important due to the peculiar stresses of living in an arctic environment, problems of young military families, recent cutbacks in funding, and problems associated with soldiers separated from their families.

Response: The need for increased social services, particularly as generated in Alaska, are discussed along with possible mitigating measures in the EIS.

INCREASED CRIME

Comment: Three individuals expressed the concern that Fairbanks would encounter a greater proportional increase in crime due to the influx of military.

Response: A discussion of crime has been added at 4A.62.

ERROR IN DISCUSSION OF CLIMATE

Comment: One individual pointed out an error in the discussion of climate.

Response: The text has been corrected.

ERROR IN DISCUSSION OF LAND USE

Comment: One individual indicated an error in discussion of land use.

Response: The description (Chapter 3) of land use is taken from the Fairbanks North Star Borough Draft Comprehensive Plan. The discussion of impacts (Chapter 4A) has been changed to reflect Chapter 3.

GENERAL IMPACT ON NATURAL AND SOCIO-ECONOMIC ENVIRONMENT

Comment: Many commentors commented non-specifically on the general environmental impact of the proposed stationing alternative.

Response: These concerns are noted. The purpose of the EIS is to address these impacts.

FORT RICHARDSON, ALASKA PUBLIC HEARING

The public hearing for the Fort Richardson portion of the Alaska stationing alternative was held on June 20, 1984 at the Old Federal Building in Anchorage. Statements were made by the following persons:

- o Barbara Andrews, Staff, Senator Ted Stevens
- o Pat Edwards, Staff, Senator Frank Murkowski
- o William J. Sparraw, Staff, Congressman Don Young
- o E.G. Pagano, Adjutant General, State of Alaska
- o Louis J. Bonito, Anchorage Assembly
- o Alvin H. Fleetwood, Anchorage Chamber of Commerce
- o Mike Zaccard
- o Greg Moe, Greg's Plumbing
- o Catherine A. Isabella

All letters received as input to the public hearing process are reproduced in full in the official public hearing record and have been used as part of the decision making documents for this action. Copies of the public hearing record which contain the transcript of oral testimony and all written statements are available for the cost of reproduction upon request to the Mobile District, Corps of Engineers.

Issues discussed in general related to the growth in Anchorage and the wildlife of the area. Of the nine people who spoke for Alaskans, eight were in favor of the Alaskan alternative, one against. The state of Alaska, Congressional representatives, and Anchorage all were in favor of the Alaskan alternative. The one citizen who was against the proposed action was concerned about Alaska growing too fast and losing its wilderness character.

Specific issues brought up during the public hearing directly related to the environmental impact statement included the following:

- o housing affordability for enlisted married troops
- o presence of permafrost
- o effects on wildlife
- o growth of Anchorage

HOUSING AFFORDABILITY

Comment: Two speakers pointed out that housing affordability was not a problem in Anchorage. The public also stated that lower grade married troops have problems, everywhere in the U.S.

Response: While there may be shortages in other areas, there are still problems of affordability in the Anchorage area.

One source of local data was the Anchorage area housing survey, and the other was the local office of Housing and Urban Development (HUD).

Comment: Another member of the public reported a 31 percent vacancy rate on base in 1980, and points out the State of Alaska loan program and DOD housing allowances.

Response: Bill Poplarchik, Fort Richardson housing officer, states the vacancy rate on base is 2 percent in 1984. The loans and DOD financial aid are discussed in 4A.101.

PERMAFROST

Comment: It was pointed out that there is no permafrost on Fort Richardson.

Response: The EIS has been changed to clarify this topic. The troops, however, will be training on permafrost soils in the Fort Greely reservation.

WILDLIFE

Comment: Several speakers mentioned that wildlife would not be impacted. The speakers said that moose eat shrubbery, get hit by cars on the Glenn Highway, and also get killed on the firing range (by hunters) and elsewhere. While the DEIS states that moose habitat will be disturbed, the local public feel that the moose adapt nicely.

Response: However, as the Anchorage area urbanizes, there will be more man-moose encounters.

GROWTH

Comment: Anchorage growth rates were generally cited by the public as a reason why the area could best handle incoming new troops. Example quote: "successfully kept pace with the expanding population." On the other hand, one citizen said "I am in favor of as little development in Alaska as possible."

Response: Growth rates are discussed in 4A.86 and 4A.87.

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APPENDIX A-2

COMMENTS AND RESPONSES CONCERNING FORT BENNING, GEORGIA AND SUMMARY OF PUBLIC HEARING ISSUES

A. EARL CHEAL & ASSOCIATES
Management Consulting - Productivity Improvement

DR. A. EARL CHEAL
PRESIDENT

June 7, 1984

Department Of The Army
Mobile District, Corps of Engineers
ATTN: Mr. Lawrence R. Green,
Chief Planning Division
P.O. Box 2288
Mobile, Alabama 36628

Dear Mr. Green:

Thank you for sending me a copy of the Draft Environmental Impact Statement, regarding stationing of the Light Infantry Division, hereafter referred to as "the statement". Unfortunately, I will be out of town at the time of the Public hearing regarding stationing of the Division at Ft. Benning, Georgia. The following comments are furnished to be included in finalizing "the statement".

"The statement" appeared to present many of the major considerations concerning Ft. Benning however, there are a few additional items that would strengthen the case for stationing the Division here:

It is well known, by those who have been associated with the Army, that even the very best plans, when implemented, will require modification due to a variety of factors. Changes in mission, training effort, etc. may be expected at any post where the Light Infantry Division is stationed. Therefore, it is most important that the "track record" of management solutions to environmental situations/problems be analyzed and included in the statement. When this is done, you are sure to find that Ft. Benning is a leader, not a follower in these important issues. It may therefore be concluded that this same level of interest, professionalism and leadership would be exerted in regards to additional units stationed at Ft. Benning. This level of effort is the result of a very dedicated civilian workforce and the assignment of many outstanding military personnel at Ft. Benning.

Pages 4F-32 through 4F34b of "the statement" address some of the mitigating measures that may lead the reader to conclude that Ft. Benning had shown strength in their management of the environmental issues. However, the point is not strong and does not appear to be addressed in the body of "the statement". B-1

I request that "the statement" address the strength of

P O BOX 12174 COLUMBUS GEORGIA 31907-0855 PHONE (404) 561 8748 OR 561-4392

RESPONSE TO COMMENTS

B-1. The text has been changed at 3.220a to note several management activities. As part of Fort Benning's continuing environmental management activities, the following accomplishments can be noted:

- o Fort Benning was named one of three Army finalists for the Environmental Quality Award;
- o The "On-going Mission and Siting Activities EIS" is prepared annually and has proven useful in identifying activities and environmental impacts at Fort Benning;
- o The "Commander's Guide to Fort Benning Environmental Management Program" pamphlet, which provides a working guide for staff and unit personnel involved in the administration and conduct of an integrated environmental management program, was published and distributed in 1983 and is currently in use at Fort Benning;
- o According to USAIC regulations, Fort Benning has established the Environmental Control Committee, the Waste POL (petroleum, oils, and lubricants) Management and the Installation Historic Preservation Committee.
- o Strict extensive erosion control measures are currently being practiced at Fort Benning, in conjunction with construction, timber harvest and other projects; and
- o The Environmental Management Office utilizes an extensive computer system for program performance and long-range planning.

management in dealing with environmental issues at Ft. Benning.

I also request that "the statement" address another management related strength that Ft. Benning possesses. Ft. Benning has on-going employee participative management programs. There are two programs, Quality Circles and Work Environment Improvement Team Concept. These programs involve the soldiers and civilian employees in the process of identifying, solving and implementing solutions which improve efficiency and quality of their product or service, while reducing costs. It is important to highlight these programs in "the statement" because by using the collective brainpower and energies of many of the people involved, the solutions to present and future environmental and other problems may be provided. Conventional methods of developing solutions, where one or a few managers "identified and solved" the problems, is clearly not as effective as a participative management approach, where the collective efforts are applied. B-2

The final item that deserves more emphasis in "the statement" is the support of the local community. This must be one of the most supportive military communities in the country. I request that you provide more space to address this important issue. B-3

Sincerely,

A. Earl Cheal

A. Earl Cheal, D.B.A.

RESPONSE TO COMMENTS

B-2. Comment noted.

B-3. The long-standing social/economic relationship between the Columbus, Georgia community and Fort Benning is mentioned in Chapter 3 of the Environmental Impact Statement.

Department of Transportation

State of Georgia
No. 2 Capitol Square
Atlanta, Georgia 30334-1002

THOMAS D. MORELAND
COMMISSIONER
STATE HIGHWAY ENGINEER

HAL RIVES
DEPUTY COMMISSIONER
ASST STATE HIGHWAY ENGINEER
DANIEL O. KELLY
TREASURER

June 1, 1984

Mr. Lawrence R. Green, Chief, Planning Division
Environmental Quality Section
Mobile District, Corps of Engineers
P. O. Box 2288
Mobile, Alabama 36628

Attention: Environment and Resources Branch

Dear Mr. Green:

The Draft Environmental Impact Statement, "Stationing of a New Army Light Infantry Division" has been reviewed as it relates to anticipated impacts on traffic volumes and patterns in the Columbus Georgia area due to the three alternatives involving Fort Benning. The general conclusion stated in the EIS that there would be little impact on traffic congestion off-post, even for the most intensive alternate, Alternate I, appears valid. The projected traffic volumes stated in the EIS can be accommodated by the existing off-post street and highway system together with the proposed improvements in the vicinity currently recommended as a part of the Columbus-Phenix City Transportation Study.

There is a point of concern, however. The EIS suggests that the majority of the traffic increase would use US 27 (Victory Drive) east of the Lindsey Creek Bypass as the primary facility for access to the Fort. While there is sufficient capacity on US 27 to handle the projected increases, we have concern about the actual points of access from the Fort to US 27. If all of the traffic increases will be accessing US 27 at only one or two points, there could very possibly be capacity and safety problems at these points. Since the Department of Transportation is directly concerned with the safety and convenience of the traveling public while on public highways, we need to be kept informed of any potential problems these access points may generate. Inasmuch as the Department funding resources are very limited, the ability of the Department to respond to these needs is also limited, and every effort needs to be made to anticipate and coordinate any necessary highway improvements at these access points. B-4

Please consider these factors as you analyze the various alternatives, and if you have any comments, or need any information, don't hesitate to let me know.

Yours very truly,

Thomas D. Moreland

TDM:RDS:ls
cc: D. J. Altobelli, FHWA

B-4. The Environmental Impact Statement adequately addresses increases in traffic congestion. Mitigating measures are also presented (i.e., implementation of traffic proposals) which would necessitate consideration, and alleviate those impacts of concern addressed in the comment should the alternatives involving Fort Benning be implemented.

STATE OF ALABAMA

GOVERNOR'S OFFICE

GEORGE C WALLACE
GOVERNOR

MONTGOMERY 36130

May 28, 1984

Colonel Patrick J. Kelly
District Engineer
Department of the Army
Mobile District, Corps of Engineers
Post Office Box 2288
Mobile, Alabama 36628

Dear Colonel Kelly:

We in Alabama support all aspects of our national military effort and are proud of those installations within the state and immediately adjoining our state.

The proposed addition of a Light Infantry Division in the Fort Benning area would be welcomed in Alabama.

I have asked our State Emergency Management Agency to review the Environmental Impact Statement, and they are available should you desire any further information. The specific individual to contact at AEMA is Bob Lilly, telephone 261-3320.

Sincerely yours,

George C. Wallace

GCW:sw

TO: Mr. Lawrence R. Green, Chief
Planning Division
Department of the Army
P. O. Box 2288
Mobile, AL 36628

FROM: Office of Planning and Budget
Management Review Division
State Clearinghouse
270 Washington Street, S.W.
Atlanta, Georgia 30334

DATE: May 22, 1984

SUBJECT: RECEIPT OF NOTIFICATION OF INTENT TO APPLY FOR FEDERAL ASSISTANCE/PREAPPLICATION/APPLICATION/PROPOSED PERMIT/ DIRECT FEDERAL DEVELOPMENT/ENVIRONMENTAL INFORMATION

APPLICANT: Defense Department

PROJECT: DEIS - Fort Benning

FEDERAL IDENTIFICATION NUMBER (If applicable):

STATE APPLICATION IDENTIFIER: GA 84-05-21-001

REVIEW COMMENTS DUE BY: June 7, 1984

OFFICE OF PLANNING AND BUDGET CONTACT: C. Badger/S. Williams

Correspondence related to the above project was received by the State Clearinghouse on May 22, 1984.

The review has been initiated and every effort is being made to ensure prompt action. The proposal will be carefully reviewed relative to its consistency with goals, policies, plans, objectives, programs, and if applicable, with budgetary restraints. You may expect to be informed by the State Clearinghouse of the results of the initial review by June 11, 1984. If you have not been contacted by the State Clearinghouse by this date, your proposal may be considered consistent. Your completed application should include this letter as evidence of compliance with Executive Order 12372.

In future correspondence regarding this project, please include the State Application Identifier Number shown above. If you have any questions regarding this project, please call us at (404)656-3829 or 656-3855.

Form SC-1
July 1983

Alabama Department Of Economic And Community Affairs

GEORGE C WALLACE
GOVERNOR

W M "BILL" RUSHTON
DIRECTOR

May 22, 1984

TO: Mr. Lawrence R. Green, Chief, Planning Division
Department of the Army
Mobile District, Corps of Engineers
P. O. Box 2288
Mobile, AL 36628

FROM: Donna J. Snowden, Single Point of Contact
Alabama State Clearinghouse
OSPFP Division, ADECA

SUBJECT: PLANS, STUDIES, AND OTHER DOCUMENTS--RECEIPT

Applicant: Mobile District, Corps of Engineers

Project: Draft Environmental Impact Statement for Stationing of a new Army Light Infantry Division

State Application Identifier Number: OSP-030-84

The above document has been received by the State Clearinghouse. Please note that this document has been assigned the SAI Number shown above. In future correspondence on this document, please refer to the SAI Number. Your cooperation is appreciated.

This document has been distributed to appropriate agencies, and every effort is being made to ensure prompt action. You will be advised of any comments received.

If you need assistance, please feel free to contact me at (205) 284-8905. If I am not available, please talk with Moncell Thornell at (205) 284-8904.

OSP/04

3465 Norman Bridge Road • P O Box 2939 • Montgomery Alabama 36105 0939 • (205) 284-8700

FORT BENNING PUBLIC HEARING

The Public Hearing for the Fort Benning stationing alternative was held at Columbus College, Columbus, Georgia on June 11, 1984.

Statements were made by the following persons:

- Bill Feighner, Mayor, City of Columbus
- Van Meter, President, Fort Benning Chapter of the Association of the United States Army (AUSA)
- Charles McDaniels, Columbus Councilman
- Mary Jane Galer, State Representative, Georgia General Assembly
- Ron Starnes, Executive Director, Lower Chattahochee Area Planning Commission
- Bob Bayer, Staff, Office of Senator Senator Sam Nunn
- David Fox, Local Representative of Senator Mattingly
- Herb Lockett, Representative of Senator Denton
- Bill Talmadge, Office of Congressman Ray
- Joe Ragland, Executive Vice-President, Columbus Chapter of Commerce
- William B. Steele, Columbus
- James H. Blanchard, Columbus
- Jack C. Garland, Chairman, Columbus Airport Commission
- Owen Ditchfield, President, South Columbus Concerned Citizens
- James J. Matthews, Columbus
- Sam Allison, Columbus

The following persons provided written statements for the record:

- U.S. Senator Sam Nunn, Georgia
- U.S. Representative Richard Ray, Georgia
- U.S. Representative Bill Nichols, Alabama
- Deborah Robinson, Juniper, Georgia

All letters received as input to the public hearing process are reproduced in full in the official public hearing record and have been used as part of the decision making documents for this action. Copies of the public hearing record which contains the transcript of oral testimony and all written statements are available for the cost of reproduction upon request to the Mobile District, Corps of Engineers.

The following issues directly related to the environmental impact statement were raised during the public hearing:

- o Operating hours of Columbus Airport Approach
- o Capability of the Columbus Medical Center
- o Positive community attitude toward the military

Comment: The Columbus Approach could, if required at some future date, remain open 24-hours to handle increased air traffic associated with Fort Benning.

Response: The EIS has been changed in paragraphs 4E.71 and 4G.73 to reflect the information provided in the comment.

Comment: The Medical Center has sufficient capacity, equipment and staffing to absorb the increased population.

Response: Comment noted. Paragraphs 4E.47 and 4G.94 reflect the ability of the area hospitals to absorb the additional population.

Comment: Columbus has historically been able and willing to absorb the population associated with Fort Benning activities.

Response: The long-standing social/economic relationship between the Columbus, Georgia community and Fort Benning is mentioned in paragraph 3.178 of the EIS.

APPENDIX A-3

COMMENTS AND RESPONSES CONCERNING FORT CAMPBELL, KENTUCKY AND SUMMARY OF PUBLIC HEARING ISSUES

G/C Inc. GIVENS CONSTRUCTION, INC

2713 FT. CAMPBELL BLVD., HOPKINSVILLE, KENTUCKY 42240
(502) 885-1348

June 13, 1984

U. S. Army Corps of Engineers, Mobile District
SAMPD-EE
Post Office Box 2288
Mobile, Alabama 36628

Re: Environmental Impact on Stationing of A
Seventeenth Active Component Division

Gentlemen:

In regard to the consideration of stationing another Division at Fort Campbell, Kentucky, the economic attributes of this proposal merit our supreme attention.

This light brigade should have minimal adverse effects on the quality of air, water, and life for our community. C-1

The capacity for water, which comes from surrounding watershed lakes and Lake Barkley, is more than adequate. Our sewerage treatment facility can handle eight times its present flow. The housing is much more than adequate with new subdivisions and apartment complexes being built.

Quite a few officers and enlisted personnel from Ft. Campbell have found Hopkinsville to be a family oriented community in lieu of a commercial jungle type atmosphere. The overall cost of living for today's soldier is much lower in this locale. Our community is actively adding and/or improving its recreation facilities for activities such as golf, tennis, swimming, and our proximity to the Land Between the Lakes is definitely an asset for recreational purposes and also for maneuvers.

I realize there is some noise associated with the artillary and troop movement, but as I understand this light brigade, the largest artillary is a 105mm canon and only one hundred helicopters in addition to light trucks and vehicles. C-2

There is some traffic congestion, mostly at quiting time for the factories, but this is also true at quiting time on post at Ft. Campbell. I would think that some scheduling could alleviate this problem. C-3

I have never met any finer personnel or more mannerly children anywhere in Hopkinsville than the enlisted men and officers and their families in my own neighborhood. We would definitely welcome more of this type people to Hopkinsville.

Sincerely,

C. Michael Givens
President

CMG:jh

C-1. These issues are adequately addressed.

C-2. The effects of noise associated with this alternative are adequately addressed.

C-3. The issue of traffic congestion is adequately addressed. Scheduling could be considered a mitigating measure. Additional information is provided in the response to the public hearing comments.

TENNESSEE STATE PLANNING OFFICE
1800 JAMES K. POLK STATE OFFICE BUILDING
505 DEADERICK STREET
NASHVILLE, TENNESSEE 37219
(615) 741-1676

LAMAR ALEXANDER
Governor

C. LEWIS LAVINE
Director

84-3295

June 22, 1984

Mr. Lawrence R. Green
Department of the Army
Mobile District, Corps of Engineers
P. O. Box 2288
Mobile, Alabama 36628

SUBJECT: CHTN062084-028 Draft Environmental Impact Statement, Stationing of A New Army Light Infantry Division.

Dear Mr. Green:

In accordance with Presidential Executive Orders 12372 and 12416 and with Gubernatorial Executive Order 58, this office serves as the designated State Clearinghouse for federal activities and grants review.

State and local government evaluation of submitted materials have indicated no conflicts with existing or planned activities. Therefore, we are approving this proposal based on the descriptive information made available to us. However, should additional information come to the attention of this office, we may wish to comment further. C-4

This letter should be attached to the application and become a permanent part of the project file. Any involved federal agency should respond in writing to this office if there are problems complying with this approval. The assigned State Clearinghouse Identification Number should be placed in the appropriate block on the federal application form.

The appropriate funding agency will now be reviewing our recommendation. If we can be of further assistance, please do not hesitate to contact me.

Sincerely,

Saralee W. Terry

Saralee W. Terry
Director, State Review Process

SWT:mcp

cc: Dan Sherry
Roberta Hylton
Mitch King
Allan Lucas
Bill Hurst
Larry Bowers

C-4. Comment noted. Any additional information submitted would be considered.

2 July 1984

To Whom it may Concern,

In reference to the Environmental impact statement concerning placement of the new Light Brigade at Fort Campbell I have the following comments, the first few concerns you are probably aware of, but my last concern is one I have seen no publicity on, and I'm not sure it has been raised.

I am currently a dependent wife, also a member of the Individual Ready Reserve, residing in quarters at Fort Campbell. I ETS'd in April as an E6 with 11 years 9 months of service, so I've been around and seen alot.

My first concern is Highway 41A. That road is one reason why my husband and I decided to move into quarters, as it's such a treacherous road. We have been here since November of 1979, and the road is getting progressively worse. C-5

C-5. The issue of traffic congestion is adequately addressed. See response to comment C-3.

C-5 cont.

One reason for this is that it is not limited access. If it were limited access with frontage roads to the businesses that line it, there would be an improvement. There are a large number of businesses on the highway than four years ago, and I'm sure there will be more in the future.

C-6

Another concern is the crowded conditions more people would place on the medical facilities. In a recent article in the Clarksville Leaf Chronicle, the local civilian hospitals claimed they could pick up any excess from Fort Campbell, which is fine except for one thing — CHAMPUS. Those who would be required to use these hospitals would be required to use Champus. For dependents of Active duty this would involve the service member to pay the first 25^{00} and for retirees to pay 25 percent. Why should we have to pay for services we are entitled

C-6. The health care services within the community and on-post are adequately addressed in the EIS (3.328-3.329, 3.375, 40.76, 40.105). However, it is recognized that increased pressure on existing on-post medical facilities could result in more dependents and retired military personnel being required to use CHAMPUS at an increased cost.

to at no cost, because more people have been sent to an area than its medical facilities can handle. I have worked in a hospital and know the Army could send extra staff, but only after Manpower Surveys are done to show that hospital is actually handling that much workload, and Champus visitors not counted in the workload. It also takes time to collect manpower data and time for DA to program the extra people to the hospital therefore there would be a time lag before the new people arrive to increase hospital staff. C-6 cont.

The Commissary and PX would also be subject to more crowding, also the banks. C-7

My main concern however concerns the capacity of the local social agencies to handle social investigations - especially child abuse investigations. It right now appears that the C-8

C-7. This issue is adequately addressed. See response related to the public hearing comments on the issue of on-post parking problems.

C-8. The provision of health care services, including psychiatric treatment, is adequately addressed in the EIS. A discussion of State child abuse programs and their effect on specific individuals is beyond the scope of an EIS.

local agencies are already overwhelmed with their current workload and what will happen when there are more people with more possible child abuse cases.

C-8 cont.

My husband and I have had first hand experience with such an investigation as we were investigated by the Commonwealth of Kentucky for child abuse, of which the case against us was eventually dismissed, however the investigation was not handled as thoroughly as could be.

We filed a hospital U.Q. concerning how we felt the Social Worker handled the case, and also a subsequent follow up to the U.Q. The basic answer we received from the U.Q. was that since there are no federal laws governing child abuse, state law must be followed. By state law, any unexplained obvious injury in a child requires reporting. Since we lived in

Kentucky, our case was reported to the DHS, Commonwealth Kentucky.

This incident occurred in February 1984 and at the time my husband Richard Martinez (Staff Sergeant) was (and still is) Ward Master of Inpatient Psychiatry, and I at the time was, Staff Sergeant Gail Martinez, Assistant NCOIC, of Operating Room at Blanchfield Army Community Hospital, Fort Campbell, Kentucky.

On Sunday 12 February, I while bathing my four month old daughter, I noticed her right thigh was quite swollen, the first abnormality I had seen. I took her to the emergency room where an X-ray confirmed she had a fractured femur. She was admitted to the hospital and put into traction. A social work consult was done as a matter of routine.

On 14 February at 1530 we were given an appointment to see

the Social Worker assigned to our case. At that meeting there was already present a worker from the Commonwealth of Kentucky, Department of Human Services. At that time we couldn't explain the injury and we were told we would have to be investigated before our child could come home. We were told that DHS could get a court order to take our child and put her in foster care until DHS was satisfied with us. Our babysitter was out of town on emergency leave and it was a few days until she could be reached by telephone.

We agreed to cooperate fully in the investigation.

The state worker was very concerned that both of us worked in high stress areas - especially myself. I admitted that I did work in a statistically stressful area, and also admitted that I was undergoing outpatient psychiatric care for stress reduction at the time of this incident.

The state worker was concerned that stress can cause abuse.

My husband and I gave our permission for the social workers to speak to our supervisors, who could tell them how we handle stress and also to give a general character reference. The states response to that was - "And what do you think they'd say?" We also said that they could ask our family priest from Chapel about our character - but the state said that it wasn't necessary.

On 15 February our daughter Felicia was taken to surgery where she was put to sleep and a cast applied from waist to toe on the right leg and waist to knee on the left leg.

Shortly after Felicia left surgery we were called back to social work. There the state worker told us that our daughter would be ready to leave the hospital before the investigation could be completed and that she would get a

court order to put Felicia into foster care until a hearing could be held the next week to determine Felicia's status. We then were able to tell them about an incident my husband had almost forgotten that may have contributed to the injury. A neighbor child had accidently stepped on Felicia's leg a few days before when Felicia was lying on the floor. The state didn't feel that was sufficient to cause the injury.

When we asked if Felicia could stay in the hospital until we could go to court, and we were told NO - because Felicia might catch someone's illness, and certainly we didn't want that. We asked what were our rights and were told our only right was to a lawyer.

I spoke to my psychologist who spoke to one of the orthopedic doctors who spoke to the chief

Pediatrics, who determined that if Felicia were kept in a private room or with surgical patients there was little chance of her to get ill. The orthopedist who was new to the case then determined to keep her in the hospital until we could go to court.

Thursday 16 February was my husband's day off and he went and hired a lawyer.

Friday 17 February the state worker visited our home to check on it. She was impressed that we were willing to pay a lawyer, and fought to keep our baby in the hospital. She also was impressed at the state of our house, clean and decorated.

Over the weekend we [illegible] our lawyer who had been in contact with the state worker. She told our lawyer she thought we were nice people, but the injury concerned her.

On Tuesday 21 February we went to court. We had with us a medical statement from a pediatrician

who had treated our 3 children over three years time and he had never seen evidence of abuse and that ~~they~~ were always brought in appropriately for care. Also we had a medical statement from an orthopad that while it would have taken great force to cause the fracture it was not the type of fracture commonly seen in child abuse cases.

Total body X rays were done and there were no other broken bones, and there was not a bruise on her body. Noone can explain how so much force to fracture the femur caused no other injuries.

Also coming to court with us were the girl who stepped on Felicia, and a psychiatrist who worked with my husband and is also a close friend.

Rather than a hearing being held, provisions were made for a ninety day continuance.

The stipulations were that for ninety days my husband

and I would undergo psychiatric treatment with Dr. Chard, our two younger children, Felicia and Sonia would be sent two days a week to the Foot Nursery, and that we would allow a State Social Worker to visit our home once a week. Under these conditions we would be allowed to bring Felicia home. We agreed, and the Judge agreed, so these stipulations were laid down and our case continued to 22 May.

Rick and I met with Dr Chard who then determined Rick didn't need psychiatric care and told this to the hospital social worker on our case. Care was discontinued for Rick and I was returned to my psychologist for future care.

Our two children were taken to the Foot Nursery as required.

On 2 April I left active duty. We had not yet seen a social worker and felt that maybe they just hadn't found us at home

since we both worked. But after I started to stay home, still no social workers came.

15 May I contacted my lawyer to check on our hearing and I informed him that no social workers had ever been [illegible]. Also I informed him that after talking with my psychologist, no one ever asked him about my status even though the state worker kept saying that my stress levels might be connected to Felicia's injury.

On 19 May I was contacted by another state social worker who said he was [illegible] case and that he had just spoken to our lawyer. He said she had received good nursery reports and she felt everything was ok and that he didn't plan on coming to visit. He also told me he had just spoken to my psychologist who gave a good report.

He then offered to come out if I wanted him to - but I wanted [illegible]

I called my husband who came home from work. The social worker had all of his recommendations ready for the judge. He wanted for the court to drop out but for DHS to keep their book open for another sixty days. We would be required to continue to take the children to the nursery, or if we didn't want that, he'd have to make 2 or 3 more visits. He felt sure of his recommendations without ever seeing us and would have gone to court without seeing us if he hadn't heard from our lawyer. This social worker told us she didn't receive the case until Mid April when it was two months old.

We went to court 22 May and decided to disagree with the social worker and request the case be totally closed. We felt that since they had 90 days they should have investigated during that time,

and not extend things. Especially since the social worker told us he felt that we didn't hurt our child, but he just wanted more time to study to be sure.

The judge asked if we wanted a hearing since the social workers didn't want to drop things. We felt they would infringe on our privacy by extending things.

We requested a hearing and needed witnesses. So the hearing was set for 29 May.

21 May we submitted an 1983 complaint at the hospital concerning how we were turned in to the state. We were given an explanation of the laws as given at the beginning of this letter.

On 29 May we went to Court with Dr Ch..., my psychologist and the girl who stepped on Felicia. Also we had more letters from our orthopod and pediatrician.

At that point the State decided to drop the case and to close the book. Their only

requirement was that my psychologist give two reports on me in sixty days and that the case would be closed and only reopened if I had a bad report.

This whole case concerns me greatly.

If the case load is so heavy that it takes 60 days to assign a social worker to a serious injury, how are minor cases dealt with?

The post nursery is often filled to capacity, yet even when full they are required to receive children bound by court order. Is it good for the kids to be in an overcrowded nursery?

Nursery reports are relied on heavily, so is the post nursery doing the job of the state social workers?

Is it fair that if the Social Agencies cannot handle their present workload, to add

here more people, with the chance that more cases will arise?

While in the end we were cleared of any wrong-doing, it was a tough fight to clear ourselves — and I sincerely hope no one else has to have their case handled like this. I feel we shouldn't have our troops to be exposed to this until the Commonwealth of Kentucky can get their Social Services working more efficiently.

Several nurses and doctors we know feel we were handled wrongly and that Kentucky overreacted, but once they had the case none could stop them. Yet those social workers refused to talk to anyone that could have character referenced us. They just did things their way, regardless of the trauma it caused us.

I hope all are under consideration

17

for the new Brigade has their Social Service evaluation.

Sincerely

Gail F Martins
4348 B Peace Village
Ft Campbell
Kentucky 42223
Home phone 502 439 1125
Husband - SSG Richard Martins
duty phone 502 798-8179.)

CHARLOTTE E. BALDWIN
SECRETARY

MARTHA LAYNE COLLINS
GOVERNOR

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
OFFICE OF THE SECRETARY
FRANKFORT, KENTUCKY 40601
TELEPHONE (502) 564-3350

July 6, 1984

Mr. Lawrence R. Green
Chief, Planning Division
Environmental and Resources Branch
Department of the Army
Mobile District, Corps of Engineers
Post Office Box 2288
Mobile, Alabama 36628

Dear Mr. Green:

The Kentucky Natural Resources and Environmental Protection Cabinet serves as the State Clearinghouse for distribution of Environmental Impact Statements. Enclosed are comments the Cabinet has received on the Draft Environmental Impact Statement - Stationing of a New Army Light Infantry Division.

The Cabinet appreciates the opportunity to comment on this Draft EIS. If you have any questions, please contact me at (502) 564-3350.

Sincerely,

Valerie A. Wickstrom

Valerie A. Wickstrom
Principal Assistant

VAW/jes

Enclosures

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COMMONWEALTH OF KENTUCKY
TRANSPORTATION CABINET
FRANKFORT, KENTUCKY 40622

FLOYD G. POORE
SECRETARY

MARTHA LAYNE COLLINS
GOVERNOR

June 5, 1984

STEPHEN REEDER
DEPUTY SECRETARY AND
COMMISSIONER OF HIGHWAYS

OTTO INGRAM
DEPUTY SECRETARY/COMMISSIONER
DEPT. OF RURAL & MUNICIPAL AID

JOHN A. STEPHENSON, PH.D
DEPUTY SECRETARY/COMMISSIONER
DEPT. OF VEHICLE REGULATION

ROBERT K. CAPITO, P.E.
STATE HIGHWAY ENGINEER
DEPT. OF HIGHWAYS

ED SAMS
PRINCIPAL ADMIN. ASSISTANT
OFFICE OF THE SECRETARY

PRISCILLA GERSHMAN
ADMINISTRATIVE ASSISTANT
OFFICE OF THE SECRETARY

LARRY E. MOORE
ADMINISTRATIVE ASSISTANT
OFFICE OF THE SECRETARY

MARY McDOWELL MULLOY
PRESS SECRETARY
OFFICE OF THE SECRETARY

ROGER COLE
COMMISSIONER
DEPT. OF ADMINISTRATIVE SERVICES

GEORGE T. WOLNITZEK
COMMISSIONER
DEPT. OF FISCAL MANAGEMENT

ROBERT COX
EXECUTIVE DIRECTOR
AERONAUTICS AND RIVERPORT DEV.

BETTY HAWKINS
EXECUTIVE DIRECTOR
OFFICE OF PERSONNEL MANAGEMENT

CYNTHIA NITZ RIS
EXECUTIVE DIRECTOR
OFFICE OF GENERAL COUNSEL

HARRY E. SYKES
EXECUTIVE DIRECTOR
OFFICE OF MINORITY AFFAIRS

Ms. Valerie A. Wickstrom
Office of the Secretary
Natural Resources and Environmental
Protection Cabinet
Fifth Floor, Capital Plaza Tower
Frankfort, Kentucky 40601

Subject: DEIS -- Stationing of a New Army Light Infantry Division, Possibly at Fort Campbell, Kentucky

The Kentucky Department of Highways is responsible for controlling both public and private usage of right-of-way of the State road system. Any firm, individual, or governmental agency desiring access to a State road or desiring to perform any type of work on State right-of-way must obtain a permit from the Department. A contractor performing the work must have in his possession at all times a copy of the permit, authorization letter, and detailed drawings of work to be done.

The Department encourages the use of private property for placement of utility facilities where possible and practical; but we realize that in some instances highway rights-of-way are the only reasonable places to locate the proposed utilities. In these cases, we expect the conscientious efforts of both the applicant and the contractor to minimize adverse effects on the roadway and on the traveling public due to construction of the applicant's project.

If a State maintained road is affected by this proposal, any proposed access or encroachment should be coordinated at the earliest possible stage with: C-9

A. W. Clements, Chief District Engineer
Kentucky Department of Highways
Drawer D, 1840 North Main Street
Madisonville, Kentucky 42431
Telephone (502) 821-1600

Sincerely yours,

Thomas A. Scott

Thomas A. Scott, P.E.
Division of Design

TAS:lk:ee

cc: A. W. Clements

A-102

C-9. Comment noted. Should this alternative be implemented, any impacts on State maintained roads will be further coordinated with the Department of Highways.

CHARLOTTE E. BALDWIN
SECRETARY

MARTHA LAYNE COLLIN
GOVERNOR

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
FORT BOONE PLAZA
18 REILLY ROAD
FRANKFORT, KENTUCKY 40601

M E M O R A N D U M

TO: Valerie Wickstrom
State Environmental Review Officer
Office of the Secretary

FROM: Clyde P. Baldwin, P.E. for PB
Environmental Engineer Branch Manager
Permit Review Branch
Division of Water

DATE: July 6, 1984

SUBJECT: DEIS, Stationing of a New Light Infantry
Division at Fort Campbell (Christian and Trigg Counties), EIS 84-14

Attached are the Division of Water comments for the Draft Environmental Impact Statement prepared by the U.S. Army, Corps of Engineers, on the possible stationing of a light infantry Division at Fort Campbell.

CPB:TK:lcc

Attachment

cc: Ken Bohannon, Construction Grants Branch
George Schureck, Drinking Water Branch
Mike Mills, Division of Environmental Services

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NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET

FEDERAL ASSISTANCE REVIEW

Division of Water

Project Number: 84-14

Project Title: DEIS, Stationing of a New Light Infantry Division at Fort Campbell (Christian and Trigg Counties)

The Division of Water has reviewed this DEIS. The Division's comments respond to specific points and generally address matters in the Division's regulatory purview.

SPECIFIC POINTS

3.311 to 3.316 Water Supply, Pages 3-81 and 3-82. C-10

The Division of Water agrees with the DEIS assessment of the water supply system of the Cities of Hopkinsville, Oak Grove, and Pembroke.

3.317 and 3.318 Wastewater Disposal, Pages 3-82 and 3-83. C-11

The construction of the new Hopkinsville wastewater treatment plant and the upgrading of the old plant have been completed. The old plant now has a capacity of 2,880,000 gallons per day; the new plant's capacity is 3,000,000 gallons per day.

Oak Grove has submitted to the Division of Water a facility plan for wastewater treatment. That plan is presently undergoing U.S. Environmental Protection Agency review.

GENERAL COMMENT

40.71 Water Supply, Page 4D-24. C-12

40.72 Wastewater Disposal, Page 4D-24.

If the light infantry division is stationed at Fort Campbell, the majority of the involved personnel will live in the cantonment areas of the post. These areas are served by the Fort Cambpell water treatment plant and wastewater treatment plant.

Relatively few personnel will live off-post. Because of this, the impact on the affected Kentucky water supply and wastewater treatment systems will be minimal. Therefore, the Division of Water finds it unlikely that stationing the light infantry division at Fort Campbell will strain the capacities of the affected Kentucky water and wastewater facilities.

Clyde P. Baldwin Environmental Engineer Branch Manager
Division of Water

Date 7/6/84

C-10. Comment noted. If necessary, the Division of Water would be contacted for further information.

C-11. The text has been corrected accordingly.

C-12. Due to a shortage of on-post family housing and bachelor enlisted and officer quarters, only 400 unmarried enlisted personnel would live on-post, while married personnel and their dependents and bachelor officers, all totalling 2,390 would live in area communities. However, all of the 2,790 military personnel and their dependents would represent only ten percent of the projected regional population increase to the year 1990 and less than two percent of the regional total. Due to their likely diffusion throughout urban and rural areas surrounding the post and expansion of off-post military systems, it is unlikely that severe stress on off-post water supply and wastewater disposal systems would result from the proposed stationing action. These issues are discussed in detail in the EIS.

TENNESSEE HISTORICAL COMMISSION
DEPARTMENT OF CONSERVATION
701 BROADWAY
NASHVILLE, TENNESSEE 37203
615/742-6716

June 21, 1984

Mr. James B. Hildreth
Mobile District
U. S. Army Corps of Engineers
P.O. Box 2288
Mobile, Alabama 36628

Re: DEIS, Stationing of a New Light Infantry Division, Fort Campbell, Tennessee-Kentucky and Other Locations, CH# 84-3295

Dear Mr. Hildreth:

My staff has reviewed the above referenced DEIS concerning the proposed project's effect on significant cultural resources in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations 36 CFR 800.

On the whole this DEIS recognizes the responsibility of the Department of the Army toward significant cultural resources in light of the impact of stationing a new division at Fort Campbell. However, the first sentence of Section 4 D 116 on page 4 D-34 is disturbing in that it says considerations will be given to identifying and protecting cultural resources and references Army Regulations AR-420-40 for this opinion. We can find no such qualifying language in that regulation. Rather AR-420-40 states that the Army will determine if any National Register listed property exists within or near the area of the undertaking, and if this information is not available, will"locate, inventory, and evaluate all historic properties within the area of undertaking." (3-2) Chapter 3 further outlines the consultation process with the State Historic Preservation Officer and the Advisory Council on Historic Preservation. Therefore, we recommend that this sentence be revised to reflect the Army's commitment, as reflected in the remainder of Section 4 D 116 and other sections of this DEIS, to identify, evaluate, and if possible, avoid adverse impact to significant cultural resources. C-13

If you have any questions, please contact Ms. Joan Koch at 615/742-6720.

Sincerely,

Herbert L. Harper,
Executive Director and
Deputy State Historic
Preservation Officer

HLH:sg

xc: Saralee Terry, State Clearinghouse

C-13. At the present time uncertainties exist as to exact locations of areas of new constructions associated with stationing alternatives and consequently the area of the undertaking cannot be specified at this time. Once the area of the undertaking is identified, a determination will be made with respect to whether or not the area has been previously disturbed, whether or not cultural resource surveys have already been performed, and whether or not potentially significant resources have been identified in the area of the undertaking.

As stated on page 3-100 of the EIS no National Register properties exist on Fort Campbell, but the Old Post House, located between Gates 2 and 3 adjacent to the post, is listed on the National Register. Further on page 4D-33 and 4D-34 the presence of known significant, but not listed archeological and historical resources is acknowledged, as well as the potential for as yet undiscovered such resources.

FORT CAMPBELL, KENTUCKY PUBLIC HEARING

The Public Hearing for the Fort Campbell stationing alternative was held on June 12, 1984, in the Clement Auditorium of the Austin Peay State University, Clarksville, Tennessee.

The following individuals made statements at the hearing:

- E. G. Adams, civilian aide to the Secretary of the Army
- David Adkinson, representing U.S. Senator Wendell Ford from Kentucky
- Victor L. Albright, Jr., President of Clarksville Engineering Services, Tennessee
- Harvey Appleman, President of the Western Kentucky-Tennessee Chapter of the 101st Airborne Division Association
- Glenn Babb, President of the Hopkinsville Chamber of Commerce, Kentucky
- Hunter Burney, Clarksville
- Ted A. Crozier, Mayor of Clarksville, Tennessee
- William Ellis, Dean of the Graduate School at Austin Peay State University, Clarksville, Tennessee
- Frank Gamble, representing the County Judge/Executive, Christian County Fiscal Court, Hopkinsville, Kentucky
- Wendell Gilbert, Vice President, Clarksville Chamber of Commerce, Tennessee
- George Gracey
- Walt D. Griffin, Executive Director of the Clarksville Area Chamber of Commerce and the Industrial Development Board of Montgomery County, Tennessee
- Dodson Guinn, President of the Clarksville Chamber of Commerce, Tennessee
- Riggs Hays, Military Affairs Committee of the Clarksville Chamber of Commerce, Tennessee
- Kathy Highbotham, representing Congressman Don Sundquist, Tennessee
- W. J. Hobson, Mayor of Cadiz, Kentucky
- Robert Koob, President of Fort Campbell's Chapter, Retired Officer's Association
- Art Lombardi, former Deputy Post Commander at Fort Campbell
- Ray Luttrell, representing the banks and savings and loan associations of Hopkinsville and Clarksville
- Ramsey Morris, Kentucky State Representative
- Frank Pitzer, practicing physician in Hopkinsville, Kentucky, and of the consulting staff of the Clarksville Hospital, Tennessee
- Joel Plummer, County Executive, Montgomery County, Tennessee

- Thomas Riley, Director and Chief Executive Officer of the University of Kentucky's Community College in Hospkinsville, Kentucky
- Starlene Smith, Assistant Director of Parks and Recreation, Clarksville, Tennessee
- Richard Tanner, member of the Christian County Fiscal Court, Kentucky
- Chappelle Wilson, Department of Justice, Commonwealth of Kentucky
- Mark Withers, Administrator for the City of Hopkinsville, Kentucky
- Carney Wright, Administrator of the Clarksville Memorial Hospital, representing the hospitals and nursing homes in the Clarksville-Hopkinsville and Fort Campbell area

The following individuals and organizations submitted written statements for inclusion into the hearing record:

- E. G. Adams, President, Pennyrile Citizens Bank, Hopkinsville, Kentucky
- Glenn Babb, First City Bank, Hopkinsville, Kentucky
- Don Barry, Vice President, Security Federal Savings and Loan Association, Clarksville, Tennessee
- Willard A. Bowling, President, Hopkinsville-Christian County Board of Realtors, Inc., Hopkinsville, Kentucky
- William G. Deatherage, Chairman of the Board, Planters Bank & Trust Company, Hopkinsville, Kentucky
- P. T. Evans, Clarksville, Tennessee
- Ben S. Fletcher III, President, Christian County Bar Association, Hopkinsville, Kentucky
- Frank M. Gary, County Judge/Executive, Hopkinsville, Kentucky
- General Assembly, State of Tennessee (Resolution)
- Dotson R. Guinn, President, Northern Bank of Tennessee, Clarksville, Tennessee
- Hopkinsville/Christian County Chamber of Commerce (Resolution), Kentucky
- Sherrill L. Jeffers, Mayor, City of Hopkinsville, Kentucky
- Lacy Joiner, Jr., President, Hopkinsville Federal Savings and Loan Association, Kentucky
- A. G. Kupisch, Superintendent, Christian County Public Schools, Hopkinsville, Kentucky
- W. J. Lawrence, Jr., President, Federal Savings and Loan Association of Hopkinsville, Kentucky
- James T. Mann, President, First Federal Savings Bank, Clarksville, Tennessee
- Ralph T. McConnell, Director of Missions, Christian County Baptist Association, Hopkinsville, Kentucky
- Montgomery County Board of Commissioners (Resolution), Tennessee

- o Dewey Morris, President, The First National Bank of Clarksville, Tennessee
- o Joseph Senick, Big Rock, Tennessee
- o Tom C. Stapp, President, Guaranty Federal Savings & Loan Association, Clarksville, Tennessee
- o Robert J. Sullivan, Vice President, First American Bank, Nashville, Tennessee
- o Donald Sundquist, U.S. Representative from Tennessee
- o Robert R. Welch, President, Commerce Union Bank, Clarksville, Tennessee
- o Shirley L. Williams, Clarksville, Tennessee

All letters received as input to the public hearing process are reproduced in full in the official public hearing record and have been used as part of the decision making documents for this action. Copies of the public hearing record which contain the transcript of oral testimony and all written statements are available for the cost of reproduction upon request to the Mobile District, Corps of Engineers.

The following issues directly related to the environmental impact statement have been extracted from the transcript of the public hearing held in Clarksville, Tennessee.

REGIONAL WASTEWATER DISPOSAL

Comment: Inadvertently, 1980 data instead of 1983 data on Christian County's wastewater treatment facilities were made available for the DEIS. The 1983 information was included in the hearing record.

Response: The newer information has been incorporated into the text.

AIRSPACE SATURATION

Comment: Post airspace is not nearing saturation. A number of recent improvements to the airfield has increased its capability to handle aircraft under various conditions. Altitude separation and time scheduling are techniques which can be implemented to accommodate an increase in frequency of flights associated with the stationing of a light infantry brigade at the post.

Response: Discussions with the 101st Aviation Group have confirmed that the stationing of a light infantry brigade will not significantly affect airspace. The text has been corrected accordingly.

TRAFFIC CONGESTION

Comment: Several comments addressed potential traffic congestion problems on U.S. Route 41-A near Fort Campbell during morning and evening peak periods. Other comments identified measures being considered to alleviate traffic congestion; e.g., establishment of a fixed bus routing from Clarksville to the post, construction of a North Parkway, and traffic flow improvements on Route 41-A.

Response: This subject is adequately addressed (3.384-3.388, 4D.109-4D.111).

LAND USE

Comment: Current on-post and off-post lands available for maneuvers are adequate for existing use as well as use by a new brigade as part of the alternative.

Response: The EIS notes the use of off-post lands for exercises. However, these lands are available only on a seasonal basis and no off-post lands are available as range or impact areas.

ON-POST PARKING PROBLEMS

Comment: Two commentors raised concerns that on-post parking space has not been adequate, particularly near the PX area.

Response: This EIS indicated that the alternative would aggravate parking problems, especially in areas of the post that provide commercial and community center facilities. However, this statement has been deleted because of the recent construction of two lots in the PX area containing 100 spaces.

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APPENDIX A4

COMMENTS AND RESPONSES
CONCERNING FORT DRUM, NEW YORK
AND
SUMMARY OF PUBLIC HEARING ISSUES

Jefferson County Historical Society
228 WASHINGTON STREET · WATERTOWN, NEW YORK 13601 · 315-782-3491

June 26, 1984

Le 84-154

U.S. Army Corps of Engineers,
Mobile District
Sampd-ee
Post Office Box 2288
Mobile, AL 36628

Dear Sirs:

Herewith my Draft Environmental Impact statement with special emphasis upon evidences of man's occupation of the land area within the confines of Ft. Drum. Recovery and preservation must become the name of the game where intensive and sometimes destructive use of the land takes place. This letter is intended to call attention to this need.

To better explain my interest and position: my master's degree is in archaeology from the University of Arizona at the Tucson, and I have done considerable field work in that state. Pertinent facts about my career include service as curator of an U.S.I.S. museum on the site of prehistoric ruins at Kinishba on the Apache Indian Reservation in Arizona. My interest in industrial archaeology has developed during twelve years as director of the Jefferson County Historical Society, specifically because of the Society's collection of water turbines which has been assessed by curators at the Smithsonian Institution as the definitive collection of water turbines in the United States.

Having done research not only on the early history of the area encompassed by the boundaries of Ft. Drum but also on the impact of water power on the North Country, I am keenly aware of the necessity for on-going historical documentation, recovery and preservation in the Ft. Drum area. Therefore, I urge a strongly enunciated commitment to these issues on the part of the United States Army.

Sincerely,

Margaret W. M. Shaeffer

Margaret W. M. Shaeffer
Director

MWMS:etn
Enclosure

A-116

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COMMENT ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)

Margaret W. M. Shaeffer
Director, Jefferson County Historical Society
228 Washington Street
Watertown, N.Y. 13601

The area which now comprises Fort Drum is rich historically. In the overview of cultural resources in the recently issued volume, Stationing of a New Army Light Infantry Division: Draft Environmental Impact Statement, U.S. Army Corps of Engineers, Mobile District, May, 1984, (par. 4D.52) at Fort Drum, the LeRay Mansion and one prehistoric site (both on the National Register) are mentioned as cases in point. The LeRay Mansion is only the most distinguished and evident survival of the early occupation of that area by people of European origin. The known major archealogical site is also undoubtedly one among an unknown total.

As anticipated in the environmental impact statement, additional intensive military use of the area as proposed will doubtless reveal additional prehistoric sites which, if they can be promptly and properly studied, will add to a deeper understanding of the early Indian occupation of the area. This calls for a definite commitment to salvage archaeology on the part of the military. D-1

Salvage archaeology is presently a well-organized branch of the science. It is neither arcane nor expensive. Trained archaeologists are available for reasonable fees. A site once recorded will not be lost although the land it occupied will be put to another use. If such a commitment does not exist the area will suffer irreparable loss. D-2

This is also true for the historic white occupation of the area comprising Ft. Drum today. There are amazing ties to U.S. history here. And a rich developmental sequence to be seen from the late eighteenth century when the French emigres first came to the heavily wooded northern wilderness. Evidences of numerous mill sites

D-1. As stated on Page 4D-18 of the EIS a cultural resources overview and management plan is being compiled for Fort Drum. This document will serve as the basis for future cultural resources investigations at Fort Drum.

At the present time, the general area of construction is known. Once the area of undertaking is definitely identified, a determination will be made on whether the area has been disturbed, whether or not cultural resources surveys have already been performed and whether or not potentially significant resources have been identified in the area of the undertaking.

If significant resources would be affected by the undertaking, appropriate mitigation measures would be implemented. These measures may include protection and in-place preservation of the resource, documentation of architectural properties or data retrieval at archaeological sites.

D-2. See response to Comment D-1.

along the streams and rivers, of mining ventures, of cheese factories, dams, churches, houses and cemeteries - all speak of man's endeavors to manipulate that wilderness to his use - and for his survival.

Ergo, salvage archaeology is indicated for the historic and industrial sites as well.

Thus a new infantry division should be able to look forward to full use of the Ft. Drum reservation by providing for the systematic investigation of evidences of man's culture, for the collection of artifacts and for the preservation of some relatively few outstanding sites to flesh out the history of the area.

D-3

RESPONSE TO COMMENTS

D-3. See response to Comment D-1.

MERCY HOSPITAL OF WATERTOWN
MADONNA HOME · HEALTH RELATED FACILITY
218 STONE STREET
WATERTOWN, NEW YORK 13601
315-782-7400

ADMINISTRATOR
SISTER MARY PIERRE SEGUIN, RSM, F.A.C.H.A.
EXTENSION 2121

ASSISTANT ADMINISTRATOR
SISTER MARGARET M. RIORDAN, RSM, F.A.C.H.A.
EXTENSION 2131

ASSISTANT ADMINISTRATOR
SISTER MARY ALEXIS PARROTTE, RSM
EXTENSION 2426

ASSISTANT ADMINISTRATOR
MRS. SHARON HARRIS, R.N.
EXTENSION 2145

June 26, 1984

United States Army Corps of Engineers
Mobile District
SAMPD-EE
Post Office Box 2288
Mobile, Alabama 36628

Gentlemen:

Re: Light Infantry Division
at Fort Drum

Mercy Hospital of Watertown strongly supports the establishment of a light infantry division at Fort Drum. We indicated our support by testifying at the Public Hearing held in Watertown, New York, on June 13, 1984. At that time representatives of the hospitals and other health providers in the area identified the services which are available now to serve the military personnel, their dependents, the civilian work force, and the beneficiaries of CHAMPUS.

We called attention to the fact that there is an excess of 75 hospital beds for use by the military, identifying the opportunity to save the government money by reducing construction and manpower expenses identified with the establishment of a full station hospital at Fort Drum. D-4

Mercy Hospital of Watertown is interested in contracting with the United States Army to provide services for Fort Drum. We do have excess beds in Obstetrics-Gynecology, Pediatrics, and Medical/Surgical; we have a Mental Health Center for in-patients, out-patients, and day patients. We also have an Employee Assistance Program and an Alcoholism Rehabilitation Program.

Our surgical services support general and vascular surgery, neurosurgery, orthopedic surgery, urology, ophthalmology, otorhinolaryngology, oral surgery, and podiatry.

Our medical services support family practice, internal medicine, nephrology, cardiology, oncology, allergy/immunology, and dermatology. We provide acute dialysis services and by fall, 1984, we shall provide chronic dialysis services.

We have an excellent laboratory staffed with three pathologists. We can provide 24-hour turn-around reporting time on tests.

We maintain an emergency service 24-hours a day staffed by an on-duty emergency physician.

RESPONSE TO COMMENTS

D-4. Comment noted. Information on regional hospital bed availability has been considered.

Our diagnostic services include specialty radiology service (which will be expanded in 1985), nuclear imaging, ultrasound imaging, C.T. Scanner, and cardiology testing. We are presently increasing our diagnostic services in cardiology.

We provide rehabilitation services including physical therapy, respiratory therapy, occupational therapy, speech therapy and audiology. We conduct a Diabetes Education Center for both in-patients and out-patients.

We hold clinics periodically for the following: Pediatric Heart, Muscular Dystrophy, and Parkinson's Disease. We conduct off-site Adult Screening/Extension clinics for screening hypertension and for other referral services.

Together with the other five hospitals near Fort Drum and the existing health care and hospital resources within the three-county area, we are amply able to provide the necessary services to the increasing military buildup in respect to all services and especially routine medical/surgical services, obstetrical, gynecologhical, pediatric, and emergency services, as well as additional specialty medical/surgical services as may be required.

We are prepared and eager to provide contract services for acute care capabilities with the military. We have had a long-standing and satisfactory relationship. We see no substantial obstacles or adverse impact to the civilian health care community resulting from the addition of troops at Fort Drum. D-5

We welcome the opportunity to continue our existing close working relationship. We can effect substantial savings for the military.

I shall be glad to meet with your representatives at their convenience.

Sincerely yours,

Sister Mary Pierre Seguin, R.S.M.

Sister Mary Pierre Seguin, R.S.M.
Administrator

SMPS w

RESPONSE TO COMMENTS

D-5. Comment noted. The potential for contract services for acute care capabilities is understood.

Jefferson County Department of Planning
Robert A. McNary, Director

175 Arsenal Street
Watertown, NY 13601
Telephone 315-785-3144

June 18, 1984

Lawrence Green, Chief
Planning Section
U.S. Army Corp of Engineers
Mobile District
SAMPD-EE
Post Office Box 2288
Mobile, Alabama 36628

Dear Mr. Green:

Enclosed are the detailed Jefferson County Planning Department comments on the Draft Environmental Impact Statement entitled "Stationing of the New Light Infantry Division", dated May, 1984. As you will note, we have made comments concerning environmental impact statement concerns in the areas of water, wastewater, solid waste, land use, housing and regional economic development.

You should be aware of the fact that I presented a summary version of these comments, excluding housing and regional economic development, at a recent public hearing on June 13, 1984 at the Watertown High School in Watertown, New York. Should you have questions about our comments, please do not hesitate to contact me.

Sincerely,

Robert A. McNary
Director of Planning

RAM:ljc

Enclosure

cc: W. Douglas Howland, Chairman, Board of Supervisors
Gordon D. Cerow, Jr., Supervisor, Town of Clayton
James A. Merritt, Clerk of the Board
Karl R. Amylon, Manager, City of Watertown
Homer Earl, Chairman, Planning Board
John Johnson, Jr., Managing Editor, Watertown Daily Times
Donald Alexander, General Manager, WTNY
Pat Evans, Attorney

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JEFFERSON COUNTY PLANNING DEPARTMENT

COMMENTS ON

"STATIONING OF A NEW ARMY LIGHT INFANTRY DIVISION

DRAFT ENVIRONMENTAL IMPACT STATEMENT"

I am Robert A. McNary, Director of the Jefferson County Planning Department and would like to thank you for this opportunity to comment on the "Draft Environmental Impact Statement for Stationing of a New Army Light Infantry Division".

I would like to state that my Department has spent considerable time in evaluating the Draft Environmental Impact Statement, specifically as it pertains to Fort Drum and the surrounding communities. My comments will be directed toward this geographical area and not the other communities considered in the alternatives.

We have primarily commented on the alternative titled "Full Light Infantry Division at Fort Drum, New York". While we have evaluated the other Fort Drum alternatives, we recognize that the impacts are often similar in nature, however only proportionately scaled down.

I should explain that the County Planning Department provides the primary professional planning service to all communities in Jefferson County. In this capacity we deliver a diversity of information and expertise to the County, as well as its municipalities, including towns, villages, and the City of Watertown. We assist them with implementation of such activities as zoning, building codes, housing projects, demographic analysis, solid waste management, economic development projects, water and wastewater system improvements, environmental analysis, etc.

We will herein address several of these areas where our experience permits a qualified response. While there are some places where the Draft E.I.S. could be improved or made more specific, we will not dwell on these. Rather we will point out areas where existing and future community programs can possibly alleviate potential adverse impacts stated in the E.I.S. and facilitate a level of cooperation with the military.

First, under Environmental Impact Statement topics titled "Water and Wastewater" it is stated that the expansion would place severe pressure on old and constrained (i.e. limited capacity) municipal water and wastewater systems. Additionally, the Statement finds that because much of

D-6

RESPONSE TO COMMENT

D-6. Summaries of municipal supply capabilities, water use, sewer capabilities, and current loadings have been added to Chapter 3 and the analyses in Chapter 4 have been modified slightly. Although there is excess capacity in some of the systems, it still seems likely that large amounts of development in towns such as Antwerp, Philadelphia, or Carthage could cause problems. The conclusions in the EIS are still correct.

the development may be located in areas where such municipal services are not available, an on-site water quality problem may occur due to the lack of septic/sanitary regulations. The E.I.S. indicates that this situation would be made worse if most of the troops and their families had to live off-base during the first several years of housing construction at the Post. It also indicates that the off-post troops looking for housing, as well as the "spin-off" /private development may place a burden on these services. D-6 cont.

While we admit that some of our municipal water and wastewater systems are old, we have detailed information that demonstrates the yearly improvements which are being made. With maintenance and upgrading, the systems continue to provide safe and reliable service.

Also, while some of our systems are constrained by sizing, in several municipalities, there is excess capacity which can handle the type of development which the Statement specifies. Only by projecting the specific type and amount of development, as well as its demand characteristics, can we determine the capabilities of the municipal systems in question.

The County Planning Department has made contact with many of the "primary impact Villages" and the City (i.e. which operate all municipal services around Fort Drum) to obtain specific sizing and improvements information. All parties have indicated that their jurisdictions are willing to provide relevant information and describe excess capacities for development where applicable. This working relationship should be helpful in orienting development and making municipal improvements, where necessary.

Where it is cost effective and reasonable to provide on-site water and sewer we hope that environmental impacts (e.g. on ground water) can be minimized. Toward this end, we have received assurances from numerous municipalities surrounding Fort Drum that municipal and State sanitary regulations, governing septic disposal, can be implemented to protect local water supplies. The Planning Department will work with these municipalities to develop local regulations and coordinate actions with the appropriate State agencies (i.e. D.E.C. and D.O.H.).

Secondly, the land use section indicates that there are numerous communities surrounding the Fort that do not have zoning and other developmental regulations. The Impact Statement goes on to say that because of D-7

D-7. Statements have been added to the EIS indicating which towns do or do not have zoning regulations. The percentage is much lower in St. Lawrence and Lewis Counties than it is in Jefferson County. To clarify specifically where land use planning exists or does not exist in areas impacted by Fort Drum, a table giving those areas with planning boards, master plans, zoning ordinances, or subdivision regulations is given in Appendix E.

the potentially significant residential and commercial development off-post, there may be a disruption to development patterns and local services, as well as a danger to groundwater resources. If these conditions are not appropriately anticipated it is likely that providing services (e.g. road maintenance, water, sewer, lighting, etc.) to this new development will be considerably more expensive to local taxpayers. D-7 cont.

We would like to first respond to the Statement that there is little or no land use/developmental regulations in communities surrounding Fort Drum. In what the Statement considers a "primary" developmental impact area immediately adjacent to the Fort and along State Routes 11, 3 and 283, 11 of 16 communities, or 69 percent, have zoning regulations. Of these 11 communities, seven have recently undergone extensive revisions to conform to new zoning practices and changing development patterns. Also two of the communities without zoning or other major developmental codes are currently considering some type of land use regulation. Anyone who understands the detailed and often lengthy community planning/development process, realizes that this is a significant accomplishment for this particular area.

We do concur with the Impact Statement's inference that if regulations are non-existent, insufficient, or poorly enforced that new development may be an environmental detriment and financial drain on the community. With this in mind we are in hopes that development can be directed toward communities with some type of land use regulations. We also understand that this new "spin-off development" may be of a type, and in locations not previously anticipated by communities which have zoning. In light of all such considerations we will carry out the following steps, some of which are already in progress:

1. We have recently contacted most Towns and Villages around the Fort and provided them with preliminary indications that land use impacts can be expected (May and June, 1984). We have received tentative commitments from all those contacted that they will work with the County Planning staff and neighboring communities to evaluate prospective new development and improve regulations/enforcement where necessary. A Fort Drum Development Committee is being considered to coordinate this action.

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2. The County Planning staff will work with the Defense Department's Office of Economic Adjustment to properly anticipate the type of off-base developmental impacts. This information will be translated to a local development "picture", plotted and related to the communities. It will thus provide a basis for the appropriate regulations. D-7 cont.

3. The Planning staff, with the Development Committee, will coordinate with State agencies (i.e. Department of State, Department of Environmental Conservation, Department of Health, Department of Transportation, Tug Hill Commission) to plan for and insure proper development.

Third, the Impact Statement indicates that a current problem exists with solid waste disposal in the County. This is understandable when you realize that ten municipal and private landfills out of 11 in the County, including Fort Drum, are presently operating under "consent orders" from the State Department of Environmental Conservation. This means that they must make environmental improvements or face closure in the near future. Only the City operates a permitted landfill. D-8

Given environmental conditions the improvements will likely be very costly to local communities. In addition, with off-base, as well as on-base, expansions the increased amount of solid waste generated (more than 15,000 tons per year) will greatly impact the life and quality of existing solid waste systems. This will be the case at Fort Drum, as well as all off-post facilities; including the City of Watertown, should they receive a significant amount of development and the accompanying waste stream. Thus, no one, the Army or civilian community, is immune from this problem.

However, we would like to relate that the County has been working for the past several years to alleviate this pending situation. For instance, in 1981 an energy market study was completed to evaluate possible energy users for a solid waste resource recovery plant. In the summer of 1983 the County authorized, and City Council supported, an in-house survey of solid waste volumes, disposal costs, and environmental conditions. The Planning Department has completed this and preliminarily determined that it may be economically feasible and competitive to institute a resource recovery facility. Our Department has also worked with both North and South Jefferson Towns to evaluate regional landfills and other disposal alternatives.

D-8. The comment is in general agreement with material in the EIS. Text has been changed to show that one landfill has a valid permit issued in 1983.

D-8 cont.

Currently, numerous communities are requesting the County to enter into an engineering feasibility study to evaluate several disposal options, including resource recovery, landfill, etc. We believe that this process will soon be completed and we may then begin this study, thus leading to construction engineering.

In the recent past we have had several discussions with the Fort Drum Commander and engineering officials. They have indicated a strong desire to be a part of our final system design. We anticipate their involvement in our resolution to this problem, thus preserving the environment and saving money for both the military and community at large.

D-9

Fourth, the Impact Statement addresses the potential housing shortage that may exist as a result of the expansion. The Study projected that approximately 90 percent of the troops would be housed on-base. This would leave 1,330 soldiers and their families who would be looking for off-base housing. Of course, as the Statement recognizes, more may have to be housed off-base if Post housing is not available by the time major troop movements begin. While it is admitted that there are currently a considerable number of vacant houses (i.e. 1,156 or 3.5 percent), the Statement authors make the point that many of these will likely be insufficient or substandard for military use. This has been confirmed in past surveys taken by the Fort Drum Housing Referral Office.

It should be understood that while the Planning Office does not directly provide housing assistance, we continually evaluate the County's housing profile to determine deficiencies and ways to resolve these. In the recent 1980 Census we have a thorough statistical means of evaluating the housing market.

In addition, we have worked with various governmentally assisted housing efforts, as well as private developers. In fact, during the period when the 76th Engineering Battalion was to be stationed at Fort Drum our Office, in conjunction with the Fort Drum Housing Referral Office and the Community Military Liason Committee, performed a survey of rental units in a reasonable commuting distance of the Fort. This survey provided the necessary information to substantiate the need for the Huntington Street Apartments, and demonstrate to the Army that the community could provide sufficient off-base housing to accommodate the Battalion.

RESPONSE TO COMMENTS

D-9. Comment noted. However it should be recognized that the vast majority of military personnel cannot qualify for low income housing because of recent pay increases.

Based upon our expertise and our prior experience with the military housing needs, we assume that there are various factors that must be addressed when discussing off-base housing, including type (i.e. rentals, for-sale), size, location, affordability and "sense of community". We feel that the community; with private, State and Federal assistance; can meet the stated need of at least 1,330 off-base units. To demonstrate this ability we would point to the following qualifications and opportunities: D-9 cont.

1. Various local organizations; such as Catholic Charities, local housing authorities and non-profit agencies; have demonstrated their ability to provide hundreds of low-income rental units since the late 1970's.

2. A County-wide rural housing non-profit agency was recently established (with State Division of Housing and Community Renewal funds) to provide low-moderate income housing. The agency's primary target area is described as the rural areas in eastern Jefferson County.

3. Section 8 Rental Assistance, Weatherization and other programs are provided through several local housing agencies.

4. The City's housing rehabilitation program for renter and owner-occupied units has existed for several years.

5. There are several rental rehabilitation and conversion projects pending in communities immediately adjacent to the Fort.

From such resources it is apparent to us that the "vehicles" are in place to provide the type of off-base housing needed by the military. With the expansion, we anticipate it will be easier to leverage State and Federal funds to construct some of this housing. In fact, various programs are now underway.

Thus, we would anticipate a formal coordination mechanism between local housing agencies, the proposed Fort Drum Development Committee, local realtors and developers, the Fort Drum Housing Referral Office, Federal and State housing officials, and other relevant parties. This will not only allow us to build or renovate off-base housing, but to accomplish it in a manner desired by the military, and compatible with community services.

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D-10

Finally, with regards to economic development, it is agreed by this Office that the expansion will provide overall economic betterment to the community. This will come in the form of more on-post short and long term jobs, as well as the off-post development that will be implemented to serve the Fort.

Please be assured that the community has the capability to assist with a wide range of development interests, from the contractor to the retail store. In addition, we have numerous local development institutions and organizations such as the County Industrial Development Agency, numerous banks, Jefferson County Industries, the Local Development Corporation, downtown redevelopment organizations, various Village and Town development corporations, as well as our Office. These groups can plan, coordinate and financially assist this growth, in cooperation with the appropriate municipal officials. It is our belief that this will eliminate or reduce local economic dislocations and, again, not place an undue burden on community services. In fact, it will provide a means to stimulate more development and provide jobs for spouses of the military.

I hope that the information I have provided is useful in modification of some statements in the E.I.S. It should also be viewed as a pledge by this Office that we will work toward the ends previously stated.

RESPONSE TO COMMENTS

D-10. Comment noted. The extent of potential economic development and the creation of short term and long term jobs is understood.

COMMENT ON DRAFT ENVIRONMENTAL IMPACT STATEMENT:
STATIONING OF A NEW ARMY LIGHT INFANTRY DIVISION

Statement of James Dowd, past chairman of the area SCORE organization (Chapter #170, affiliate of the U.S. Small Business Administration). A former business executive and management consultant, and member of the National Association of Business Economists and the American Marketing Association, Mr. Dowd has been with SCORE in this area for over seven years.

Historically, change creates opportunity, but the prospect of change often creates apprehension. The stationing of a light infantry division at Fort Drum will unquestionably have a positive regional economic impact, but the question is: are we going to witness any serious negative side effects?

The future economic health of this area appears to be in jeopardy on two major issues. Issue number one: are we going to be exposed to the economic waste and personal tragedies of unwise business expansions and unwise business start-ups - and their probable bankruptcies later on?

After the boom and bankruptcies of the World War II decade, the U.S. Congress in establishing the Small Business Administration wisely saw the need for managerial as well as financial assistance to small businesses. However, the task proved much larger than anticipated, so the S.B.A., with the help of the U.S. Chamber of Commerce, created a volunteer affiliate called SCORE, which now comprises thousands of both active and retired business executives who offer to provide managerial counseling - at no cost to the client.

To help the small business man and woman we have ample SCORE personnel in the North Country - three dozen counselors here, another dozen or so at Ogdensburg, some four dozen in the Syracuse area, another group in Utica - people with expertise in all lines of business: agriculture, manufacturing, wholesale, retail

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and service industries; people avaiable without charge to counsel and to provide educational workshops and literature to those in business and to those planning to enter the business world on their own. And this latter group includes military personnel nearing the end of their terms of service.

So here are a hundred or more competent men and women, already in place, available to provide the expertise, the caution, the judgment and the common sense approach to survival in the business world. The SCORE organization here has been in operation for over 17 years, and has counseled some 900 clients to date. Most SCORE members have spent their entire business lives in this region, so they know the regional business scene intimately.

There will be a sizable impact on regional economic activity with the stationing of this division at Fort Drum. However, this is no World War II crash program, such as I witnessed here at Pine Camp before and after Pearl Harbor, when haste inevitably made waste. The Army is to be congratulated on the deliberate, orderly phasing of the creation of this division over a three-year time span. Given that amount of time, I am confident that small business problems can be materially alleviated through help from SCORE, in collaboration with the S.B.A., Chambers of Commerce and local banks.

This brings us to major issue number two: Are we going to witness "potential disruptive effects due to greater economic activity than historically experienced (p 4C3a)". . (effects which) "can be expected to be inflationary (p 4C9)"? D-11

Part of the answer has already been given - the help that SCORE can provide to minimize unwise business moves.

D-11. This issue is adequately discussed in the EIS, on pages 4C-7, 4C-8, and 4C-9 paragraphs 4C.15 through 4C.18.

But another part of the answer is to be found in the peculiar economic history of this area. As the Draft EIS points out (p 4C7), these expectations of potential disruptive and inflationary effects are based on a review of the 1965-78 period. However, in the past three years this area has suffered not just temporary recession but rather prolonged depression, with monthly unemployment frequently reported as the highest in the state. The U.S. Department of Commerce's "Survey of Current Business" (April, 1984) shows that per capita personal income by county found Jefferson, St Lawrence and Lewis Counties respectively ranking 41, 58 and 61, out of 62 counties in New York State. D-12

So this has been a largely unrecognized disaster area, with an unusual amount of slack in the local economy.

Given a division at Fort Drum, would local interest rates go through the roof? The major banks here are statewide and multinational respectively, with lending capacity far in excess of any projected local need. Are food prices going to explode? If so, this would happen on a national basis, not just locally, and not because of a division at Fort Drum. Would construction contract bids go sky high? Historically, outside bidders compete freely with local contractors. After all, Syracuse is only 75 miles away, Utica 90, Rochester 130.

The only sector which shows any indication of rising prices is rental housing. Given on-base housing construction plans, as well as expansion in the off-base private and public sectors, the rental housing shortage would be temporary. D-13

So any apprehension regarding serious negative side effects of expanded regional economic activity is, in my judgment, considerably overstated and scarcely warranted by the facts. D-14

In conclusion, the stationing of a light infantry division at Fort Drum would constitute decisive economic therapy for this region.

RESPONSE TO COMMENTS

D-12. Comment noted. The economic status of the region is understood.

D-13. Comment noted. It is recognized that any rental housing shortage may be only a short term effect.

D-14. Comment noted. However, it should be noted that a sudden influx of people and money into a region can have substantial impacts if not adequately controlled.

CITY OF WATERTOWN, NEW YORK

ROOM 302, WATERTOWN MUNICIPAL BUILDING
245 WASHINGTON, STREET
WATERTOWN, NEW YORK 13601
(315) 788-0722

KARL R. AMYLON
CITY MANAGER

July 6, 1984

Mr. Lawrence Greene, Chief
Planning Section
U.S. Army Corp. of Engineers
Mobile District
P.O. Box 2288
Mobile, Alabama 36628

Attention: Environment and Resources Branch

Dear Mr. Greene:

Re: Stationing of a New Light Infantry Division
Draft Environmental Impact Statement
U.S. Army Corp. of Engineers, Mobile District

With regard to the above referenced subject, please find enclosed a formal response to the Draft Environmental Impact Statement prepared by the Mitre Corporation and dated May, 1984. As you will note, these comments concern the City of Watertown, New York and are made on behalf of this office and the Watertown City Council. Those areas addressed concern water supply, waste water, solid waste, housing, public safety and transportation. A summary of the City's position on the stationing of a new Light Infantry Division at Fort Drum was presented at the Public Hearing conducted on June 13, 1984 at the Watertown High School. What follows herein is a more formal response to the Draft Environmental Impact Statement on the possibility of stationing the full component division at Fort Drum, New York.

Should you have any questions on this subject, please do not hesitate to contact me. Thank you for your time and consideration on this matter.

Very truly yours,

Karl R. Amylon

KRA:dv

Enc.

cc: Mr. John Ficke, The Mitre Corp.

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A FORMAL RESPONSE TO THE DRAFT
ENVIRONMENTAL IMPACT STATEMENT
ON THE POSSIBILITY OF STATIONING
THE 17TH ACTIVE COMPONENT DIVISION
AT FORT DRUM, NEW YORK

by

Karl R. Amylon, City Manager
Room 302, Municipal Building
245 Washington Street
Watertown, New York 13601

July 3, 1984

The Draft Environmental Impact Statement poses several questions with regard to the effects on the City of Watertown, New York should the Light Infantry Division or a portion thereof be located at Fort Drum. For the purposes of this discussion the City's response to these questions will focus on the alternative of locating the Full Light Infantry Division at Fort Drum. While other alternatives involving Fort Drum have been evaluated, it is the City's position that the impacts would be similar in nature, only proportionately scaled down. In order to have a proper prospective on these issues, the City requests that the Department of the Army continually keep in mind that a new division would be built incrementally beginning in Fiscal Year 1984 and completed in Fiscal Year 1987. This is of critical importance as the Draft Environmental Impact Statement implies that the City may face certain problems resulting from a large influx in military and civilian personnel into the general Watertown population. Assuming an adequately prepared staging of these personnel, this is not necessarily the case.

I. WATER SUPPLY

The Draft Environmental Impact Statement cites several concerns with regard to the availability of adequate municipal water services. It is stated that the expansion would place a severe burden on old and antiquated municipal water systems. The City of Watertown owns and operates a municipal water treatment system which has an average metered output of finished water of 6.1 million gallons per day. It is estimated that the current facility has a maximum daily output potential of between 7½ and 8 million gallons per day. Although the Draft Environmental Impact Statement has questioned the condition of the City's facilities to effectively handle the demands resulting from a large population influx, it has not reviewed the City's plans for scheduled improvements to the water treatment system. The City is currently in the process of undertaking a 1.1 million dollar capital project to accomplish immediate and short-term improvements to the water system. Such improvements are expected to stabilize this system and provide for an increase in output capacity of up to 10 million gallons per day. The time frame to implement these improvements and

D-15

D-15. EIS has been revised to reflect planned improvements in water system and wastewater treatment facilities. The major conclusion of the EIS that some communities will have more demands that they can handle is still valid.

to bring the plant to near capacity will be a maximum of 2 months from the start of construction.

D-15 cont.

At the same time a master plan is being developed for long-term improvements to the City's Water Treatment Facility. The City Council has gone on record stating that these improvements must be made and obviously consideration will have to be given to the stationing of the Light Infantry Division at Fort Drum in terms of such water improvements. The Department of the Army should also be aware that the City is working with Jefferson County on studying the feasibility and possible implementation of a County-Wide Water District, with a potential source of either Lake Ontario or the Black River. In short, from the City's perspective, work has already begun on dealing with the water problems cited in the Draft Environmental Impact Statement. Since the housing of the Light Infantry Division at Fort Drum will be staggered over the next four years, the impacts will be greatly lessened as these improvements are made and the capacity of the system increased.

II. WASTE WATER

Under the option of locating a full Light Infantry Division at Fort Drum, the Draft Environmental Impact Statement indicates that existing municipal waste water systems are not sized for expansion. The City of Watertown owns and operates a Primary and Secondary Treatment Plant for the treatment of waste water, a fact not contained in the Draft Environmental Impact Statement. It was designed with a significant reserve capacity for future growth consideration. As such, the City currently operates well below its current in-place capabilities. Significant population expansion is possible with no adverse impact upon the quality of effluent discharged to the Black River. With no further capital investment whatsoever, the City could absorb a population increase of 5500 people by the most conservative estimates. The most reasonable estimate would indicate an increase of 8700 people possible. These estimates consider the expanding commercial, industrial and public loading created by the increased residential loading. The capacity for the City effectively processing waste water resulting from a large influx of population is demonstrated in the figures below.

A. Basic design parameters of our facility are:

Hydraulic	8.0 million gallons per day
Biochemical oxygen demand (BOD)	20,000 pounds per day
Total suspended solids (TSS)	17,000 pounds per day

B. Current loading expressed as a % of design:

Hydraulic	78% capacity
BOD	61.5% capacity
TSS	53.2% capacity

C. Current utilization of specific sub units expressed as a % of current maximum capacity:

Sludge thickening	53%
Anaerobic digestion	32.5%

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Sludge chemical conditioning and dewatering	12%
Sludge incineration	6%

I. No disinfection requirements and, therefore, there is no chlorine loading on receiving river.

D-15 cont.

Obviously the City does have adequate expansion capabilities for increased treatment of waste water and existing user fees should not increase for new development.

III. SOLID WASTE

D-16

The Draft Environmental Impact Statement indicates a regional problem with finding suitable solid waste landfill facilities and notes that in 1982 Jefferson County had twelve operating disposal sites with none having necessary permits. The City of Watertown owns and operates a sanitary landfill and processes 69 tons of solid waste per day. The landfill has operated since 1963 and is currently in compliance with New York State Department of Environmental Conservation permit regulations. The permit was issued on October 17, 1983 and renewal is anticipated. The reasonable remaining life expectancy of the City's landfill is difficult to estimate, but should be at least between five and six years. The stationing of a Light Infantry Division at Fort Drum should not adversely affect the City's municipal solid waste collection and disposal capacity over the short-term.

At this time the City has begun working with the Jefferson County Planning Department on initiating an examination into the possibility of a County-Wide solid waste disposal facility. During the summer of 1983 the City Council supported an in-house survey of solid waste volumes, disposal cost, and environmental conditions within the County. The Planning Department has completed this evaluation and a preliminary determination has resulted in that it may be economically feasible and competitive to institute a resource recovery facility in Jefferson County. It is expected that the City will join other Jefferson County communities in requesting an engineering feasibility study to evaluate disposal options, including resource recovery, landfill, etc. This study, once completed, should lead to construction engineering and the City will cooperate in such endeavors. In other words a long-term solution to the solid waste disposal problem can be reasonably expected.

IV. HOUSING

D-17

With regards to the issue of off-base housing, the Environmental Impact Statement expresses concern on the availability of residential units within the City. The issue of availability and the affordability of off-base housing represents a short-term issue. It is recognized that the private sector will gear up to provide additional new construction and conversion of existing housing stock throughout the affected impact area. For its part, the City of Watertown has been involved in the rehabilitation of existing owner-occupied and investor-owned housing units for the past four years through the Department of Housing and Urban Development's Small Cities Program. Over 150 housing units have been renovated and brought up to standard and it is anticipated that an additional 150 units will be rehabiliated and brought up

D-16. EIS has been revised to state that Watertown's landfill now has a permit. Planning for a county-wide facility is described in the EIS. The EIS conclusion that there are serious regional and on-post problems is still valid.

D-17. Comment noted. Although perhaps only short term, the availability of adequate off-base housing is a potential impact.

to standard over the next twelve months. It has been found that many of these rental units were vacant prior to this type of repair work. In addition, the City is in the process of applying for additional Federal Aid to continue this program. The City has also worked with other various governmentally assisted housing efforts, as well as private developers. During the period when the 76th Engineering Battalion was to be stationed at Fort Drum, the City was a partner to the development and construction of the Huntington Street Apartment Complex demonstrating that the community could provide sufficient housing when circumstances warrant. It is anticipated that similar projects could be realized, particularly in light of Governor Cuomo's commitment to deal with this problem from the State level.

D-17 cont.

V. PUBLIC SAFETY

D-18

The Draft Environmental Impact Statement implies that a significant effect in terms of public safety would be realized in the Watertown community. One reason for this is the lag time for the local community's infrastructure to meet the demands of a significantly increased permanent military and civilian population. The City of Watertown has a full-time Police force comprised of a 70 man department. The City is currently undertaking an independent and comprehensive review of its Police Department and the implications of a Light Infantry Division being located at Fort Drum could be assessed under this study. Should it be necessary to increase the number of uniformed personnel and implement other major changes, the City can probably be prepared to do so in July of 1985. With regards to fire protection, the City has a 113 man full-time paid department. In the Spring of 1982 the City received a 2A rating from the Insurance Services Organization which is the highest rank that any City Fire Department has in the State. The City feels confident that it can deal with any impacts that may result from the housing of a Light Infantry Division at Fort Drum in terms of public safety.

VI. Transportation

D-19

With regards to the issue of traffic and transportation, the Environmental Impact Statement expresses concern on the potential of increased vehicular traffic that might result on State Highway 3 and U.S. Highway 11 and on County Highway 52 (Pearl Street) and the Watertown-Fort Drum Corridor. The Environmental Impact Statement failed to mention the New York State Department of Transportation's scheduled project for the reconditioning and preservation of the Pearl Street and Route 283 Corridor to Fort Drum. The proposed project will begin within the City Limits of Watertown at Main Street, Starbuck Avenue and Pearl Street Intersections. The project proceeds Northeasterly along Route 283 and terminates 1/10th of a mile South of Gate 1, which is the main entrance into Fort Drum. The objective of this project is to update the highway with reconstruction of an urban section in the City and resurfacing existing concrete pavement, with the addition of 8 foot stabilized shoulders, which will provide a safer traffic way to Fort Drum and reduce the amount of maintenance required for the facility. This project has a tentative letting date scheduled for April, 1985 or possibly sooner.

D-18. Comment noted. However, the sudden influx of several thousand people can produce effects on public safety service.

D-19. Additional information has been included in the EIS.

CONCLUSION

As noted earlier in this response, it is important to realize that the stationing of a Light Infantry Division at Fort Drum will take place during Fiscal Years 1984 through 1987. As I have pointed out, in terms of water supply, waste water disposal, solid waste disposal, housing, public safety and traffic, the City is currently able to mitigate a number of the adverse effects pointed out in the Environmental Impact Statement. For those which cannot be initially dealt with, the City either alone or through the cooperation with other governmental bodies has begun formulating plans or taking action to resolve such problems over the short-term. Such mitigating effects should be incorporated into the final Environmental Impact Statement Document. As a result, the long-term outlook for effectively dealing with the impacts of a Light Infantry Division is excellent and I strongly recommend that the Department of the Army give its highest consideration to Fort Drum. Both the local officials and the community are overwhelmingly in favor of stationing the Division here and are willing to work with the Department of the Army to make this a successful venture.

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DAVID O'B MARTIN
26TH DISTRICT, NEW YORK

COMMITTEE ON
ARMED SERVICES

Congress of the United States
House of Representatives
Washington, D.C. 20515

July 3, 1984

Mr. James B. Hildreth
Environmental Coordinator; SAMPD-EE
U.S. Army Engineer District, Mobile
P. O. Box 2288
Mobile, Alabama 36628

Dear Mr. Hildreth:

I am writing in regard to the Environmental Impact Statement (EIS) on "Stationing of a New Army Light Infantry Division", and request that this letter and its enclosures be made a part of the hearing record.

First, I am attaching a letter from The Most Reverend Stanislaus J. Brzana, Bishop of the Catholic Diocese of Ogdensburg, New York, urging that the new division be located at Fort Drum.

Also, I am attaching a Memorandum re "Fort Drum/Light Infantry Division" from Colonel (Ret.) David B. Hannum, Jr., who recently retired from the Army after 31 years active service, and is now a member of my Congressional staff. Having served his last tour as Post Commander of Fort Drum, Colonel Hannum is eminently qualified to address the installation's capability of handling Reserve Component units without interference from the division.

I would appreciate having the attached documents included in the Final EIS on the stationing of the Light Infantry Division.

Respectfully yours,

David O'B. Martin
Member of Congress

DM/dmb
Attachments

624 WASHINGTON STREET
OGDENSBURG, NEW YORK 13669

June 27, 1984

The Honorable John Marsh
Secretary of the Army
c/o Congressman David Martin
109 Cannon Building
Washington, D.C. 20515

Dear Mr. Secretary:

I have the honor to be the Bishop of the Catholic Diocese of Ogdensburg in northern New York. Our diocese embraces the territory of Fort Drum.

I am keenly interested in Fort Drum which I have visited a number of times for pastoral and other occasions.

May I join the chorus of many others in urging you to locate a division or significant unit of the Army in Fort Drum. Passing over the favorable economic impact in the area, an important reason for the Army is that our people are friendly and would welcome more soldiers. I call the military personnel "ministers of peace," since peace is their ultimate objective. We have always had cordial relations.

I am a former Army Chaplain. As a very young priest I served as Chaplain in the Ninth Armored Division during World War II. After many casualties we survived the Battle of the Bulge in Europe.

If a division is assigned to Fort Drum I would be happy to cooperate with its Chaplains in supplying necessary spiritual and pastoral service.

With sincere best wishes and strong hope, I am

Very cordially yours,

+ Stanislaus J. Brzana

Most Rev. Stanislaus J. Brzana, S.T.D.
Bishop of Ogdensburg

/jg

DAVID O B MARTIN
26TH DISTRICT, NEW YORK

COMMITTEE ON
ARMED SERVICES

Congress of the United States

House of Representatives

Washington, D.C. 20515

MEMORANDUM June 28, 1984

To: Congressman Dave Martin

From: Col. Dave Hannum

Re: Fort Drum/Light Infantry Division

I firmly believe that Reserve Component (RC) units can continue to train at Fort Drum in the same manner as they have in the recent past without interference from the Light Infantry Division (LID) if it is stationed there. At the present time, the Fort Drum training facilities are only used about thirty percent of the time. Many areas of the post are infrequently used during Annual Training (AT) as the terrain is not suited to the desired training. There are other training areas on the installation that have traditionally been used only by specific type RC units. This terrain could very easily be used by the LID when not in use by the RC. The LID training schedule can be designed around RC training during the AT period. This would be similar to what is now done at other installations where there is a large infusion of off-post personnel and units during specific periods. In all probability, elements of the LID will be assisting in AT and thus will have a reduced requirement for training areas during the AT period.

I also feel that by proper management, a portion of the LID's field training can be interspersed between cycles of RC training. At the present time, most RC units engage in field training for eight or, at most, nine of the fourteen days they are at Fort Drum. The remaining days could be used by the LID without interference with RC Annual Training.

The stationing of the LID at Fort Drum offers an unprecedented opportunity for RC units that use the installation for training. The RC units will be exposed from the outset to the latest doctrine by association with the LID. Also, the RC will be exposed to the state of the art equipment that the LID is scheduled to be equipped with.

In my opinion, the LID stations at Fort Drum would offer unique training opportunities for non-divisional RC units training at the post. It would offer an ideal opportunity for augmentation of the LID as it might be employed in a combat situation. This would provide an excellent training scenario for both components.

The stationing of the LID at Fort Drum would make active Army training support much more accessible to units training there or in the geographic area. At the present time, this support is available in limited amounts due to geographic considerations. At the present time, this support is frequently minimal due to travel requirements.

A factor that I feel must be considered in assessing the impact on RC training is the fact that while much of the LID training takes place in a field environment, much does not. The LID, as any other unit, also has constraints on ammunition, fuel, etc., which dictate how much field training takes place. These factors will reduce the competition for training areas thru management of the LID training plan.

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U.S. Department of Housing and Urban Development
Buffalo Office, Region II
Mezzanine, Statler Building
107 Delaware Avenue
Buffalo, New York 14202

July 10, 1984

Mr. Lawrence R. Green
Chief, Planning Division
Department of the Army
Mobile District Corps of Engineers
P. O. Box 2288
Mobile, Alabama 36628

Dear Mr. Green:

Thank you for the opportunity to review the Draft Environmental Impact Statement - Stationing of a New Army Light Infantry Division (Fort Drum, New York or alternative location). I share in the concern that has been raised in respect to an eminent need for new housing units and encourage the use of this Department's programs wherever appropriate. D-20

The projected increase in night-time noise is of particular concern and the large projected increase in helicopter noise warrants further assessment prior to preparation of the Final Environmental Impact Statement. D-21

Sincerely,

Joseph B. Lynch
Manager, 2.2S

RESPONSE TO COMMENTS

D-20. Comment noted for future potential action.

D-21. The major change in noise problems would be in the frequency of occurrences with more nighttime and winter season weapons firing and more helicopter flights. If a light infantry division is stationed at Fort Drum, simulation modeling of noise effects would be conducted as part of the Army's ongoing noise assessment program.

PD-EE

New York State Department of Environmental Conservation
6274 East Avon-Lima Road, Avon, NY 14414
TELEPHONE: 716 226-2466

Henry G. Williams
Commissioner

Eric A. Seiffer
Regional Director

May 22, 1984

Mr. Lawrence R. Green
Chief, Planning Division
Department of the Army
Mobile District, Corps of Engineers
P.O. Box 2288
Mobile, Alabama 38828

RE: Stationing of a New
Light Infantry Division

Dear Mr. Green:

I have sent the dEIS on the above referenced document to Randy Voss of our Watertown Office. He will coordinate review for his NYS DEC Regional Office.

Please remove my name from your mailing list. Thank you.

Sincerely,

Albert W. Butkas
Regional Permit Administrator
Regulatory Affairs

AWB/11
cc: R. Voss w/ document

Mr. Randy Voss
NYS Dept. of Environmental Conservation
State Office Building
317 Washington Street
Watertown, NY 13601

VILLAGE OF ANTWERP
NEW YORK

OFFICE OF THE CLERK

June 27, 1984

Mr. Lawrence R. Green
Chief, Planning Division

Dear Mr. Green,

In regards to your letter dated May 16, 1984, the Village Board of Trustees for the Village of Antwerp voted in favor of supporting the Light Infantry Division.

The Village Board feels that this action could only be an asset to our community, as we have many homes for sale or rent, and many small businesses that could only benefit from this.

We are a small community trying to better and improve our economy and a Light Infantry Division could only better our out look.

Sincerely,
Mayor, George Carroll

25 June 84

8061 Black River Rd.
Watertown, NY 13601

To Whom It May Concern:

If I had more time I'd send you a petition of names of people opposing the Division coming to Ft. Drum. The reason for those opposing it and not showing up at the hearing at Watertown High School is they all feel the same way - If the Government wants to do something, they'll do it regardless what the majority wants. And you really have to admit that is true.

One case we had here was when they wanted to put a prison here. The people here were oppose it and even spent money fighting it but lost. They were told the prison would

be temporary. Well, things have changed. It's now permanent and they're adding on to it now.

We live here because it's quiet, not over crowded, little traffic and crime. I understand 75% is black and that's going to cause problems. I'm not prejudice but many people here are. We're having problems now in town with black men trying to pick up white women. There was a case last week in one of the restaurants. Two white women were having dinner. Two black men came over to see if they would join them. The women said very politely "No thank you" but the men wouldn't take no for an answer. They harassed the women the whole time they ate their meal. Two white GI's saw what was going on and they went over and dragged the men away.

So this what we'll have to put up with if the Division comes?

Even some of the Military people at Ft. Drum dont want the Division here but they cant say much because of their status. They said this is a nice place to raise children and they plan on staying here when they retire. Two have bought homes and one is in the process now. He has 8 years left to retire but his family will stay here.

So please stick the Division some where else!

Sincerely
Cindy Jones

1/4

2 July 84

Mr James B Hildreth
Mobile District, Corps of Engineers
P.O. Box 2288
Mobile, Alabama, 36628
ATTN: SAMPO-EE

I understand from an article in Army Times that you are accepting written comments for environmental impact statements on basing the new Army light divisions. I sending you this letter to voice my onagement that Fort Drum, New York, is being considered as such a base.

In the summer of 1974, I spent six months as a platoon leader at Fort Drum, TDY with my unit. Again, in the summer of 1976, I served three months as a company commander at Fort Drum, TDY with my unit. My memories of the extremely difficult time I personally had (and which all my soldiers shared) in obtaining off-post housing make me wonder why the Army is even considering stat...

A-171

thousands of soldiers and their families at Fort Drum. Admittedly, my experience is some eight years old, but my impression is that Fort Drum itself and the surrounding communities would be woefully inadequate in terms of housing and so on for such a large influx of military personnel and families.

My wife (who accompanied me to Fort Drum at our expense) and I found the area to be beautiful and the recreation opportunities to be plentiful, but the substandard, over-priced housing we were forced to utilize causes me to vote strongly against Fort Drum as a division base.

For me, Fort Drum's surrounding communities hold the distinction of being the only area where I have ever been refused service because I was in the Army. One evening, four of my lieutenants and myself decided to have dinner in Watertown

3/4

We stopped at a tavern across from the restaurant beforehand, and were asked by the owner before we were served if we were "military." As a short haircut is tough to conceal, I answered yes; whereupon we were specifically told to leave because we were in the Army. Being stone-sober at the time, and not overly anxious to start a fight, we departed. I reported the incident to the post Judge Advocate, who took statements from us and told us that there were four taverns in town which he knew refused services to GI's. I have no knowledge of whether the actions he was taking against these taverns were ever successful, but Watertown still bears the distinction for me of being the only place I have been so shabbily treated in over twelve years of active duty.

In closing, I can only recommend that the Army not base a division at

4/4

the soldiers and families involved, such a move would be a tremendous mistake.

William J Ryan
WILLIAM J RYAN
MAJOR, CORPS OF ENGINEERS
9968 BEXLEY DRIVE
Sacramento, CA 95827
ph (916) 363-3365
Sacramento DISTRICT,
CORPS OF ENGINEERS
ph (916) 440-3314

FORT DRUM, NEW YORK PUBLIC HEARING

The Public Hearing on the Fort Drum stationing alternatives was held on June 13, 1984 at the Watertown High School Auditorium, Watertown, New York. Statements were made by the following persons:

- David O'B. Martin, Representative, U.S. Congress
- Governor Mario Cuomo, New York
- Senator H. Douglas Barclay, New York Senate
- H. Robert Nortz, Assemblyman, New York State
- John G. A. O'Neil, Assemblyman, New York State
- W. Douglas Howland, Chairman, Jefferson County Board of Supervisors
- Mayor T. Urling Walker, City of Watertown
- Vito Castellano, Commanding General, 42nd Infantry Division
- Clifford C. Reinhard, Chairman, Lewis County Board of Legislators
- Nicholas J. Viskovich, Chairman St. Lawrence County Legislature
- Jack Scordo, Committee Against Expansion of Fort Drum
- Cindy Jones
- Barbara Schell
- James A. Merritt, Clerk and Budget Officer, Jefferson County Board of Supervisors
- Karl R. Amylon, City Manager, Watertown, New York
- David Hannum, Retired Commander of Fort Drum, New York
- Alfred P. O'Neill, Sheriff, Jefferson County, New York
- Bernard Lammers, Professor St. Lawrence University
- Ralph R. Dickinson, Supervisor, City of Watertown, New York
- Barbara D. Gale, Trustee, Village of Gouverneur, New York
- Floyd Martin, Sheriff, Lewis County, New York
- Edward Cosmic, Supervisor, Town of Wilna, New York
- Herman L. Zahn, Supervisor, Town of Rutland, New York
- Kim L. Martusewicz
- James E. Brett, President, Jefferson County Chamber of Commerce.
- William Saiff, WNBE TV
- Benjamin Coe, Exective Director, Tug Hill Commission
- Michael J. Geiss, Assistant Regional Director, New York State Office of Parks, Recreation and Historic Preservation
- Mark Freeman, Supervisor, Town of Champion, New York
- William Snide, Assistant Administrator, Mercy Hospital, Watertown, New York

- Robert A. McNary, Director, Jefferson County Planning Department
- Steven T. Harter, Assistant Fire Coordinator, Jefferson County
- Warren E. Fargo, Superintendent, Watertown City School District
- Paul T. Higgins, Director, Jefferson County Veterans Service Agency
- Russell Wilcox, Executive Director, Thousand Islands Bridge Authority
- James Dowd, Past Chairman, SCORE
- Lee Clary, District Attorney, Jefferson County, New York
- Carolyn L. Barton, Director, Jefferson County Office of Civil Defense
- Edmund J. Keane, President, Key Bank
- Steven Hayes, President, Jefferson County Industries
- Floyd C. Kitto
- Frances Leon, President, Watertown Alive
- John T. Henderson, President, Jefferson County Community College
- John K. Haack, retired Deputy Commander, Fort Drum, New York
- Edward Sieber, Administrator, Lewis County General Hospital
- Sister Mary Pierre Sequin, Administrator, Mercy Hospital, Watertown, New York
- Stanley Duncan, President, House of the Good Samaritan Hospital, Watertown, New York
- Donald K. Hopkins, Vice President, New York State Association of Realtors
- Dorothy M. Karl, President Jefferson/Lewis County Board of Realtors
- Tony Lawyer, Secretary/Treasurer, St. Lawrence Valley Building and Construction Trades Council
- Floyd Bajjaly, Medical Society of Jefferson County, New York
- Patrick L. Evans, President, Greater Watertown Chamber of Commerce
- Darrel Rippeteal, President, Northern New York Chapter of Reserve Officers Association
- Alex C. Velto, Assistant Director, Catholic Charities of the Diocese of Ogdensburg, New York
- Hal Little, Council Commissioner, Seaway Valley Council, Boy Scouts of America
- Robert J. Kissel
- Fred Stone

The following people submitted written comments for the hearing record:

- Kenneth Steblen, Executive Director, Jefferson County Industrial Development Agency
- Fred Videtto, Jefferson County Fire Coordinator
- John Cascanette, Chief of Police, City of Watertown, New York
- John Herrman, President Medical Staff, Lewis County General Hospital
- Karl Burns, Past Mayor, City of Watertown, New York
- Charles Bohlen, District Superintendent of Schools, BOCES District Office, Watertown, New York
- Robert Cullen, Mayor, Village of Black River, New York
- Charles Woodell, Coordinator of Physical Education and Athletics, Watertown High School
- Michael Montigelli, Executive Director, Black River Housing Council, Inc.
- Thomas Lallon, Past State Commander, VFW Department of New York
- Jean Bilow, Director of Patient Services, Jefferson County Public Health Nursing Services
- William Koelmel, President, North Side Inprovement League, Inc.
- John Nichols, President, United Way of Jefferson County, New York
- Stuart Mesinger, Staff, St. Lawrence County Planning Board
- Joseph Rich, Executive Director, Disabled Person's Action Organization, Watertown, New York
- Curran Wade, Mayor, Village of Gouverneur
- Richard Withigton, North Country Orthopaedic Group, P.C.
- D. C. Alexander, Partner, WTNY
- Michael Delarm, Administrator, Edward John Noble Hospital, Gouverneur, New York
- Dorothy Dillon, Councilwomen, Gouverneur Town Board
- Nicola Luciani, Commander, Disabled American Veterans, Watertown, New York
- William Lacey, C.R.B. Atkinson Real Estate, Inc., Gouverneur, New York

All letters received as input to the public hearing process are reproduced in full in the official public hearing record and have been used as part of the decision making documents for this action. Copies of the public hearing record which contains the transcript of oral testimony and all written statements are available for the cost of reproduction upon request to the Mobile District, Corps of Engineers.

The following issues directly related to the environmental impact statement were raised at the public hearing:

WATER SUPPLY

Comment: Speakers from the Jefferson County Department of Planning, the City of Watertown, and some smaller communities mentioned that excess water supply exists to support an increased population.

Response: Information provided by the County and City has been incorporated into the EIS. Reserve capacity is greatest in Watertown, but very limited in some of the small communities.

WASTEWATER

Comment: Speakers from the Jefferson County Department of Planning, the City of Watertown, and some smaller communities mentioned excess capacity for wastewater treatment.

Response: Information provided by the City and County has been incorporated into the EIS. Reserve capacity is greatest for Watertown (now at 78 percent of hydraulic capacity) and Watertown has plans for expansion. Several smaller communities, however, are near capacity and some do not have community wastewater systems.

SOLID WASTE

Comment: Speakers from Jefferson County Department of Planning, the City of Watertown, the St. Lawrence County Legislature, Governor Cuomo, and others mentioned issues of solid waste. Most agreed that there are soil and geologic problems that cause problems with finding suitable sites. The City of Watertown and Jefferson County pointed out that the city's landfill has a valid permit. The Governor stated that Fort Drum's landfill could be expanded, that there was room off-post for more, and that permit applications would be expedited. Jefferson and St. Lawrence Counties mentioned their plans for resource-recovery incinerator facilities.

Response: The EIS is essentially correct in its description of problems with establishing suitable landfills. The EIS has been corrected to show that Watertown's landfill has a valid permit.

RECREATION

Comment: Several speakers mentioned abundant outdoor and other recreational opportunities and pointed out that these were not discussed in the EIS.

Response: Similar information is provided in the EIS on page 3-105 paragraph 3.417.

QUALITY OF LIFE

Comment: Speakers who took positions opposed to the stationing at Fort Drum stated that the rural and community (Watertown) style and quality of life would be changed greatly.

Response: Comment noted. The rural nature of the region is described on pages 3-101, 3-103, and 3-105 paragraphs 3.404, 3.407-3.409, and 3.413 thru 3.417.

LAND USE

Comment: One speaker expressed concern that the Army would want to acquire additional land around the post by buying up family farmland.

Response: As noted in the EIS, none of the proposed Fort Drum alternatives would include the acquisition of additional land.

EMPLOYMENT

Comment: One speaker stated that many of the new jobs created at Fort Drum and in the region from the stationing of a division would be taken by spouses of the new military personnel so that the benefit to local employment would be less than it appears.

Response: It is probable that some civilian jobs would be filled by spouses of incoming military personnel. The text has been changed to reflect this. Additional information is given in Appendix L.

CRIME

Comment: One speaker stated that crime could increase with the stationing of an Army division at Fort Drum.

Response: It is likely that the number of crimes would increase as a result of stationing; however, it is also probable that most of the crimes would be concentrated on-post. The text has been changed to include more information on crime and Appendix M has been added for details.

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APPENDIX A5

COMMENTS AND RESPONSES CONCERNING FORT LEWIS, WASHINGTON AND SUMMARY OF PUBLIC HEARING ISSUES

TAHOMA AUDUBON SOCIETY
1919 So. Tyler • Tacoma, WA 98405 • (206) 759-0997

June 20, 1984

U.S. Army Corps of Engineers,
Mobile District
Sampd-ee
Post Office Box 2288
Mobile, Alabama 36628

Attention: Environment and Resources Branch

Reference: Fort Lewis as a site for the new light division (17th)

This Society is well aware that there are regional interest groups who will see a rapidly-mounted population increase as a boon to the local economy. The more responsible segments of these groups may not appreciate the "boom and bust" atmosphere associated with such rapid increases. We get nervous when we read statements to the effect that, "Over 6,550 vacant acres capable of commercial or industrial development were identified as available in Pierce County in 1982." Overall, the addition of 23,540 persons to the community may not ultimately produce a positive effect. Obviously, environmental effects are going to be negative to some degree.

The community will bear the brunt of the impacts created by the influx of people. Increased populations will be responsible for the major environmental impacts generated because people have needs and desires. In this case, people are going to create more or less serious impacts upon water supplies, sewage disposal, solid waste, housing, traffic, energy use, public safety, land use and especially schools. One sentence says there could be an increase in crime. The Pierce County Sherriff's office should be able to say precisely what level crime will climb to, how many additional men will be needed and what increase the budget will require as a result. L-1

Of considerable importance are the biological impacts to be expected across the land. Low-growing vegetation is subjected to severe impacts now from foot and wheeled traffic, regulations and rules notwithstanding. If the division is based here, we believe that it will only be a short time before officials will determine that certain relatively untouched areas must be prepared for military training purposes. Only so much use can be made of existing facilities by expert scheduling. L-2

Much of the prairie habitat is already being lost through soil disturbance. Each time the mat of moss, lichens and grass is torn away, a Douglasfir seedling can begin. Fort Lewis has the finest remaining examples of prairie and oak/prairie habitats

RESPONSE TO COMMENTS

L-1. The EIS considers the magnitude of impacts possible under the proposed stationing alternative. Results of the analysis indicate that no excessive or serious adverse impacts are anticipated on utilities and public services as a result of the proposed stationing alternative.

L-2. Sources of disturbances to the biological environment due to increased training activities are described in Chapter 4. It is likely that an estimated 20% to 60% increase in training activities would have an adverse effect on the fort's vegetation as well as to other components of the natural environment. Mitigation through careful range management and scheduling would be necessary to reduce the magnitude of possible effects.

TAHOMA AUDUBON SOCIETY
1919 So. Tyler • Tacoma, WA 98405 • (206) 759-0997

and these are being lost through present military activity. It does not matter whether it occurs knowingly or unknowingly. These are resource well worth preserving but added populations will make it less likely to happen. Even the historic Ponderosa Pine grove is worth conserving because it provides an important lesson in plant travel prior to our arrival here. L-2 cont.

We have mixed emotions on our objections to the addition of a new division at Fort Lewis, knowing some of our friends and neighbors look upon it as economically important to them. On the whole, however, we doubt that the community will gain markedly and expect that it will even lose as a result. Certainly the natural habitats and wildlife will lose.

Sincerely,

Robert W. Ramsey

Robert W. Ramsey
President

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Yakima Valley

AUDUBON SOCIETY
CHAPTER OF NATIONAL AUDUBON SOCIETY
P. O. BOX ~~9781~~ 2823 YAKIMA, WASHINGTON ~~98909~~ 98907

July 2, 1984

DEPARTMENT OF THE ARMY
Mobile District, Corps of Engineers
P. O. Box 2288
Mobile, Alabama 36628

Attn: Environmental Quality Section
Environment & Resources Branch

Gentlemen:

Thank you for giving us an opportunity to comment on the proposed changes at the Yakima Firing Center. Certain important factors were not included in the Draft Environmental Impact Statement:

1. The Yakima Firing Center is an important breeding area for the Sage Grouse, whose range is limited. Any increase in the number of buildings or the amount of activity at the Center would have a serious impact on these birds. L-3

   a. It would destroy a significant amount of the sage brush, which is the principal source of food and cover for the Sage Grouse, and is very slow-growing.
   b. These birds are shy, and the encroachment of more buildings and people on their territory would result in severe stress for them, which could lead to a decrease in their numbers.

2. The nearby Yakima Canyon is a prime nesting area for Bald Eagles, Golden Eagles, Ospreys and Prairie Falcons. Training flights projected for the Canyon would likely drive these four species out of the area to find new nesting sites and new hunting grounds, both of which are already in short supply. L-4

We hope that the above details will be given serious consideration before any substantial increase is made in the number of personnel stationed at the Yakima Firing Center.

Sincerely,

YAKIMA VALLEY AUDUBON SOCIETY

Helen Wilson
(Miss) Helen Wilson
President

RESPONSE TO COMMENTS

L-3. The text has been changed to reflect this comment (paragraphs 3.591, 3.589, 4A.216 and 4B.91).

L-4. The text has been changed to reflect this comment (paragraphs 3.591, 3.589. 4A.216 and 4B.91).

Tacoma-Pierce County
Board of Realtors®

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Tacoma, Wash. 98466
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July 3, 1984

U.S. Army Corps of Engineers
Mobile District
SAMPO-EE
Post Office Box 2288
Mobile, Alabama 36628

Dear Sirs,

On behalf of the more than 1800 members of the Tacoma-Pierce County Board of Realtors®, we would once again like to voice our optimism in regards to the proposed stationing and activation of a light Infantry Division at Fort Lewis, Washington.

Over the years, the real estate and building industry in our area has stood ready and eager in the meeting of the housing needs of military personnel.

We sincerely believe that our area is capable of handling the increased growth that was pointed out as part of the Environmental Impact Statement, especially with the proposed incremental building plans. L-5

Should you need any information on the availability of housing or other needs, please do not hesitate to call our office.

Very truly yours,

Ray Cyger, Chairman
Governmental Affairs Committee

Very truly yours,

Dale Trout, President
Tacoma-Pierce County
Board of Realtors®

cc: Senator Slade Gorton
Senator Dan Evans
Congressman Norm Dicks
Governor John Spellman

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L-5. Comment noted.

Nisqually Indian Tribe

4820 She-Nah-Num Drive S.E.
Olympia, Washington 98503
Phone: 456-5221

July 2, 1984

Colonel Patrick J. Kelly
District Engineer, Mobile District
U.S. Army Corps of Engineers
P.O. Box 2288
Mobile, Alabama 36628

RE: Stationing of a New Light Infantry Division

Dear Colonel Kelly,

The Nisqually Indian Tribe has reviewed the Draft Environmental Impact Statement (DEIS) for Stationing of a New Army Light Infantry Division. In addition, we are familiar with the training activities occurring on Fort Lewis, both through documents and observation. The DEIS is deficient in a number of areas important to the Nisqually Tribe, as discussed below. These matters include the treaty rights of the Nisqually Tribe.

TRUST RESPONSIBILITY OF THE U.S. ARMY

We understood that this EIS is being prepared to assist the Army decision making process in the matter of stationing of this new division, and that the Corps of Engineers has no direct permitting role. Nevertheless, in this action the U.S. Army is authorizing an action which could affect treaty rights and treaty secured resources of the Nisqually Tribe. Because of this responsibility the Army stands in a most exacting fiduciary relationship to the Nisqually Indian Tribe and its members. See, e.g., Seminole Nation v. United States, 216 U.S. 286 (1942). In the case of the Nisqually Indian Tribe, the United States' and Army's responsibility derives by virtue of the Treaty of Medicine Creek, 10 Stat. 1132 (1854).

In considering this action, the U.S. Army has a trust responsibility to assure that the United States does not breach its obligation to the Nisqually Indian Tribe under the Treaty of Medicine Creek either by acting or permitting an action that would impair the rights secured to the Nisqually Tribe under the Treaty. See, e.g., Confederated Tribes of the Umatilla Reservation v. Alexander, 440 F. Supp. 553 (D. Or. 1977). This responsibility was clearly enunciated in a recent Record of Decision from the District Engineer, Seattle District.

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> I fully recognize and accept the fact that I am charged with fiduciary duty and trust responsibility to protect tribal treaty rights within the jurisdiction of the Corps of Engineers. I fully recognize that my authority as a Federal official within the Corps of Engineers does not empower me to abrogate any Indian treaty rights...(Record of Decision, Weyerhaeuser Company, 12 February 1983)

The DEIS does not discuss the treaty rights of the Nisqually Indian Tribe and the trust responsibility of the United States Army to the Tribe. It must contain such a discussion if the Army decision makers are to make an informed decision on the division stationing alternatives discussed in the DEIS. L-6

TREATY RIGHTS OF THE NISQUALLY TRIBE.

a. Legal Background

To the Nisqually Indians and the Nisqually Tribe, there is no single resource more important than the fish runs that historically entered the river in a staggered fashion that provided the Tribe a year round source of fresh food and income. Today, as at the time of the Treaty, Tribal families are engaged in and rely upon fishing as an important contributor, if not the sole source, of family income. And, for all families, the fish runs provide a food source of continuing high importance. Families of the Tribe, the Tribal social structure, religious traditions, other employment within the Tribe and the Tribal government itself, all revolve around the fishery as the central force of Tribal life. The allocation of Tribal manpower and finances and even Tribal involvement in litigation are determined in accordance with their potential for constructively benefiting the Tribe's fishery resources and fishing activities.

In the mid-1800's the United States government decided that it wished to settle the area west of the Cascade mountain range which belonged to and was occupied by several hundred tribes and bands of Puget Sound and Washington coastal Indians. The first important area to which the United States sent its treaty negotiators was the Nisqually Valley. During the negotiations the Nisqually and other tribes refused to meet with the representatives of the President unless and until such time as their rights were secured to continue their fishing and access to their fishing places. Eventually a treaty was negotiated by which the participating tribes agreed to live on smaller areas of land, called reservations, but secured to themselves full access and entitlement to their abundant resources and the fishing locations which they had traditionally and customarily used and relied upon for food, economy, and cultural and religious needs. The provision which secures the right to these resources and fishing places is memorialized in the Treaty of Medicine Creek at Article III:

> The right of taking fish, at all usual and accustomed grounds and stations, is further secured to said Indians in common with all citizens of the Territory, and of erecting temporary houses for the purpose of curing, together with the privelege of hunting, gathering roots and berries, and pasturing their horses on open and unclaimed lands. . . .

L-6. Paragraph 3.576 has been clarified to include specific reference to the treaty. Further discussion of the treaty and the tribal position with respect to it can be found in the 1979 FEIS for on-going mission activities for the Fort Lewis Military Installation and Yakima Firing Center.

As non-Indian citizens moved into the territory, and particularly to the vicinity of the Nisqually River and other Medicine Creek Tribal fishing areas, this provision became a source of controversy and litigation spanning the entire century. The conflict and controversy notwithstanding, fishing remains as important to the Nisqually Indians today as it was at the time of the Treaty. Perhaps a statement of its importance could be no more clearly put than it was by the Supreme Court in its earliest decision interpreting the language of the Stevens' Treaties with Northwest Indian tribes.

> The right to resort to the fishing places in controversy was a part of larger rights possessed by the Indians, upon the exercise of which there was not a shadow of impediment, and which were not much less necessary to the existence of the Indians than the atmosphere they breathed.

United States v. Winans, 198 U.S. 371 at 381 (1905).

Since Winans, the Supreme Court has addressed the interpretation of this very same provision of the treaties six additional times. See Seufert Bros. Co. v. United States, 249 U.S. 194 (1919); Tulee v. Washington, 315 U.S. 681 (1942); Puyallup Tribes v. Department of Game (Puyallup I), 391 U.S. 392 (1968); Puyallup Tribe v. Department of Game (Puyallup II), 414 U.S. 44 (1973); Puyallup Tribe v. Department of Game (Puyallup III), 433 U.S. 165 (1977); Washington v. Washington State Commercial Passenger Fishing Vessel Ass'n, (hereinafter "Fishing Vessel Ass'n), 443 U.S. 58 (1979). In addition, the lower federal courts have dealt affirmatively with the same question many more times. See esp. United States v. Washington, 384 F. Supp. 312 (W.D. Wash. 1974), aff'd 520 F.2d 676 (9th Cir. 1975), cert. denied 423 U.S. 1086 (1976), post-trial order beginning at 459 F. Supp. 1020, substantially aff'd sub. nom. Washington v. Fishing Vessel Ass'n, supra; United States v. Washington - Phase II, 506 F. Supp. 187 (W.D. Wash. 1980); Hoh Indian Tribe v. Baldridge, 522 F. Supp. 683 (W.D. Wash. 1981).

Incorporated within the Tribe's reservation of a right to take fish is the Tribe's right to have the fishery resources themselves protected. The destruction of a fish run by blockage of its upstream passage, destruction of its spawning or feeding habitat, destruction of its food sources whether in the River or in the marine waters, and other man-made limitations of its productive ability, are called in question if they affect the right of the Tribe to catch the fish that are secured to the Tribe by Treaty.

Although the specific definition of the treaty tribes' right to the protection of the fishery resource itself is more recent than for other treaty fishing right principles, the courts have discussed the principles of protection of the resource from the earliest of the cases. In the cases, from Winans through Fishing Vessel Association, the Supreme Court has discussed the importance of the fishery resources and the right to continued access to them. Then, after analyzing the treaty provision, its history and the Supreme Court's seven decisions on the fishing treaties as well as other related cases, United States v. Washington - Phase II, with a visiting judge sitting, held:

> At the onset, the Court holds that implicity incorporated in the treaties' fishing clause is the right to have the fishery habitat protected from man-made despoliation.

United States v. Washington - Phase II, (Phase II) supra, at 203. The court, in explaining the implicity treaty right to have the fishery resources protected, then went on to reference the Supreme Court's decision in Fishing Vessel Association, supra, in its recognition of the vital and overriding importance of fishing and the fishery resources to the tribes. See Phase II, supra, at 203-206, and Fishing Vessel Ass'n, supra, 443 U.S. at 664 to 667, 675 to 681, and the cases cited therein.

The Phase II court also looked specifically at what the implied right to resource protection meant.

> The most fundamental prerequisite to exercising the right to take fish is the existence of the fish to be taken. In order for salmon and steelhead trout to survive, specific environmental conditions must be present. . . . (1) access to and from the sea, (2) an adequate supply of good quality water, (3) a sufficient amount of suitable gravel for spawning and egg incubation, (4) an ample supply of food, and (5) sufficient shelter.

Phase II, supra, at 203.

The right of access to exercise traditional hunting, gathering and fishing activities is also secured to the Nisqually Indian Tribe and its members by The Treaty of Medicine Creek, supra. The question of right of access was first addressed by the United States Supreme Court in United States v. Winans, supra. In that case, the Supreme Court noted that,

> . . . the treaty was not a grant of rights to the Indians, but a grant of rights from them--a reservation of those not granted. And the form of the instrument and its language was adapted to that purpose. Reservations were not of particular parcels of land, and could not be expressed in deeds as dealings between private individuals. The reservations were in large areas of territory and the negotiations were with the tribe. . . . They imposed a servitude upon every piece of land as though described therein. There was an exclusive right of fishing reserved within certain boundaries. There was a right outside of those boundaries reserved "in common with citizens of the Territory." As a mere right, it was not exclusive in the Indians. Citizens might share it, but the Indians were secured in its enjoyment by a special provision of means for its exercise. They were given "the right of taking fish at all usual and accustomed places," and the right "of erecting temporary buildings for curing them." The contingency of the future ownership of the lands, therefore, was foreseen and provided for--in other words, the Indians were given a right in the land--the right of crossing it to the river--the right to occupy to the extent and for the purpose mentioned. No other conclusion would give the effect to the treaty. And the right was intended to be continuing against the United States and its grantees as well as against the State and its grantees.

United States v. Winans, supra, at 381-382. That case went on to consider whether the granting of a license or permit by the State or the United States, or grant of rights in a disposition of the shorelands upon navigable waters, might affect the rights of the Indians in their access to their traditional fishing sites. The Supreme Court concluded quite plainly that such rights could not be granted to others (including businesses) in any way that did not fully accommodate the rights of the Indians. Elsewhere and more recently, in considering a Corps of Engineers project, the courts have ruled "the right to destroy Indian rights will not be inferred from the general project authorization" and the project under consideration was enjoined by the court. Confederated Tribes of the Umatilla Reservation v. Alexander, supra, at 555-556.

b. Clear Creek Hatchery Site

L-7

The DEIS is deficient in that it fails to discuss and disclose for Army decision makers, and fails to assess probable impact upon, the Clear Creek hatchery site. This site is located upon the portion of the Nisqually Indian Reservation now occupied by Fort Lewis, approximately 300 yards from the Nisqually River, and is the finest undeveloped hatchery site in the Puget Sound area. This is a result of the exceptional qualities of the Clear Creek site. The natural springs and slope of the site allow a gravity-fed design that eliminates the major electrical power requirements of most hatcheries. The quality of the water present is excellent, and combined with the gravity-fed design and other site characteristics will allow two levels of ponds to be used for fish rearing without the need of pumping water.

The feasibility study for the Nisqually Fish Hatchery at Clear Creek was completed in May of 1982. The feasibility study clearly establishes that this site has the potential for being the most cost effective and important major fish hatchery in Puget Sound, and perhaps in the northwest. Copies of this study were made available to the Army, both at Fort Lewis and Washington, D.C., yet it is not referenced in the DEIS. A copy of the study is enclosed for your use.

The Clear Creek hatchery is the major component of a plan agreed to by the Nisqually Tribe and the State of Washington in 1980 to rehabilitate the Nisqually drainage and return salmon production to near historical levels. Of at least equal significance is the site's location deep in southern Puget Sound. The Nisqually River and southern Puget Sound have been plagued with a number of problems since early this century, due in part to power development and logging along the river and high interception rates on Nisqually and other south Puget Sound salmon and steelhead runs by virtually every other commercial and sport fishery in the northwest region. More recently, the rapid growth of an intensive sport fishery in southern Puget Sound has inadvertently prevented the Tribe from receiving its treaty secured share of the more popular salmon runs, and created difficult legal and practical problems for the Tribe, the State and the sportsmen. We have been meeting with members of the sport fishing clubs throughout southern Puget Sound to assure that we are aware of their concerns and to help us address them, as well as taking care of the Tribe's needs, through the design and operation of the proposed hatchery. Production from the hatchery

L-7. Potential adverse effects to aquatic biota which would include salmon in the region are identified in paragraphs 4A.146, 4A.173, 4A.209, 4B.10, 4B.44 and 4B.84. Since the training activities that would increase as a result of the stationing under either alternative have not at this stage been specifically defined, potential effects to the Clear Creek hatchery site in particular, cannot be ascertained. However, in a worst case, establishment of a man-made hatchery could be precluded by Army activities, which also could adversely affect the natural habitat of the area.

promises to correct the allocation imbalance caused by this intensive sport fishery, and otherwise to beneficially contribute to these sport fisheries. It will improve the Tribe's fishery, which has suffered tremendously by being the "last in line" of the string of Northwest and Puget Sound commercial, Indian and sport fisheries. But it will also benefit greatly commercial and recreational fisheries of other non-Indian groups throughout Puget Sound and the Pacific Northwest, including recreational fishermen from Fort Lewis itself.

It is absolutely imperative that any and all possible impacts on this invaluable hatchery site that might result from the proposed stationing and training be fully assessed and disclosed. Brief mention of a hatchery (pages 4A-56, 4B-30) is mysterious and possibly deceptive. There is no hatchery now maintained on Fort Lewis. The only hatchery activity proposed for the Fort Lewis area is the proposed Nisqually Tribe's Clear Creek Fish Hatchery. L-8

c. Salmonid Habitat Protection

As noted in the DEIS, the Nisqually River is a major producer of salmon and steelhead. The fishery of the Nisqually Indian Tribe depends on this production. A major tributary to the Nisqually River is Muck Creek. The lower 15 miles of Muck Creek traverses Fort Lewis, as does a portion of two Muck Creek tributaries, South Creek and Lacamas Creek. In addition, there are several short, springfed tributaries, Exeter Springs, Halverson Creek, Denton Creek and Johnson Creek. Altogether, this Muck Creek drainage is the major producer of chum salmon (not pink salmon, as noted on page 3-142) in the Nisqually drainage, and produces coho salmon, steelhead, and cutthroat trout as well. Most of this production occurs in the portion of the Muck Creek drainage within the Fort Lewis boundaries.

Muck Creek flows across the gravelly prairies upon which a great deal of Fort Lewis vehicle training occurs. Consequently, there are numerous fords, both authorized and unauthorized, of the stream and its tributaries. As noted in the DEIS, Fort Lewis has attempted to minimize the impact of these stream crossings. Nevertheless, significant damage to salmonid spawning and rearing habitat continues to occur, including driving military vehicles up and downstream. It makes no difference to the salmon whether such activities are authorized or not.

The DEIS totally fails to discuss the impacts of increased instream activities. Even at present training levels, we observe some significant impacts. A 60% increase in these activities would severely impact the salmonid habitat of the Muck Creek drainage and, consequently, the treaty fishing rights of the Nisqually Tribe. The "mitigating measures" specified in the DEIS have not been effective in the past but are necessary if the detrimental habitat impacts of stream crossings and instream training activities are to be minimized. A portion of Muck Creek also borders the artillery impact area on Fort Lewis (the map of this impact area, as shown on page 3-140, is incorrect). Muck Creek occasionally receives direct hits from artillery fire and frequently receives deflections, so called "skips." The Nisqually Tribe has not assessed the fisheries impact of these artillery hits; however, we suspect that it cannot be beneficial. The presence of unexploded artillery rounds does effect directly our access to our usual and accustomed hunting and fishing areas (see below). The DEIS has not L-9 L-10 L-11

L-8. The text has been clarified; reference to the hatchery has been deleted.

L-9. The potential instream impacts that could result from an increase in training under both alternatives have been identified in several pararaphs including 4A.146, 4A.173, 4B.10, 4B.44 and 4B.84.

L-10. The impact area designation has been corrected on Figure 3-12 with the Southern border changed to follow Muck Creek.

L-11. The EIS identifies the issue that an increase in artillery fire in the Muck Creek area could enlarge the concern the Native Americans have had (Paragraphs 4A.210 and 4B.85). Without detailed training plans and schedules the magnitude of potential impacts cannot be ascertained. However, as a worst case there could be an increase of unexploded shells proportionate to the increase of artillery fire by 60%. A corresponding impact could result to area fisheries.

assessed, so far as we are able to determine, the impact of up to 60% more artillery fire on the salmonid habitat of Muck Creek. In addition, the Nisqually River itself has received on occasion an artillery hit. May we expect a 60% increase in these stray artillery rounds and "skips"? L-11 cont.

An additional concern, as noted in the DEIS, is vehicle crossing of the Nisqually River itself. Such crossings could increase by as much as 60%. It has been our observation that vehicle river crossings occur whenever low flow river conditions allow, regardless of salmonid spawning. Most spawning occurs during higher flows, which is convenient. Nevertheless, the impact on water quality of a 60% increase in stream crossings is of great concern to us, and is not directly addressed in the DEIS, nor is the risk of fuel leakage and spills into the Nisqually River during vehicle crossings. A fuel spill would kill rearing salmonids in the river downstream of the spill location; this risk should be acknowledged in the EIS. L-12

The Nisqually Delta is the last remaining natural estuary of a major river system in the Puget Sound region. Based on recent studies, the Tribe believes that it may be the major salmon nursery area south of Admiralty Inlet in Puget Sound. Understandably, the Nisqually Indian Tribe is particularly concerned that nothing be done that would in any way result in a deterioration of the estuary habitat upon which salmonids and other fishery resources depend for their growth, well being, and survival. As noted on page 3-147 of the DEIS, Fort Lewis has a wastewater treatment facility on Puget Sound. This facility is adjacent to the Nisqually Delta and impacts from this facility effect water quality in the delta area. It is our understanding that this facility is at present near its peak capacity at peak loads and that the trunk line feeding the facility is already at capacity. L-13

The Nisqually Tribe is not convinced that the DEIS has adequately assessed the impact of stationing 10,000 more troops on the treatment capacity of the Fort Lewis facility. The analysis presented on page 4B-24 is very optimistic, considering that some reserve capacity must be maintained at the facility in case of full mobilization in an emergency. We are, as noted above, primarily concerned with maintaining estuarine habitat quality. Nevertheless, we think that it is essential that the EIS fully and accurately address wastewater treatment so that Army decision makers will know the full cost of placing the new division at Fort Lewis.

As we have discussed above, implicit in the treaty fishing rights of the Nisqually Indian Tribe

> . . . is the right to have the fishery habitat protected from man-made despoliation.

Phase II, supra, at 203. The increase in stream crossings and other instream activities, and the increased risk of fuel spills and water quality degradation, both in the Nisqually River and delta, all indicate that the fishery and fishing rights of the Nisqually Indian Tribe will likely be diminished if Fort Lewis training activities are increased by up to 60%.

L-12. The impacts to water quality (siltation) and thus aquatic biota from an increase in stream crossings is identified in paragraphs 4A.146, 4A.173, 4A.209, 4B.10, 4B.44 and 4B.84. The increased risk of a fuel spill which could also affect the aquatic environment has now been identified in the text.

L-13. As discussed in paragraphs 4A.192 and 4B.66 under the worst case alternative with a projected population of 60,000, treatment capacity at Fort Lewis would be adequate. The system can serve a community of 75,000. Reduction of infiltration is presently being accomplished through repair and replacement of existing collector lines.

d. Access to Usual and Accustomed Use Areas

L-

The DEIS states, at page 3-153, that:

> Because of the extensive military activities on Fort Lewis, the immediate area is no longer available to the Nisqually Indians to be used in traditional ways.

So far as the artillery impact area, a portion of which belongs to the Nisqually Indian reservation, this is true. But for the whole of Fort Lewis, this is far from an accurate statement. Fort Lewis is a traditional hunting area of the Nisqually Tribe and is still so used. The major game animal hunted is deer; however, hunting for bear and small game animals is occasionally practiced. The fact that all of Fort Lewis is a traditional hunting area of the Tribe should be explicitly acknowledged in the EIS. At this point in time we cannot state with certainty whether or not our traditional hunting will be effected by the proposed stationing. However, given the greatly increased level of military training activities proposed, it seems probable that our hunting will be negatively impacted.

Plant gathering, a traditional cultural practice, is also an activity for which members of the Nisqually Tribe continue to use Fort Lewis. The major plant gathered is camas root, a native plant of the prairie areas of Fort Lewis. Miscellaneous medicinal plants and basket construction materials are also gathered. Because the proposed new division will be highly mechanized, it may be expected that the prairie areas of Fort Lewis will be heavily impacted and the available habitat for native plant production, including camas, diminished. In addition to less production, it would appear that our access to and use of these areas would be further restricted. The EIS should note that traditional plant gathering has a cultural importance that cannot be measured. For a number of tribal members, inclusion of appropriate traditional foods is essential for traditional social and religious activities, and traditional medicines are essential for maintaining good health. Fort Lewis is a major gathering area and, consequently, to be denied access to Fort Lewis because of conflicts with increased levels of training is a matter of great concern to the Tribe. L-15

The Nisqually River is the primary fishing area of the Nisqually Indian Tribe. At present, an unknown number of artillery rounds are overshot or "skip" from the impact area and land in the Nisqually River. This places some level of danger and risk on our fishermen exercising their treaty fishing rights. The proposed division stationing will increase artillery fire by up to 60%. What will the increased risk be to our fishermen? Will it be so great that we are, in essence, denied safe access to a portion of our usual and accustomed fishing areas on our own reservation because the danger is too great? We note, in passing, that the portion of the Nisqually River is also a popular fishing area for non-Indian sport fishermen, although we suspect they are unaware that they are at risk when fishing there. L-16

One final issue of access to Fort Lewis is the protection of and access to traditional sites of sacred importance, including graveyards. There were at least five cemetaries on the Nisqually Indian Reservation. In reflection of the importance of these sites to the Nisqually community as a whole, one of the cemetaries

L-14. The sentence has been clarified to indicate that the immediate impact area is no longer available for use in traditional ways by the Nisqually. Also see response L-6.

L-15. The new light infantry division is not heavily mechanized. As described in paragraph 1.5 there would be no use of tanks, armored personnel carriers, large calibre artillery or large trucks. Further, as stated in paragraphs 4A.169 and 4B.40 wheeled vehicle use would produce only minimal disturbance to soil since they would be used principally on existing roads. Also see response L-14.

L-16. An increase in accidents as a result of both stationing alternatives has been identified and quantified in paragraphs 4A.201 and 4B.78.

in 1911 was deeded to the Nisqually Tribe for purposes of a tribal cemetary. The title to this sacred land is still held by the Tribe, although access to the area has been denied to tribal members for years and the buried remains were required to be removed. The DEIS should explicitly acknowledge that increased denial of access to tribal members by Fort Lewis effects not only subsistence activities but also the exercise of religious and cultural activities. L-17

If the EIS analysis so demonstrates, under "Adverse Impacts That Cannot Be Avoided," the EIS should state that the Nisqually Indian Tribe will be denied their treaty-protected right of access to traditional hunting, gathering and fishing sites. If the analysis discloses that there will be no denial of access, then the EIS should so state. This information is necessary, both to the Army decision makers and to the Nisqually Tribe.

FORT LEWIS LAND OWNERSHIP

The DEIS briefly notes, at page 3-144, that there is a land ownership dispute between the Nisqually Indian Tribe and Fort Lewis. This dispute is not adequately discussed, and it should be. Army decision makers should be informed that Fort Lewis does not hold clear title to the training areas that are part of the Nisqually Indian Reservation. The implication of this fact is that should the new division be located at Fort Lewis, its training activities could be disrupted if the Tribe and Fort Lewis cannot successfully settle this ownership question through non-litigative means. L-18

The Nisqually Indian Reservation was established to provide a perpetual homeland for the Nisqually Indians. It was created by Executive Order dated January 20, 1857, pursuant to The Treaty of Medicine Creek of 1854, and was created in conformity to the report of Territorial Governor Isaac Stevens, dated December 5, 1856. Governor Stevens' report contained comments, maps and a survey of the relocated Nisqually Reservation along the Nisqually River and including a portion of the prairie. The survey map included with the report clearly shows that Lake Nisqually was inside the Reservation boundaries.

In 1884, the Nisqually Indian Reservation was allotted among members of the Tribe. However, Lake Nisqually was not allotted; rather, it remained in tribal ownership as had the whole reservation prior to allotment. In 1911, the heirs of Klucketsah, Allottee No. 18, Willie Frank and Lizzie John, deeded a portion of their allotment (one acre) to the Nisqually Tribe for a tribal cemetary. Transfer and deed was approved by the Secretary of Interior.

In 1918, Pierce County illegally condemned the Nisqually Indian allotments of the eastern (Pierce County) side of the Nisqually Reservation, approximately 3300 acres in total. At present those reservation lands on the prairies above the river are part of the artillery impact area and a portion of the area below the bluff, adjacent to the Nisqually River, is the so-called "buffer zone." At no time did Pierce County, nor has the United States, made any attempt to condemn or otherwise alienate the property interests of the Nisqually Indian Tribe.

L-17 Impact on the access of the Nisqually to Fort Lewis property depends in part on specific troop training activities, plans for which cannot be developed until the stationing decision has been made. The preparers of this EIS have been unable to ascertain precisely the extent of alleged Nisqually legal rights to Fort Lewis property or the extent of impact on those alleged rights from increased troop activities.

If ultimately it is determined that alleged Indian treaty rights would conflict with proposed increases in troop strength or training activities at Fort Lewis which would be caused by adoption of the Fort Lewis alternative, the worst case possibilities would appear to include the following:

1. the Army's preferred uses of Fort Lewis could be restricted to avoid conflict with the alleged Indian treaty rights;

2. judicial resolution of questions regarding the existence or extent of such alleged treaty rights could become necessary; or,

3. the Army might explore legal avenues to acquire or legally extinguish Indian treaty rights, if any, found to conflict with proposed Army uses of Fort Lewis.

L-18 Land use disputes are identified in paragraph 3.576 where the reader is referred to the 1979 FEIS for on-going mission activities for the Fort Lewis Military Installation and Yakima Firing Center for more details on this and other Native American issues. Incorporation by reference is encouraged under the Council on Environmental Quality regulations implementing NEPA.

The Tribe does not dispute that in 1901 Congress enacted a law authorizing the condemnation of allotted Indian lands for any public purpose under the laws of a state or terriroty. The authorization, however, does not relieve the state or subdivision thereof of the requirement of first obtaining the consent of the United States and of bringing the action in federal court. See, e.g., State of Minnesota v. United States, 305 U.S. 382 (1939).

The fact that the Nisqually Indian allotments were illegally condemned, and that two tribally-owned portions of the reservation were never condemned at all, means that Fort Lewis has at best disputed an unclear title to approximately 3300 acres, including a major part of their artillery impact area, and no legal title whatsoever to Lake Nisqually and the one acre tribal cemetary. The Tribe has submitted to the Army at Washington, D.C., lengthy documentation of the above facts. The EIS process should make certain that Army decision makers reviewing stationing alternatives have included for them in the comparative analysis of the alternate sites the fact that Fort Lewis does not have clear title to a major part of its training area.

It is not the intention of the Nisqually Indian Tribe to immediately claim and repossess its reservation lands, for we have little use for an artillery impact area. In fact, the Tribe is committed to a "good neighbor" policy toward its neighbor Fort Lewis. We are hopeful that this policy is reciprocated by Fort Lewis and that Fort Lewis is committed to assisting the Nisqually Tribe in reaching its goals, including rebuilding the fish runs of the Nisqually River drainage and providing for a safe and productive homeland for our members.

IMPACT ON RESERVATION LIFE

As noted above, the Nisqually Indian Reservation was established in 1857, pursuant to The Treaty of Medicine Creek of 1854, to provide in perpetuity a safe and productive homeland for members of the Nisqually Indian Tribe. Today, we still occupy that portion of the reservation remaining to us. Approximately 40 Nisqually Indian families live on the reservation, and we have a tribal center and two mini-hatchery facilities. In addition, tribal members regularly visit the Nisqually River, both for commercial fishing and for recreational and other personal reasons.

The peace, security and well-being of our tribal members is effected by Fort Lewis training activities and, therefore, will be impacted by a 60% increase in these activities. This impact is briefly acknowledged in the DEIS; however, no discussion is found of that fact that our reservation was set aside by Executive Order as a homeland for the Nisqually Indians and that, as a matter of law and treaty right, we have the right to a healthy, safe and secure homeland. We think the impact of a 60% increase will be great, as outlined below. The final EIS should have an extensive discussion of these impacts. L-19

a. Artillery Fire and Impact Noise

We discussed above the fact that on occasion misdirected artillery fire and "skips" have landed on our reservation and in the Nisqually River. In fact, for years Fort Lewis shot artillery directly over our reservation and homes. This practice was changed several years ago; however, with a 60% increase in artillery

L-19. The EIS identifies a range of issues that have been important to the Nisqually in the past and which would be likely problems with an increase in personnel and activity on the post (i.e. fisheries, artillery fire, noise, land use). More specific answers to the questions are given in responses L-20 through L-24.

fire occurring if the new division is placed at Fort Lewis, what assurance does the Nisqually Tribe have that artillery fire will not once again be directed over our heads, endangering the safety of our homes and families.

Regardless of the direction of fire, the effect of noise on the peace and health of Nisqually Indian Reservation residents should not be lightly dismissed, as it is in the DEIS. At present, Fort Lewis training activities include artillery fire and impact noise at any hour. The DEIS states, at page 3-145, that there are "limitations on night fire." While this may be true, it is of no consequence since artillery fire regularly continues until midnight, and a number of times tribal members are awakened in the middle of the night - three a.m. for instance - by the sound of artillery explosions. The disruption of normal sleep by artillery fire is especially harmful to the tribal members who are war veterans, of which there are several. L-20

The EIS should note that some homes on the Nisqually Indian Reservation are only 1000 yards from the Artillery Impact area, and fishing camps along the river are even closer, and should attempt to inform Army decision makers, and the Nisqually Indian Tribe, what the impact of a 60% increase in artillery fire will be on the Nisqually Reservation. It would seem inevitable that night firing would increase. What mitigation measures are proposed for residents of the Nisqually Reservation, or is mitigation of artillery impact noise even possible? L-21 L-22

b. Helicopter Activity

At present, Fort Lewis helicopters frequently fly over the Nisqually Indian Reservation at very low altitudes. This is especially a problem in the portions of our reservation adjacent to the Nisqually River where helicopters fly at or below tree top level. The noise from helicopters and other aircraft is at times so great as to disrupt normal conversation inside homes and at our tribal center.

Our concers about helicopter noise are much the same as for artillery impact noise discussed above. The DEIS states that helicopter noise will increase 35%, yet makes no effort to assess the impact of this increased noise on the peace and security of residents of the Nisqually Indian Reservation. L-23

c. Trespass

At present, the Nisqually Indian Reservation receives a number of uninvited "visitors" from Fort Lewis. The majority of these "visitors" are military personnel who are lost and at times there may be as many as 10 vehicles at our hatchery pond asking directions. At these present levels, this trespass of our reservation is only minimally disruptive; however, with a 60% increase in training such trespass could become very disruptive. This impact should be acknowledged in the EIS and made known to Army decision makers. L-24

A second form of trespass is of even greater concern to us. The Nisqually Indian Reservation is our homeland, for the enjoyment and use of our tribal members. Yet a number of non-Indians regularly trespass on our reservation, generally for recreational purposes, and the majority of these come from Fort Lewis. The stationing of 10,000 more troops, plus dependents, at or near Fort Lewis will increase this illegal activity. This impact should be acknowledged in the EIS and made known to Army decision makers.

L-20. Fort Lewis observes a 10:00 p.m. to 6:00 a.m. night curfew on artillery firing and airmobile operations. Presently, some exercises require activities which extend into curfew hours; on the average this occurs 3 to 6 times per month. Permission of the commanding officer is required for these activities and notices to the public are issued (newspapers, etc.) in advance. As a result of the proposed stationing alternatives an increase in after-curfew training may result, the amount of which cannot be determined until a detailed training schedule is developed. Most current noise complaints stem from firing the M-198 155-mm howitzer. With stationing the new light division reductions of artillery noise impacts may result as the M-198 howitzer is displaced by the smaller quieter M-102, 105-mm.

L-21. The location of some homes and fishing camps from the artillery impact area has been noted in the text.

L-22. As noted in response L-20 with the stationing of the new light infantry division reductions, not increases in artillery noise impacts may result.

L-23. As stated in pararaphs 4A.181, 4A.184, 4A.185 and 4B.58 noise impacts are likely under the proposed stationing alternative, yet without detailed training plans and schedules the magnitude of such impacts can not, at this time be quantified. Should the stationing occur at Fort Lewis, simulation modeling of noise effects would be conducted as part of the Army's ongoing noise assessment program.

L-24. As stated in paragraphs 4A.180 and 4B.54 existing land use conflicts (including mutual trespass as mentioned in paragraph 3.542) would be likely to continue.

CULTURAL RESOURCES

The DEIS correctly states that there are "numerous significant archaeological resources" on Fort Lewis, and that the likelihood of impact on the resources is high. Fort Lewis is the only one of the alternate stationing sites with such a high impact on cultural resources. We are convinced that Fort Lewis is committed to cultural resource protection; nevertheless, with training occurring over such a large area disruption and/or destruction of some of these resources is inevitable. Placement of this new division, with its emphasis on all-terrain vehicles, would increase this impact by an unknown but substantial level.

Protection of cultural and archaeological sites and resources on Fort Lewis is of great importance to the Nisqually Tribe since a large number of the resources are our resources and cronicle the history of the Nisqually Indian people. Some of these sites are known, such as the reservation homesteads which we were forced to abandon in 1918, and some are unknown. In either case, it is knowledge of our past, our history, that is at risk. In making the stationing decision, the Army should weigh heavily the fact that only Fort Lewis, of all the alternatives, places a high impact risk on cultural resources.

IMPACT ON BALD EAGLES

The DEIS correctly notes that bald eagles, a threatened species and a species of religious importance to Nisqually Indians, nests along the Nisqually River near Fort Lewis and large numbers of eagles winter in and around Fort Lewis and the Nisqually Indian Reservation. The DEIS is not correct, however, in stating at page 3-143 that since no infantry training occurs near the nest site, the site is relatively free from human interference. In fact, the site is subjected to frequent helicopter overflights at very low altitudes. The DEIS should be corrected on this point. L-25

In two of the past three years, the adults at this site have not nested successfully. The reason for these failures is not known; however, the possibility of helicopter overflights contributing to the failures is high. Therefore, the EIS must assess the impact of helicopter overflights, and a proposed 60% increase in helicopter flights, on the nesting of this threatened species. There is no justification for the statement on page 4B-3 that the bald eagle would likely not be disturbed if the new division were to be located at Fort Lewis. L-26

MISCELLANEOUS

The DEIS is deficient and/or inaccurate at a number of points. These are listed below.

Page 3-131 - Land Use - There is no mention of the Nisqually Indian Reservation, despite the fact that the reservation is an immediate neighbor of Fort Lewis. L-27

Page 3-134 - Wastewater Disposal - The EIS should discuss the fact that recent studies have found that Puget Sound has some major water quality problems and that shellfish beds in southern Puget Sound have been closed recently to commercial sales due to bacteria contamination. It is possible that shellfish in the vicinity of the Fort Lewis sewage treatment facility outfall are so contaminated. This L-28

L-25. Some observers at the post agree with the comment that overflights in the area occur and disturbance to the eagles is possible. The text has been modified to reflect this.

L-26. The Section 7 consultation process between the Army and the U.S. Fish and Wildlife Service regarding the bald eagle has been initiated and is in progress.

L-27. A description of the size and location of the Nisqually Indian Reservation is given in paragraph 3.576.

L-28. See response L-13.

regional problem is currently under study by the Washington State Legislature and the Washington Department of Ecology. It is essential that the Fort Lewis facility and its possible impacts not be assessed in a vacuum, but rather in its regional context. L-28 cont.

Page 3-140 - Figure 3-12 - This map is misdrawn, we presume, since first, the artillery impact area is shown much larger than it actually is. Was this an error in the DEIS preparation, or is this large expansion of the artillery impact area being proposed by Fort Lewis and, therefore, provided to you for EIS preparation? Second, the location of the Nisqually Indian Reservation is mistaken in that only the western portion is portrayed (see Fort Lewis Land Ownership, above). The full reservation boundary may be found by consulting the U.S.G.S. Nisqually Quadrangle map, 7.5 minute series. L-29

Page 142 - Terrestrial Ecosystems - In our opinion, the prairie and oak habitats found on Fort Lewis are sufficiently unique in western Washington to warrant much more extensive description. We know of few other places where one can see the prairie blooming with the wild camas. The analysis of impact on this habitat, page 4B-18, is likewise insufficient. L-30

Page 3-145 - Night Firing (Section 3.548) - As noted above, there may be limitations imposed but either they are not enforced or they are not severe enough. There is no means to bring these problems to the attention of Fort Lewis when they are happening. There should be. L-31

Finally, we have noted that throughout the DEIS discussion of Fort Lewis there is reference to Lanning 1984, yet in the bibliography this is listed as a personal communication reference. Are there published and/or printed reference materials available to backup this Lanning citation, and are these available for inspection and/or duplication? L-32

CONCULSION

For reasons stated in some detail above, the summary discussions in the DEIS of "Native American Concern" (at pages 4A-56 and 4B-29) are deficient and far from adequate. Likewise, Table 4B-3 (at page 4b-4) is deficient in that it does not fully, adequately, or at times accurately assess impacts of this stationing alternative. The "Comparison of Environmental Socioeconomic Effects of the Stationing Alternatives" (pages 2-7 to 2-9) is likewise incomplete and inaccurate, and should be expanded to include the factors we have identified above. Only then can Army decision makers make a fully informed choice among the stationing alternatives. L-33

The Nisqually Indian Tribe is committed to being a "good neighbor," if this is at all possible. But being a "good neighbor" is a two-way street. Fort Lewis is already heavily utilized for training, at times to the detriment of our treaty rights and, since 1918, to the detriment of our property rights. Recent antagonism by Fort Lewis toward our plans for securing our future have not improved our "good neighbor" relationship.

L-29. See response L-10.

L-30. The text has been changed to reflect in the uniqueness of the prairie habitats in the region.

L-31. See response L-20.

L-32. The information obtained from Lanning 1984 is not in published form. Most information pertained to the nature of training activities and mitigation that could occur under each alternative. These plans are in the formative stages, not yet documented.

L-33. Table 4B-3 is a summary table, not the definitive statement. The reader should refer to the text for details.

14 - Colonel Patrick J. Kelly - 7/2/1984

Your Final Environmental Impact Statement must acknowledge that there are major Indian treaty right and Indian land title conflicts at Fort Lewis. These facts should be made an important part of the comparative discussion of the alternate sites. Only by these means will you fulfill the purpose of the EIS and assist Army decision makers by presenting them with a more complete analysis of environmental effects.

Sincerely,

Frankie A. McCloud - Vice-Chairman
for

Richard A. Wells
Tribal Chairman

RAW/sjs

Enclosure

cc: Bureau of Indian Affairs
Fish and Wildlife Service

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TACOMA-PIERCE COUNTY SHELTER COALITION

3925 South Orchard
Tacoma, Washington 98466
564-8788

July 6, 1984

U.S. Army Corps of Engineers
Mobile District
SAMPD-EE
Post Office Box 2288
Mobile, Alabama 36628

RE: Draft Environmental Impact Statement on Stationing of a Seventeenth Active Component Division

This letter comes in support of stationing a new light infantry division at Fort Lewis, Washington. At its July 5, 1984 meeting, the Shelter Coalition addressed the diverse impacts which such a stationing would have upon the Fort Lewis geographic area. The Shelter Coalition considered the wide ranging views, concerns, and suggestions of all its affected members before deciding to give this strong letter of support. L-34

The Shelter Coalition notes the strategic convenience of a new, rapid deployment force at Fort Lewis. History has already marked Fort Lewis as an instrumental location for securing our international security. The Coalition also emphasizes the historical welcome accorded the troops of Fort Lewis. With this letter, we renew that welcome. We highly commend Fort Lewis as the best stationing site through reasons of national security and demography for this new light infantry division.

Very truly yours,

Ray Geyger
Chairman
Tacoma-Pierce County
Shelter Coalition

RESPONSE TO COMMENTS

L-34. Comment noted. The support is recognized.

PIERCE COUNTY

PLANNING DIVISION
2401 South 35th Street, Room 2, Tacoma, Washington 98409-7490
Telephone: (206) 591-7210

July 6, 1984

DAN CAGLE
Manager

Lawrence Green, Chief
Planning Division
Department of Army
Mobil District, Corps. of
Engineers
P.O. Box 2288
Mobile, AL 36628

Re: Stationing of a new Army Light Infantry Division, DEIS

Dear Mr. Green:

I have reviewed the above referenced document and wish to offer the following comments as related to the Ft. Wainwright-Ft. Lewis and Ft. Ord-Ft. Lewis stationing alternatives:

1. Par. 4A. 148, 4A.196, 4B.46, 4B.69, 4B.136 and 4B.150 - these sections should provide a clearer statement of the expected off-post population growth related to family and bachelor populations in terms of development units expected for the likely settlement areas in Pierce County by 1989. L-35

2. Par. 4A.155 and 4B.24 - these sections discuss the regional economic impacts on the private sector but they do not address the fiscal impacts associated with this project in relation to the secondary effects of off-post development. The fiscal impacts should be identified and addressed for police, fire protection, roads, schools and other appropriate public facility requirements. L-36

3. Par. 4A.203 and 4B.80 - impacts associated with off-post traffic beyond Ft. Lewis as it affects arterials within Pierce County should be addressed. L-37

4. Par. 3.505 should include current 1990 population projection by the Puget Sound Council of Governments of 543,608 (PSCOG, 1984). L-38

L-35. The location of potential dwelling sites for families and bachelors living off post would be determined by vacancy rates, affordability and new construction that could occur by 1989. Several local communities within Pierce County were identified as probable locations for new family residents off-post; Spanaway-Parkland, Lakewood-Steilacoom and Tacoma being the most likely choices based on current settlement patterns. A level more detailed within these communities is beyond the scope of this statement. The level of detail provided in Chapters 4A and 4B is sufficient to determine the adequacy of housing, schools and various community services.

L-36. In FY 1983 Fort Lewis contributed about $2.5 million in school subsidies to the surrounding region (paragraph 3.522). This figure will increase proportionately to the growth in the areas student population as a result of either stationing alternative offsetting costs to the education community that could otherwise result. Further, as stated in Table 4B-6 under the alternative of stationing a division minus, a significant monetary influx to the region would result. Increases in total business volume and personal income would provide a substantial base for area taxes which could in turn be used to finance additional community services such as police and fire protection. Also, those families and individuals living off-post could add additional revenues to the local tax bases assisting in the financing of additional service needs.

L-37. Since the precise location of off-post residency and secondary growth as a result of the stationing alternatives cannot be identified, traffic increases that could result beyond the immediate vicinity of the fort can likewise not be accurately determined. However, increases immediately surrounding the fort have been quantified in paragraphs 4A.203 and 4B.80.

L-38. The text has been changed to reflect the new information.

We thank you for this opportunity to comment on this request and we look forward to receiving the Final EIS for this project. Should you have questions of us, please feel free to call me at (206) 591-7165.

Kind regards,

DAN CAGLE
Environmental Official

By ROZ GLASSER
Environmental Planner

DC/RG/dlm

FORT LEWIS, WASHINGTON PUBLIC HEARING

The public hearing for the Fort Lewis stationing alternatives was held at the Tacoma Dome on June 19, 1984. Statements were made by the following persons:

- Randy Lewis, Tacoma-Pierce County Chamber of Commerce
- Bob Oestereich, Apartment Association of Pierce County
- Roy D. Burnsides, Tacoma-Pierce County Board of Realtors
- Boyd Lundstrom, Citizen of Lakewood
- Jack D. Howard, Homebuilders Association
- Bill Frank, Jr., Nisqually Indian Tribe
- Robert W. Ramsey, Tacoma Audubon Society
- Harold Helyer, Citizen
- Charles F. Gordon, Lakewood Area Chamber of Commerce
- Dale Trout, Tacoma-Pierce County Board of Realtors
- Mary A. Fries, Washington Native Plant Society, South Sound Chapter
- Ray Fralez, Lakewood Chamber of Commerce
- Nancy L. Landry, Citizen
- Stan Johnson, State Representative of Lakewood Steilacoom University Place
- Susan Black, Citizen and Pierce County Growth Management Task Force
- Harry Lang, Clover Park School District
- Budd Dugan, Citizen

In addition, six persons submitted written statements:

- Norman D. Dicks, Congress of the United States, House of Representatives
- Randy Lewis, Tacoma-Pierce County Chamber of Commerce
- Kenneth M. Russell, Tacoma Council, Navy League of the United States
- Joe Stortini, Pierce County Council
- Bob Oestereich, Apartment Association of Pierce County
- Mary A. Fries, Washington Native Plant Society, South Sound Chapter

All letters received as input to the public hearing process are reproduced in full in the official public hearing record and have been used as part of the decision making documents for this action. Copies of the public hearing record which contains the transcript of oral testimony and all written statements are available for the cost of reproduction upon request to the Mobile District, Corps of Engineers.

The major issues and concerns raised during the public hearing directly related to the environmental impact statement were as follows:

- Description of the biological environment and impacts presented in the EIS;
- Problems expected from an increase in noise from training and flight practices
- Ability of area housing and schools to accommodate an increase in the student population
- Several concerns raised by the neighboring Native Americans.

BIOLOGICAL ENVIRONMENT

Two speakers had comments on the biological description and impacts on Fort Lewis and region. These comments are summarized and answered below.

Comment: The description of vegetation type in paragraph 3.498 implies common western Washington vegetation, possibly with some variation in proportions. In a U.S. Forest Service research paper we find that in the Puget Sound area "large areas differ from the surrounding Tsuga heterophylla zone, there are many notable features which are not common elsewhere . . . many of these features are found on the Tacoma prairie."

Response: The text has been revised to emphasize the unique features of the region.

Comment: Paragraph 3.532 does not mention that only a small portion of the prairie now contains native prairie grass, the Idaho fescue.

Response: Comment noted and text is changed.

Comment: In paragrah 3.532 reasons for douglas fir expansion should be made.

Response: Comment noted and text is changed.

Comment: There is little description of the kinds of training that is contemplated or what kinds of effects it may have on the land and vegetation.

Response: The types of training and estimated increases under the alternatives for a division minus and a brigade are described in Chapter 4 with the likely resulting impacts to the biological environment. Although detailed training activities are not known at this time, general requirements are described.

Comment: Nothing is said in the Draft about public access. One could assume that more intensive training might mean even less opportunity for access than now.

Response: The potential impacts to the current recreational uses of the fort, implying public access, are stated under land use in the Fort Lewis sections of Chapter 4.

Comment: We suggest the addition of the following study to the bibliography: Steppe by Step: Understanding Priest Rapid Plants.

Response: The citation has been added to the bibliography.

HOUSING

Six speakers had specific comments on housing. Most stated their belief that communities surrounding Fort Lewis could accomodate increased incoming military personnel associated with either stationing alternative. One speaker did not feel the housing issue was covered adequately. That comment is paraphrased and answered below.

Comment: One of two concerns focuses on the impact on housing not just in the Lakewood area but on all surrounding areas. Although the issue is treated in a number of sections it's not adequately covered. The commentor would like the EIS preparer to contact the Lakewood Area Chamber of Commerce and others to get a little depth to the understanding of the area.

Response: Information on housing and other topics was obtained from the Tacoma-Pierce County Chamber of Commerce in addition to the Thurston Regional Planning Commission, the Pierce County Planning Department, Pierce County Department of Planning and Community Development, the Tacoma-Pierce County Economic Development Board and the Fort Lewis Housing Referral Office as indicated by the list of references. These sources contained adequate information on the current state of housing and projected housing needs in both counties, not just the Lakewood area.

CULTURAL RESOURCES
NATIVE AMERICAN CONCERNS

Comment: Nisqually Indian Treaty Rights are not mentioned in the Draft EIS.

Response: Paragraph 3.576 has been revised to contain specific reference to the Treaty.

Comment: Concern over the potential conflict between increased training and Native American uses of area fisheries were raised.

Response: Topic is discussed in the section for written responses, specifically in responses L-6 through L-30.

SCHOOLS

Five speakers commented on the potential effects to area schools from the proposed stationing alternative. One comment indicated that along with the housing issue the information on schools was not treated adequately (see response to housing comment). Another speaker had corrections for two errors noted below.

Comment: There are a couple of errors in Tables 3-14 and 3-15. In the first case, the capacity of Clover Park Junior High schools are incorrectly labled as being at or exceeding capacity. The second table lists enrollment for on-post schools as full time equivalency rather than straight enrollment as the table column implies.

Response: Both tables are now corrected.

UTILITIES AND SERVICES

One commentator stated that "people are going to create more or less serious impacts upon water supplies, sewage disposal, solid wastes, . . . traffic, energy use, . . ."

Response: Comment noted and responded to under written comment L-2.

NOISE

Noise was among the largest concerns of the speakers. Specific comments and responses to the issue are addressed below.

Comment: "We would ask however that the final environmental statement examine and present to the community information on what, if any, safety and noise impacts will be generated over the urban areas of Pierce County by increases in aircraft flights associated with the location of the division here. The Draft EIS does not do an adequate job in addressing this matter."

Response: Comment noted. Paragraphs 4A.188 and 4B.59 state that, "Increases in both off-post and on-post noise levels as a result of (the) stationing alternative(s) cannot be determined until a detailed training schedule has been established. If the light infantry division minus an infantry brigade, or the light infantry brigrade are stationed at Fort Lewis, simulation modeling of noise effects would be conducted as part of the Army's ongoing noise assessment program."

Comment: Concerns were expressed over modification to helicopter training activities enacted "approximately ten years ago" to minimixe overflights of populated areas near Fort Lewis, and as to whether "this modification will be explained."

Response: The present VFR (visual flight rules) flight pattern at Fort Lewis for helicopters will remain in effect. No changes will be required to accomodate units of the light infantry division under the proposed stationing alternatives.

Comment: Concerns were raised over night training activities and curfews at Fort Lewis.

Response: Comments noted. Fort Lewis observes a 2200 hrs (10:00 p.m.) to 0600 hours (6:00 a.m.) night curfew on firing of artillery and airmobile operations (helicopters). Presently, however, some exercises require activities which extend into curfew hours. This occurs, on average, approximately 3 to 6 hours per month. Permission of the Post Commanding Officer is required for these activities, and notices to the public (newspapers, etc,) are issued in advance. Since the light infantry division emphasizes both night-fighting and airmobile capabilities, it is anticipated that increases in training activities to support these capabilities will occur under the proposed stationing alternative. In turn, some increase in after-curfew training activities may be required. The exact amount of this increase, if any, cannot be determined until a detailed training schedule for the light infantry division has been established. It should also be noted that most noise complaints at Fort Lewis stem from firing of the M-198, 155 mm howitzer. Should units of the new light infantry division be stationed at Fort Lewis, substantial reductions of artillery impact noise may result as the M198 howitzer is displaced with the smaller, quieter M-102, 105-mm howitzer, which is the primary artillery weapon of the light infantry division (Lanning, 1984).

APPENDIX A-6

COMMENTS AND RESPONSES CONCERNING FORT ORD, CALIFORNIA AND SUMMARY OF PUBLIC HEARING ISSUES

City of Marina

311 HILLCREST AVENUE
MARINA, CA 93933
TELEPHONE (408) 384-3715

May 22, 1984

Department of the Army
ATTN: Environment & Resources Branch
Mobile District, Corps of Engineers
P. O. Box 2288
Mobile, Alabama 36628

Re: Draft Environmental Impact Statement:
Stationing of a New Army Light Infantry Division

Thank you for providing me with a draft copy of the Draft Environmental Impact Statement. I am particularly interested in the impact of this occurring at Fort Ord. I have no objections to the stationing of troops at Fort Ord, but I do have some concerns with the DEIS in that I don't feel that it addressed the housing issue, street impacts, and Fritzsche Airfield adequately.

Firstly, the housing issue is very confusing. On Page xi, you imply that almost all new personnel would be living on post. Similarly, on Page 4B-40, Section 4B.126, it gives the same impression. Conversely, on Page 4B.47, Section 4B.150, it appears that, for at least two years, there would be a significant impact upon housing off-post. O-1

Secondly, street impacts of additional troops on neighboring communities are not discussed in any significant detail. Many soldiers come to our City and other cities on the Monterey Peninsula to shop or engage in leisure and tourist activities. The EIS needs to recognize that street maintenance costs are a significant impact related to additional troops at Fort Ord. O-2

Thirdly, in discussions about Fritzsche Airfield, you mention the Air Installation Compatible Use Zone Study (Page 3-175, paragraph 3.652). However, you don't mention that it recommends lengthening the runway of Fritzsche Firfield, which will significantly impact future housing on the Armstrong property in Marina. I believe that, since Marina will be the location where many of the off-post housing will occur, the Army should seriously consider its decisions with regard to the Airfield because it will limit future housing expansion in Marina. O-3

Finally, I question the number of school-aged dependents of military personnel listed for Fort Ord on Table 2-1 on the line entitled: "Change". O-4

I hope that these comments will be of help to you as you develop your Final Environmental Impact Statement. We do not oppose the

RESPONSE TO COMMENTS

O-1. The text of paragraphs 4B.126 and 4B.150 have been modified to indicate that the great majority of incoming married personnel would live in bachelor quarters on post until family housing was available.

O-2. Paragraph 4B.128a has been added to indicate the potential impacts to streets in neighboring communities due to increased vehicular traffic.

O-3. Any lengthening of the runway at Fritzsche Army Airfield is not currently planned nor is such activity related to the proposed stationing alternative.

O-4. Table 2-1 has been corrected to show the correct number of school-age dependants.

stationing of additional troops, but feel that you have understated the impacts on housing, streets and Fritzsche Airfield.

Sincerely,

Larry W. Bagley

LARRY W. BAGLEY
City Manager
City of Marina
California

LWB/frc

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MRWPCA

MONTEREY REGIONAL WATER POLLUTION CONTROL AGENCY

220 Country Club Gate Center, Suite 34—Pacific Grove, CA 93950
(408) 372-3367

May 31, 1984

Department of the Army
Mobile District, Corps of Engineers
Attn: Environmental Quality Section-
Environment and Resources Branch
Post Office Box 2288
Mobile, Alabama 36628

Dear Sirs:

This is in response to your letter of May 16, 1984, conveying to us the Draft Environmental Impact Statement (DEIS) dated May 1984, for the stationing of a new Army Light Infantry Division. Our comments are focused on the subject of wastewater collection, treatment, and disposal, which is the sole service provided by this Agency in the Monterey Bay area. The sections of the Draft EIS relating to potentially stationing troops at the Fort Ord Military Installation are those to which the following comments are directed.

On page 3-168 of the document, please make the following corrections to paragraph 3.633 entitled "Wastewater Disposal." The membership of the Monterey Regional Water Pollution Control Agency also includes the City of Pacific Grove as well as the other city members which were listed in this paragraph. In paragraph 3.634, the paragraph should be revised to indicate that four, rather than five, existing treatment plants and the Fort Ord facility are connected to the Stage 2 portion of the Regional System. Please also update the paragraph to indicate that the Stage 2 Project is now totally complete and fully operational. O-5

On page 4B-39, under paragraph 4B.124 entitled "Wastewater Disposal," it should be noted that while the Agency is desirous of contracting with Fort Ord for capacity in the Regional wastewater treatment plant, it is not accurate to state that any capacity has thus far been..."reserved for Fort Ord...." at the new Regional facility. This is true inasmuch as no actual contract has been executed for this purpose. The Corps of Engineers are expected to be negotiating with this Agency on behalf of Fort Ord for purposes of acquiring capacity rights within the Regional treatment plant. However, although the Agency has requested that such negotiations commence, there has been no action thus far on behalf of the Army to proceed with negotiations for this purpose. Until such a contract is actually O-6

O-5. Paragraphs 3.633 and 3.634 have been corrected.

O-6. Paragraph 4B.124 has been modified to reflect the information in this comment.

executed, capacity in the Regional treatment plant for flows from the Fort Ord complex should not be identified as "reserved."

On page 4B-46, under paragraph 4B.147 entitled "Wastewater Disposal," the same comment as made above regarding reservation of capacity in the Regional treatment plant applies to this paragraph as well. O-7

It would be advantageous for the Army to proceed immediately with negotiations to reserve desired amounts of capacity in the Regional treatment plant, to ensure that future capacity to provide wastewater service to Fort Ord is available. O-8

Thank you for the opportunity to comment on the Draft EIS at this time.

Sincerely,

Robert S. Jaques
Agency Engineer

RSJ/ldy

cc: LTC Muerer
Facilities Engineering
Fort Ord

RESPONSE TO COMMENTS

O-7. Paragraph 4B.147 has been modified.

O-8. This comment has been noted for potential future action.

State of California, George Deukmejian, *Governor*

California Coastal Commission
631 Howard Street, 4th Floor
San Francisco, California 94105
(415) 543-8555

June 19, 1984

Patrick J. Kelley, District Engineer
U.S. Army Engineer District, Mobile
P.O. Box 2288
Mobile, Alabama 36628

Subject: Stationing of a Light Infantry Division, Draft Environmental Impact Statement

Dear Colonel Kelley:

The Commission staff has reviewed the draft EIS for the stationing of a light infantry division with respect to the alternative for stationing at Fort Ord, Monterey County.

Our review indicates that the proposed alternative for stationing at Fort Ord is likely to have direct effects on coastal zone resources including effects on water resources, cumulative effects on the availability of adequate public services, especially sewage treatment capacity, site impacts from new construction and training activities and potential spillover effects from increased growth on adjacent coastal communities. These issues, especially concerning sewage capacity and water resources, have been issues which the Coastal Commission has addressed in local coastal planning and regulatory actions in the area. Therefore, if the preferred alternative chosen is for stationing at Fort Ord, a consistency determination should be submitted pursuant to the Federal Coastal Zone Management Act of 1976 (16 U.S.C. 1456 et seq.) and NOAA regulations (15 CFR Part 930.11 et seq.). I am enclosing a copy of these regulations and please refer to subpart C for particulars of the consistency determination process. O-9

The federal statute and implementing regulations provide that the federal agency must assure that any aspects of the project which will have a direct effect on the coastal zone will be carried out in a manner consistent to the maximum extent practicable with the state Coastal Management Program. The basic policy requirements of the California Coastal Management Program are contained in Chapter 3 of the California Coastal Act, which I am also enclosing.

Should you have questions or need additional information, please contact Mary Hudson, staff counsel, or Liz Fuchs, coastal analyst, California Coastal Commission, 631 Howard Street, 4th floor, San Francisco, CA 94105, telephone (415) 543-8555.

Sincerely,

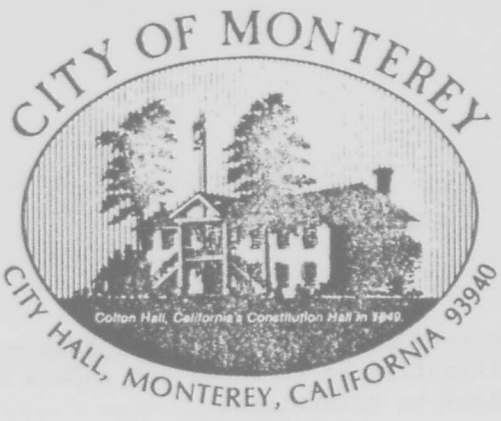
James W. Burns
Deputy Director
for Land Use

Enclosures

cc: Price Walker, State Clearinghouse
Dave Loomis, Central District Coastal Commission
Ken Fellows, Dept. of Water Resources
Lawrence R. Green, Army Corps, Mobile District

RESPONSE TO COMMENTS

O-9. This comment has been noted for potential future action should the Fort Ord alternative be selected and should direct effect on the coastal zone be determined.



June 14, 1984

Mr. Lawrence R. Green
Chief, Planning Division
Attention: Environment & Resources Branch
Department of the Army
Mobile District, Corps of Engineers
P.O. Box 2288
Mobile, Alabama 36628

Dear Mr. Green:

The City of Monterey has reviewed the May 1984 Draft Environmental Impact Statement (EIS) on the Stationing of a New Army Light Infantry Division. As you might expect, we are concerned with the consequences of the Fort Lewis-Fort Ord Stationing Alternative, particularly Fort Ord. These comments have been prepared for the June 18 Public Hearing on the EIS. I understand that we have until July 9 to submit written comment on the EIS. We may wish to submit additional comments on the EIS before that deadline. Our current comments on the EIS are as follows:

1. NOISE:

The EIS inadequately addresses the increased noise impact at Monterey Peninsula Airport should the New Army light Infantry Division be stationed at Fort Ord. On page 4B-36, the EIS states that "Use of MPA by Fort Ord Units would increase twenty-five percent." Yet, the EIS concludes that ".... in comparison with commercial air carrier use of MPA, all military use would remain at about one percent of total air traffic and would not represent a significant increase in noise levels." First, the military use should not be compared with commercial use since military aircraft do not always follow airport district curfew and nosie abatement operational procedures. Second, a 25% traffic increase should be analysed independently of commercial traffic. And, third, the EIS inadequately addresses the noise impact of air transport activities during training exercises. The EIS should address these impacts and prescribe mitigation measures. O-10

2. WASTEWATER DISPOSAL: O-11

The EIS assumes that a regional sewer plant will be constructed to accommodate present and future Fort Ord wastewater loads. Yet the

O-10. Paragraph 4B.112 has been modified. The analysis of the 25 percent increase in Army use of the airport is included with the analysis of commercial traffic since potential noise levels are the resultant of all air traffic and the potential increase in all Army traffic due to the stationing alternative would remain at approximately one percent.

O-11. The regional agency has not indicated that federal funding is an issue.

Regional Sewer Agency has recenty imposed a sewer district annexation moratorium largely due to the Federal Government's refusal to fund the plant expansion. The EIS should re-examine its assumptions in this area. If Federal installation expansions are to continue at the Presidio of Monterey, Fleet Numerical Oceanography Center in Monterey, U.S. Naval Postgraduate School in Monterey and Seventh Infantry Division and New Army Light Infantry Division at Fort Ord, then the Federal Government's posture on financing sewage plant improvements needs to be re-examined. The Wastewater Disposal mitigation measure on page 4B-56a as currently stated ("Continue participation in regional agency for management of wastewater treatment") appear to be inadequate to respond to the present study. O-11 cont.

3. HOUSING:

The EIS inadequately addresses the impact on local housing stock during the two to three year lag time between arrival of the New Light Infantry Division and completion of new family housing construction. Moreover, what impact would occur due to the number forced to live off post before housing is constructed added to the number who elect to live off post after the housing is constructed. Finally, the school impact analysis in the EIS fails to address the number of children attending off-post schools as a result of this off post housing. Other municipal services would also be affected and need to be addressed. O-12 O-13 O-14

4. TRAFFIC:

The EIS inadequately addresses the impacts of off-post traffic. Local traffic will increase due to families living off-post. On page 4-B-48, the EIS states that "There would be a nearly eleven percent increase in the number of privately-owned vehicles registered on the post." That eleven percent increase will also spill over onto local City streets and highways and needs to be addressed in the EIS. Further, what impact will result from military convoys traveling form Fort Ord to Monterey Peninsula Airport on City streets. Again, if use of the Airport by Fort Ord will increase by twenty-five percent and a portion of that will be for air transport activities, what traffic impact will result on neighborhood streets in the City of Monterey. O-15

5. WATER:

While the 17th Infantry Division will be drawing their water from wells on post rather than City water supplies, any additional drawdown of the Monterey Peninsula water supply should be considered significant. O-16

O-12. See response to Comment O-1. Married personnel would not be forced to live off post; rather, they would live on post without their families.

O-13. As stated in paragraph 4B.151, the potential impacts on area schools are discussed including the requirement for construction of a new school.

O-14. Impacts to area municipal services would be minimal since the personnel would be living on post.

O-15. Paragraph 4B.155 has been modified to include the concerns of this comment.

O-16. Comment noted. The significance of additional drawdown is recognized and is reflected in the text.

These are the City of Monterey's initial comments on the New Army Light Infantry Division EIS. Please understand that we are not necessarily against the proposal for increased Army use of Fort Ord. We are asking for a very careful and a very specific examination of the significant impacts and the proposed mitigation measures including setting forth the timing, financing related Congressional actions and other matters consistent with the National Environmetal Protection Act. We appreciate the opportunity to comment and look forward to participating in the review process on this proposal.

Sincerely,

Clyde Roberson
Mayor

c: City Manager
City Council

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United States Department of the Interior
~~WATER AND POWER RESOURCES SERVICE~~
BUREAU OF RECLAMATION
MID-PACIFIC REGIONAL OFFICE
2800 COTTAGE WAY
SACRAMENTO, CALIFORNIA 95825

IN REPLY
REFER TO: MP-150
120.1

JUN 28 1984

Colonel Patrick J. Kelly
Department of the Army
Mobile District, Corps of Engineers
Attn: Environmental and Resources Branch
P. O. Box 2288
Mobile, Alabama 36628

Dear Colonel Kelly:

We are commenting on your Draft Environmental Impact Statement "Stationing of a New Army Light Infantry Division." In the Fort Ord, California alternative, it is noted that "Ground-water resources provide most water supply needs in the region (both domestic needs and economically-important agricultural needs), and continual pumpage in excess of natural recharge allows sea-water intrusion which increases chloride concentrations." The Bureau of Reclamation is currently evaluating the Watsonville conveyance facility to extend water supplies from the San Felipe Project westward to the Watsonville area and thence northward and southward. The southern arm of the conveyance system evaluation extends to the northern edge of Elkhorn Slough. One of the concerns to be addressed is the problem of ground-water overdraft. If the Department of the Army is interested in project water to compensate for ground-water overdraft, the scope of our evaluation would need to be expanded to reflect these changes in order to adequately analyze the environmental impacts. O-17

Sincerely,

NEIL W. SCHILD
ASSISTANT REGIONAL DIRECTOR

RESPONSE TO COMMENTS

O-17. The comment has been noted for potential future action.

EIS
O-Letter

Resources Building
1416 Ninth Street
95814

(916) 445-5656

Department of Conservation
Department of Fish and Game
Department of Forestry
Department of Boating and Waterways
Department of Parks and Recreation
Department of Water Resources
California Conservation Corps

GEORGE DEUKMEJIAN
GOVERNOR OF
CALIFORNIA

THE RESOURCES AGENCY OF CALIFORNIA
SACRAMENTO, CALIFORNIA

Air Resources Board
California Coastal Commission
California Waste Management Board
Colorado River Board
Energy Resources Conservation
and Development Commission
San Francisco Bay Conservation
and Development Commission
State Coastal Conservancy
State Lands Commission
State Reclamation Board
State Water Resources Control
Board
Regional Water Quality
Control Boards

Colonel Patrick J. Kelley
Army Corps of Engineers
Post Office Box 2288
Mobile, Alabama 36628

July 5, 1984

Dear Colonel Kelley:

The State has reviewed the draft EIS, Stationing of Light Infantry Division, submitted through the Office of Planning and Research. Review was coordinated with the Air Resources, Waste Management, and Water Resources Control Boards; Coastal and State Lands Commissions; and Departments of Conservation, Fish and Game, Parks and Recreation, Water Resources, Health Services, and Transportation.

The Coastal Commission responded directly to you on this matter by letter of June 19, 1984.

The Department of Transportation comments that an encroachment permit must be obtained before any work begins within the Caltrans right-of-way. Before this permit may be obtained, the applicant must have design plans approved by Caltrans and an environmental document that discusses the project's impacts on the Caltrans right-of-way approved by the lead agency. Questions regarding these comments should be directed to Gary Ruggerone, Environmental Branch Chief, 50 Higuera St., San Luis Obispo, CA 93401 or (805) 549-3182. O-18

The Department of Parks and Recreation, Office of Historic Preservation, comments that there is only a remote possibility that the project would affect National Register or eligible properties at Fort Ord. Should any of the non-archeological properties that have been inventoried be deemed significant and found to be potentially subject to impacts, consultation with the Office of Historic Preservation on a case-by-case basis should resolve possible conflicts. O-19

Fort Hunter-Liggett has been inventoried and shown to have an abundance of cultural resources, some of which are listed in the National Register. The Office of Historic Preservation is reviewing a National Register nomination for five archeological districts for this base. Impacts associated with exercises on this base could be highly destructive to these resources. Therefore, it will be necessary to determine precisely and as early as possible if there are means available to avoid or minimize such impacts. Substantive planning for the treatment of archeological properties subject to impacts at Hunter-Liggett begin as soon as possible. Contact person is Hans Kreutzberg at (916) 322-9621. O-20

RESPONSE TO COMMENTS

O-18 **This comment has been noted for potential future action.**

O-19 **This comment has been noted for potential future action.**

O-20 **This comment has been noted for potential future action.**

The Department of Water Resources (DWR) notes that the report discusses the existing ground water overdraft and sea water intrusion problems, as well as the impact that the proposed project would have on existing water supply problems. DWR believes, however, that the EIS should include a commitment to implement the mitigation measures mentioned in the report and to address the incremental sea-water intrusion problem within the context of working with local agencies to solve the overall water supply problem of the area. O-21

Questions regarding DWR's comments should be directed to Floyd McCullough, 3374 E. Shields Avenue, Post Office Box 5710, Fresno, CA 93755 or (209) 445-5101.

Thank you for providing an opportunity to review this project.

Sincerely,

Stan Taylor

Gordon F. Snow, Ph.D
Assistant Secretary for Resources

cc: Office of Planning and Research
1400 Tenth Street
Sacramento, CA 95814

(SCH 84052204)

O-21 This comment has been noted for potential future action. Mitigating measures listed in this document are potential actions that could be implemented should the Fort Ord alternative be selected.

CITY OF SEASIDE

440 HARCOURT AVE. P.O. BOX 810 SEASIDE, CALIFORNIA 93955-0810

TELEPHONE (408) 899-6200

July 5, 1984

Department of The Army
Mobile District, Corps of Engineers
Post Office Box 2288
Mobile, Alabama 36628

Attention: Environment and Resources Branch

Gentlemen:

This letter contains comments relating to the Draft E. I. S. for the Stationing of a New Army Light Infantry Division. It is written from the perspective of the concerns of the City of Seaside, California, relating to the Fort Lewis - Fort Ord Alternative.

We found the report generally addressed all issues from a regional perspective, i.e. it discussed the impacts on the area around the Post, but was not specific as to the effects on the separate political entities. Fort Ord is in the midst of several independent cities of varying sizes. Each city feels the effects of major developments at Fort Ord, depending on its location with respect to the Post. Seaside is one of the cities directly adjacent to the Post and, in fact, includes part of the Post within its city limits. A report dealing with impacts, in the aggregate, on Fort Ord's surrounding area does not really provide adequate information for each agency to determine how it will be affected.

Seaside will be subjected to more noise from additional training and the additional training flights. Its housing market would be affected during the two year lag between the stationing of troops and the completion of new housing construction. Seaside's municipal wells, fed by the Seaside aquifer, could be affected adversely if increased pumping of the existing or proposed well fields drastically increases salt water intrusion. The increase in the number of privately owned vehicles could result in additional traffic control measures on the streets accessing the City from the Post.

Using the summary of effects mentioned above, I am submitting the following specific comments and ask that they be addressed from the perspective of the City of Seaside and include the expected cumulative effects of the on-going conversion of the Seventh Infantry Division to the Seventh Light.

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1. Although the additional firing for training will not generally increase the noise levels in the City to a noise impact area as defined by California law, it will still amount to more of a nuisance and/or annoyance. We ask that all reasonable means of mitigating the noise resulting from small arms firing and artillery firing be employed. O-22

2. Seaside is subject to noise from aviation activity at Monterey Peninsula Airport. Although the additional military flights are not expected to include the City in a noise impact area, as defined by the California Noise Standards, they could still result in nuisance and/or annoyance-level noise levels for residents in certain parts of the City. We ask that military flights at Monterey Peninsula Airport avoid civilian housing areas to the greatest extent possible. O-23

3. The City's low housing vacancy rate and the anticipated impacts of the gap between the stationing and the completion of new construction will create havoc with the civilians competing for the same available units. We ask that housing construction begin as soon as humanly possible as a means of mitigating the anticipated housing crunch. O-24

4. In an effort to provide effective vehicle circulation within the City, especially for those persons entering directly from the Post, traffic control and diffusion plans may have to be revised. We ask that the City Engineer be provided with anticipated traffic flow patterns from Fort Ord so adequate measures can be taken on the City's side. O-25

5. Current statistical data are always needed for current and advance planning. We would appreciate receiving the following information for use in determining the number of personnel who might be expected to reside in Seaside. O-26

   a. A Zip Code run of off-Post personnel addresses so the proportion living in Seaside can be determined.

The comments listed above are submitted in the spirit of the E. I. S. process, i.e. to assure that a complete document is prepared for use in making an informed decision.

O-22 This comment has been noted for potential future action.

O-23 This comment has been noted for potential future action.

O-24 See response to Comment O-1. Accelerated housing construction is included as a mitigating measure in Table 4B-11.

O-25 This comment has been noted for potential future action.

O-26 This comment has been noted for potential future action.

The City of Seaside recognizes that the final decision will be related to the needs of National defense. However, if the Fort Lewis - Fort Ord Alternative is selected, Seaside must know how it will be affected and what it will be expected to do.

Thank you for the opportunity to comment on this most important issue. Feel free to contact me or members of the City staff through the office of our City Manager, Charles McNeely.

Sincerely,

Lancelot C. McClair
Mayor

EJF:LCM:ae

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United States Department of Agriculture

Soil Conservation Service

2828 Chiles Road
Davis, CA 95616
(916) 449-2855

July 3, 1984

James B. Hildreth
U.S. Army Engineer District, Mobile
P.O. Box 2288
Mobile, AL 36628

Dear Mr. Hildreth:

We acknowledge receipt of the draft environmental impact statement for the proposed stationing of a New Light Infantry Division in various states. Our comments will reflect the proposal concerning the Fort Ord and Fort Hunter Liggett, California sites.

We have reviewed the document and have the following comments:

1. Grazing and other agricultural leases on Fort Ord were not mentioned. | O-27

2. The potential for increases in wildfire occurrence on both Fort Ord and Fort Hunter Liggett, including nearby U.S. Forest Service lands was not addressed. | O-28

3. Many of the soils at both Forts are highly erodible. Accelerated soil erosion can be reduced by utilizing proven soil conservation measures on both construction and training sites. You indicated in 4B-58 that erosion of the soil cannot be avoided. | O-29

4. Distribution of livestock grazing on Fort Hunter Liggett cannot be successfully directed to upland areas without an improved fencing plan, water trough maintenance, and an implemented grazing plan. At present, this resource is under utilized which adds to the fire hazard. | O-30

5. The maintenance of oak woodlands has become very important to the local area. It was unclear in the document as to what impacts on soil, wildlife, and oak woodlands the project would have. | O-31

6. Currently, the waiting period for on-post housing approaches 12 months. Off-post housing is now limited; with the proposed additional military personnel, this problem will only worsen. | O-32

The Soil Conservation Service is an agency of the United States Department of Agriculture

50

* U.S. Government Printing Office: 1983—420-039/1578

O-27. Paragraph 3.650 has been amended to indicate the extent of grazing and other leases on Fort Ord.

O-28. Paragraphs 3.650 (Fort Ord) and 3.700 (Fort Hunter Liggett) have been modified to include present practices aimed at controlling wildfire occurrence through controlled burning.

O-29. Table 4B-11 (page 4B-57) includes mitigating measures for soil erosion; however, even with proven soil conservation measures, some soil erosion can occur and this is what is indicated in Table 4B-12 (on page 4B-58).

O-30. The prerequisites for distributing livestock grazing to upland areas have been noted.

O-31. Since specific use areas and detailed training plans for light infantry training are not yet established, the projected impacts cannot include the level of detail requested in this comment.

O-32. Housing on post is recognized as a major issue in the area.

7. Domestic water at both Fort Ord and Fort Hunter Liggett is limited. Water scarcity at Fort Hunter Liggett has not been mentioned, although agricultural wells in the area have noted decreased water levels within the area nearby. Salt water intrusion and water shortages may seriously affect the local economy. O-33

We appreciate the opportunity to comment on this proposal.

Sincerely,

Gene Andreuccetti

EUGENE E. ANDREUCCETTI
State Conservationist

Late comment
Received 7/13/84

SDA, SOIL CONSERVATION SERVICE
328 CHILES ROAD
AVIS, CA 95616

FFICIAL BUSINESS
ENALTY FOR PRIVATE USE, $300

SACRAMENTO, CA 95 PM 10 JUL 1984

James B. Hildreth
U.S Army Engineer District, Mobile
P.O. Box 2288
Mobile, Al 36628

PD-EE

O-33. Recent documentation (Beach-Philpot Associates, 1984) reports that there is are "no known trends of overdraw or subsidence from the underground aquifers." Should groundwater not be sufficient at some future time, area reservoirs are possible long-range sources.

Carl D. Larson, 120 Sea Foam Avenue, Box 2259, Monterey, CA 93942 408/649-1117

July 7, 1984

Department of the Army
Mobile District, Corps of Engineers
P.O. Box 2288
Mobile, Alabama 36628

Attention: Environment and Resources Branch

re: Draft Enviromental Impact Statement
Stationing of a New Light Infantry Division, Fort Ord

(This statement repeats the comments I made in the Public Hearing in Monterey)

Not addressed in the EIS for Fort Ord are the following:

- Effects and impacts of convoys: O-34

  . From Fort Ord to Monterey Peninsula Airport;
  . From Fort Ord to Travis Airfield;
  . From Fort Ord to other airfields;
  . From all airfields returning to Fort Ord;
  . Add the same analyses to and from Fort Hunter Ligget.

- Effects and impacts of additional noise from Light Infantry aircraft flights to and from the respective airfields: O-35

  . Troop movement flights;
  . Other support flights;
  . Non-troop movement flights between troop movement events;
  . Aircraft engines running, when parked, other than for normal flight purposes.

- *Impacts upon Monterey Peninsula and surrounding communities during national emergency movements are omitted.* O-36

There is a "no project" alternative that must be considered; that is, Fort Ord is not the choice of last resort for establishment of a light infantry brigade or division. Conversely, it is stated that in a time of national emergency the nearest airfields, rather than or in addition to Travis, will be utilized. Therefore, the fact of a light infantry unit at Fort Ord carries with it the certain utilization of Monterey airfield in troop movements.

O-34. Convoying would be used to transport personnel and equipment to a training area (e.g. Fort Hunter Liggett) or to an airfield for air transport to another area. The impacts of convoying are included in paragraphs 4B.112, 4B.143, 4B.166 and 4B.168. The exact number and size of convoys to be used should a brigade be stationed at Fort Ord are not known. However, such convoys must conform to state regulations regarding size and timing. Additionally, the present 7th Division will be converted to a light division design with a reduction in the amount of personnel and equipment to be transported (the total transport weight of a light division is estimated at only 40 percent of the weight of a full division). A light brigade would be equipped with high-mobility wheeled vehicles and not the heavy duty trucks or tracked vehicles of a conventional brigade. Furthermore, to enhance brigade training, consideration is being given to marching troops all or part of the way to training areas at Fort Hunter Liggett, thus further reducing the need for convoying. Convoying to an airfield (e.g. Travis Airfield) would be used primarily when the new brigade was to be transported to an area for training with the rest of the new division. At present, such training (and the necessary convoying) would occur at most once a year and more likely once every two years and as such would not be a significant factor in area or regional transportation.

O-35. The effects of additional noise due to aircraft flights are stated in paragraph 4B.112. Should the new brigade be stationed at Fort Ord, military use of Monterey Peninsula Airport would remain at about one percent of total air traffic and would not produce a significant increase in noise levels.

O-36. Under a national emergency, the deployment of a current infantry division would require approximately 1450 sorties or aircraft flights to transport the division. A major factor in the light division design is its rapid deployability. A full light division would require only 480 sorties, only one-third the flights required for a conventional division. Should the brigade be stationed at Fort Ord, this would increase the potential sorties should both the light division and the brigade need deployment to about 600 sorties, only 40 percent of the sorties needed to transport a conventional division.

- *Effects and impacts of the ultimate utilization of MPA, supplanting Travis as the regular embarkation port, are not considered in the EIS.*

O-37

Common sense, practicability, budgetary constraints, efficiency and effectiveness, increasing traffic congestion, and human physical concerns will dictate abandonment of the Ord-Travis commute. Forseeable impacts must be addressed.

- In other words, the major effects and impacts outside the Fort Ord/Hunter Liggett boundaries are ignored. Convoys through the Bay Area and hinterland where highway congestion is acute, and convoys into the City of Monterey where capacity to accommodate convoys to the airport is limited, present traffic problems of the first order.

- Likewise are noise impacts upon the Monterey Peninsula from aircraft flights, as well as upon other communities near airfields that may be used in the new mode.

- Likewise, effects and impacts created during national emergencies are ignored.

O-38

Expansion, changes, and interrelated effects and impacts of Department of Defense installations in the proximate area should be included in this EIS. Expansion of the Defense Language Institute in Monterey, and of the Naval Post Graduate School in Monterey, have related effects. Housing at Fort Ord for DLI personnel adds significantly to the traffic congestion and thoroughfare constraints. Increase in intensity of use of the NPS facility presents additional sensitivity to aircraft noise and consequent interruption of activities. The combined cumulative impacts and effects upon the military and civilian jurisdictions should be included in the EIS. In effect, the combined growth and change of the Department of Defense installations are a staged, or phased, or integrated project. Simultaneous impacts of the three of them are significantly greater than the total of the singular impacts, separately.

To divide the three into mutually exclusive units and to segregate their respective impacts and effects upon the community is to deny the principle of cumulative impacts; it is a circumvention of the purpose and value of Federal environmental evaluation.

Are military decisions customarily made without regard for operations of other units in the same sector? It is inevitable that the isolated decisions for the three installations ultimately will affect each other negatively. Impairment of their own operations due to failure to anticipate impacts and effects of this nature may be irreversible. Also, Monterey Peninsula currently is confronting aggravated traffic conditions and effects of overbuilding in some areas that have limited carrying capacities for new development. The Light Infantry decision will change the nature of the famous Monterey Peninsula. Army will find the responsibility for environmental degradation counterproductive in terms of public support for our military defense. C-131 flights in large numbers are not compatible with the nature of the Peninsula area. Nor are stacked-up convoys or crosstown rush hour commute loading-on. I think Army has miscalculated to its disadvantage.

With high regard for your mission,

Carl D. Farnum

O-37. See responses to Comments O-34, O-35, and O-36.

O-38. The action under consideration is the potential stationing of a light infantry brigade and the potential impacts associated with such an action were analyzed against a baseline condition that included all present activities in the area, military or civilian. For example in paragraph 3.621, the described baseline conditions include not ony civilian air taffic but also military traffic from Army, Navy, Coast Guard and Air Force operations.

FORT ORD, CALIFORNIA PUBLIC HEARING

The public hearing for the Fort Ord stationing alternative was held on June 18, 1984 at the Monterey Conference Center, Monterey, California. Statements were made by the following persons:

- o Phyllis Price, Salinas City Council, Member, Salinas, CA (statement read into the record by General Gay);
- o Terrence L. Ellis, Assistant City Manager, City of Monterey, CA;
- o David Valeska, Housing and Community Development Coordinator, City of Monterey, CA;
- o Walter N. Norwick, Seaside, CA;
- o Carl D. Larson, Monterey, CA;
- o Frank Pierce, Monterey, CA;

All letters received as input to the public hearing process are reproduced in full in the official public hearing record and have been used as part of the decision making documents for this action. Copies of the public hearing record which contains the transcript of oral testimony and all written statements are available for the cost of reproduction upon request to the Mobile District, Corps of Engineers.

The following issues directly related to the environmental impact statement were raised in the statements presented at the public hearing:

- o water availability
- o wastewater treatment
- o noise
- o traffic
- o housing

WATER AVAILABILITY

Comment: Two speakers expressed concern regarding water availability and the suggestion was made that the Army continue to work with local jurisdictions in finding solutions to the water supply problem.

Response: The significance of water availability is reflected in the text and Fort Ord would continue to participate in the solution of regional water supply issues.

WASTEWATER TREATMENT

Comment: Three of the speakers expressed concern on the potential impacts of the stationing alternative on regional wastewater treatment.

Response: Revised paragraphs 4B.124 and 4B.147 reflect Fort Ord's involvement in regional wastewater treatment.

NOISE

Comment: Three of the speakers expressed concern over potential increases in noise levels from aircraft at the Monterey Peninsula Airport and from vehicles on local roads. The statement was made that airport use by the Army would be much greater than the 25 percent increase described (in 4B.112) and that noise levels were based on an obsolete mix of aircraft using the airport.

Response: The 25 percent increase in traffic due to the stationing is an accurate estimate and this increase would still represent only about 1 percent of air traffic. The mix of aircraft is based on current, 1984 data. As stated in the text, any increases in vehicular traffic are not expected to significantly alter noise patterns on the area's roads and highways.

TRAFFIC

Comment: Two of the speakers expressed concern with potential traffic increases, including the increase in convoys.

Response: While there would be an increase in general traffic due to military vehicles and privately-owned vehicles, the percent increase would not be a major percentage increase over existing traffic in the area.

HOUSING

Comment: Four of the speakers expressed serious concerns about the potential impacts to housing due to the stationing alternative. It was stated that the stationing action would use up ten years worth of housing in Monterey that would otherwise go to the civilian population.

Response: The availability of area housing is recognized as a major problem in the region and that is why on-post housing construction is included as part of this stationing alternative. While the present schedule has a two year gap between the potential stationing action and family housing availability, regional housing costs, particularly with the increases that would occur by the time of the potential stationing, would not allow the vast majority of incoming personnel to rent or buy housing off post and such personnel would live in on-post bachelor quarters, involuntarily separated from their families.

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APPENDIX A-7

COMMENTS AND RESPONSES TO LETTERS REFERRING TO MORE THAN ONE FORT

United States Department of the Interior

GEOLOGICAL SURVEY
Water Resources Division
Post Office Box 1350
Albany, New York 12201

NEW YORK DISTRICT

May 31, 1984

Lawrence R. Green
Chief, Planning Division
Corps of Engineers
Department of the Army
P. O. Box 2288
Mobile, Alabama 36628

Attn: Environment and Resources Branch

Dear Sir:

The draft Environmental Impact Statement on alternatives for activation and stationing of a Light Infantry Division involving eight forts has been reviewed by Roger Waller of this office. The review has concentrated on the water supply and geology, minerals, and soils sections of four of the forts involved.

The reviewer paid particular attention to the impacts at Fort Drum, New York, but other forts were reviewed because his prior duties involved ground-water studies on Fort Richardson, Fort Wainwright, and Fort Greeley, all in Alaska, as part of the U.S. Geological Survey's water-resources investigations for the nation.

1) The ground-water resources at each of the above forts has been interpreted satisfactorly. The limitations on water needs at all forts except Fort Richardson are only with existing plant capacities. M-1

2) At Fort Drum, the potential for ground-water contamination from septic tanks in contiguous areas is significant where bedrock units lie close to the land surface. M-2

3) It is doubtful that permafrost conditions exist at Fort Richardson, Alaska. M-3

For the District Chief:

Roger M. Waller

Roger M. Waller
District Ground Water
Specialist

RMW:mbh

M-1 Comment noted.

M-2. Comment noted. The potential for groundwater contamination from septic tanks is noted in the EIS.

M-3. The text has been corrected.

CPT Brian O. McCormick
HQ&A Co.,1st Bn, 2nd SSB
Ft. Gordon, GA 30905

James B. Hildreth
Mobile District, Corps of Engineers
ATTN: SAMPD-EE
P.O. Box 2288
Mobile, AL 36628

Dear Mr. Hildreth,

It is my understanding that you are heading a study group that will make recommendations to the Department of the Army for the location of the Army's seventeenth division, to be activated in FY85. In 1977-78 another study group was tasked to recommend locations for the redeployment of the 2nd Infantry Division from Korea to CONUS. If I can recall correctly, that group recommended that the division be broken up and distributed among three posts in the northeastern U.S. Those posts were Forts Dix, Drum, and Devens. The group further recommended that the brigade assigned to Ft. Devens use Camp Edwards, MA, a National Guard training area, for field exercises. M-4

The original recommendations are probably still on file at DA. If you were to review it, it may further aid you in making your final recommendations to DA. I personally believe that the Army needs more visibility in the Northeast.

Good luck with your work and thank you for taking the time to read this note.

Sincerely,

BRIAN O. McCORMICK
CPT, SigC

RESPONSE TO COMMENTS

M-4. Comment noted. Information from the 2nd Infantry Division redeployment study was used extensively in the preparation of the present study.

U.S. Department
of Transportation
Federal Aviation
Administration

Southern Region

P. O. Box 20636
Atlanta, Georgia 30320
#1050

Mr. Lawrence R. Green
Chief, Planning Division
Corps. of Engineers, Mobile District
P. O. Box 2288
Mobile, Alabama 36628

June 8, 1984

Dear Mr. Green:

The Federal Aviation Administration has reviewed the DEIS for the stationing of a new Army Light Infantry Division and has no comments to offer. We feel that we will be able to adequately respond to the several air traffic control situations discussed in the various scenaries. M-5

Thank you for allowing us the opportunity to review the proposal.

Sincerely,

Robert T. Francis, II
Manager,
Program Evaluation &
International Staff

RESPONSE TO COMMENTS

M-5. Comment noted. The air traffic control capabilities of the Federal Aviation Administration are understood.

United States Department of the Interior

BUREAU OF MINES

WESTERN FIELD OPERATIONS CENTER
EAST 360 3RD AVENUE
SPOKANE, WASHINGTON 99202

June 15, 1984

Mr. Lawrence R. Green
Chief, Planning Division
Department of the Army
Mobile District Corps of Engineers
P.O. Box 2288
Mobile, Alabama 36628

ATTENTION: Environment and Resources Branch

Re: Draft Environmental Impact Statement
Stationing of a New Army Light Infantry Division

We have received and reviewed your Draft Environmental Impact Statement, "Stationing of a New Army Light Infantry Division". In reviewing Environmental Impact Statements (EIS), the Bureau focuses its attention on the mineral natural resources and how the proposed action impacts any existing resources. We ensure that mineral natural resources are adequately discussed and that probable impacts, either beneficial or adverse, are addressed in the EIS. The review conducted by this office has been limited to Fort Lewis and the Tacoma-Olympia area, including the Huckleberry Creek Mountain Training Center (HCMTC), Yakima Firing Center (YFC), Camp Bonneville Barracks (CPB), and Vancouver Barracks (VB), Washington; and Fort Ord, California. The results of our review follow.

Geologic resources of economic interest for the Yakima Firing Center, Huckleberry Creek Mountain Training Center, Camp Bonneville, and Vancouver Barracks are not addressed. Our Mineral Industry Location System (MILS) indicates 11 diatomite, 1 sand and gravel, and 1 pumice deposit, all past producers, occur on the Firing Center. These deposits also appear on the Yakima Firing Center Special Map, Series V 791S, Edition 3-DMATC. Our records do not show any exploitable geologic resources of likely economic interest on the HCMTC, CPB, and VB. M-6

Likewise, geological resources of economic interest on Fort Ord, California, were not discussed. Our MILS indicates one mercury deposit--a past producer, a developed clay property, and two mineral properties (status and commodity unknown) occur on the Fort. M-7

M-6 Revisions have been incorporated into the text (Paragraph 3.579). No impacts on the exploitable geologic resources at Yakima Firing Center are expected as a result of the proposed stationing alternatives.

M-7. The only activity associated with the proposed stationing alternative that could potentially preempt mineral development would be the construction of new family housing. One of the factors considered in site selection for any construction would be the location of geologic resources of economic interest.

In preparing your Final Environmental Impact Statement, the mineral resources of these areas should be addressed. This assessment of the mineral resources should include (1) examination of all reported mineral occurrences to estimate the quantity and quality of identified resources; (2) identify areas of potential mineral resources, i.e., areas where mineral deposits are likely to occur; and (3) evaluate the impact caused on mineral resources by the proposed action. M-8

The Bureau's Field Operations Centers have personnel with extensive experience in the above type of technical studies and can provide technical assistance or perform the field evaluation.

Sincerely,

D'Arcy P. Banister, Supervisor
Minerals Involvement Section

RESPONSE TO COMMENTS

M-8. See response to comments M-6 and M-7.

24 June 84

HAROLD BORING
P.O. Box 221
GLENMONT, NY 12077

To whom it May Concern:

It appears as the the Army's new 10,000 man Brigade is becoming a political issue as to where they will be based.

I'm sure that after all kick-backs and the big Political names in the East Fort Drum will win out.

I am from Ohio - have lived in Clarksville, Tenn and currently reside in Albany, New York all as a civilian. I spent 8+ years in the U.S. Army and have not been stationed at any of your posts under consideration.

I only hope that, for the sake of the military man and his family that you will consider them. After all over 90% of the career men are married.

I know from being a Real Estate agent that Housing + Taxes alone are unaffordable to a Military man in upstate New York. A $38-42,000 home at Clarksville Tenn cost $74-82,000 in New York. M-9

What about the weather? From Nov. thru April it is 0 and below in N.Y.. It will take many tax dollars to pay that kind of utility bills, not to mention what it does to a family's budget.

It seems as the there are two issues against Fort Campbell. That be the air traffic, at which I say hog wash, as all you ever see is Helicopters and they have their seperate field. M-10

M-9. Affordability of housing is discussed in the EIS.

M-10. Discussion with the 101st Aviation Group have confirmed that the stationing of a light infantry brigade will not significantly affect airspace. The text has been corrected accordingly.

I am sure that Buffalo, Syracuse, + Rochester in N.Y. + Pittsburg + Toronto which all have major airports take in Camp Drum as an approach.

Gentlemen there is no comparison on this apr traffic. Your second strike against Fort Campbell, I believe is the traffic congestion on Fort Campbell Blvd. There are more people who die shoveling snow in New York than die on Ft Campbell Blvd. This I assure you. Besides I think that Ft Campbell Blvd can be reworked with Federal Funding a lot cheaper than you can refurbish Camp Drum. M-11

Please reduce your pay to an E-5 and live 6 months at both locations, then make your decision. It will be a lot easier.

A lot of Famous + Proud hero's has come from Ft Campbell + the 101st Airborne and currently reside in Tenn + Ky. Ft Campbell is a proud base, lets give them our thanks and spare their economy with the new division.

Thank you
Harold J Boim,

RESPONSE TO COMMENTS

M-11. A number of improvements are being planned to mitigate the problem of traffic congestion on U.S. Route 41-A. See comment and response related to the public hearing comments on the issue of traffic congestion. This subject is adequately addressed.

United States Department of Agriculture

Soil Conservation Service

P. O. Box 311
Auburn, Alabama
36830

JUL 0 5 1984

Mr. Lawrence R. Green
Chief, Planning Division
Department of the Army
Mobile District
Corps of Engineers
P. O. Box 2288
Mobile, Alabama 36638

Dear Mr. Green:

RE: Stationing of a New Army Light Infantry Division

This is in response to your request of May 16, 1984 for review of the draft environmental impact statement on the above referenced project.

We have no comments for your consideration since the environmental concerns of SCS appear to be adequately addressed. We suggest that the Corps give careful consideration to selecting the alternative that minimizes the conversion of agricultural land to residential use for military personnel. M-12

The opportunity to review this document is appreciated.

Sincerely,

ACTING FOR
Ernest V. Todd
State Conservationist

RESPONSE TO COMMENTS

M-12. Comment noted for potential future action.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUL 9 1984

OFFICE OF
EXTERNAL AFFAIRS

Mr. James B. Hildreth
Environmental Coordinator
Corps of Engineers
U.S. Army Engineer District, Mobile
Post Office Box 2288
Mobile, AL 36628

Dear Mr. Hildreth:

The Environmental Protection Agency's (EPA) comments on the draft environmental impact statement (DEIS) entitled "Stationing of a New Army Light Infantry Division," dated May 18, 1984, have been classified as Category LO-2, specifically, lack-of-objections/insufficient information. Definitions of the categories are provided in the enclosure. Our procedure is to categorize our comments on both the envionmental consequences of the proposed action and the adequacy of the impact statement at the draft stage.

One general comment is that this DEIS needs to be carefully edited before going final. Many sections are redundant and greater conciseness will make the document easier to read and understand.

The concept of splitting the relocation of approximately 10,500 military personnel to form a new light infantry division between various military installations is an excellent means of reducing environmental impacts upon any one site. The DEIS adequately identifies the various impacts that are likely to occur as a result of this relocation. However, the impact statement does not adequately address how the more significant impacts will be resolved. Particularly, the DEIS recognizes that, as a result of the personnel relocation, problems will arise in such areas as water supply, wastewater treatment, solid waste disposal, hazardous waste disposal and wetlands impacts. The DEIS does not address mitigative measures to correct these identified problems.

EPA believes that these problems can be resolved, and suggests that the final EIS address the following areas:

- An explanation of the rationale used to determine how the new light division is to be divided among two or more military installations. Without this explanation, it is difficult to assess the dissimilar alternatives; M-13

M-13. Chapter 2 of the EIS provides information and rationale used in the selection of the various alternatives including the splitting of the division between two installations. For example, availability of housing, size of maneuver and training area, environmental factors, construction requirement, and availability of other existing facilities were factors used in alternative selection.

- How increased demands for water supply, wastewater treatment, solid and hazardous waste disposal will be handled (i.e., facility expansion, new construction, facility location, the procedures involved, and funding for such facilities). EPA suggests that the most appropriate mechanism for dealing with these issues might be to involve the President's Economic Adjustment Committee. This Committee could provide assistance with the construction of social and/or environmental facilities necessitated by the siting of the new division; M-14

- What the specific wetland impacts will be and how these impacts will be mitigated (Fort Drum alternative); M-15

- What the impact upon ambient ozone concentrations in Monterey County will be, and what the impact of particulate emissions from training activities will be (Fort Ord alternative); M-16

- How adverse impacts to permafrost will be minimized (Fort Wainwright alternative); and, M-17

- A list of the needed environmental permits associated with each alternative. M-18

If you have any questions concerning our categorization procedures or comments, please call Matt Schweisberg (FTS 475-8795).

Sincerely,

Frank Rusco

for Allan Hirsch
Director
Office of Federal Activities

Enclosure

M-14. Those facilities necessary on post as a result of increased demands for water supply, wastewater treatment, solid and hazardous waste disposal will be handled by that specific post. A list of the construction requirements for each stationing alternative is provided in Appendix K. Any requirements for such facilities off-post will be handled by the affected community with appropriate state and Federal assistance as necessary.

M-15. Specific wetland impacts cannot be determined until training activities and requirements are known. As stated in the EIS, training needs for the new light infantry division are still being developed. However, as noted in the EIS paragraph 3.449, training activities that affect wetlands at Fort Drum are regulated by the New York State Department of Environmental Conservation. Should any Fort Drum stationing alternative be selected, any training activities involving wetlands would continue to be regulated as at the present time.

M-16. Fort Ord's contribution to area emissions has remained well below one percent of the regional total and would remain below one percent should this stationing alternative be selected.

M-17. Table 4A-9 states that the off road traffic could be restricted and that the Army could restrict the amount of area in which off road vehicles and excavation would be permitted (paragraphs 4A.66a and Table 4A-10, under geology). If Army environmental regulations are followed, impacts to permafrost would be mitigated.

M-18. Each fort already has the necessary environmental permits associated with activities at that location. Any additional permits, or modifications thereof, will be determined when detailed plans are developed for the selected alternative.

Environmental Impact of the Action

LO--Lack of Objections

EPA has no objections to the proposed action as described in the draft impact statement; or suggests only minor changes in the proposed action.

ER--Environmental Reservations

EPA has reservations concerning the environmental effects of certain aspects of the proposed action. EPA believes that further study of suggested alternatives or modifications is required and has asked the originating Federal agency to reassess these aspects.

EU--Environmentally Unsatisfactory

EPA believes that the proposed action is unsatisfactory because of its potentially harmful effect on the environment. Furthermore, the Agency believes that the potential safeguards which might be utilized may not adequately protect the environment from hazards arising from this action. The Agency recommends that alternatives to the action be analyzed further (including the possibility of no action at all).

Adequacy of the Impact Statement

Category 1--Adequate

The draft impact statement adequately sets forth the environmental impact of the proposed project or action as well as alternatives reasonably available to the project or action.

Category 2--Insufficient Information

EPA believes that the draft impact statement does not contain sufficient information to assess fully the environmental impact of the proposed project or action. However, from the information submitted, the Agency is able to make a preliminary determination of the impact on the environment. EPA has requested that the originator provide the information that was not included in the draft statement.

Category 3--Inadequate

EPA believes that the draft impact statement does not adequately assess the environmental impact of the proposed project or action, or that the statement inadequately analyzes reasonably available alternatives. The Agency has requested more information and analysis concerning the potential environmental hazards and has asked that substantial revision be made to the impact statement.

If a draft impact statement is assigned a Category 3, no rating will be made of the project or action, since a basis does not generally exist on which to make such a determination.

APPENDIX B

ADDITIONAL INFORMATION ON THE FORTS IN ALASKA

FORT WAINWRIGHT
REGIONAL ECONOMIC IMPACT FORECAST
FOR CONSTRUCTION

REGIONAL ECONOMIC IMPACT FORECAST

INSTALLATION: Ft. Wainwright, AK

IMPACTS FROM: Construction

PROJECT AND ALTERNATIVE NAME: Light Inf. Div.- Greatest Change

PROJECT INPUTS (1984 dollars)

Highest Annual Dollar Volume:	$ 41,800,000
Percent of $ volume local labor:	38%
Percent of $ volume local materials:	15%
Military families now living in region projected to move onto base:	none
Price deflator for output: 247	

ECONOMIC IMPACT FORECAST (1984 dollars)

CHANGE IN ANNUAL TOTAL BUSINESS VOLUME:	+ $ 12,954,000	(+2.459%)
CHANGE IN ANNUAL LOCAL PERSONAL INCOME:	+ $ 9,787,000	(+1.524%)
THIS ADDED PERSONAL INCOME IS EQUIVALENT TO THE AVERAGE ANNUAL SALARIES OF:	248 persons	(+1.046%)

FORT WAINWRIGHT
REGIONAL ECONOMIC IMPACT FORECAST
FOR MISSION CHANGE

REGIONAL ECONOMIC IMPACT FORECAST

INSTALLATION: Ft. Wainwright, AK

IMPACTS FROM: Mission Change

PROJECT AND ALTERNATIVE NAME: Light Inf. Div.-Greatest Change

PROJECT INPUTS (1984 dollars)

Net change in $ value of expenditures for local supplies & services:	$	3,627,208
Net change in number of civilian employees:		360
Average annual household income of civilian employees:	$	39,800
Net change in number of military personnel:		7,400
Average annual household income, military:	$	30,800
Proportion (% age) of military personnel involved in the mission change who are expected to reside on post:		45%
Price deflator for output: 247		

ECONOMIC IMPACT FORECAST (1984 dollars)

CHANGE IN ANNUAL TOTAL BUSINESS VOLUME:	+ $	191,426,000	(+36.334%)
CHANGE IN ANNUAL LOCAL PERSONAL INCOME:	+ $	292,118,000	(+46.475%)
THIS ADDED PERSONAL INCOME IS EQUIVALENT TO THE AVERAGE ANNUAL SALARIES OF:		9,688 persons	(+40.784%)

FORT RICHARDSON
REGIONAL ECONOMIC IMPACT FORECAST
FOR CONSTRUCTION

REGIONAL ECONOMIC IMPACT FORECAST

INSTALLATION: Ft. Richardson, AK

IMPACTS FROM: Construction

PROJECT AND ALTERNATIVE NAME: Light Inf. Div.- Greatest Change

PROJECT INPUTS (1984 dollars)

Highest Annual Dollar Volume:	$ 11,100,000
Percent of $ volume local labor:	38%
Percent of $ volume local materials:	15%
Military families now living in region projected to move onto base:	none
Price deflator for output: 247	

ECONOMIC IMPACT FORECAST (1984 dollars)

CHANGE IN ANNUAL TOTAL BUSINESS VOLUME:	+ $ 4,257,000	(+0.183%)
CHANGE IN ANNUAL LOCAL PERSONAL INCOME:	+ $ 2,960,000	(+0.150%)
THIS ADDED PERSONAL INCOME IS EQUIVALENT TO THE AVERAGE ANNUAL SALARIES OF:	72 persons	(+0.104%)

FORT RICHARDSON
REGIONAL ECONOMIC IMPACT FORECAST
FOR MISSION CHANGE

REGIONAL ECONOMIC IMPACT FORECAST

INSTALLATION: Ft. Richardson, AK

IMPACTS FROM: Mission Change

PROJECT AND ALTERNATIVE NAME: Light Inf. Div.-Greatest Change

PROJECT INPUTS (1984 dollars)

Net change in $ value of expenditures for local supplies & services:	$	888,048
Net change in number of civilian employees:		170
Average annual household income of civilian employees:	$	39,800
Net change in number of military personnel:		1,190
Average annual household income, military:	$	30,800
Proportion (% age) of military personnel involved in the mission change who are expected to reside on post:		45%
Price deflator for output: 247		

ECONOMIC IMPACT FORECAST (1984 dollars)

CHANGE IN ANNUAL TOTAL BUSINESS VOLUME:	+ $	40,935,000	(+1.761%)
CHANGE IN ANNUAL LOCAL PERSONAL INCOME:	+ $	53,395,000	(+2.701%)
THIS ADDED PERSONAL INCOME IS EQUIVALENT TO THE AVERAGE ANNUAL SALARIES OF:		1,708 persons	(+2.452%)

TABLE B-1

ANCHORAGE ECONOMIC PROJECTIONS

	Permanent Population (Thousands)	Employment (Thousands)	Personal Income[b] (Million $)	Real Personal Income[b] (Million 1967 $)
1983	224.0[a]	122.0	4000.8	1486.5
1984	227.0	124.0	4110.1	1454.0
1985	232.0	125.0	4593.5	1539.9
1986	234.0	126.0	4963.0	1576.0
1987	237.0	127.0	5355.4	1610.8
1988	240.8	129.4	5793.5	1650.3
1989	247.0	132.6	6352.9	1713.4
1990	255.0	136.7	7081.8	1808.1
1991	259.0	138.6	7551.3	1824.7
1992	269.7	144.2	8584.3	1963.0
1993	274.7	146.7	9142.9	1978.1
1994	280.4	149.6	9977.7	2042.1
1995	286.0	152.4	10794.4	2089.5
1996	292.7	155.9	11791.4	2158.5
1997	298.5	158.8	12819.9	2218.7
1998	303.6	161.4	13881.2	2270.9
1999	309.0	164.1	15063.6	2329.2
2000	314.0	166.7	16317.0	2384.1
2001	319.0	169.1	17669.1	2439.2
2002	324.2	171.7	19148.7	2497.1
2003	329.8	174.6	20805.1	2562.5
2004	335.7	177.6	22599.7	2628.6
2005	341.2	180.3	24540.7	2695.0

[a]This differs from the Municipality of Anchorage 1983 estimate of 230.8 because of difference in definition. The Municipality's estimate is based on a housing count conducted in July, a time when there are a lot of temporary and transient residents in Anchorage, causing the housing vacancy rate to be lower than it is on an annual average basis. The ISER projection is an annual average and better represents the permanent population.

[b]Income by place of residence.

SOURCE: Institute of Social and Economic Research, Municipality of Anchorage economic model output file BIG.TRY4, variables A.POP, A.MP.99, A.Y.YR, A.YRREAL, and estimates by Brian Reeder, ISER, U of Alaska, Anchorage, AK.

APPENDIX C

ADDITIONAL INFORMATION ON FORT BENNING

FORT BENNING
INFANTRY ONLY
REGIONAL ECONOMIC IMPACT FORECAST
FOR CONSTRUCTION

REGIONAL ECONOMIC IMPACT FORECAST

INSTALLATION: Ft. Benning, GA

IMPACT FROM: Construction

PROJECT AND ALTERNATIVE NAME: Light Inf. Div.- Infantry Only

PROJECT INPUTS (1984 dollars)

Highest Annual Dollar Volume:	$ 44,000,000
Percent of $ volume local labor:	19%
Percent of $ volume local materials:	36%
Military families now living in region projected to move onto base:	none
Price deflator for output: 247	

ECONOMIC IMPACT FORECAST (1984 dollars)

CHANGE IN ANNUAL TOTAL BUSINESS VOLUME:	+ $ 25,702,000	(+0.633%)
CHANGE IN ANNUAL LOCAL PERSONAL INCOME:	+ $ 9,448,000	(+0.301%)
THIS ADDED PERSONAL INCOME IS EQUIVALENT TO THE AVERAGE ANNUAL SALARIES OF:	610 persons	(+.0389%)

FORT BENNING
INFANTRY ONLY
REGIONAL ECONOMIC IMPACT FORECAST
FOR MISSION CHANGE

REGIONAL ECONOMIC IMPACT FORECAST

INSTALLATION: Ft. Benning, GA

IMPACTS FROM: Mission Change

PROJECT AND ALTERNATIVE NAME: Light Inf. Div. - Infantry Only

PROJECT INPUTS (1984 dollars)

Net change in $ value of expenditures for local supplies & services:	$ 1,499,000
Net change in number of civilian employees:	450
Average annual household income of civilian employees:	$ 27,250
Net change in number of military personnel:	2,450
Average annual household income, military:	$ 24,290
Proportion (% age) of military personnel involved in the mission change who are expected to reside on post:	57%
Price deflator for output: 247	

ECONOMIC IMPACT FORECAST (1984 dollars)

CHANGE IN ANNUAL TOTAL BUSINESS VOLUME:	+ $ 76,865,000	(+1.892%)
CHANGE IN ANNUAL LOCAL PERSONAL INCOME:	+ $ 86,728,000	(+2.762%)
THIS ADDED PERSONAL INCOME IS EQUIVALENT TO THE AVERAGE ANNUAL SALARIES OF:	4,066 persons	(+2.594%)

FORT BENNING
INFANTRY AND AVIATION
REGIONAL ECONOMIC IMPACT FORECAST
FOR CONSTRUCTION

REGIONAL ECONOMIC IMPACT FORECAST

INSTALLATION: Ft. Benning, GA

IMPACTS FROM: Construction

PROJECT AND ALTERNATIVE NAME: Light Inf. Div.- Inf + Avi

PROJECT INPUTS (1984 dollars)

Highest Annual Dollar Volume:	$ 72,200,000
Percent of $ volume local labor:	19%
Percent of $ volume local materials:	36%
Military families now living in region projected to move onto base:	none
Price deflator for output:	247

ECONOMIC IMPACT FORECAST (1984 dollars)

CHANGE IN ANNUAL TOTAL BUSINESS VOLUME:	+ $	42,175,000	(+1.038%)
CHANGE IN ANNUAL LOCAL PERSONAL INCOME:	+ $	15,504,000	(+0.494%)
THIS ADDED PERSONAL INCOME IS EQUIVALENT TO THE AVERAGE ANNUAL SALARIES OF:		1,001 persons	(+0.639%)

FORT BENNING
INFANTRY AND AVIATION
REGIONAL ECONOMIC IMPACT FORECAST
FOR MISSION CHANGE

REGIONAL ECONOMIC IMPACT FORECAST

INSTALLATION: Ft. Benning, GA

IMPACTS FROM: Mission Change

PROJECT AND ALTERNATIVE NAME: Light Inf. Div.-Inf + Avi

PROJECT INPUTS (1984 dollars)

Net change in $ value of expenditures for local supplies & services:	$	1,499,000
Net change in number of civilian employees:		513
Average annual household income of civilian employees:	$	27,250
Net change in number of military personnel:		3,703
Average annual household income, military:	$	24,290
Proportion (% age) of military personnel involved in the mission change who are expected to reside on post:		57%
Price deflator for output: 247		

ECONOMIC IMPACT FORECAST (1984 dollars)

CHANGE IN ANNUAL TOTAL BUSINESS VOLUME:	+ $	106,655,000	(+2.626%)
CHANGE IN ANNUAL LOCAL PERSONAL INCOME:	+ $	124,677,000	(+3.970%)
THIS ADDED PERSONAL INCOME IS EQUIVALENT TO THE AVERAGE ANNUAL SALARIES OF:		5,833 persons	(+3.722%)

DEPARTMENT OF THE ARMY
MOBILE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 2288
MOBILE, ALABAMA 36628

REPLY TO
ATTENTION OF:
Environmental Quality Section

April 24, 1984

Mr.David J. Wesley, Field Supervisor
Endangered Species Field Station
U. S. Fish and Wildlife Service
2747 Art Museum Drive
Jacksonville, Florida 32207

Dear Mr. Wesley:

Reference is made to your letter of April 3, 1984, concerning endangered or threatened species at Fort Benning, Georgia (FWS Log No. 4-1-84-127).

This letter constitutes our biological assessment under Section 7 of the Endangered Species Act of 1973, as amended.

The red-cockaded woodpecker, Picoides borealis, is an abundant resident on the Fort Benning reservation. An estimated 500-600 trees are being actively utilized by the birds. These trees are marked with white bands, and training activities in their vicinity are strictly controlled. Additional pine stands are being protected to insure that mature trees will be available in the future. Consequently, the red-cockaded woodpecker population at Fort Benning is in very healthy condition.

The proposed increase of troops at Fort Benning would not require additional training areas and consequently, would not affect the resident red-cockaded woodpecker populations.

The American alligator, Alligator mississippiensis, occasionally occurs in streams and ponds on the Fort Benning reservation. The species is protected and not significantly affected by training activities.

The gray bat, Myotis grisescens, is not known to occur on Fort Benning. Since there are no caves on the reservation, the presence of resident gray bats is very improbable.

The bald eagle, Haliaeetus leucocephalus, is an occasional migratory or winter visitor but does not nest or reside on the reservation. The nearest known active nesting is near Lake Seminole 150 miles to the south.

The Arctic peregrine falcon, Falco peregrinus, is a very rare migratory traveler through the area that has not been reported from the Fort Benning reservation.

In summary, an increase in troop strength up to 5,000 individuals (two brigades) would not require new training areas at Fort Benning and consequently, should not affect any endangered or threatened species. The proposed increase would not exceed 5,000 additional troops.

If plans should change and troop strength increases exceed 5,000, we will notify your office immediately.

We appreciate your assistance in protecting endangered and threatened species. If you have any questions, please contact Mr. Jack C. Mallory at FTS 537-2723.

Sincerely,

Willis E. Ruland
Chief, Environment and Resources
Branch



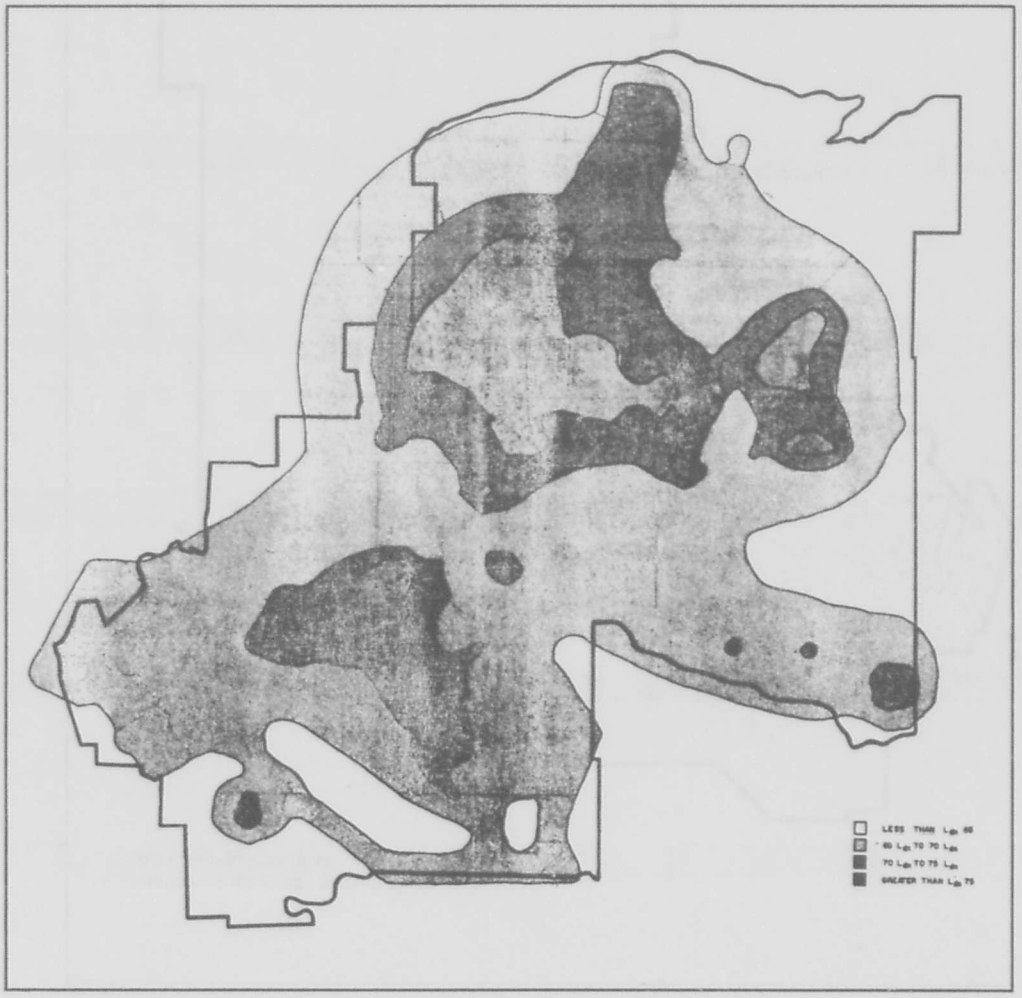
Source: Fort Benning Directorate of Engineering and Housing, 1983.

FIGURE C—1—1
FORT BENNING IMPULSE NOISE CONTOURS



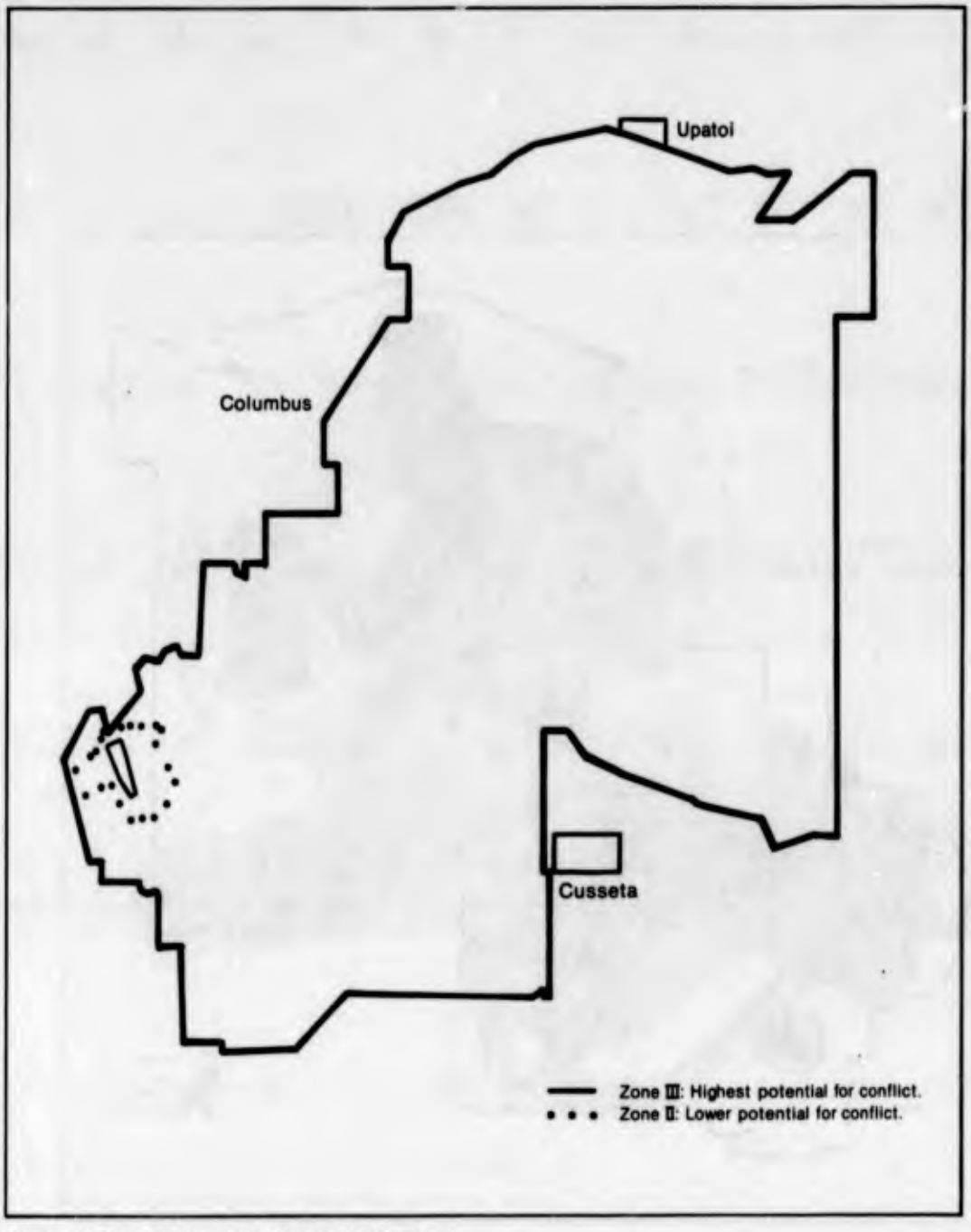
Source: Fort Benning Directorate of Engineering and Housing, 1983.

FIGURE C—1—2
NOISE CONTOURS FOR TRAFFIC, SMALL ARMS, CANTONMENT AREA AND ROTARY WING AIRCRAFT



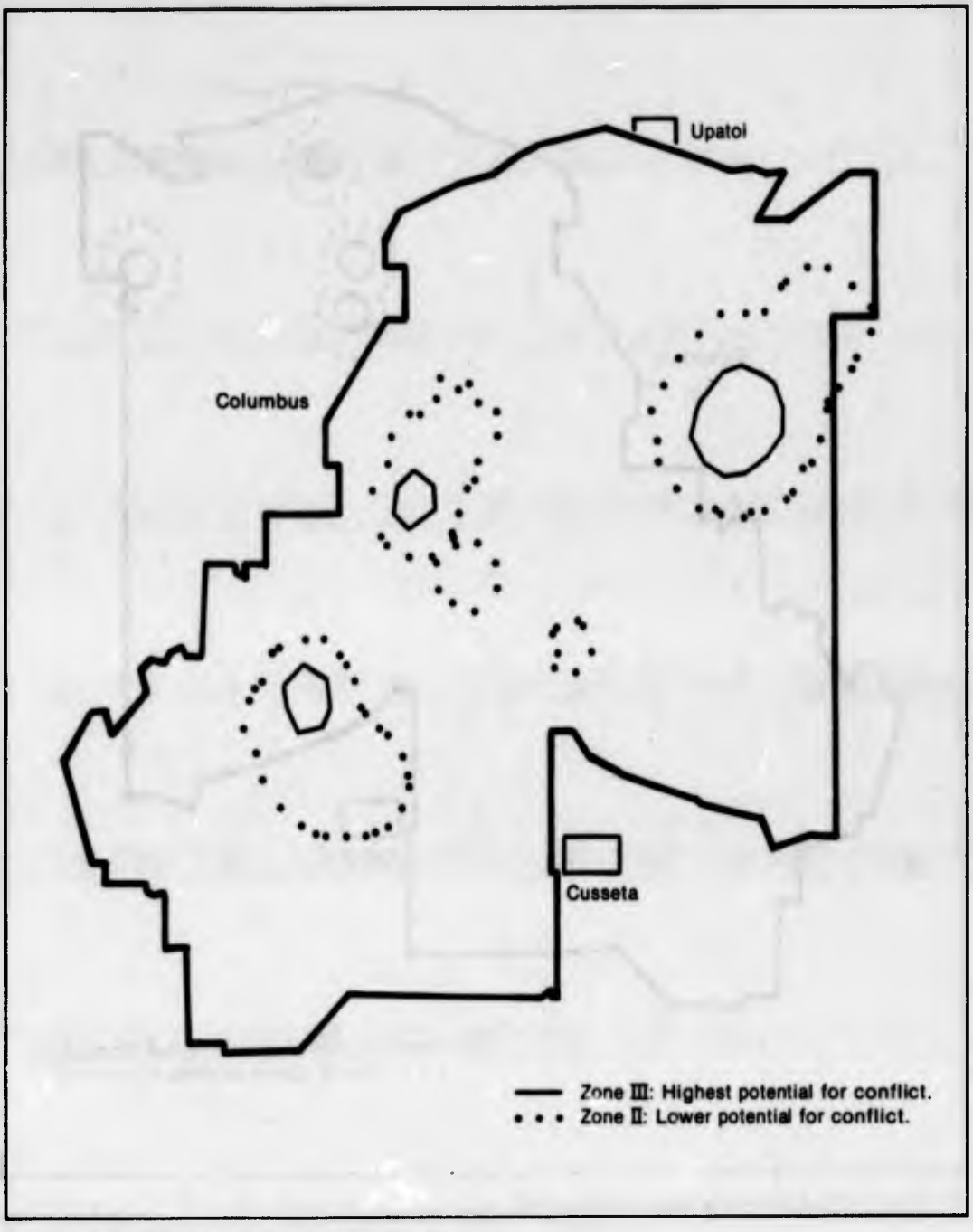
Source: Fort Benning Directorate of Engineering and Housing, 1983.

FIGURE C—1—3
FORT BENNING COMPOSITE NOISE CONTOURS



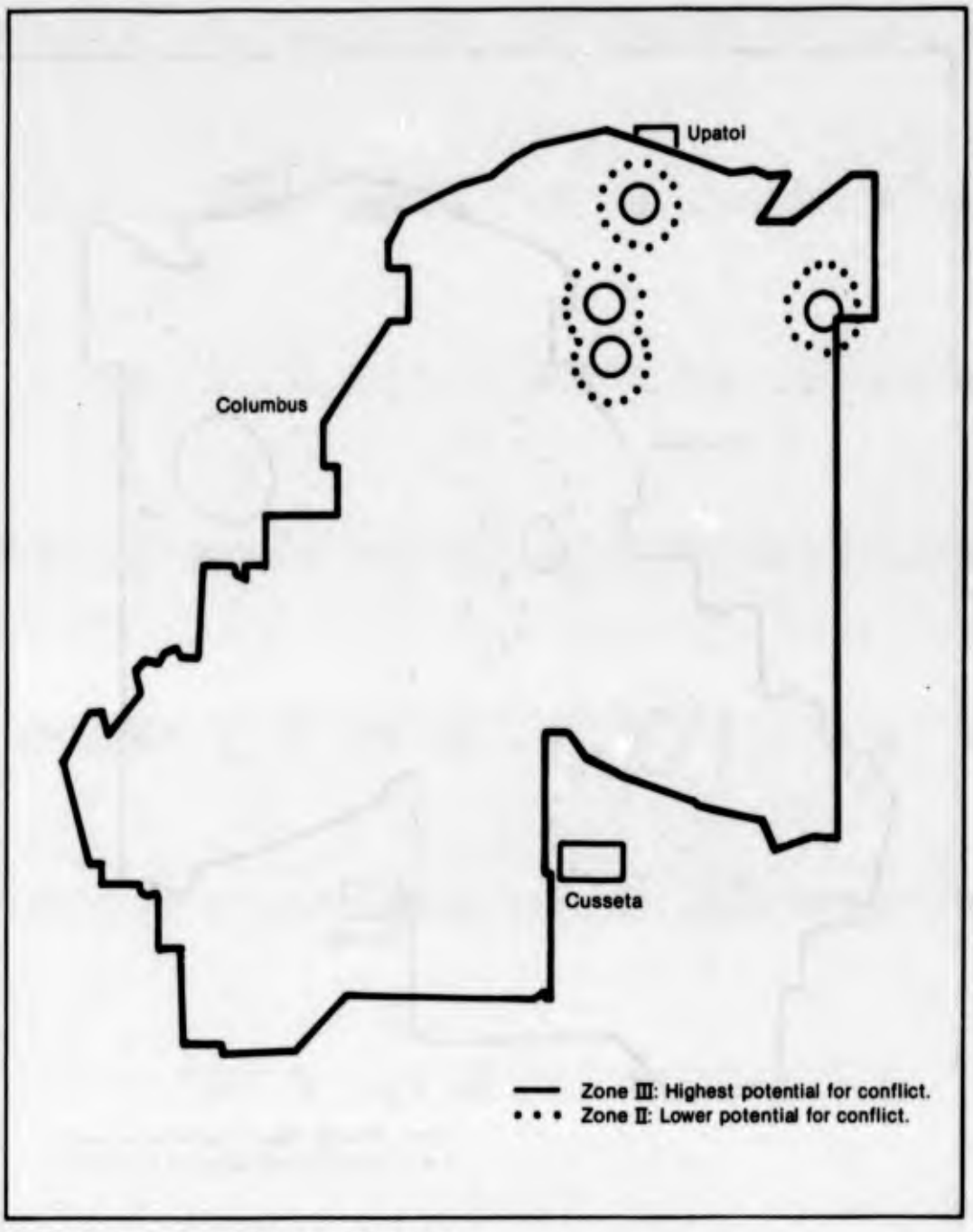
Source: U.S. Army Environmental Hygiene Agency, 1982

FIGURE C—2—1
ICUZ NOISE ZONE CONTOURS FOR LAWSON ARMY AIRFIELD



Source: U.S. Army Environmental Hygiene Agency, 1982

FIGURE C—2—2
ICUZ BLAST NOISE CONTOURS FOR FORT BENNING, GA, HEAVY WEAPONS FIRING AND DEMOLITION OPERATIONS



Source: U.S. Army Environmental Hygiene Agency, 1982

FIGURE C—2—3
ICUZ NOISE ZONE CONTOURS FOR IFV RANGES AT FORT BENNING, GA

APPENDIX D

ADDITIONAL INFORMATION ON FORT CAMPBELL, KENTUCKY

Consumptive and Non-Consumptive Recreational Activities at Fort Campbell

Annually, combined hunting and fishing trips on post approach fifty thousand. In the 1982 hunting season, the whitetail deer harvest was 2,215 of both sexes (a peak of sustained increase in kills since the herd was established and grew to huntable size in 1960). Other 1982 or 1982-1983 hunting season harvests include 4,368 bobwhite quail, 760 squirrels, 772 cottontail rabbits, and 1,188 doves.

The post also is utilized for a number of non-consumptive activities. The approximate number of annual trips per non-consumptive activity on the post include horseback riding (26,000 trips), use of campgrounds (3,800 trips), use of the outdoor recreation area for dog training, berry picking, etc. (1,500 trips), use of nature trails (920 trips), bird and coon dog field trials (780 trips), use of bicycle trails (450 trips), and use of the field archery range (370 trips).

Geology, Minerals and Soils

Stream alluvium up to 20 feet in depth lies along most of the perenial drainage channels in the installation. It consists of clay, silt, sand, and gravel. The land area of Fort Campbell not covered by stream alluvium or Tuscalossa gravel is covered with a thick overburden of residual soil developed in place by weathering of the cherty limestone parent material. This "residuum" consists of red clay of high plasticity with lesser amounts of silt, fine chert, and limestone fragments. The residuum is between 25 and 35 feet thick within the cantonment area. Its thickness increases towards the west and is greatest on the hills where it is up to 100 feet in thickness. Samples indicate a permeability which is very low and which will significantly impede the vertical movement of any liquid to the bedrock aquifer (Harland Bartholomew and Associates, Inc. 1982).

A formation (Tuscaloosa gravel) of upper Cretaceous Age caps some of the uplands and drapes hillsides in the extreme western portion of the reservation (limited primarily to land just west of the north impact area). It consists of up to 50 feet of unconsolidated gravel, sand, silt, and multi-colored kaolinite clay.

The entire installation is underlain by limestone bedrock of the Mississippian Age. The uppermost formation is called the Ste. Genevieve limestone formation which ranges in thickness from zero to 180 feet. The formation immediately below it is the St. Louis limestone formation ranging from 150 feet to 385 feet in

thickness and generally outcrops at the lower elevations and along the southern boundary of Fort Campbell (Harland Bartholomew and Associates, Inc. 1982).

As a result of the abrupt diversification across the reservation, Fort Campbell has a large number of individually identified soil classifications. These soils range from fertile, dark brown, silty clay loam in the eastern portion to a light brown silt loam on gentle slopes and more rolling terrain in the west. In general, the area is covered with 2 to 3 feet of varying degrees of silty loam overlaying a weathered limestone formation. The thickness of the layer is dependent on the slope gradient and general erosion susceptibility. In the western portion of the reservation, erosion has been so severe, due to steep ridges dissected with slope gradients ranging generally 15 to 40 percent, that most of the loess has been removed. The properties of the subsequent layer are a direct result of the type and quality of the limestone that was weathered (Harland Bartholomew and Associates, Inc. 1982).

The depth to bedrock, with few exceptions, ranges from 6 feet to greater than 50 feet. These few exceptions occur in the escarpment-like slopes along the major streams located in the easternmost portion of the reservation. Due to slope gradient in the central and eastern portions of the reservation, many potential problems exist as a result of poorly drained to restrictively drained soil conditions. This is due in part to the existence of a fragipan strata and slopes of less than 5 percent. This lack of permeability can result in many problems related to shallow excavations, road construction, maneuvering, etc. (Harland Bartholomew and Associates, Inc. 1982).

Most of the post contains soil types and topography conducive to farming and high production. Except for the land in the western portion of the post characterized by steep gradients, most of the post contains land designated as prime agricultural land (U.S. Department of Agriculture 1981, 1980, 1975, and 1953).

On April 17, 1984, the Federal Emergency Management Agency (FEMA) announced that scientists have identified the potential for a catastrophic earthquake along the New Madrid fault. Should such an earthquake occur, FEMA has estimated (based on 1811-1812 earthquakes) that Fort Campbell would be subjected to intense shaking and heavy damage. The FEMA is developing a five-year earthquake preparedness plan to be integrated with plans of the affected states (including Kentucky and Tennessee). The agency plans to conduct a conference on the problem in St. Louis, Missouri, June 2 to 5, 1984 (Federal Emergency Management Agency 1984)

TABLE D-1

WILDLIFE HABITAT IMPROVEMENT ACTIVITIES FUNDED BY MONIES PROVIDED FOR FISH AND WILDLIFE MANAGEMENT (1984 through 1988)

Work Category	Acreage	Percent of Total Post Program	Purpose
Disking	2500 acres	100	Cover modification for quail
Clearing and Piling Brush	1000 acres	100	Cover modification for quail and food production for deer
Seeding Disked Areas	2500 acres	100	Supplement native quail food supply
Liming Disked Areas	2500 acres	100	Improve quail food production
Seeding and Reseeding Other Areas	520 acres[1,2]	100	Green vegetation for deer and small grain for all species
Cover Maintenance	50 acres	100	Quail cover
Cover Establishment	50 acres	100	Quail cover
Prescribed Burning	50,000 acres	50	Cover maintenance and modification for quail and deer
Firebreak Maintenance	125 miles[1]	25	Hunter access/fire protection
Lake Fertilization	117 acres[3]	100	Increase fish production
Fish Population Establishment (White Amur)	30 acres	100	Establish balanced fish population

[1]Annually.
[2]An additional 20,000 acres are contained in impact areas. Although these areas produce game, specific management practices other than prescribed burning from boundary to boundary are prohibited by the occurrence of unexploded ammuntion.
[3]5-7 applications to each acre annually.

Source: Fort Campbell, 1984.

TABLE D-2

FORT CAMPBELL BUILT-UP AREA LAND USE

Land Use Category	Approximate Area (Acres)	Percent of Total Area
Family Housing	1,100	7.9
Troop Housing	600	4.3
Commercial Services	50	0.4
Community Facilities	400	2.9
Administration	50	0.4
Operational Training	4,850	34.7
Operational Maintenance	600	4.3
Supply, Storage, and Post Maintenance	1,200	8.6
Recreation Facilities	800	5.7
Open Space	4,300	30.6
Lakes	35	0.2
Total	13,985	100.0

Note: Built-up area includes the Main Cantonment area, Campbell Army Airfield, former Claksville Base, Lake Taal recreational area, and Sabre Heliport area.

Source: Fort Campbell, 1981.

TABLE D-3

MAJOR ON-POST ROADWAY CORRIDORS

East-West

- Lee Road
- Jackson Road and 18th Street
- Chaffee Road and 25th Street
- Morgan Road and Polk Road

North-South

- Ohio Avenue and Reed Avenue
- Indiana Avenue
- Woodlawn Road and Tennessee Avenue
- Missouri Avenue
- Kansas Avenue

FORT CAMPBELL
REGIONAL ECONOMIC IMPACT FORECAST
FOR CONSTRUCTION

REGIONAL ECONOMIC IMPACT FORECAST

INSTALLATION: Ft. Campbell, KY

IMPACTS FROM: Construction

PROJECT AND ALTERNATIVE NAME: Light Inf. Div.; Greatest Change

PROJECT INPUTS (1984 dollars)

Highest Annual Dollar Volume:	$ 10,400,000
Percent of $ volume local labor:	19%
Percent of $ volume local materials:	38%
Military families now living in region projected to move onto base:	none
Price deflator for output: 247	

ECONOMIC IMPACT FORECAST (1984 dollars)

CHANGE IN ANNUAL TOTAL BUSINESS VOLUME:	+ $	4,761,000	(+0.314%)
CHANGE IN ANNUAL LOCAL PERSONAL INCOME:	+ $	1,653,000	(+0.136%)
THIS ADDED PERSONAL INCOME IS EQUIVALENT TO THE AVERAGE ANNUAL SALARIES OF:		95 persons	(+0.153%)

FORT CAMPBELL
REGIONAL ECONOMIC IMPACT FORECAST
FOR MISSION CHANGE

REGIONAL ECONOMIC IMPACT FORECAST

INSTALLATION: Ft. Campbell, KY

IMPACTS FROM: Mission Change

PROJECT AND ALTERNATIVE NAME: Light Inf. Div.;Greatest Change

PROJECT INPUTS (1984 dollars)

Net change in $ value of expenditures for local supplies & services:	+$ 707,851
Net change in number of civilian employees:	+ 50
Average annual household income of civilian employees:	$ 27,700
Net change in number of military personnel:	+ 1,150
Average annual household income, military:	$ 17,600
Proportion (% age) of military personnel involved in the mission change who are expected to reside on post:	54%
Price deflator for output: 247	

ECONOMIC IMPACT FORECAST (1984 dollars)

CHANGE IN ANNUAL TOTAL BUSINESS VOLUME:	+ $ 19,105,000	(+1.262%)
CHANGE IN ANNUAL LOCAL PERSONAL INCOME:	+ $ 24,597,000	(+2.025%)
THIS ADDED PERSONAL INCOME IS EQUIVALENT TO THE AVERAGE ANNUAL SALARIES OF:	1,429 persons	(+2.299%)

APPENDIX E

ADDITIONAL INFORMATION ON FORT DRUM

FORT DRUM
REGIONAL ECONOMIC IMPACT FORECAST
FOR CONSTRUCTION

REGIONAL ECONOMIC IMPACT FORECAST

INSTALLATION: Ft. Drum, NY

IMPACTS FROM: Construction

PROJECT AND ALTERNATIVE NAME: Light Inf. Div.- Greatest Change

PROJECT INPUTS (1984 dollars)

Highest Annual Dollar Volume:	$ 319,000,000
Percent of $ volume local labor:	21%
Percent of $ volume local materials:	30%
Military families now living in region projected to move onto base:	none
Price deflator for output: 247	

ECONOMIC IMPACT FORECAST (1984 dollars)

CHANGE IN ANNUAL TOTAL BUSINESS VOLUME:	+ $ 329,498,000	(+1.667%)
CHANGE IN ANNUAL LOCAL PERSONAL INCOME:	+ $ 100,566,000	(+0.911%)
THIS ADDED PERSONAL INCOME IS EQUIVALENT TO THE AVERAGE ANNUAL SALARIES OF:	4,443 persons	(+1.042%)

FORT DRUM
REGIONAL ECONOMIC IMPACT FORECAST
FOR MISSION CHANGE

REGIONAL ECONOMIC IMPACT FORECAST

INSTALLATION: Ft. Drum, NY

IMPACTS FROM: Mission Change

PROJECT AND ALTERNATIVE NAME: Light Inf. Div.-Greatest Change

PROJECT INPUTS (1984 dollars)

Net change in $ value of expenditures for local supplies & services:	$	4,715,300
Net change in number of civilian employees:		1,614
Average annual household income of civilian employees:	$	25,055
Net change in number of military personnel:		11,820
Average annual household income, military:	$	22,500
Proportion (% age) of military personnel involved in the mission change who are expected to reside on post:		90%
Price deflator for output: 247		

ECONOMIC IMPACT FORECAST (1984 dollars)

CHANGE IN ANNUAL TOTAL BUSINESS VOLUME:	+ $	290,679,000	(+11.887%)
CHANGE IN ANNUAL LOCAL PERSONAL INCOME:	+ $	373,068,000	(+18.867%)
THIS ADDED PERSONAL INCOME IS EQUIVALENT TO THE AVERAGE ANNUAL SALARIES OF:		17,236 persons	(+21.892%)

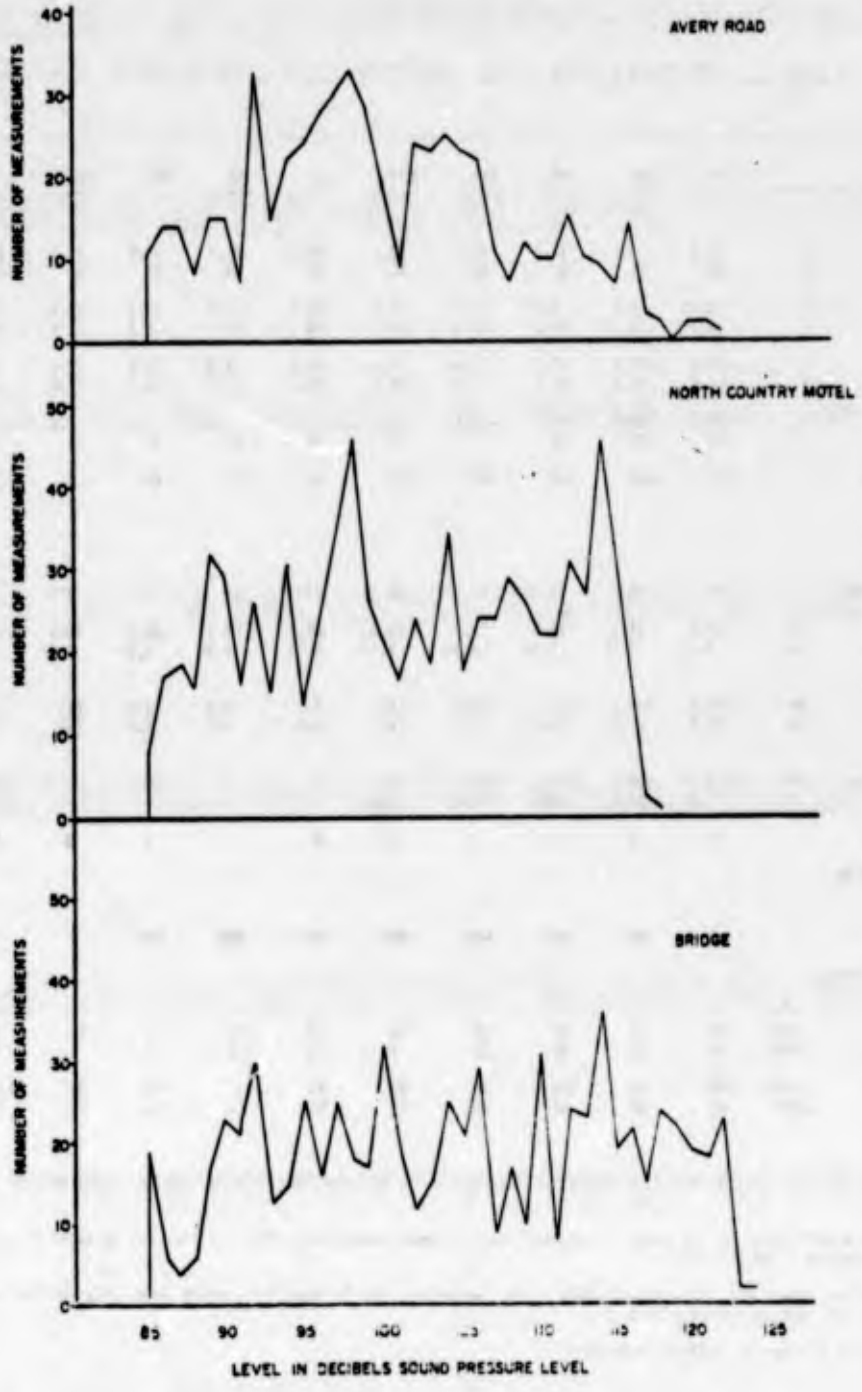


TABLE 3-FD-2

DISTRIBUTIONS OF BLAST NOISE MEASUREMENTS IN NATURAL BRIDGE, NY
Source: Luz, 1979

TABLE 3-FD-1

CLIMATIC SUMMARY FOR FORT DRUM/WHEELER SACK ARMY AIRFIELD

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	DATA YEARS
1. Temperature															
Absolute Maximum	C	18.9	16.1	27.2	29.4	30.6	35.6	37.7	35.0	35.6	29.4	24.4	18.9	36.7	30
	F	66	61	81	85	87	96	98	95	96	85	76	66	98	30
Mean Daily Maximum	C	-1.0	-0.4	4.4	11.9	19.0	24.5	27.3	26.3	21.9	15.3	7.8	0.7	13.2	30
	F	30.3	31.2	40.2	53.5	66.2	76.1	81.1	79.3	71.5	59.5	46.0	33.2	55.7	30
Mean Daily Minimum	C	-11.2	-10.9	-5.2	1.4	7.6	13.2	15.9	14.9	11.0	4.9	-0.4	-8.3	2.8	30
	F	11.8	12.4	22.6	34.5	45.6	55.8	60.7	58.8	51.8	40.9	31.2	17.1	37.0	30
Absolute Minimum	C	-35.6	-32.8	-28.3	-15.6	-4.4	-1.1	5.0	2.2	-2.8	-9.4	-19.4	-39.4	-39.4	30
	F	-32	-27	-19	4	24	30	41	36	27	15	-3	-39	-39	30
Heating Degree Days (2)(3)		1477	1332	1030	688	382	62	57	95	219	530	854	1341	8067	8-15
2. Precipitation															
Mean Relative Humidity Percent		74	74	71	67	66	68	68	71	73	72	73	75	71	23
Mean Monthly Precipitation and Annual	MM	79.5	64.0	72.6	78.7	80.8	69.3	81.8	80.0	98.3	97.3	103.6	95.0	999.7	30
	IN	3.13	2.52	2.86	3.10	3.18	2.73	3.22	3.15	3.87	3.83	4.08	3.74	39.36	30
Mean Monthly Snowfall and Annual	MM	657.9	569.0	401.3	68.6	(4)	0.0	0.0	0.0	(4)	17.8	254.0	932.2	2900.7	30
	IN	25.9	22.4	15.8	2.7	(4)	0.0	0.0	0.0	(4)	0.7	10.0	36.7	114.2	30
Maximum Monthly Snowfall	MM	2016.7	988.1	1366.6	203.2	20.3	0	0	0	T	127.0	1137.9	1869.4	2016.7	15
	IN	79.4	38.9	53.8	8.0	0.8	0	0	0	T	5.0	44.8	73.6	79.4	15
Mean Number of Days with Snowfall 0.25 MM (0.1 In)		16	14	11	3	(4)	0	0	0	0	(4)	5	14	63	23
3. Wind		WSW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	S	W	WSW	WSW	W	23
Prevailing Surface Direction															
Mean Speed	KMPH	17	17	17	19	15	13	13	11	13	13	10	15	15	23
	MPH	10	10	10	12	9	8	8	7	8	8	17	9	9	23
Extreme Speed	KMPH	104	93	104	96	93	91	87	80	96	117	109	96	117	23
	MPH	65	58	64	60	58	56	52	50	60	73	68	60	73	23

NOTES:
1. Fort Drum/Wheeler Sack Army Airfield is located at latitude 44°03'N, longitude 75°43'W, elevation 207.3m (680 ft), it is 16 Km (10 Mi) northeast of Watertown, N.Y.

2. Degree-day is a unit equal to the number of degrees that the mean temperature for a 24 hour day is above or below a base temperature. The base temperature for heating is 18.3° (65°F).

3. Data taken at Watertown, N.Y. City Water Supply Plant, September 1962 to May 1969, except June, July and August, and at Fort Drum Waste Water Treatment Plant, July 1969 to February 1978.

4. Number less than 0.5 day or 1.27 mm (0.05 IN)

5. T - Trace.

Source: Magness and others, 1981

TABLE 3-FD-2

NOISE LEVELS IN NATURAL BRIDGE, NEW YORK, IN 1979

Date	Time	Site 1	Site 2	Site 3
11 Jun	2110-2340*	73 dB	70 dB	71 dB
	2110-2340†	83 dB	80 dB	81 dB
	Average for day	73 dB	70 dB	71 dB
14 Jun	0848-1020	62 dB	57 dB	55 dB
	1945-2304*	55 dB	56 dB	54 dB
	1945-2304†	65 dB	66 dB	64 dB
	Average for day	57 dB	58 dB	56 dB
18 Jun	0944-1149	66 dB	64 dB	58 dB
	2021-0008*	74 dB	69 dB	57 dB
	2021-0008†	81 dB	78 dB	68 dB
	Average for day	72 dB	69 dB	59 dB
21 Aug	0812-1112	68 dB	63 dB	65 dB
	2050-2137	51 dB	53 dB	49 dB
	Average for Day	59 dB	55 dB	56 dB
22 Aug	0920-1104	63 dB	65 dB	59 dB
	2100-2347*	72 dB	69 dB	64 dB
	2100-2347†	80 dB	78 dB	74 dB
	Average for day	71 dB	69 dB	65 dB
26 Aug	2030-2341*	71 dB	63 dB	55 dB
	2030-2341†	79 dB	71 dB	64 dB
	Average for day	70 dB	62 dB	55 dB
28 Aug	0850-1058	68 dB	68 dB	--
	0923-1058	--	--	66 dB
	2108-2231*	64 dB	59 dB	49 dB
	2108-2231†	70 dB	64 dB	53 dB
	Average for day	60 dB	58 dB	54 dB
	Average of 7 days	69 dB	66 dB	64 dB
	CERL Predictions	76 dB	72 dB	65 dB

* Uncorrected equivalent level
† Measurements after 2200 hours weighted by 10 dB

Source: Luz, 1979.

TABLE 3-FD-3

LOCAL PLANNING AND LAND USE CONTROL IN JEFFERSON, LEWIS, AND ST. LAWRENCE COUNTIES, NEW YORK

Municipality	Planning Board Established	Master Plan Prepared	Zoning Ordinances Enacted	Subdivision Regulations Enacted
Jefferson County				
Adams (T)	X	X	-	X
Adams (V)	X	X	X	X
Alexandria (T)	X	X	X	X
Alexandria Bay (V)	-	X	X	X
Antwerp (T)	-	X	-	-
Antwerp (V)	-	X	-	-
Black River (V)	-	-	X	-
Brownville (T)	-	-	-	-
Brownville (V)	-	X	-	-
Cape Vincent (T)	-	X	-	-
Cape Vincent (V)	X	X	-	-
Carthage (V)	X	X	X	-
Champion (T)	-	X	-	-
Chaumont (V)	-	X	-	-
Clayton (T)	X	X	X	-
Clayton (V)	X	X	X	-
Deferiet (V)	-	X	-	X
Dexter (V)	-	-	-	-
Ellisburg (T)	X	-	X	-
Ellisburg (V)	-	X	X	-
Evans Mills (V)	X	-	X	X
Glen Park (V)	-	-	X	-
Henderson (T)	X	X	X	-
Herrings (V)	-	X	-	X
Hounsfield (T)	-	-	-	-
LeRay (T)	X	-	X	X
Lorraine (T)	X	-	-	-
Lyme (T)	X	X	X	X
Mannsville (V)	-	-	X	-
Orleans (T)	-	X	X	-
Pamela (T)	-	-	-	-
Philadelphia (T)	X	X	X	-
Philadelphia (V)	-	-	X	-

TABLE 3-FD-3 (Continued)

LOCAL PLANNING AND LAND USE CONTROL IN JEFFERSON, LEWIS, AND ST. LAWRENCE COUNTIES, NEW YORK

Municipality	Planning Board Established	Master Plan Prepared	Zoning Ordinances Enacted	Subdivision Regulations Enacted
Jefferson County (Cont.)				
Rodmad (T)	X	-	-	-
Rutland (T)	X	-	-	-
Sackets Harbor (V)	X	X	X	-
Theresa (T)	-	-	-	-
Theresa (V)	-	-	-	-
W. Carthage (V)	X	X	X	-
Watertown (T)	X	X	X	X
Watertown City	X	X	X	X
Wilna (T)	X	X	X	-
Worth (T)	X	X	X	X
Lewis County				
Castorland (V)	-	-	-	-
Constableville (V)	X	-	-	-
Copenhagen (V)	-	-	-	-
Croghan (T)	X	-	-	-
Croghan (V)	-	-	-	-
Denmark (T)	X	-	-	-
Diana (T)	-	-	X	X
Greig (T)	X	-	-	-
Harrisburg (T)	X	-	-	-
Harrisville (V)	X	X	-	-
Lewis (T)	X	X	X	X
Leyden (T)	X	-	-	X
Lowville (T)	X	X	X	X
Lowville (V)	X	X	X	X
Lyonsdale (T)	-	-	-	-
Lyons Falls (V)	-	-	-	-
Martinsburg (T)	X	X	X	X
Montague (T)	X	X	X	X
New Bremen (T)	X	-	-	-
Osceola (T)	X	X	X	X

TABLE 3-FD-3 (Concluded)

LOCAL PLANNING AND LAND USE CONTROL IN JEFFERSON, LEWIS, AND ST. LAWRENCE COUNTIES, NEW YORK

Municipality	Planning Board Established	Master Plan Prepared	Zoning Ordinances Enacted	Subdivision Regulations Enacted
Jefferson County (Con.)				
Pinckney (T)	X	X	X	X
Port Leyden (V)	X	-	-	-
Turin (T)	X	X	X	X
Turin (V)	X	X	-	X
Watson (T)	-	-	-	-
West Turin (T)	X	X	X	X
St. Lawrence County (Communities most likely to be affected)				
DePeyster (T)	-	-	-	-
Edwards (T)	-	-	-	-
Edwards (V)	-	-	-	-
Fowler (T)	X	X	-	-
Gouverneur (T)	-	-	-	-
Gouverneur (V)	X	X	X	X
Hermon (T)	-	-	-	-
Hermon (V)	-	-	-	-
Macomb (T)	-	-	-	-
Pitcairn (T)	-	X	-	-
Rossie (T)	X	-	-	-

(T) = town
(V) = village
X = in place
- = none in place

Source: Jefferson County Planning Board, St. Lawrence County Planning Board, and Tug Hill Commission, 1984.

APPENDIX F

ADDITIONAL INFORMATION ON FORT LEWIS, WASHINGTON

APPENDIX F

ADDITIONAL INFORMATION ON FORT LEWIS, WASHINGTON

Additional information for Fort Lewis, Washington in this Appendix includes the following:

- An itemized table of likely facilities needed, and area required under the two alternatives (division minus, and an infantry brigade).
- CERL model output for the division minus alternative, including economic impact forecasts for the mission change and facility construction.

TABLE F-1

LIKELY FACILITIES DEVELOPMENT AT FORT LEWIS UNDER THE ALTERNATIVE OF STATIONING A LIGHT INFANTRY DIVISION, MINUS AN INFANTRY BRIGADE

FACILITY	CONSTRUCTION COULD OCCUR ON PREVIOUSLY UNDEVELOPED LAND	AREA REQUIRED		
		SQUARE FEET	TOTAL ACRES	QUANTITY
E.P. Barracks		818,520		
Bachelor Officer Quarters		123,400		
Company Administration and Supply		306,005		
Enlisted Dining Facilities		68,800		
Family Housing	●	2,015,000/1,600 units	380[a]	
Division Headquarters		30,000		
Sensitized Compartment Information Facility		14,000		
Brigade Headquarters		50,000		
Battalion Headquarters		178,830		
Aviation Hangers		216,000		
Aviation Parking Apron	●	209,733	43[a]	
Vehicle Maintenance Shops	●	1,000,686	23[a]	
Training Facilities	●			
6 Small Arm Ranges		1,000,000/range	138[b]	
1 MG Range		2,000,000	46	
TASC Photo Lab Admin.		22,400		
Gymnasium		21,000		
Branch Library		8,000		
Recreation Center		27,000		
Child Care Center		22,500		
Handball Courts				5
Chapel		6,375		
Enl. Club		11,000		
Drama/Arts Center		28,000		
Arts and Crafts Center		7,000		
Tennis Courts				4
Softball Field				2

Source: Fort Lewis, Office of the Comptroller, 1984.
[a]Source: Glover, 1984. Personal communication.
[b]Source: Daniels, 1984. Personal communication.

TABLE F-2

LIKELY FACILITIES DEVELOPMENT AT FORT LEWIS UNDER THE ALTERNATIVE OF STATIONING AN INFANTRY BRIGADE, PLUS SUPPORT SLICE

FACILITY	CONSTRUCTION COULD OCCUR ON PREVIOUSLY UNDEVELOPED LAND	AREA REQUIRED		
		SQUARE FEET	TOTAL ACRES	QUANTITY
E.P. Barracks		303,240		1,323 spaces
Bachelor Officer Quarters		29,000		50 spaces
Company Administration and Supply		103,215		
Enlisted Dining Facilities		23,400		
Brigade Headquarters		10,000		
Battalion Headquarters		57,960		
Vehicle Maintenance Shops	●	1,000,686	23[a]	
Training Facilities				
6 Small Arm Ranges	●	1,000,000/range	138[b]	
1 MG Range	●	2,000,000	46	
Health, Morale & Welfare Facilities		90,800		
Other		306,700		

Source: Fort Lewis, Office of the Comptroller, 1984.
[a]Source: Glover, 1984. Personal communication.
[b]Source: Daniels, 1984. Personal communication.

FORT LEWIS
REGIONAL ECONOMIC IMPACT FORECAST
FOR CONSTRUCTION

REGIONAL ECONOMIC IMPACT FORECAST

INSTALLATION: Ft. Lewis, WA

IMPACTS FROM: Construction

PROJECT AND ALTERNATIVE NAME: Light Inf. Div.- Greatest Change

PROJECT INPUTS (1984 dollars)

Highest Annual Dollar Volume:	$ 186,000,000
Percent of $ volume local labor:	20%
Percent of $ volume local materials:	35%
Military families now living in region projected to move onto base:	none
Price deflator for output: 247	

ECONOMIC IMPACT FORECAST (1984 dollars)

CHANGE IN ANNUAL TOTAL BUSINESS VOLUME:	+ $ 200,182,000	(+0.551%)
CHANGE IN ANNUAL LOCAL PERSONAL INCOME:	+ $ 62,497,000	(+0.284%)
THIS ADDED PERSONAL INCOME IS EQUIVALENT TO THE AVERAGE ANNUAL SALARIES OF:	2,581 persons	(+0.329%)

FORT LEWIS
REGIONAL ECONOMIC IMPACT FORECAST
FOR MISSION CHANGE

REGIONAL ECONOMIC IMPACT FORECAST

INSTALLATION: Ft. Lewis, WA

IMPACTS FROM: Mission Change

PROJECT AND ALTERNATIVE NAME: Light Inf. Div.- Greatest Change

PROJECT INPUTS (1984 dollars)

Net change in $ value of expenditures for local supplies & services:	$	3,094,000
Net change in number of civilian employees:		585
Average annual household income of civilian employees:	$	25,900
Net change in number of military personnel:		10,000
Average annual household income, military:	$	22,700
Proportion (% ase) of military personnel involved in the mission change who are expected to reside on post:		54%
Price deflator for output: 247		

ECONOMIC IMPACT FORECAST (1984 dollars)

CHANGE IN ANNUAL TOTAL BUSINESS VOLUME:	+ $	341,868,000	(+0.941%)
CHANGE IN ANNUAL LOCAL PERSONAL INCOME:	+ $	305,833,000	(+1.390%)
THIS ADDED PERSONAL INCOME IS EQUIVALENT TO THE AVERAGE ANNUAL SALARIES OF:		13,753 persons	(+1.755%)

APPENDIX G

ADDITIONAL INFORMATION ON FORT ORD

FORT ORD
REGIONAL ECONOMIC IMPACT FORECAST
FOR CONSTRUCTION

REGIONAL ECONOMIC IMPACT FORECAST

INSTALLATION: Ft. Ord, CA

IMPACTS FROM: Construction

PROJECT AND ALTERNATIVE NAME: Light Inf. Div.- Greatest Change

PROJECT INPUTS (1984 dollars)

Highest Annual Dollar Volume:	$ 85,000,000
Percent of $ volume local labor:	17%
Percent of $ volume local materials:	30%
Military families now living in region projected to move onto base:	none
Price deflator for output: 247	

ECONOMIC IMPACT FORECAST (1984 dollars)

CHANGE IN ANNUAL TOTAL BUSINESS VOLUME:	+ $ 68,363,000	(+0.248%)
CHANGE IN ANNUAL LOCAL PERSONAL INCOME:	+ $ 27,052,000	(+0.141%)
THIS ADDED PERSONAL INCOME IS EQUIVALENT TO THE AVERAGE ANNUAL SALARIES OF:	1,042 persons	(+0.164%)

FORT ORD
REGIONAL ECONOMIC IMPACT FORECAST
FOR MISSION CHANGE

REGIONAL ECONOMIC IMPACT FORECAST

INSTALLATION: Ft. Ord, CA

IMPACTS FROM: Mission Change

PROJECT AND ALTERNATIVE NAME: Light Inf. Div.- Greatest Change

PROJECT INPUTS (1984 dollars)

Net change in $ value of expenditures for local supplies & services:	$	1,007,000
Net change in number of civilian employees:		130
Average annual household income of civilian employees:	$	27,000
Net change in number of military personnel:		1,770
Average annual household income, military:	$	22,000
Proportion (% age) of military personnel involved in the mission change who are expected to reside on post:		90%

Price deflator for output: 247

ECONOMIC IMPACT FORECAST (1984 dollars)

CHANGE IN ANNUAL TOTAL BUSINESS VOLUME:	+ $	37,442,000	(+0.778%)
CHANGE IN ANNUAL LOCAL PERSONAL INCOME:	+ $	53,914,000	(+1.100%)
THIS ADDED PERSONAL INCOME IS EQUIVALENT TO THE AVERAGE ANNUAL SALARIES OF:		2,411 persons	(+1.136%)

LISTED AND PROPOSED ENDANGERED AND THREATENED SPECIES AND CANDIDATE SPECIES THAT MAY OCCUR IN THE AREA OF THE PROPOSED EXPANDED TROOP STRENGTH AT FORT ORD, HUNTER-LIGGETT, CAMP ROBERTS MONTEREY AND SAN LUIS OBISPO COUNTIES, CALIFORNIA
#1-1-84-SP-261

LISTED SPECIES

(E) San Joaquin kit fox, Vulpes macrotis mutica (H-L, CR)
(E) Smith's blue butterfly, Euphilotes enoptes smithi (FO)
(E) Bald eagle, Haliaeetus leucocephalus (H-L, CR)
(E) California condor, Gymnogyps californianus (H-L, CR)
(E) American peregrine falcon, Falco peregrinus anatum (H-L, CR)

PROPOSED SPECIES

None

CANDIDATE SPECIES

least Bell's vireo, Vireo bellii pusillus (CR, H-L) (1)
Black legless lizard, Anniella nigra nigra (FO) (2)

Plants

Fort Ord
Sandmat manzanita, Arctostaphylos uva-ursi subsp. pumila (2)
Monterey ceanothus, Ceanothus rigidus (2)
Seaside bird's-beak, Cordylanthus rigidus subsp. littoralis, comb. nov. ined. (1)
Hutchinson's larkspur, Delphinium hutchinsoniae (2)
Eastwood's goldenweed, Ericameria fasciculata (1)
Coast wallflower, Erysimum ammophilum (2)
Menzies' wallflower, Erysimum menziesii (1)
Santa Cruz microceris, Microceris decipiens (2)
Hunter-Liggett
Purple amole, Chlorogalum purpureum var. purpureum (1)
Brewer's spineflower, Chorizanthe breweri (2)
One-awned spineflower, Chorizanthe rectispina (2)
San Antonio collinsia, Collinsia antonina (2)
Santa Lucia bedstraw, Galium californicum subsp. luciense (2)
Hardham's bedstraw, Galium hardhamiae (2)
Salinas Valley baeria, Lasthenia leptalea (2)
Carmel Valley bushmallow, Malacothamnus palmeri var. involucratus (2)
Santa Lucia pogogyne, Pogogyne clareana (2)
Hoffman's sanicle, Sanicula hoffmannii (2)

Hickman's checkermallow, Sidalcea hickmannii subsp. hickmannii (2)
Caper-fruited tropidocarpum, Tropidocarpum capparideum (2)

Camp Roberts

Salinas Valley baeria, Lasthenia leptalea (2)

FO = Fort Ord
H-L = Hunter-Leggett
CR = Camp Roberts
(E) = Endangered
(T) = Threatened
(CH)= Critical Habitat
(1) = Category 1: Taxa for which the Fish and Wildlife Service has sufficient biological information to support a proposal to list as endangered or threatened.
(2) = Category 2: Taxa which existing information indicates may warrant listing, but for which substantial biological information to support a proposed rule is lacking.

APPENDIX H

METHOD FOR ESTIMATING ENERGY USAGE

APPENDIX H

METHOD FOR ESTIMATING ENERGY USAGE

The four major categories of energy usage addressed in this report are personal transportation, off-post housing, military vehicles and equipment, and on-post energy requirements. The methods used to determine present energy consumption and to estimate the energy impacts of the stationing alternatives for each of the categories are described below.

The primary mode of personal transportation is by private automobile. The number of vehicles operated by military personnel is estimated as 1.6 automobiles per troop based on information obtained from four of the forts involved in the stationing alternatives. Gasoline consumption is calculated based on the average annual mileage of 9,026 miles per car at a mileage of 15.53 miles per gallon (Motor Vehicle Manufacturers Association, 1983).

The estimates of gasoline consumption in counties adjacent to the forts using national averages may be compared with the updated values from Drysdale and Calef, 1977 presented in Table H-1. The Drysdale and Calef values were based on 1970 census and service station sales data and include fuel consumed by trucks and commercial aircraft during taxiing, idling and take-off. The values are updated based on the 2.02 percent increase in per capita energy consumption from 1970 to 1980 (U.S. Bureau of the Census, 1982). Per capita energy usage for transportation in each state may be calculated from data in the same reference. Transportation energy usage in the surrounding counties estimated from the per capita energy usage are also presented in Table H-1. The updated Drysdale and Calef values were used to evaluate personal transportation energy impacts in this report.

Off-post housing energy consumption in surrounding counties and by military personnel and dependents living off-post is based on per capita usage for residential and commercial purposes in each state as summarized in Table H-2 (U.S. Bureau of the Census, 1982). All troops living off-post are assumed to be married and the average number of dependents is 2.5. The percentage of married incoming troops is based on the Army average; 75 percent of all officers are married and 47 percent of all enlisted personnel are married.

Energy usage by military vehicles and equipment is estimated based on an average vehicle usage of 20 miles per day for 242 days per year. The fuel mileage of both gasoline and diesel powered vehicles is 7.5 miles per gallon and approximately 36 percent of the

TABLE H-1

ESTIMATES OF PRESENT TRANSPORTATION ENERGY USAGE

Fort	Population of Adjacent Counties[1]	Gasoline Consumption[2] 10^9 Btu	Drysdale and Calef Values[3] 10^9 Btu	U.S. Census Values,[4] 10^9 Btu
Alaska				
Richardson	230,846	7,110	11,600	51,000
Wainwright	65,311	2,010	3,800	14,400
Benning	254,660	8,060	17,500	25,000
Campbell	168,269	6,770	9,500	17,000
Drum	227,440	6,520	11,700	13,100
Lewis	609,907	24,480	29,400	61,600
Ord	290,444	9,130	17,200	29,000

Sources:
1. U.S. Bureau of the Census, 1980.
2. Motor Vehicle Manufacturers Association, 1983.
3. Drysdale and Calef, 1977.
4. U.S. Bureau of the Census, 1982.

TABLE H-2

ESTIMATES OF PRESENT OFF-POST HOUSING ENERGY USAGE

Fort	Population of Adjacent Counties	Adjacent States	Percent of Population	Per Capita Housing Energy Usage, 10^6 Btu	Total Off-Post Housing Energy Use, 10^9 Btu
Alaska					
Richardson	230,846	Alaska	100	171.64	50,800
Wainwright	64,311				
Benning	254,660	Alabama	19	99.90	25,700
		Georgia	81	101.23	
Campbell	168,269	Kentucky	45	116.36	23,800
		Tennessee	55	161.98	
Drum	227,440	New York	100	105.76	24,100
Lewis	609,907	Washington	100	132.14	80,600
Ord	290,444	California	100	94.94	27,600

vehicles are gasoline powered. Motorcycle mileage is 50 miles per gallon. Fuel usage by all the gasoline and diesel powered generators and compressors in the division is estimated as approximately three percent of the fuel consumption of all division vehicles. Helicopter energy usage is based on an individual aircraft consumption of 100 gallons per hour for 300 hours per year. Fuel consumption by military transport planes for annual training of the full division is estimated using a capacity of 100 troops per transport plane and a fuel usage rate of 3 gallons per mile.

Conversion factors for fuel usage to Btu are summarized in Table H-3. Gasoline and diesel fuel consumption indicate present energy usage by military vehicles. Aviation fuel and kerosene consumption indicate present aircraft energy use. The sum of coal, oil, natural gas, propane and electricity use indicates present on-post energy use for heating, cooling and personnel support. This sum is extrapolated using an effective population at each fort to evaluate the impact of troop deployment alternatives. The effective population is defined as the number of civilian employees, military personnel, and dependents living on-post plus one-third the number of military personnel and civilians who work an eight hour shift on-post but live off-post. On-post energy use is divided by the effective population to obtain present per resident on-post energy usage.

The total energy use per troop is determined by dividing the sum of on-post energy usage, off-post residential consumption and personal vehicle usage by the number of military personnel at an installation. Dependents of military personnel and civilian employees are not included in this calculation.

The increase in on-post energy consumption under each stationing alternative is assumed to be directly proportional to the increase in effective population. For mobility fuels such as gasoline, diesel fuel and aviation fuel, the energy requirements of the vehicles in the light infantry division are added to the linear extrapolation of present mobility fuels consumption.

TABLE H-3

ENERGY UNIT CONVERSION FACTORS

1 Ton of Coal = 22.0 MBtu (million Btu)
1 Gallon of Fuel Oil = 140,200 Btu
1 Cubic Foot of Natural Gas = 1,040 Btu
1 Pound of Natural Gas = 21,830 Btu
1 Gallon of Gasoline = 125,000 Btu
1 Gallon of Diesel Fuel = 138,700 Btu
1 Gallon of Aviation Fuel (JP4) = 127,000 Btu
1 Gallon of Propane = 95,000 Btu
1 Pound of Propane = 21,573 Btu
1 Kilowatt-Hour of Electricity = 11,600 Btu (incorporates a conversion efficiency of 30 percent from fuel energy to electrical energy)

APPENDIX I

ADDITIONAL INFORMATION ON THE REGIONAL ECONOMIC ANALYSIS

APPENDIX I

THE ECONOMIC IMPACT FORECAST SYSTEM

The CERL Economic Impact Forecast System (EIFS) is a regional/sectoral model and is constructed on detailed information obtained on all U.S. counties. At the regional level, it covers all the United States in any combination of counties as required. At the sectoral level it analyzes five functional areas: construction, operations and maintenance, training, mission change, and contractor/industrial type activities.

The method of analysis is based on a combination of community economic base study and location quotient. The location quotient (LQ) is used to calculate "total to basic" ratios and, hence, regional multipliers. Employment, rather than income, total payrolls, or value added, is chosen as the unit of measurement in the calculation of the location quotients and the multipliers. The driving force of the whole system is thus a set of regional and national employment figures which are used to generate, first, the location quotients, and then the regional multipliers.

EIFS consists of five separate forecast models, one for each of the functional areas of military actions listed above. These five models are similar enough to be considered as a "generic" regional economic impact model. Figure I-1 illustrates the general model structure found in all of the EIFS models.

A military action will usually involve a change in personnel, their wages and salaries, and local procurements for materials and supplies. In EIFS, personnel are classified as either civilian, military permanent party, or military trainee. A further distinction is made between military personnel living on-post, both permanent party and trainee, and those living in the region around the installation.

Population is implicitly modeled to the extent that only those civilian and military personnel involved with the military action and their dependents are counted in the population change. EIFS does not estimate the local population effects that may be induced as a result of the economic impacts from a military action.

Changes in salaries and local procurements are converted into an initial change in local sales. Local procurements for materials and supplies are assumed to go to merchants who sell wholesale goods or business and professional services. Personnel salaries are converted to local sales of retail goods and personnel

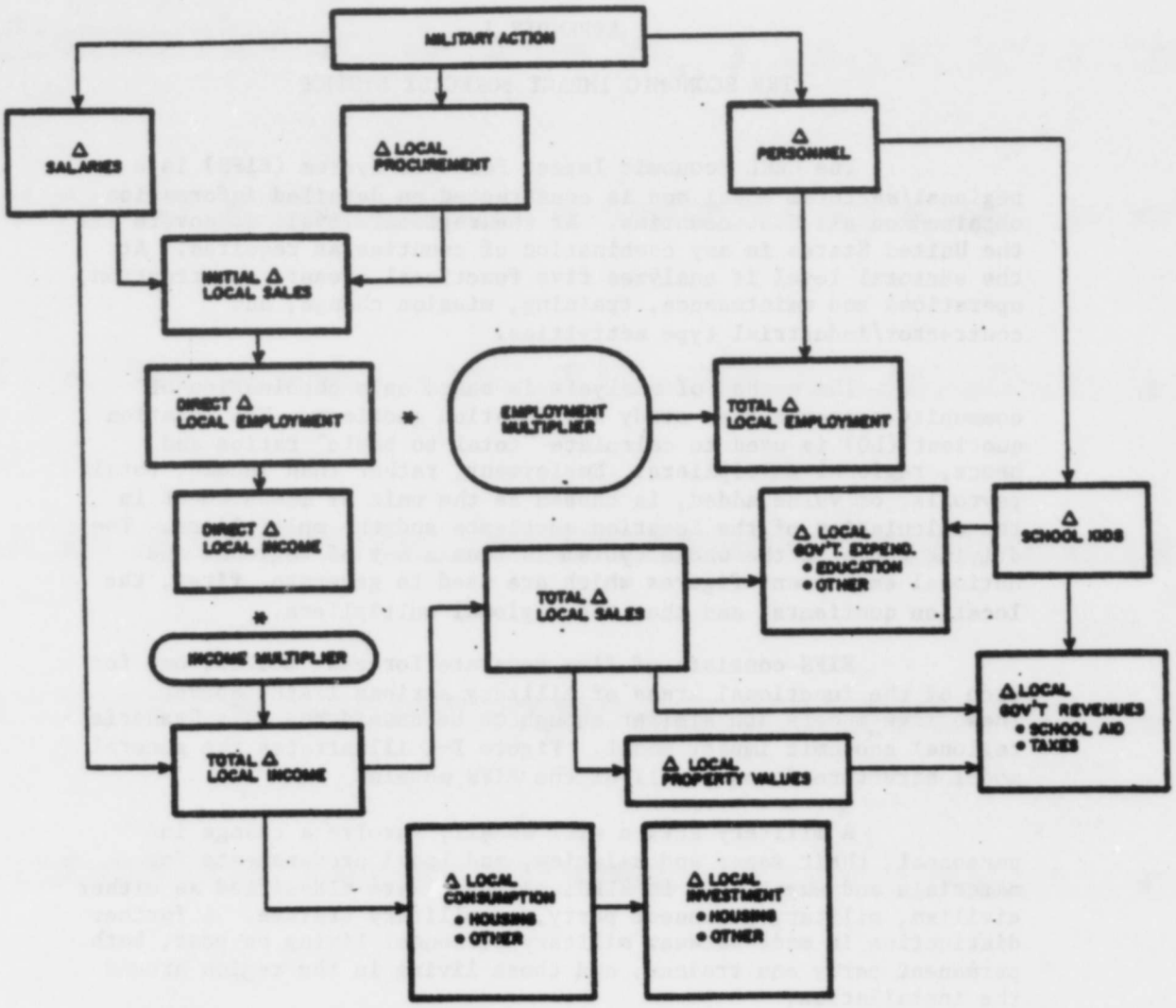


FIGURE I-1
THE "GENERIC" EIF FORECAST MODEL

services by factors that represent the portion of income spent in the region. These factors differ for civilians and various types of military personnel; they also account for the differences in consumer purchases at post commissary and exchange facilities by military personnel living on- and off-post.

Local merchants are assumed to hire or lay off employees because of the initial change in sales. Furthermore, this direct change in local employment is presumed to be proportional to the initial change in sales. Like the initial change in sales, these workers are employed at either trade or service sector establishments. In addition to employment changes, the initial change in local sales will also affect the wages and salaries of employees in the affected businesses.

The direct changes in local employment and local income will generate subsequent local employment and income changes. The overall subsequent changes in local employment and income caused by the initial change in local sales are called the multiplier process. The multiplier process can be quantified as a "multiplier," which estimates the total change that results from an initial change. EIFS estimates and uses two types of multipliers: an employment multiplier and an income multiplier. Consequently, the total change in local employment due to a military action is equal to the product of the direct change in local employment and the employment multiplier, plus the military and civilian personnel who were affected by the military action. The total change in local income due to a military action is equal to the product of the direct change in local income and the income multiplier, adjusted to reflect local personnel income by place of residence, plus the income of the military and civilian personnel who were affected by the military action. Employment and income changes calculated in EIFS are "full-time" equivalents; i.e., two workers employed for 4 hours a day is the same as one employee working an 8-hour day. Also, total change in local personal income does not include the effects of overtime pay, night-pay differentials, weekend pay, etc. Local personal income in EIFS is defined as the sum of wages and salaries, dividends, interest, rents, transfer payments, and net social insurance payments.

The Construction forecast model estimates the economic and social consequences of a construction project. The construction project is assumed to be carried out by a construction firm, so that neither the civilian nor the military personnel of the installation are involved in the activity. The magnitude of regional economic effects depends mostly on the extent to which local laborers are

used for the construction project and on how much the construction contractor depends on local merchants for needed materials and supplies.

The Mission Change forecast model estimates the socioeconomic impacts resulting from major changes in activity at a military installation (e.g., a closure of operations at the post or a change in the installation's mission, such as an armor division substituted for an infantry division. Each action would indicate a different mix of civilian and military personnel before and after the action, as well as changes in local procurements of services and supplies.

Detailed discussion of the EIFS model can be found in CERL Technical Report N-69, Economic Impact Forecast System (EIFS) II: User's Manual, Updated Edition (CERL, 1983).

APPENDIX J

OVERVIEW OF TRAINING ACTIVITIES

OF THE

PROPOSED LIGHT INFANTRY DIVISION

OVERVIEW OF THE TRAINING ACTIVITIES OF THE PROPOSED LIGHT INFANTRY DIVISION

The creation of the 17th Infantry Division (Light) at any of the described candidate locations creates a requirement for individual and unit training. An overview of training requirements necessary to maintain the 17th Infantry Division combat ready is presented below.

Among the peacetime missions of a military unit is training to maintain the skill proficiency of each soldier and to achieve readiness for the combat mission of the unit. This training is accomplished in the field by simulating conditions the unit would likely encounter in combat.

There are approximately 242 days available each year for training. Field exercises account for one-third of the available time used. Operation, maintenance, and repair of equipment, and the practice of small unit tactical procedures account for an additional third. The remaining third of available time is spent on the participation in and support of installation activities, and the support of Army Reserve and National Guard training.

Field training exercises vary depending upon the size and type of unit involved, but are normally conducted in undeveloped areas of a military reservation. Activities include the conduct of tactical maneuvers using conventional combat gear for the individual soldier and the weapons and equipment organic to the military unit. Every prudent effort is made to promote battlefield realism during such exercises with the exception that blank ammunition is normally used to insure personnel safety. This type of training requires the operation of vehicles and other equipment, both on and off the roads and trails, employing protective and concealment measures, and performing administrative and logistical functions under field and combat simulated conditions.

Range firing, on-the-job training (for mechanics, clerks, supply personnel, medicaal personnel, etc.), and small unit and crew training is conducted using established facilities and training areas dedicated to such purposes. These areas are normally located in or near the cantonment area of a military installation and are subject to repetitive use.

Support given to Army Reserve and National Guard units normally takes place during the summer months when these units travel to military installations for two weeks of active duty training. During this period, actvie Army units turn over some of there equipment and

training areas to reserve units so they can conduct field training. this training mainly focuses on unit level operations.

The support given to the host installation by tenant Army units takes many forms. Tenant units will supply assistance with housekeeping, and a variety of other activities. The support provided will, of course, depend on the particular installation, its need for support, and the tenant unit ability to provide support.

As mentioned previously, field exercises vary depending upon the size and type of unit involved. There is some uniformity in the frequency of training. Division sized units normally participate in field exercises once every two years. Brigade sized units train as a unit about once a year. Battalions train, on the average, once per quarter. Company and platoon sized units train, in the field, on an average of once a month. Generally, field training exercises require combat unit elements to perform maneuvers necessary for attack, defense, and withdrawal during daytime and nighttime conditions. Support elements of the unit receive their training, during these field exercises, by providing the variety of services and tasks required to accomplish the assigned unit mission.

Basic maneuvers common to all troop units on field exercises include tactical road marches, moving into assembly areas, and establishing perimeter security to portect against suprise enemy attacks. Road marches of 15 to 30 kilometers are common and are conducted using vehicles organic to the unit (jeeps and light to medium trucks). These road marches usually conclude when the unit bivouacs in an assembly area to await initiation of other maneuvers. Personnel, vehicles, and other equipment are dispersed and camouflaged to prevent observation. Perimeter security is simultaneously established to prevent suprise attack against those in the assembly area.

Attack, defense, and withdrawal maneuvers by combat elements of a division or brigade requires the coordinated movement of infantry and artillery. When attacking, infantry move using available roads and trails and, as is generally and realistically needed, use cross-country movement when in contact with the enemy. During defensive activities, foxholes are prepared for personnel and weapons emplacement, minefields are often installed, and protective barriers are erected. During a withdrawal, units move to successive defensive positions to delay enemy advance. The defensive preparations used during a withdrawal are more hastily prepared than during a deliberate defensive maneuver. Except for specifically designated live fire exercises, live ammunition is not used during field exercises. Blanks and other simulators are used to provide battlefield conditions and effects.

Combat support units conduct their own field exercises as well as participate in brigade and battalion operations. Their tasks and support are specific according to the type of unit they are. Aviation units transport troops and cargo, provide air attack support, and remove casualties when required. Engineer units construct/demolish roadways, bridges, obstacles, and minefields; assist in river crossings; and provide potable water to troop units. Signal units operate radio and teletype networks, and install and operate telephone communicatiin systems. Medical units erect and operate medical aid stations and evacuate casualties from the combat area. Other support command units transport bulk food supplies, ammunition, and fuel repair vehicles; control medical service operations; and provide personnel management services.

In brief, the Infantry Division (Light) will train using the developmed methods currently used by the Army. This training will have as its goal, the development of the individual soldier and the cohesiveness of the component units as a primary consideration. The mainterance of combat readiness is, naturally, the purpose of all training.

APPENDIX K

CONSTRUCTION REQUIRED FOR THE STATIONING ALTERNATIVES

TABLE K-1

CONSTRUCTION REQUIRED FOR THE
FORT WAINWRIGHT-FORT LEWIS STATIONING ALTERNATIVE

Fort Wainwright	Fort Richardson	Fort Lewis
Convert Building 4066 to Troop Medical Clinic	Enlisted Bachelor's Quarters	BOQ
BDE Maintenance Facility (Org.)	Dental Clinic, 32 Chair	EP Barracks
Dental Clinic, 28 Chair	Community Health Bldg	Co Adm/Supply
DISCOM Maintenance Facility (Org.)	Medical Clinic	Bn HQ/Classroom
DVARTY Maintenance Facility (Org.)	Barracks Mod 626	Bde HQ
Composite Maintenance Facility (Org.)	Aviation Hanger with Apron & Fuel Disp	Dining Facility
Direct Support Maintenance Facility	Barracks Mod 628	Vehicle Maint Shop
Bde HQ (Consolidated), 3 each	Barracks Mod 630	Training Facilities
General Purpose Warehouse		TASC Photo Lab/Admin
Ammunition Igloos		Gymnasium
Dental Clinic, 34 Chair.		Branch Library
GS Maintenance Facility		Child Care Center (300)
Outpatient Clinic		Tennis Courts
Cold Storage Warehouse		Softball Fields
Training Aids/Battle Simulation Center		EM Club
Barracks Modernization (1001)		Drama/Arts Center
Barracks Modernization (1004)		Arts & Crafts Center
BCT Barracks Modernization, 2 each		
BCT Barracks Modernization, 3 each		

TABLE K-2

CONSTRUCTION REQUIRED FOR THE
FORT LEWIS-FORT ORD STATIONING ALTERNATIVE

Fort Ord	Fort Lewis
EP Barracks	EP Barracks
Bachelor Officers Quarters	Bachelor Officers Quarters
Company Administration and Supply	Company Administration and Supply
Dining Facilities Enlisted	Enlisted Dining Facilities
Brigade Headquarters	Family Housing
Battalion Headquarters	Division Headquarters
Family Housing	Sensitized Compartment Information Facility
Ammo Storage	Brigade Headquarters
Deployment Warehouse	Battalion Headquarters
	Aviation Hangers
	Aviation Parking Apron
	Vehicle Maintenance Shops
	Training Facilities
	6 Small Arm Ranges
	1 MG Range
	TASC Photo Lab Admin.
	Gymnasium
	Branch Library
	Recreation Center
	Child Care Center
	Handball Courts
	Chapel
	Enlisted Club
	Drama/Arts Center
	Arts and Crafts Center
	Tennis Courts
	Softball Field

TABLE K-3

CONSTRUCTION REQUIRED FOR THE STATIONING OF THE
FULL LIGHT INFANTRY DIVISION AT FORT DRUM

Barracks	Basketball Courts
BOQ	Baseball Fields
Dining Facilities	FE Maint. Building
Family Housing	DEH Building
Brigade HQ	Transportation Building
Battalion HQ/CLSRM	TMP Maintenance Building
Company HQ	Elec. Substation
TAC Shops	Central Heat Plant
Runway	Water Treatment Plant
Overrun & Shoulders	Sewage Treatment Plant
Taxiways	Station Hospital
Hangar Apron	Library
Flight Control Tower	Red Cross Facility
A/C Fuel Truck Fac.	Child Care Center
A/C Fuel Storage	SSSC
Nav Aid Building	Class VI Store
Avionics Shop	ROD/Gun Club
A/C Hanger	Tennis Courts
Elementary School	G. P. Warehouse
NCO/EM Club	Flam Mat Warehouse
Chapel Center	FE Maintenance Shed
Commissary	FE Storehouse
Skill Center	Salvage Facility
Bowling Alley	PMO Facility
PX	Finance Center
Officers Club	JAG Office
GED Center	Guest House
Auto Craft Shop	Cold Storage Warehouse
MWR Admin/Supply	DEH Vehicle Sheds
Youth Activities Center	Ammo Storage
TASC	Med Supply
Instrument Trainer Building	Gymnasium
Troop MED Centers	Swimming Pool
Dental Clinic	Hard Stand
Computer Center	Post Admin
PX Cafeteria	Roads/Streets
Gas Station	Div/Post HQ
Post Office	Recreation Center
Theater	Arms Vault
	Ranges

TABLE K-4

CONSTRUCTION REQUIRED FOR THE
FORT DRUM-FORT CAMPBELL STATIONING ALTERNATIVE

Fort Drum		Fort Campbell
Barracks	Basketball Courts	BN Consolidated Mess
BOQ	Baseball Fields	BDE Headquarters Building
Dining Facilities	FE Maint. Building	Motor Pool Building
Family Housing	DEH Building	Motor Pool Hard Stands
Brigade HQ	Transportation Building	BTN HQ/Classrooms
Battalion HQ/CLSRM	TMP Maintenance Building	Company Admin/Supply
Company HQ	Elec. Substation	
TAC Shops	Central Heat Plant	
Runway	Water Treatment Plant	
Overrun & Shoulders	Sewage Treatment Plant	
Taxiways	Station Hospital	
Hangar Apron	Library	
Flight Control Tower	Red Cross Facility	
A/C Fuel Truck Fac.	Child Care Center	
A/C Fuel Storage	SSSC	
Nav Aid Building	Class VI Store	
Avionics Shop	ROD/Gun Club	
A/C Hanger	Tennis Courts	
Elementary School	G. P. Warehouse	
NCO/EM Club	Flam Mat Warehouse	
Chapel Center	FE Maintenance Shed	
Commissary	FE Storehouse	
Skill Center	Salvage Facility	
Bowling Alley	PMO Facility	
PX	Finance Center	
Officers Club	JAG Office	
GED Center	Guest House	
Auto Craft Shop	Cold Storage Warehouse	
MWR Admin/Supply	DEH Vehicle Sheds	
Youth Activities Center	Ammo Storage	
	Med Supply	
TASC	Gymnasium	
Instrument Trainer Building	Swimming Pool	
	Hard Stand	
Troop MED Centers	Post Admin	
Dental Clinic	Roads/Streets	
Computer Center	Div/Post HQ	
PX Cafeteria	Recreation Center	
Gas Station	Ranges	
Post Office	Arms Vault	
Theater		

TABLE K-5

CONSTRUCTION REQUIRED FOR THE
FORT DRUM-FORT BENNING STATIONING ALTERNATIVE I (Alt. 11)

Fort Drum		Fort Benning
Barracks	FE Maint. Building	Bde Hq Bldg
BOQ	DEH Building	Bn Hq Bldgs
Dining Facilities	Transportation Building	Co Admin & Supply
Family Housing	TMP Maintenance Building	Encl Bks w/o Dining
Brigade HQ	Elec. Substation and Distribution Lines	Encl Dining
Battalion HQ/CLSRM	Central Heat Plant	Chapels
Company HQ	Water Well, Distribution Lines & Storage Tanks	Religious Ed Fac
TAC Shops	Water Treatment Plant	Dispensary
Runway	Sewage Treatment Plant	Fire Station
Overrun & Shoulders	Sewage Pump Station and Force Main	Gymnasium
Taxiways	Station Hospital	Recreation Center
Hangar Apron	Library	Dry Storage Warehouse
Flight Control Tower	Red Cross Facility	G. P. Warehouse
A/C Fuel Truck Fac.	Child Care Center	Bde Vehicle Maint
A/C Fuel Storage, Jet	SSSC	Bn Vehicle Maint
Nav Aid Building	Class VI Store	Road Improvements
Avionics Shop	Rod/Gun Club	Telephone Exchange
A/C Hanger	Tennis Courts	Wash Fac Centralized
Elementary School	G. P. Warehouse	BOQ
NCO/EM Club	Flam Mat Warehouse	Come Ac/Ht Plant
Chapel Center	FE Maintenance Shed	Utility Supports Systems
Commissary	FE Storehouse	Bowling Center
Skill Center	Salvage Facility	Skill Development Center
Bowling Alley	PMO Facility	Enlisted Club
PX	Finance Center	Exchange Facilities
Officers Club	JAG Office	Indoor Handball Court
GED Center	Guest House	Outdoor Recreation Fac
Auto Craft Shop	Cold Storage Warehouse	Bn Adm & CLSRM
MWR Admin/Supply	DEH Vehicle Sheds	
Youth Activities Center	Ammo Storage	
TASC	Med Supply Warehouse	
Instrument Trainer Building	Gymnasium	
Troop MED Centers	Swimming Pools (1-indoor, 1-outdoor)	
Dental Clinic	Hard Stand	
Computer Center	Post Admin	
PX Cafeteria	Roads/Streets	
Gas Station	Div/Post HQ	
Post Office	Recreation Center	
Theater	Ranges	
Basketball Courts		
Baseball Fields		

TABLE K-6

CONSTRUCTION REQUIRED FOR THE
FORT DRUM-FORT BENNING STATIONING ALTERNATIVE II (Alt. 12)

Fort Drum		Fort Benning
Barracks	FE Maint. Building	Bde Hq Bldg
BOQ	DEH Building	Bn Hq Bldgs
Dining Facilities	Transportation Building	Co Admin & Supply
Family Housing	TMP Maintenance Building	Encl Bks w/o Dining
Brigade HQ	Elec. Substation and	Encl Dining
Battalion HQ/CLSRM	Distribution Lines	Chapels
Company HQ	Central Heat Plant	Religious Ed Fac
TAC Shops	Water Well, Distribution	Dispensary
Runway	Lines & Storage Tanks	Fire Station
Overrun & Shoulders	Water Treatment Plant	Gymnasium
Taxiways	Sewage Treatment Plant	Recreation Center
Hangar Apron	Sewage Pump Station and	Dry Storage Warehouse
Flight Control Tower	Force Main	G. P. Warehouse
A/C Fuel Truck Fac.	Station Hospital	Bde Vehicle Maint
A/C Fuel Storage, Jet	Library	Bn Vehicle Maint
Nav Aid Building	Red Cross Facility	Road Improvements
Avionics Shop	Child Care Center	Telephone Exchange
A/C Hanger	SSSC	Wash Fac Centralized
Elementary School	Class VI Store	BOQ
NCO/EM Club	Rod/Gun Club	Come Ac/Ht Plant
Chapel Center	Tennis Courts	Utility Supports Systems
Commissary	G. P. Warehouse	Bowling Center
Skill Center	Flam Mat Warehouse	Skill Development Center
Bowling Alley	FE Maintenance Shed	Enlisted Club
PX	FE Storehouse	Exchange Facilities
Officers Club	Salvage Facility	Indoor Handball Court
GED Center	PMO Facility	Outdoor Recreation Fac
Auto Craft Shop	Finance Center	Bn Adm & CLSRM
MWR Admin/Supply	JAG Office	
Youth Activities	Guest House	
Center	Cold Storage Warehouse	
TASC	DEH Vehicle Sheds	
Instrument Trainer	Ammo Storage	
Building	Med Supply Warehouse	
Troop MED Centers	Gymnasium	
Dental Clinic	Swimming Pools (1-indoor,	
Computer Center	1-outdoor)	
PX Cafeteria	Hard Stand	
Gas Station	Post Admin	
Post Office	Roads/Streets	
Theater	Div/Post HQ	
Basketball Courts	Recreation Center	
Baseball Fields	Ranges	

TABLE K-7

CONSTRUCTION REQUIRED FOR THE
FORT DRUM-FORT BENNING STATIONING ALTERNATIVE III (Alt. 10)

Fort Drum		Fort Benning
Barracks	FE Maint. Building	None
BOQ	DEH Building	
Dining Facilities	Transportation Building	
Family Housing	TMP Maintenance Building	
Brigade HQ	Elec. Substation and	
Battalion HQ/CLSRM	Distribution Lines	
Company HQ	Central Heat Plant	
TAC Shops	Water Well, Distribution	
Runway	Lines & Storage Tanks	
Overrun & Shoulders	Water Treatment Plant	
Taxiways	Sewage Treatment Plant	
Hangar Apron	Sewage Pump Station and	
Flight Control Tower	Force Main	
A/C Fuel Truck Fac.	Station Hospital	
A/C Fuel Storage, Jet	Library	
Nav Aid Building	Red Cross Facility	
Avionics Shop	Child Care Center	
A/C Hanger	SSSC	
Elementary School	Class VI Store	
NCO/EM Club	Rod/Gun Club	
Chapel Center	Tennis Courts	
Commissary	G. P. Warehouse	
Skill Center	Flam Mat Warehouse	
Bowling Alley	FE Maintenance Shed	
PX	FE Storehouse	
Officers Club	Salvage Facility	
GED Center	PMO Facility	
Auto Craft Shop	Finance Center	
MWR Admin/Supply	JAG Office	
Youth Activities	Guest House	
Center	Cold Storage Warehouse	
TASC	DEH Vehicle Sheds	
Instrument Trainer	Ammo Storage	
Building	Med Supply Warehouse	
Troop MED Centers	Gymnasium	
Dental Clinic	Swimming Pools (1-indoor,	
Computer Center	1-outdoor)	
PX Cafeteria	Hard Stand	
Gas Station	Post Admin	
Post Office	Roads/Streets	
Theater	Div/Post HQ	
Basketball Courts	Recreation Center	
Baseball Fields	Ranges	
	Arms Vault	

APPENDIX L

ADDITIONAL INFORMATION ON LABOR FORCE PARTICIPATION OF U.S. ARMY PERSONNEL SPOUSES

APPENDIX L

ADDITIONAL INFORMATION ON LABOR FORCE PARTICIPATION OF U.S. ARMY PERSONNEL SPOUSES

It is likely that some civilian jobs created as a result of stationing portions of the light infantry division could be filled by spouses accompanying incoming military personnel. Department of Defense- wide, about 47 percent of military spouses participated in the labor force in 1983 (U.S. Department of Labor, 1983). A 1982 report by the Rand Corporation, based on 1978/1979 data indicates that about 36 percent of spouses of Army enlisted personnel and 35 percent of Army Officer spouses are members of the civilian work force as full-time, part-time and self employed (Table L-1) (Doering and Hutzler, 1982). Although statistics are unavailable on the proportion of working spouses occupying on-post civilian jobs, it is likely that some of the positions created as a result of the new division would be filled by spouses of incoming personnel.

TABLE L-1

LABOR FORCE PARTICIPATION OF SPOUSES
OF U.S. ARMY PERSONNEL

Type of Labor	Working Spouses of Enlisted Personnel (percent)	Working Spouses of Officers (percent)
In Armed Forces	4.4	11.1
Working Full-Time	20.8	22.1
Other Working[a]	15.6	12.8
Unemployed	3.0	5.7
Other Not Working[b]	56.2	48.2
Total % Working Non-Military	36.4	34.9

[a]Includes part-time and self-employed spouses.
[b]Includes spouses who were in school, at home or retired.

Source: Doering and Hutzler, 1982.

APPENDIX M

ADDITIONAL INFORMATION ON U.S. ARMY PERSONNEL CRIME RATES

APPENDIX M

ADDITIONAL INFORMATION ON U.S. ARMY PERSONNEL CRIME RATES

Department of the Army crime statistics for the continental United States involving offenses of violence including murder, rape, robbery and aggravated assault, crimes against property such as larceny, burglary, auto theft and arson, and crimes involving drug offenses are shown for calender years 1980 through 1983 in Table M-1.

In general, most crimes committed by Army personnel in the continental U.S. are crimes against property. Marihuana use and possession ranks second while crimes of violence are third (Table M-1). Larceny is the predominant offense against property accounting for 91 percent of all such crimes. Over 95 percent of all crimes committed against property by Army personnel occurred on-post in 1983 as did 80 percent of violent crimes. Aggravated assault accounted for most of the violent crimes committed.

Statistics represent Army-wide actual founded offenses which are commissions of crimes that have been substantiated by military law enforcement personnel. Although the Army-wide data are compiled and used as a barometer for the state of discipline in the service, many different factors affect crime rates at different Army posts. Some conditions contributing to the incidence of crime at specific posts are; density, size and composition of the surrounding community, geography of the post, and climate and season (U.S. Army Office of the Deputy Chief of Staff for Personnel, 1984). As indicated by Table M-1 the Army-wide crime rate has dropped significantly since 1980.

Comparison of Army-wide rates to national rates in the U.S. must be caveated by the fact that Army personnel are not representative of a social and economic cross section of the U.S. male population. However, more arrests per 1000 of violent offenses, those against property and total drug violations were committed by males between 18 and 22 years nationwide than by Army personnel in 1982. Based on uniform crime reports and U.S. population figures (U.S. Department of Commerce, 1982) about 10 per 1000 arrests for violent crimes were made by 18 to 22 year old males in 1982, over 33 per 1000 arrests for crimes against property and almost 16 per 1000 total drug offenses were reported for that age group as well.

It is likely the troops associated with the new light infantry division would have an even lower rate of crime than the Army-wide average because it is considered to be an elite division atttracting some of the best personnel the Army has.

TABLE M-1

U.S. ARMY CRIME RATES FOR THE
CONTINENTAL UNITED STATES
(per 1000)

Calendar Year 4th Quarter	Crimes of Violence	Crimes Against Property	Marihuana Use and Possession	Other Drug Offenses
1980	1.21	19.29	7.05	1.08
1981	.97	16.53	5.94	.78
1982	.83	17.09	4.51	.68
1983	.70	14.31	2.54	.50
On-post	.56	13.95	2.31	.40
Off-post	.15	.36	.23	.10
Change from 1980	-42%	-26%	-64%	-54%

Source: U.S. Army Office of the Deputy Chief of Staff for Personnel, 1984.

Actual numbers of crimes on and around post could increase as a result of a stationing activity because of the population increase. As the trends indicate though, most of an increase would be concentrated on-post (Table M-1). The types of crimes committed could be expected to follow the current trends.

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INDEX

	Page
Appendices	
A - Comments and responses on the draft environmental impact statement	A-1
B - Additional information on forts in Alaska	B-1
C - Additional information on Fort Benning	C-1
D - Additional information on Fort Campbell	D-1
E - Additional information on Fort Drum	E-1
F - Additional information on Fort Lewis	F-1
G - Additional information on Fort Ord	G-1
H - Additional information on energy and fuels	H-1
I - Additional information on the regional economic analysis	I-1
J - Overview of training of the new light infantry division	J-1
L - Additional information on labor force participation of U.S. Army personnel	L-1
M - Additional information on U.S. Army personal crime rates	
Comments and responses	A-1
Alaska forts	A-3
Fort Benning	A-63
Fort Campbell	A-75
Fort Drum	A-115
Fort Lewis	A-181
Fort Ord	A-227
Multiple forts	A-267
Development and comparison of stationing alternatives	2-1
Draft environmental impact statement mailing list	6-2
Executive summary	v
Final environmental impact statement mailing list	6-13
List of preparers and reviewers	5-1
Preferred alternative	i
Public involvement	6-1

	Page
Revised pages	
Affected Environments	3-1
Fort Benning, Georgia region	3-50
Fort Campbell, Kentucky region	3-71
Fort Drum, New York region	3-101
Fort Lewis, Washington region	3-130
Fort Ord, California region	3-161
Fort Richardson, Alaska region	3-26
Fort Wainwright, Alaska region	3-3
Environmental Consequences	
Environmental and Socioeconomic Consequences of the Fort-Wainwright-Fort Lewis, Washington Stationing Alternative	4A-1
Environmental Consequences of the Fort Lewis, Washington-Fort Ord, California Stationing Alternative	4B-1
Environmental Consequences of Stationing a Full Light Infantry Division at Fort Drum, New York	4C-1
Environmental Consequences of the Fort Drum, New York-Fort Campbell, Kentucky Stationing Alternative	4D-1
Environmental Consequences of the Fort Drum, New York-Fort Benning, Georgia Stationing Alternative I	4E-1
Environmental Consequences of the Fort Drum, New York-Fort Benning, Georgia Stationing Alternative II	4F-1
Environmental Consequences of the Fort Drum, New York-Fort Benning, Georgia Stationing Alternative III	4G-1
Table of Contents	xxi