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**UNITED STATES ARMY
ENVIRONMENTAL HYGIENE
AGENCY**

ABERDEEN PROVING GROUND, MD 21010-5422

**ENVIRONMENTAL OPERATIONAL REVIEW
NO. 32-24-7140-89
10TH MOUNTAIN DIVISION (LIGHT INFANTRY)
AND FORT DRUM
WATERTOWN, NEW YORK
11-21 OCTOBER 1988**

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U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MARYLAND 21010-5422



REPLY TO
ATTENTION OF

HSHB-ME-WS (40)

7 Aug 89

MEMORANDUM FOR Commander in Chief, Forces Command, ATTN:
FCEN-RDO, Fort Gillem, Forest Park, GA
30305-6000

SUBJECT: Environmental Operational Review No. 32-24-7140-89,
10th Mountain Division (Light Infantry) and Fort Drum, Watertown,
New York, 11-21 October 1988

Copies of report with Executive Summary are enclosed.

FOR THE COMMANDER:

Roy D Miller

Encl

ROY D. MILLER, P.E.
LTC, MS
Chief, Water Quality Engineering
Division

CF:

HQDA(SGPS-PSP) (wo/encl)
HQDA(ENVR-E) (w/encl)
DA, USAEHSC, ATTN: CEHSC-F (w/encl)
CINC, FORSCOM, ATTN: FCMD-PC, (4 cy) (w/encl)
Cdr, HSC, ATTN: HSCL-P (w/encl)
Cdr, Ft Drum (2 cy) (w/encl)
Cdr, MEDDAC, Ft Drum, ATTN: PVNTMED Svc (2 cy) (w/encl)
Cdr, WRAMC, ATTN: PVNTMED Svc (w/encl)
Cdr, USATHAMA, ATTN: CETHA-TE-E (w/encl)
Cdr, USATHAMA, ATTN: CETHA-RM-IM(TIC) (2 cy) (w/encl)
Cdr, USAEHA-N (w/encl)



DEPARTMENT OF THE ARMY
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REPLY TO
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EXECUTIVE SUMMARY
ENVIRONMENTAL OPERATIONAL REVIEW NO. 32-24-7140-89
10TH MOUNTAIN DIVISION (LIGHT INFANTRY) AND FORT DRUM
WATERTOWN, NEW YORK
11-21 OCTOBER 1988

1. PURPOSE. To evaluate the functional and technical aspects of the air pollution, environmental noise, hazardous waste, solid waste, pest management, water pollution and water quality programs; to evaluate the potential for ground-water contamination; to determine the status with respect to applicable Federal, State, local, and Army environmental regulations; and to assist in the identification of existing or potential environmental hazards.

2. SIGNIFICANT CONCLUSIONS.

a. Air Pollution Review. Fort Drum has neither applied for nor possesses all necessary certificates to operate appropriate air pollution sources on the installation as required by the New York Department of Environmental Conservation (NYDEC). The present expansion of Fort Drum will also require that the installation obtain permits prior to construction for air pollution sources.

b. Environmental Noise Review. An Installation Compatible Use Noise Zone (ICUZ) committee or working group is needed to assure the successful continuance of the ICUZ program. The Construction Engineering Research Laboratory monitors proposed for installation at Fort Drum may not reliably transmit an accurate description of the noise environment, nor are they necessarily the most cost effective.

c. Ground-Water Review. Fort Drum has an excellent though potentially vulnerable aquifer system under the old Main Post, which supplies the post water supply. The major confirmed source of ground-water contamination on post is Gasoline Alley. Other potential sources are old landfills, the New Jersey National Guard wastewater lagoon, and the the Directorate of Logistics (DOL) carburetor shop. Fort Drum has never conducted a comprehensive ground water study.

HSHB-ME-WS

SUBJECT: Environmental Operational Review No. 32-24-7140-89,
10th Mountain Division (Light Infantry) and Fort Drum, Watertown,
New York, 11-21 October 1988

d. Hazardous Waste Management Review. Fort Drum's Resource Conservation and Recovery Act (RCRA) Part A and Part B permit applications did not cover the two open burning and open detonation facilities [55th Explosive Ordnance Detachment (EOD) site and Air Force EOD site]. The hazardous waste storage facility (Bldg T-4819) did not comply with RCRA standards. Many maintenance shops and motor pools accumulated hazardous waste unsafely or in a manner that did not comply with RCRA standards.

e. Pest Management Review. The Spill Prevention Control and Countermeasure Plan (SPCCP)/Installation Spill Contingency Plan (ISCP) provided erroneous spill flow information about the Insect and Rodent Control Shop (Bldg P-2517) site. Physical deficiencies existing in Bldg P-2517 would negatively impact upon the health and safety of the employees. Possible environmental contamination could result from the inadequate outdoor mixing area next to Bldg P-2517.

f. Potable/Recreational Water Quality Review. Potable water quality was meeting requirements of the National Primary Drinking Water Regulations, National Secondary Drinking Water Regulations, and New York Drinking Water Code. The water treatment plant chlorine room was not equipped with a chlorine detection alarm. Fort Drum did not have a Water Contingency Plan or an organized Cross-Connection Control/Backflow Prevention Program.

g. Solid Waste Management Review. Except for a few minor problems with the dumpsters, the storage, collection and handling of solid waste on post is very good. The wood dump only marginally qualifies as a construction debris landfill. Fort Drum has recently initiated a progressive program to expand and encourage participation in it's recycling program.

h. Water Pollution/Spill Plan Review. Wastewater discharges are not being regulated by a State Pollutant Discharge Elimination System (SPDES) permit which is in violation of State law. The installation was not in compliance with Federal and State underground storage tank (UST) requirements. The SPCCP and ISCP were found to be deficient.

6

HSHB-ME-WS

SUBJECT: Environmental Operational Review No. 32-24-7140-89,
10th Mountain Division (Light Infantry) and Fort Drum, Watertown,
New York, 11-21 October 1988

3. MAJOR RECOMMENDATIONS.

a. Air Pollution Review. Contact the NYDEC to obtain certificates to operate for: the paint spray booths located in Bldgs 197, 1041 and 6020; sawdust collection cyclones at Bldgs 1041 and 4000; the plastics fabrication exhaust system in Bldg 1041; and appropriate coal-fired combustion sources. Ensure that proper permits to construct are obtained for the medical waste incinerator to be installed at the Medical Logistics Operations Building, the Pesticide Storage Facility, the paint spray booth(s) to be installed in the Support Maintenance Area, and any other applicable air pollution sources prior to modification or construction. Obtain open burning permits for the two EOD operations and for land clearing (new construction area) in the event that such operations are resumed.

b. Environmental Noise Review. Establish an ICUZ committee or working group. Investigate the reliability and cost effectiveness of alternate noise monitoring systems.

c. Ground-Water Review. Determine the extent of contamination from Gasoline Alley, and initiate product recovery and ground-water cleanup. Conduct a site investigation at the New Jersey National Guard wastewater lagoon and the DOL vehicle maintenance shop to determine environmental impact. Arrange for a comprehensive ground water study to tie together the information from all the separate water supply and pollution sites.

d. Hazardous Waste Management Review. Include the open burning and open detonation sites on the RCRA Part A permit by 8 November 1988. Modify the RCRA Part B permit application to include these sites. Operate the hazardous waste storage facility (Bldg T-4819) according to RCRA standards. Make sure that soldiers and shop employees who handle hazardous waste receive training in proper labeling, handling, and disposal.

e. Pest Management Review. Provide in the SPCCP/ISCP an accurate description of the site and spill flow direction at the Insect and Rodent Control Shop (Bldg P-2517) area. Correct physical deficiencies existing in Bldg P-2517. Provide an adequate outdoor mixing area for this shop.

HSHB-ME-WS

SUBJECT: Environmental Operational Review No. 32-24-7140-89,
10th Mountain Division (Light Infantry) and Fort Drum, Watertown,
New York, 11-21 October 1988

f. Potable/Recreational Water Quality Review. Implement a written, installation-wide Water Contingency Plan and Cross-Connection Control/Backflow Prevention Program. Equip the water treatment plant chlorine room with a chlorine leak detection system.

g. Solid Waste Management Review. Keep lids closed on dumpsters, especially those which receive food wastes. Discontinue dumping sewage wastes at the wood dump. Continue informing people post-wide of recycling opportunities and encourage their participation.

h. Water Pollution/Spill Plan Review. Install a dedicated telephone line for the sewage treatment plant pump station alarm system. Obtain an SPDES permit for, or connect to sanitary sewer, the wastewater discharges identified in paragraph 3b, Appendix I. Expedite UST testing program, register UST with the Albany office of the DEC. Revise and expand the SPCCP and ISCP to correct deficiencies identified in paragraphs 3d and 3e, Appendix I.

CONTENTS

Paragraph	Page
I. REFERENCES	1
II. AUTHORITY	1
III. PURPOSE.....	1
IV. GENERAL.....	1
A. Personnel Contacted	1
B. Personnel Conducting the Review	1
C. Background	2
V. FINDINGS, DISCUSSIONS, CONCLUSIONS, AND RECOMMENDATIONS	8
VI. TECHNICAL ASSISTANCE	8
APPENDIX	
A - PERSONNEL CONTACTED	A-1
B - AIR POLLUTION REVIEW	B-1
C - ENVIRONMENTAL NOISE REVIEW	C-1
D - GROUND-WATER REVIEW	D-1
E - HAZARDOUS WASTE MANAGEMENT REVIEW	E-1
F - PEST MANAGEMENT REVIEW	F-1
G - POTABLE/RECREATIONAL WATER QUALITY REVIEW	G-1
H - SOLID WASTE MANAGEMENT REVIEW	H-1
I - WATER POLLUTION/SPILL PLAN REVIEW	I-1



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ATTENTION OF

DEPARTMENT OF THE ARMY
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MARYLAND 21010-5422



HSHB-ME-WS

ENVIRONMENTAL OPERATIONAL REVIEW NO. 32-24-7140-89
10TH MOUNTAIN DIVISION (Light Infantry) AND FORT DRUM
WATERTOWN, NEW YORK
11-21 OCTOBER 1988

I. REFERENCES. References used in the Appendices are listed in an Annex to the respective Appendix.

II. AUTHORITY.

A. AEHA Form 250-R, FORSCOM, 13 July 1988.

B. Memorandum, USAEHA, HSHB-M, 21 September 1988, subject: USAEHA Schedule of Field Services, FY 89.

III. PURPOSES.

A. To evaluate the functional and technical aspects of the air pollution, environmental noise, hazardous waste, solid waste, pest management, water pollution and water quality programs.

B. To evaluate the potential for ground-water contamination.

C. To assess the status of compliance with respect to applicable Federal, State, local, and Army environmental regulations.

D. To assist in the identification of existing or potential environmental hazards.

IV. GENERAL.

A. Personnel Contacted. See Appendix A for a list of personnel contacted during the review.

B. Personnel Conducting the Review. The Environmental Operational Review (EOR) was conducted by an interdisciplinary team of engineers and scientists from the U.S. Army Environmental Hygiene Agency's (USAEHA's) Directorate of Environmental Quality, Directorate of Occupational and Environmental Health, and Directorate of Radiation and Entomological Sciences. The Fort Drum EOR team consisted of the following individuals:

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EOR No. 32-24-7140-89, 11-21 Oct 88

1. Mr. Kenneth A. Lancellotti (Team Leader), Water Quality Engineering Division, responsible for the Water Pollution and Spill Plans Review.

2. 1LT James St. Angelo III, Water Quality Engineering Division, responsible for the Potable/Recreational Water Quality Review.

3. Mr. Stephen R. Jenness, Air Pollution Engineering Division, responsible for the Air Pollution Review.

4. Mr. William J. Bangsund, Waste Disposal Engineering Division, responsible for the Ground Water and Solid Waste Management Reviews.

5. 1LT Thomas G. Eccles, Waste Disposal Engineering Division, responsible for the Hazardous Waste Management Review.

6. CPT Todd W. Walker, Entomological Sciences Division, responsible for the Pest Management Review.

7. 2LT Kyra Donnell, Bio-Acoustics Division, responsible for Environmental Noise Review.

C. Background.

1. Location and Description.

a. Fort Drum is the largest Army installation in the northeast and is a major training center for all branches of the total Army. The post now covers 107,000 acres of varied terrain and stretches from Black River to Lake Bonaparte to Spragueville. The easiest access to the installation is from Exit 48 on Interstate 81. An area map is included as Figure 1.

b. Since Fort Drum was named the future home of the 10th Mountain Division (Light Infantry) in September of 1984, the installation has transformed into a thriving community, with expansion efforts continuing day and night, year round. These efforts will one day support a population of approximately 28,000 military members, their families, and Department of the Army civilian employees. Installation maps of the old and new (under construction) cantonment areas are included as Figures 2 and 3. The population of Fort Drum at the time of the EOR was approximately 13,000 people (military and civilian personnel).

2. Climatology. Fort Drum is located in an area of New York State where the terrain is typified by gently rolling features. The area experiences a climate which is most similar to that of Syracuse, 65 miles to the south, which is primarily

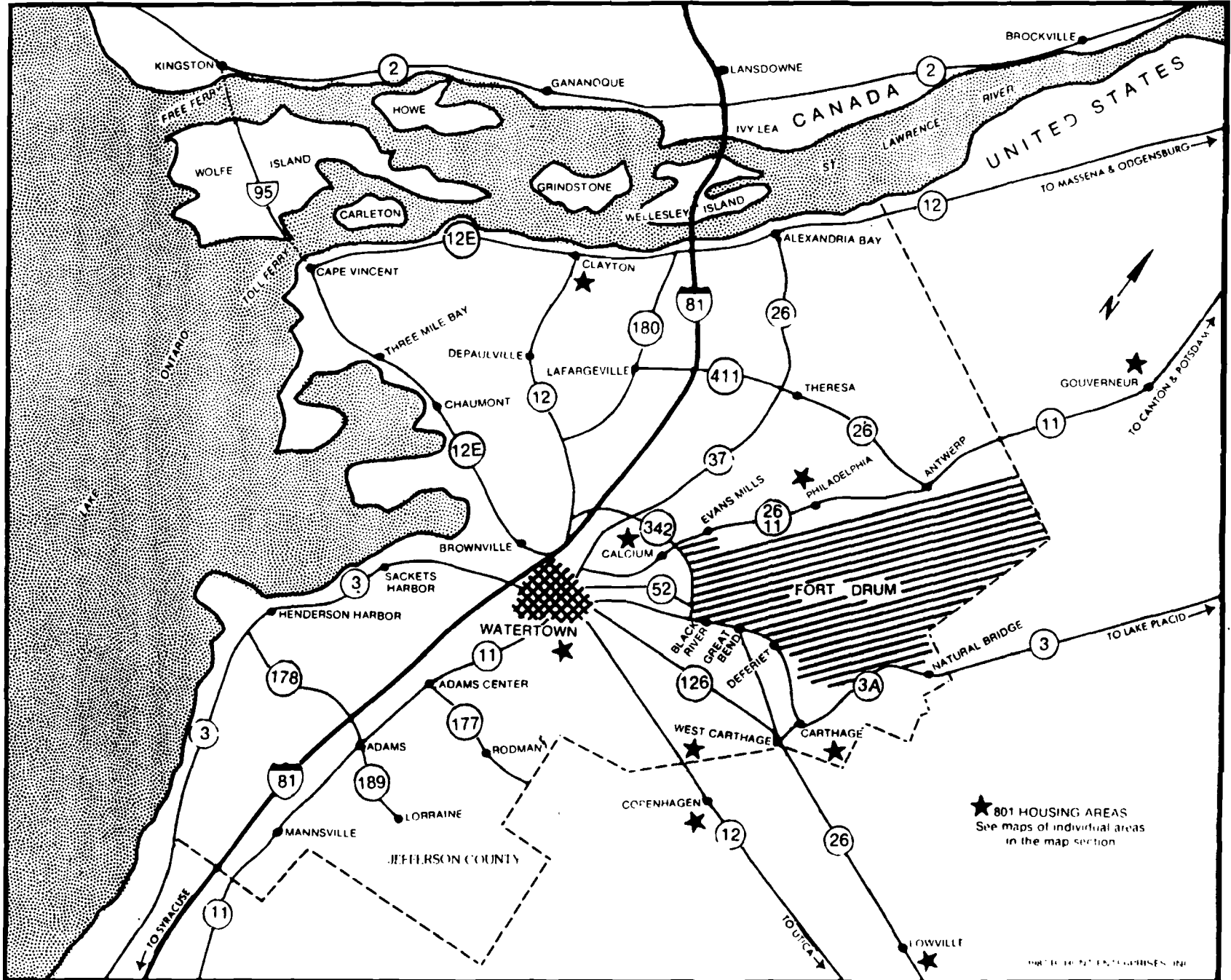


FIGURE 1. FORT DRUM AND VICINITY

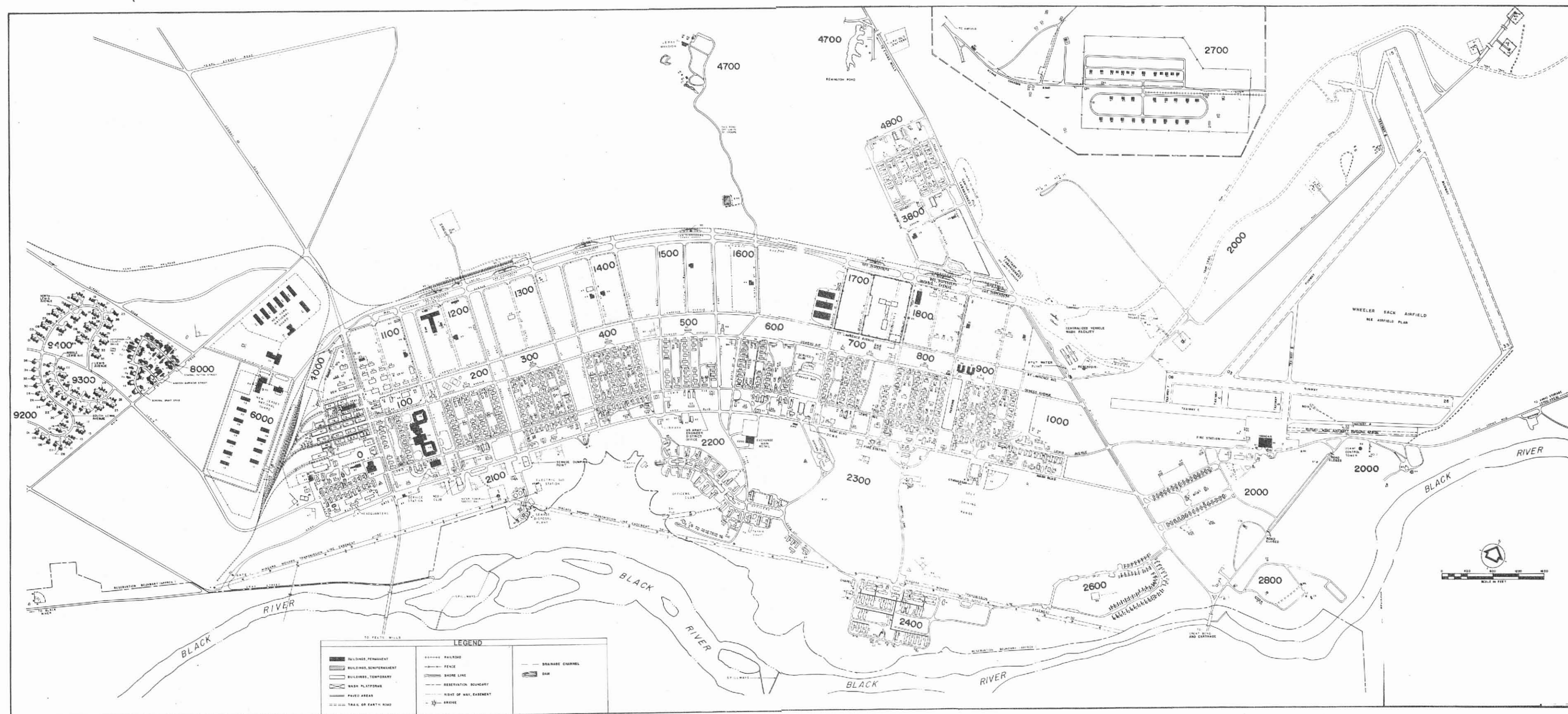


FIGURE 2. FORT DRUM INSTALLATION MAP-OLD CANTONMENT AREA

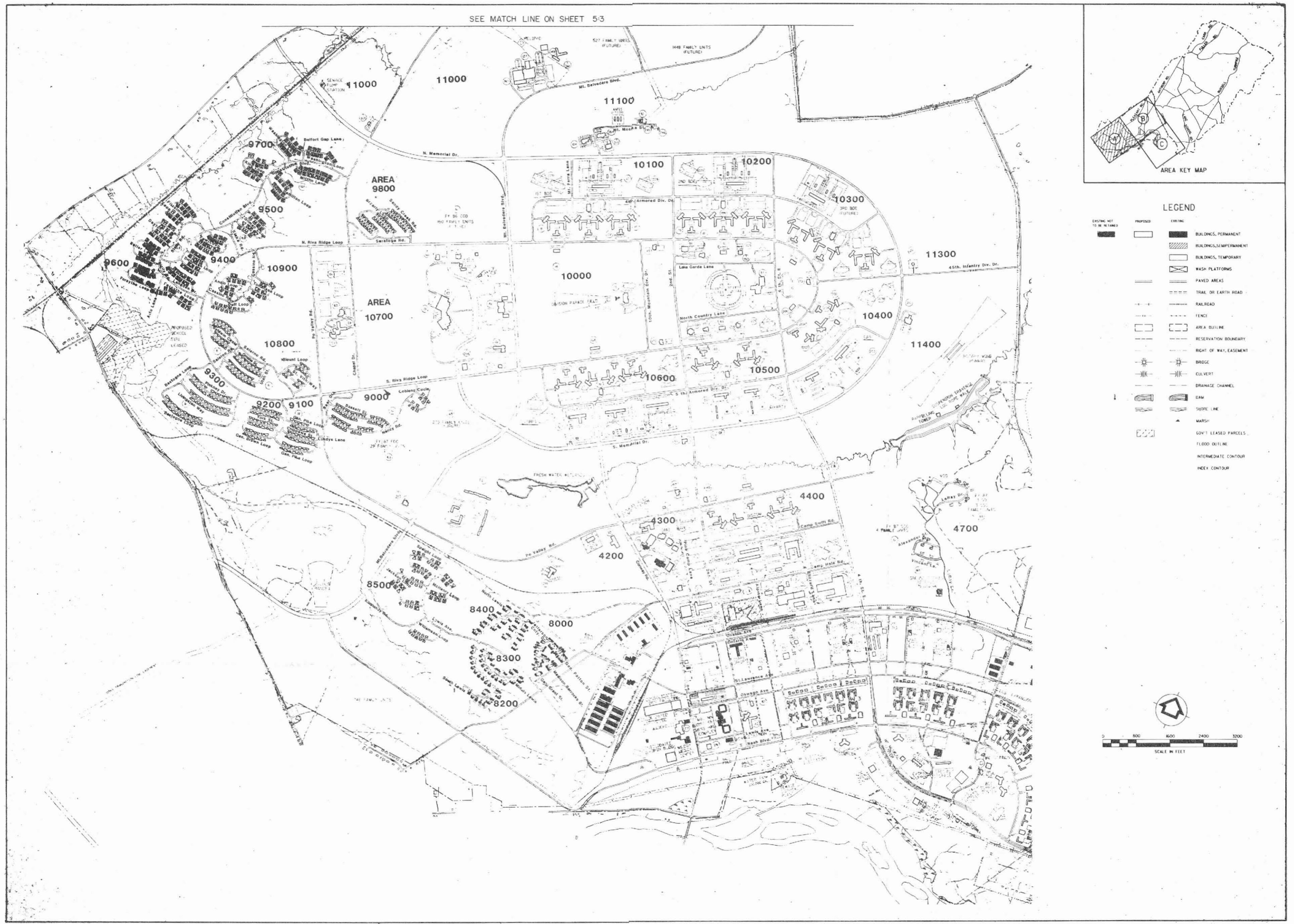


FIGURE 3. FORT DRUM INSTALLATION MAP-NEW CANTONMENT AREA

continental in character and comparatively humid. Summers and portions of the transitional seasons are marked by rapid temperature rises during the daytime to moderate levels and as a rule fall rapidly after sunset. Winters are usually cold and at times severe. Temperatures range from a mean monthly low of 23.6 °F in January to a mean monthly high of 71.1 °F in July, with an annual average of 47.7 °F. Precipitation is well distributed averaging about 3 inches per month throughout the year. Snowfall is moderately heavy and averages approximately 110 inches a year. Winds in the Watertown area are predominantly from the south and west-southwest and are generally in the 5 to 10 mph range.

3. Mission. Today the post supports many military missions. It is the home of the 10th Mountain Division (Light Infantry) and remains a training area for soldiers from the Army Reserve and Army National Guard. More than 50,000 reserve component soldiers train at Fort Drum each year. Fort Drum is also a winter warfare training center. Active Army units from across the country come to Fort Drum to train under cold weather conditions. Besides the 10th Mountain Division, other permanent party units at the installation include a Headquarters Company, United States Army Garrison, three Air Force Detachments, a Corps of Engineers office, and medical and dental personnel. Elements of the following command, staff, and tenant activities were visited during the course of the EOR:

a. Command and Staff.

(1) 1st Brigade. The mission of the 1st Brigade is to develop, train and maintain a light infantry brigade task force that is prepared to rapidly deploy and fight anywhere, anytime and win. Task Force One is comprised of organic and nonorganic units that train together and are prepared to deploy anywhere in the world to meet the Army's needs.

(2) 10th Mountain Division Artillery (DIVARTY). The mission of DIVARTY is to provide fire support and coordination to the 10th Mountain Division wherever its mission carries it. Currently DIVARTY consists of 1st Battalion, 7th Field Artillery (1-7) and 2nd Battalion 7th Field Artillery (2-7).

(3) 10th Combat Aviation Brigade. The 10th Aviation Brigade is full time member of the 10th Mountain Division. With 109 aircraft, the 10th Aviation Brigade is required to conduct reconnaissance, provide tactical mobility of personnel and equipment, and destroy enemy forces. The Brigade is organized around three battalion-sized units: the 3-25th Assault Helicopter Battalion, the 3-17th Reconnaissance Squadron, and the 2-25th Attack Helicopter Battalion.

(4) Directorate of Engineering and Housing (DEH). The DEH is responsible for housing, fire protection, utilities, supply/storage, and building and grounds functions of Fort Drum. In addition, the DEH is tasked with providing the installation with master planning and other engineering services.

(5) Directorate of Logistics (DOL). The mission of the DOL is to plan and provide logistics support to include furnishing and maintaining supplies and equipment, transportation, and food services.

(6) Public Affairs Office. The post Public Affairs Office serves as a central point of contact for command information, community relations, and media relations activities for all installation, garrison, division, and tenant activities.

b. Tenant Activities.

(1) U.S. Army Medical Department Activity (MEDDAC). The Fort Drum MEDDAC consists of a staff of health professionals. Their goal is to provide military personnel and their families with the best possible medical care efficiently and quickly. MEDDAC is a subordinate command of Health Services Command, Fort Sam Houston, Texas.

(2) Veterinary Activity. The Fort Drum Veterinary Services Animal Disease Prevention and Control (ADPAC) facility provides animal medicine clinical services. The ADPAC facility is operated as an outpatient clinic for the prevention, control and treatment of infectious/transmissible diseases.

(3) Defense Reutilization and Marketing Office (DRMO). The DRMO is a Defense Logistics Agency activity. The DRMO mission is to receive, classify, and store excess and surplus property generated by installation activities; effect disposition of property through reutilization, transfer, donation, or sale; and provide advice and technical assistance to the commander on disposal matters.

(4) Fort Drum Construction Management Office. The U.S. Army Corps of Engineers is supervising construction of the "New" Fort Drum. To accomplish this, the Corps' New York District established an on-site construction management unit, the Fort Drum Construction Management Office, consisting of 142 civilians and 21 military personnel.

(5) 55th Explosive Ordnance Detachment. The 55th Explosive Ordnance Detachment provides munitions disposal services in support of the state and defense departments for the northeast.

EOR No. 32-24-7140-89, 11-21 Oct 88

(6) 50th Armored Division Mobilization and Training Equipment Site (MATES). The New Jersey Army National Guard (NJARNG) stores and maintains many vehicles. The majority of the vehicles belong to the 50th Armored Division, NJARNG. Six other states contribute to the remaining combat vehicles.

(7) New York Army National Guard (NYARNG) Combined Support Maintenance Shop D (CSMS-D). The CSMS-D provides direct and general support for all federal surface equipment belonging to the NYARNG and the New Jersey MATES. The CSMS-D also provides DS/GS maintenance to USAR, Army active component and USMC units during training activities on Fort Drum.

(8) NYARNG Unit Training Equipment Site (UTES). The UTES provides storage for equipment belonging to the 42nd Infantry "Rainbow" Division and other New York National Guard units.

V. FINDINGS AND DISCUSSIONS/CONCLUSIONS/RECOMMENDATIONS.
Appendixes B through I:

VI. TECHNICAL ASSISTANCE.

A. Technical advice and/or assistance concerning this report may be obtained telephonically from members of the EOR team or the respective Division Chief:

- 1. Chief, Air Pollution Engineering Division, AUTOVON 584-2510.
- 2. Chief, Bio-Acoustics Division, AUTOVON 584-3829.
- 3. Chief, Waste Disposal Engineering Division, AUTOVON 584-2024.
- 4. Chief, Entomological Sciences Division, AUTOVON 584-3613.
- 5. Chief, Water Quality Engineering Division, AUTOVON 584-3816.

B. Questions regarding the use or disposition of pesticides that are unrelated to this report may be addressed to USAEHA "Pesticide Hotline" at AUTOVON 584-3773

C. The USAEHA is available, upon request, to furnish assistance in the implementation of the recommendations presented in this report. Requests for additional services should be directed through the appropriate command channels of the

EOR No. 32-24-7140-89, 11-21 Oct 88

requesting activity to the Commander, U.S. Army Environmental Hygiene Agency , ATTN: HSHB-ME, Aberdeen Proving Ground, MD 21010-5422, with an informational copy to the Commander, U.S. Army Health Services Command, ATTN: HSCL-P, Fort Sam Houston, TX 78234-6000.



KENNETH A. LANCELLOTTI
Chemical Engineer
Water Quality Engineering Division

APPROVED:



MICHAEL F. LADUC
CPT, MS
Chief, Water Quality Studies Branch
Water Quality Engineering Division

EOR No. 32-24-7140-89, 11-21 Oct 88

APPENDIX A

PERSONNEL CONTACTED

Major General Peter J. Boylan, Commanding General, 10th Mountain Division.

COL Jimmy R. Moore, Garrison Commander, Fort Drum.

COL Lynn Webster, Director, Directorate of Engineering and Housing (DEH).

Mr. Mark Tillotson, Deputy Director, DEH.

Mr. Brent Moss, Chief, Environmental Division, DEH.

Mr. David Guldenzopf, Archaeologist, Environmental Division, DEH.

Mr. Jim Haynes, Environmental Division, DEH.

Mr. Jim Leander, Chief, Engineering Plans and Services (EP & S) Division, DEH.

Mr. Bob Cullen, Master Planning, EP & S, Division, DEH.

Mr. Dick Chartrand, Chief, Design Branch, EP & S Division, DEH.

Ms. Ann Waterman, PBO, EP & S Division, DEH.

Mr. James Corriveau, Chief, Operation and Maintenance (OPS & MAINT) Division, DEH.

Mr. Roger Stock, Chief, Roads and Railroads Branch, OPS & MAINT Division, DEH.

Mrs. Sue Long, Sanitary Engineering Tech., OPS & MAINT Division, DEH.

Mr. Pike, Chief, Fire Department.

Mr. Tony Dumaw, Foreman, Paint Shop, DEH.

Mr. Ralph Elmore, Foreman, Plumbing Shop, DEH.

Mr. Dickinson Windover, Heating Shop, DEH.

Mr. R. Spriggs, Deputy Director, Directorate of Logistics (DOL).

EOR No. 32-24-7140-89, 11-21 Oct 88

Mr. Jim Brown, Industrial Engineer, DOL.

Mrs. Robin Kinne, Property Control Branch, Material Management
Section, DOL.

Mr. Paul Locy, Inspector, Support Maintenance Activity, DOL.

Mr. George Springsteen, General Foreman, DOL.

COL Norman Merski, Director, Directorate of Resource Management.

MAJ K. Trohoske, PAO, Public Affairs Office.

Mr. Bieth, Training Aids and Support Officer, TASC.

Mr. John Stirling, USAIC Print Plant.

COL Ronald Bishop, Health Service Command.

CPT Scott W. Keller, Health Facility Project Officer, USA MEDDAC.

CPT Robert Wallace, ESO, USA MEDDAC.

CPT David Goolsby, Veterinary Clinic.

Mr. Wayne H. Silk, Acting Airfield Commander.

Ms. D. Thompson, Environmental Specialist, DRMO.

Mr. Steve Arant, Field Supervisor, Corps of Engineers.

Mr. Mark Hallar, Project Engineer, Corps of Engineers.

Mr. Zac Zimmerman, Project Manager, J.A. Jones Construction Co.

Mr. Larry Harto, Foreman, AAFES Service Station.

Ms. Linda Fykef, Vehicle Registration Clerk, LEA.

LTC Carl Lundell, Supervisor, NYARNG COMBINED SPT MAINT Shop "D".

SGT Schmidt, Body Shop, NYARNG.

Mr. David Prosser, Regional Air Pollution Control Engineer,
Region 6, NYDEC.

Mr. Richard Coriale, Sanitary Engineer, Bulk Storage Section,
Division of Water, DEC, Albany, N.Y.

EOR No. 32-24-7140-89, 11-21 Oct 88

MAJ Bollinger, G-5.

Mr. Schwark, Range Control.

Ms. Smilinich, Claims Office.

Mr. Vander Wyst, Land Manager.

Ms. Ward, Assistant G-5.



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10TH MOUNTAIN DIVISION (LIGHT INFANTRY) AND FORT DRUM
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11-21 OCTOBER 1988

APPENDIX B
AIR POLLUTION REVIEW

I. REFERENCES. See Annex B-1 for a list of references.

II. PURPOSE. To evaluate the adequacy and effectiveness of the installation's air pollution abatement program and to provide assistance in the attainment and maintenance of Federal, State, and local air pollution regulations.

III. FINDINGS AND DISCUSSION.

A. Regulatory Criteria.

1. Department of the Army facilities are required by AR 200-1, paragraph 4-2, to comply with Federal, State, interstate, and local air pollution regulations. Although the principle of Federal sovereignty has traditionally exempted Federal agencies from State and local procedural requirements, the Clean Air Act Amendments (PL 95-95) removed this exemption. Now Federal facilities must comply with all substantive and procedural requirements. This includes standards relating to ambient air quality, air emissions, equipment design and operation, fuel use and composition, construction and operating permits, and reporting requirements. The revision of AR 200-1 reinforces this requirement and fully implements Section 108 of the Clean Air Act Amendments.

2. The New York Department of Environmental Conservation (NYDEC), Division of Air Resources, is responsible for the administration of the State of New York Codes, Rules and Regulations (NYCRR), Title 6, Chapter III, Subchapter A, Parts 200 - 257.

B. Air Quality Control Region. Fort Drum is situated in the Central New York Intrastate Air Quality Control Region (AQCR). This portion of the AQCR, which contains the installation has been designated by the U.S. Environmental Protection Agency (EPA) as "better than National Ambient Air Quality Standards (NAAQS)" for total suspended particulate and sulfur dioxide; and "cannot be classified or better than NAAQS" for carbon monoxide, ozone and nitrogen dioxide (40 CFR 81.333).

C. Air Pollutant Emissions Inventory, Permits and Certificates to Operate.

1. Federal Emissions Inventory. The EPA Air Pollutant Emissions Report (OMB Form 158-R75) submitted to the EPA in 1975 could not be found at the installation during the time of the Environmental Operational Review (EOR). It is assumed that this particular inventory has not been updated since originally compiled. The major revisions to the initial inventory include changes in the number and size of installation boilers and storage tanks. Updated information on boilers and storage tanks may be found in this Appendix, paragraphs D1 and D5 below.

2. Permits to Construct. The NYDEC requires in Section 201.2(a) of the NYCRR that permits to construct must be obtained prior to the construction or modification of air contaminant sources unless otherwise exempted in Section 201.6. Proper permits to construct were not obtained prior to the modification of the device fabrication and paint spray booth exhaust systems in Bldg 1041 [Training Aids and Support Center (TASC)]. It will be necessary to obtain such permits for the construction of the new medical waste incinerator proposed for the Medical Logistics Operations Building (PN 137), Pesticide Storage Facility (PN 245), paint spray booths to be installed in the Support Maintenance Area (SMA) (PN 150) and any other air pollution sources prior to modification or construction.

3. Certificates to Operate. Section 201.2(b) of the NYCRR requires that all air contaminant sources, unless otherwise exempted in Section 201.6, must have valid certificates to operate. Fort Drum had procured certificates to operate for the medical waste incinerator (Bldg 2415), pesticide storage facility (Bldg 2017) and a blueprint machine (Bldg 4000). Besides these locations, several other sources were identified as necessitating certificates during the time of the EOR. These included the paint spray booths housed in Bldgs 197 [Directorate of Engineering and Housing (DEH)], 1041 (TASC) and 6020 [New York Army National Guard (NYARNG)]; sawdust collection cyclones at Bldgs 1041 (TASC) and 4000 (DEH); the plastics fabrication exhaust system in Bldg 1041 (TASC); the coal-fired boilers located at Bldgs 95 (Maintenance Division) and 688 (Furniture Management); and the three facilities mentioned in the previous paragraph.

D. Stationary Source Compliance.

1. Boilers/Minor Combustion Sources.

a. Main Heating Plants. Fort Drum operates boilers at approximately 30 sites which have a total heat input capacity of greater than 1 million British thermal units per hour (MBtu/hr).

Data pertaining to these units is presented in Table B-1. Particulate, visible and nitrogen oxides emissions from stationary combustion installations are regulated under 6 NYCRR Sections 227.3, 227.4 and 227.5 respectively. Existing combustion sources less than or equal to 250 MBtu/hr heat input are exempted from nitrogen oxides emissions, and therefore do not impact these units. Particulate limitations restrict emissions to less than or equal to 0.60 pounds per MBtu input for units between 1 and 10 MBtu/hr. Visible emissions are required to be controlled such that the smoke emitted from any stationary sources are less than 20 percent opacity, except for a period of 3 minutes or less. However, emissions must never exceed 40 percent opacity at any time. During the time of this EOR, no excursions from these standards were observed. Properly maintained, these units will comply with visible and particulate standards.

b. Cogeneration Plant.

(1) The expansion of Fort Drum to house the 10th Infantry Division required an additional heating capacity. In response to this need, Fort Drum has contracted with J.A. Jones Construction Company to provide high-pressure steam for heating these newly constructed facilities. In addition to this function, the facility will provide electrical power to the Niagara-Mohawk Company. The cogeneration plant, which was still under construction during the time of this EOR, is located just north of Oneida and Ontario Avenues (gasoline alley), in the vicinity of the 1200 Block of Fort Drum. The facility will consist of three fluidized bed reactors which will utilize a combination of low-sulfur Pennsylvania coal and wood chips to annually provide Fort Drum with approximately 225,000 tons of high-pressure [1,359 pounds per square inch, gauge (psig)], high temperature (950 °C) steam for heating. The steam pressure would be eventually reduced to 110 psig for use throughout the new cantonment area. In addition, the plant will be capable of generating an estimated 50 megawatts of electrical power which will be sold to the Niagara-Mohawk Company. Air pollution control will consist of hot cyclone and multiclone separators, and a baghouse for each of the three units. Construction officials estimated that approximately 90 percent removal of sulfur from the coal was anticipated due to the use of limestone in the reactor beds. Fugitive emissions from the coal pile located onsite would be controlled through the use of a liquid foam dust suppression agent.

(2) Although the facility is physically located on Fort Drum property, the agreement between the Army and contractor provides that J.A. Jones is responsible for the construction and operational costs of the plant. The contractor is also

TABLE B-1. FORT DRUM MAJOR HEATING PLANT DATA

Location (Bldg)	Fuel	Total Heat Input (MBtu/hr)
3 (Headquarters)	No. 2 fuel oil	1.3
4 (G-3)	No. 2 fuel oil	1.1
36 (MEDDAC)	No. 2 fuel oil	3.0
86 (Utilities)	No. 2 fuel oil	3.1
91 (Maint. Div.)	No. 2 fuel oil	2.4
95 (Maint. Div.)	Coal	1.0
96 (Maint. Div.)	No. 2 fuel oil	1.0
175 (HQ Comp. USAG)	No. 2 fuel oil	12.4
191 (Admin. & Mgt.)	No. 2 fuel oil	1.6
198 (Transp. Div.)	No. 2 fuel oil	1.0
682 (COD)	No. 2 fuel oil	1.9
688 (Furn. Mgt.)	Coal	2.8
1172 (10th S&T Bn.)	No. 2 fuel oil	1.0
1240 (710th Main. Div.)	No. 2 fuel oil	4.7
1345 (41st Engr. Bn.)	No. 2 fuel oil	1.0
1750 (ECS)	No. 2 fuel oil	2.2
1800 (514th Main. Co.)	No. 2 fuel oil	4.6
2045 (Utilities)	No. 2 fuel oil	2.6
2049 (Aviation)	No. 2 fuel oil	4.6
2059 (Aviation)	No. 2 fuel oil	4.6
2165 (Utilities)	No. 2 fuel oil	1.5
2170 (AAFES)	No. 2 fuel oil	2.8
2222 (COD)	No. 2 fuel oil	1.4
2360 (Morale Support)	No. 2 fuel oil	2.6
2509 (Morale Support)	No. 2 fuel oil	1.1
2583 (Utilities)	No. 2 fuel oil	1.2
4003 (Bldgs & Grounds)	No. 2 fuel oil	1.1
4330 (Morale Support)	LPG	1.2
6000 (NJARNG)	No. 2 fuel oil	5.7
6001 (NJARNG)	No. 2 fuel oil	1.2

responsible for obtaining all necessary construction and operating permits. The environmental impact analysis of the plant was accomplished through the use of Fort Drum's Environmental Impact Statement (EIS). No site-specific EIS was prepared. This variation in the usual EIS preparation scenario was suggested by Department of Defense and Corps of Engineers officials and was accepted by the EPA. The contractor had properly applied for and received the necessary air pollution permits prior to construction and is responsible for obtaining proper certificates for operating and emission testing as required by the NYDEC. Official startup of the plant is anticipated for the late November-early December timeframe. Heat for the 1st Brigade, scheduled to arrive from Fort Benning in November, will be provided through the use of a package boiler located on the site of the cogeneration plant.

c. Minor Combustion Sources. Fort Drum operates approximately 1,823 smaller boilers and furnaces rated at less than 1.0 MBtu/hr heat input for supplying heat to the remainder of the installation. Gas, oil and coal are used to fire these units. Although the State of New York in 6 NYCRR 227 does not specifically restrict particulate and nitrogen oxides emissions from units less than 1 MBtu/hr, 6 NYCRR 227 does require that they comply with visible emission standards. Properly maintained, these units will comply with such opacity limitations.

2. Incineration.

a. Fort Drum operates a medical waste incinerator in Bldg 2415 for the destruction of general medical waste and sharps generated at the installation U.S. Army Medical Department Activity (MEDDAC). Small amounts of classified material are also burned in the unit. The Kirschner Scientific Model KC 100 controlled air incinerator, which was installed in 1977, was designed to process between 50 and 100 pounds per hour of types 0, 1, 2, and 4 waste. However, Fort Drum's certificate to operate for the unit has limited the charging capacity to 30 pounds per hour. The incinerator is of a two-chamber design, with the lower part of the exhaust stack acting as a secondary chamber. Forced draft blowers and auxiliary burners (500,000 Btu/hr) utilizing No. 2 fuel oil are located in both the primary and secondary chambers. The unit is operated twice a week for approximately 3 hours each day. The MEDDAC currently generates from 6-12 bags of refuse each week. Ash was removed on the following day of each burn.

b. The NYDEC has recently promulgated new incinerator regulations (6 NYCRR 219-3) which place restrictions on both existing and newly constructed incinerators in New York State. These regulations place stringent requirements on particulate,

visible, carbon monoxide, and hydrogen chloride emissions; primary chamber, secondary chamber, and exhaust gas temperatures; secondary chamber residence time; and continuous emission monitoring. This Subpart applies to all new, modified, and existing infectious waste incineration facilities whose total permitted charging rate is less than 50 tons per day. Any new facility or modification must comply with the requirements before operation may commence. All other facilities must comply with the requirements by January 1, 1992. Past operational and maintenance problems indicate that the existing medical waste incinerator at Bldg 2415 would not be able to comply with these new regulations without substantial modifications. It appears that the construction of a new unit capable of complying with the new regulations is the most feasible and cost effective solution.

3. Open Burning. Fort Drum conducts open burning operations for the purposes of fire fighting training and land clearing.

a. Fire Fighting Training Area. The Fort Drum Fire Department operated a fire fighting training pit to the south of Munns Corner Road and across from Taxiway A of Wheeler Sack Airfield. Contaminated fuel, which floated on the water in the pit, was set ablaze and extinguished. The use of this pit was discontinued in 1987. At the time of this EOR, only limited (approximately 3 times a year) fire fighting training was conducted and involved the use of old vehicles which were set ablaze and extinguished. This training was performed adjacent to the old training pit. The NYDEC does not restrict, under 6 NYCRR 215, open burning for the purpose of fire fighting training.

b. Land Clearing. Section 215.3 (a) of the NYCRR allows open burning of land clearing and/or demolition material consisting of wood, trees, tree trimmings, leaves or brush, for the erection of any structure; for construction or modification of any highway, railroad, pipeline or power or communication line; provided that such burning is done onsite or at an appropriate designated burn area and in accordance with a permit issued by the NYDEC after written application. It was unclear at the time of this EOR if the U.S. Army Corps of Engineers or the contractor was responsible for and obtained such open burning permits prior to land clearing at the site of the new cantonment area.

4. Open Burning/Open Detonation (OB/OD). The OB/OD operations were conducted at two separate sites on Fort Drum. The NYDEC allows burning of toxic, explosive, or dangerous materials at an appropriate designated site provided that such burning is done only in accordance with a permit issued by the

EOR No. 32-24-7140-89, 11-21 Oct 88

State and only if it is determined that there is no other means of safe or economical disposal. At the time of the EOR, neither of the two sites had received permits nor specific permission from the NYDEC to conduct OB/OD activities.

a. 55th Ordnance Detachment EOD Area. The 55th Ordnance Detachment conducted OB/OD activities in the vicinity of Range 17-8. Open burning, which was performed usually once or twice a year, consisted of placing materials which could be open burned (i.e. small arms, smoke and pyrotechnic grenades, propellant, and miscellaneous pyrotechnics) into a storage tank where they were ignited with waste fuel. This storage tank was located above-ground and inverted on its side, with a door cut in the side to provide access to its interior. Previous to the use of this tank, 2 foot by 5 foot concrete bunkers located at the range were utilized for burning. Open detonation operations were conducted in an open pit which was approximately 30 feet wide and 15 feet deep. High explosive projectiles and grenades, as well as 8-inch, 105 mm and 155 mm cartridges were demilitarized with this method.

b. Air Force EOD Area. The Air Force carried out OB/OD operations at a site located South of Antwerp on Range 35-16. Open burning consisted of mixing the items with dunnage and diesel fuel, and then setting the material ablaze. The burning is done on bare ground.

5. Fuel Storage and Dispensing. Fort Drum stores gasoline, No. 2 fuel oil, diesel, JP-4, propane gas, and waste oil in both aboveground and belowground tanks ranging from 250 to 25,000 gallons in capacity. Over 500 above and belowground tanks are located on Fort Drum. Tanks with capacities greater than or equal to 5,000 gallons are presented in Annex B-2. Petroleum liquid storage is governed by 6 NYCRR 229. Regulations regarding the dispensing and transporting of gasoline are contained in Part 230 of the NYCRR. Fuel usage for Fort Drum is presented in Table B-2.

TABLE B-2. FORT DRUM FUEL CONSUMPTION FOR FY 87

Product	Usage (gallons)
MOGAS	556,580
Diesel (DF-1)	1,078,439
JP-4	647,729

a. Army and Air Force Exchange Service (AAFES) Service Station. The AAFES service filling station is located at Bldg 2140. Five underground storage tanks of 3,000 to 5,000 gallon capacity store regular, unleaded regular, and premium unleaded gasoline. Since none of these tanks are greater than 40,000 gallons in capacity, the provisions of 6 NYCRR 229.2 and 229.3 regarding petroleum liquid storage do not apply. During CY 87 1,210,557 gallons of gasoline were sold. Up until September 1988 1,085,327 gallons had been sold. Since the NYDEC only regulates the dispensing and transporting of gasoline in the New York City metropolitan area, Fort Drum is exempt from Section 230 of the NYCRR.

b. Heating Plants. All Fort Drum's large (greater than or equal to 1 MBtu/hr total heat input) and small (less than 1 MBtu/hr) heating plants stored fuel oil or propane onsite in above or belowground tanks. At a few isolated facilities, coal was still used as fuel and was stored outside in concrete bins. Since all tanks are less than 40,000 gallons in capacity, the restrictions in 6 NYCRR 229.2 and 229.3 do not apply.

c. Aviation Petroleum, Oil, and Lubricant (POL) Points. Fuel for the rotary-winged aircraft at Wheeler Sack Airfield is located in underground tanks at Bldgs 1895 and 3805. Tanks at both of these sites are less than 40,000 gallons and therefore are exempt from regulation.

d. Gasoline Alley. Approximately 20 underground tanks storing motor gasoline (MOGAS), diesel, JP-4, and kerosene are located along Gasoline Alley at Bldgs 1195, 1295, 1395, 1495, 1595, 1795, 1895, and 1995. At the time of the EOR, several of these tanks were in an inactive state. All tanks are less than 40,000 gallons in capacity and therefore are exempt from regulation under 6 NYCRR 229.2 and 229.3. Gasoline dispensing and transporting are also not restricted.

6. Painting Operations. The State of New York regulates surface coating operations under Part 228 of the NYCRR (Surface Coating Processes). Since total volatile organic compound (VOC) emissions from Fort Drum should be less than 100 tons per year, the installation is exempt, as stipulated in 6 NYCRR 229.1, from paint solvent content restraints. However, all paint spray operations are required to meet the opacity standards dictated in 6 NYCRR 228.4 which restricts visible emissions to less than 20 percent opacity except for an excursion of up to 6 consecutive minutes. The proper maintenance of paint overspray controls (dry filter-type and water cascade variety) will ensure compliance with this regulation.

EOR No. 32-24-7140-89, 11-21 Oct 88

a. Directorate of Logistics (DOL). The DOL performs various small scale spray painting in Bldgs 91 (Allied Trades Section) and 1143 (Furniture Repair). A small paint and radiator flush booth is located in the radiator repair area of Bldg 91. The booth incorporates a water curtain for control of paint overspray which exhausts to the exterior of the building. The small amount of lacquer paint which is used in the booth is applied with spray cans. Volatile organic compound emissions from this booth are expected to be minor. Primarily brush and roller painting are conducted in a paint room located in the body shop of Bldg 91. The only exhaust to the shop was through a fan located in the roof. Only limited spray lacquer and camouflage painting was performed in this shop. The Furniture Repair Shop (Bldg 1143) conducted brush, roller, and spray can painting in a room at the end of the building. An exhaust fan was used to displace paint vapors to the outside of the building. A furnace dust collection filter was used to remove any paint overspray.

b. New York Army National Guard (NYARNG). A large drive-in paint spray booth was located in Bldg 6020 of the NYARNG. The booth, which had two banks of dry filters at the far end, was used to apply primarily alkyd enamel paints to both military and civilian vehicles. Approximately 2 gallons of paint a week were used in the booth. Paint overspray filters were routinely changed on a quarterly basis and disposed of with the normal trash. The booth appeared to be functioning adequately.

c. TASC. A new water curtain paint spray booth was recently installed in Bldg 1041. At the time of the EOR, the booth was not in operation due to safety and permitting considerations. The walk-in booth will be used for the application of spray and clear enamels. The booth is equipped with a pressure drop water manometer to indicate when the paint overspray filters should be removed.

d. DEH. The DEH operates a water curtain paint spray booth in Bldg 197. The walk-in booth was primarily used for the application of latex, enamel, and lacquer paints to signs, posts and various other wooden items. The booth exhausted to the roof of the building. The unit appeared to be in proper operating condition when observed during the time of the EOR.

e. Chemical Agent Resistant Coating (CARC) Paint Application. Although no large scale CARC painting is conducted on Fort Drum, brush and roller application for touchup and repair is routinely performed. At the time of the EOR, CARC painting by units was restricted to a use of less than 1 quart a day. Since CARC had not been approved for indoor spray painting, all work had to be accomplished outside. The 518th Maintenance Battalion

had indicated that its requirements could include the increased use of CARC paint in the future. Such indications suggest that the increased use of CARC at Fort Drum is inevitable. In that event, proper procedures, to include proper respiratory protection and paint booth exhaust design, will be necessary.

7. Metal Cleaning and Degreasing. Small-scale metal cleaning and degreasing operations are conducted throughout the installation. Operations primarily consist of the use of cold-cleaning parts tanks which utilize a Stoddard-type solvent as a cleaning medium. A limited amount of carburetor cleaner, which contained methylene chloride, was used. A majority of these units were serviced under a Safety Kleen contract. Units identified during the time of the EOR were located in Bldgs 91, 96, 1132, and 1142 of DOL; Bldg 6020 of the NYARNG; Bldg 6000 of the NJARNG; and Bldg 2140, AAFES Service Station. Although the NYDEC does not require certificates to operate for these tanks, it does establish equipment specifications under 6 NYCRR 226.3 for individuals conducting solvent metal cleaning. These requirements include the provisions of a drainage facility and a reduced freeboard ratio for the unit. The Safety Kleen equipment complies with these specifications. General requirements dictated in 6 NYCRR 226.2 include the storage of solvent in closed containers, maintenance of equipment to minimize evaporation, display of standing operating procedures for proper use of the unit, closing of equipment covers when the degreaser is not in use, and maintenance of solvent consumption records for each year. Each operating group should maintain these solvent records as part of their inventory, and is responsible for complying with the other general requirements.

8. Woodworking. Woodworking is conducted at three sites on Fort Drum: Bldgs 1143 (Furniture Repair), 1041 (TASC), and 4000 (DEH).

a. The Furniture Repair Shop (Bldg 1143) had various pieces of woodshaping equipment for furniture repair and fabrication. The shop was not equipped with a sawdust collection system. Although this situation poses a potential safety and health hazard, the eventual move of DOL to the new Division Support Command (DISCOM) area should rectify this situation. In the event that DOL continues to occupy this building, or its new occupants use the building for the same function, an industrial hygiene survey should be performed to ensure the health and safety of the workers.

b. The TASC operates a dry cyclone separator and baghouse in series outside of Bldg 1041 for the purpose of removing sawdust from the woodworking shop. Collected sawdust

EOR No. 32-24-7140-89, 11-21 Oct 88

was discharged to barrels and disposed of when necessary at the landfill. This collection system should comply with New York opacity and particulate emission standards (6 NYCRR 212).

c. The Woodworking Shop of DEH (Bldg 4000) operates a single cyclone for removing collected sawdust generated from the various saws and planers located within the shop area. At the time of the EOR, this cyclone appeared to be in good repair and should comply with 6 NYCRR 212.

9. Sand/Abrasive Blasting. Fort Drum conducts a limited amount of abrasive blasting in Bldg 91. The unit utilizes glass beads for small parts blasting and is totally self-contained. The DEH operates a portable sandblasting unit which is used for exterior work. The 6 NYCRR 211.2 states that "no person shall cause or allow emissions of air contaminants to the outdoor atmosphere of such quantity, characteristic, or duration which are injurious to human, plant, or animal life or to property." The 6 NYCRR 211.3 stipulates that visible emissions must be less than 20 percent opacity except for an excursion of up to 57 percent opacity for a period not to exceed 6 minutes. The reasonable use of the portable sandblaster, as well as discontinuance of sandblasting operations during extremely windy conditions, should ensure compliance with the provisions of this section.

10. Vehicle Maintenance and Repair Operations. Fort Drum, because of its mission and operations, must maintain a large number of material handling equipment, transport, construction, installation service, and military vehicles. Fort Drum conducts a majority of these operations in Bldgs 91, 93, 84, 1142, 1132, 6020, and 6000. All of these facilities provided for the collection and discharge of vehicle exhaust through either a system integrated into the building or through the use of exhaust pipe extensions. The State of New York does not place air pollution restrictions on the operation of these facilities.

11. Hazardous Air Pollutants.

a. National Emission Standards for Hazardous Air Pollutants (NESHAP). The EPA has established, under 40 CFR 61, emission standards for pollutants which the Agency has designated as hazardous. At the time of the EOR, the list included asbestos, benzene, beryllium, coke oven emissions, inorganic arsenic, mercury, radionuclides, and vinyl chloride.

(1) The installation occasionally removes and disposes of asbestos items. There are stringent regulations imposed by the NESHAP concerning the handling of asbestos articles including reporting, removal techniques and wetting, and disposal

procedures. Asbestos removal was generally performed by contract with removed materials being disposed of offpost. Small removal and disposal jobs were handled by installation personnel and disposed of through the Defense Reutilization and Marketing Office (DRMO). At the time of the EOR, a rather comprehensive program had been started to identify and remove asbestos hazards. However, the asbestos control program at Fort Drum has become fragmented and the objective of the program was not being achieved. A specific example involved the boilers at Bldg 6000. It was apparent that some repair work had been done on the shell of the two boilers located in the building, and what looked to be asbestos lagging was broken and scattered over the top of the two units. The NJARNG personnel indicated that analysis had identified the material as containing asbestos, but it had not been removed because they were awaiting a contract for removal. Although this was a good idea, it appeared that the previous repair work should have included provisions for removing the material. It was also unclear if proper notification of all demolition and/or applicable renovation work which involved the removal of friable asbestos was being performed in accordance with NESHAP requirements. Notification is not required if the total of all annual renovation work involving the removal of friable asbestos totals less than 260 linear feet on pipes or at least 160 square feet on other facility components.

(2) The installation did not have any significant stationary sources of benzene, beryllium, coke oven emissions, inorganic arsenic, mercury, radionuclides, or vinyl chloride.

b. New York State Guidelines for the Control of Toxic Ambient Air Contaminants. The State of New York has developed, through the combined effort of the NYDEC and the New York State Department of Health, guidelines for the control of toxic ambient air contaminants. These guidelines, which are also referred to as the New York State Air Guide-1, provide a screening mechanism to determine whether a permit or certificate to operate should be issued. These screening methods are in addition to the control requirements set forth under 6 NYCRR 212. This part (6 NYCRR 212) establishes control requirements for specific discharges of pollutants which the NYDEC has determined to have serious adverse, moderate and essentially localized, or localized effects on receptors or the environment. These effects may be of a health, economic or aesthetic nature or any combination of these. Air Guide-1 may be used to assess other air contaminant sources which may cause contravention of ambient air quality standards and/or cause air pollution. These specific and interim ambient air limits (AAL) have been determined through the use of both toxicity data and the American Conference of Governmental Industrial Hygienists' (ACGIH) Threshold Limit Value - Time Weighted Averages (TWA-TLV or TLV). These AAL's are compared to

EOR No. 32-24-7140-89, 11-21 Oct 88

measured or calculated concentrations at the points of concern. Although at the time of the EOR it did not appear that Fort Drum had any discharges of concern, it is extremely important that the construction or modification of any air pollutant sources be properly coordinated with the NYDEC Division of Air Resources.

12. New Construction. The construction involving the expansion of Fort Drum to accommodate the 10th Infantry Division will require that the installation will have to procure or oversee the procurement of permits to construct and certificates to operate. Areas of direct and indirect impact will involve:

a. DISCOM. The construction of the Support Maintenance Area (SMA) facilities (Project Number 150) will include the installation of paint spray booths which will necessitate permits to construct. Since only limited information was available on the facilities to be located in this area, it is advisable that the environmental office remain aware of the work progressing at this site and to permit any other applicable sources of air pollution.

b. Medical Logistics Operations Building. This facility (Project Number 137) will include the installation of a medical waste incinerator. This unit will also need a permit to construct and a certificate to operate. Source testing upon completion of the incinerator will probably be necessary as part of the permitting and certification process.

c. Pesticide Storage Facility. This facility (Project Number 245) will probably be required to obtain both a permit to construct and a certificate to operate.

d. CARC Painting. The expansion of the function and operation of Fort Drum will almost certainly increase the number and repair of tactical vehicles to include those painted with CARC paint. In addition to the construction of new paint spray facilities in the new SMA, this expansion might make it necessary for existing booths to be modified to handle the use of CARC paint. These modifications may include the incorporation of proper respiratory equipment and provisions for adequate air pollution control or atmospheric dispersion through stack height adjustment. These sources will also be impacted by the provisions of 6 NYCRR 212 and New York State Air Guide-1.

E. Mobile Source Compliance.

1. Transportation Control Plan. Installations located within an area defined in EPA-approved transportation control plans are required by AR 200-1 to cooperate with local authorities in reducing vehicular traffic consistent with

military requirements. At present, the State of New York places no restrictions on vehicular traffic in the Fort Drum area. However, AR 210-4 states that, where practical, all installations and activities will establish carpooling programs as well as control employee parking spaces. The regulation provides that carpool vehicles will receive priority over sole-occupant, nonhandicap vehicles in the assignment of desirable and convenient parking spaces. At the time of the EOR, a voluntary carpooling program was in effect at Fort Drum.

2. Inspection and Maintenance Program. The Commissioner of Motor Vehicles has established a program for periodic motor vehicle exhaust emissions inspections for all gasoline-powered motor vehicles registered in the New York Metropolitan Air Quality Control Region (NYMAQCR). These vehicles are subject to an emissions test as part of the annual vehicle inspection except those motor vehicles expressly excluded by subdivision 15 NYCRR 79.2(f). This region is comprised of Suffolk (except Fisher's Island), Nassau, Kings, Queens, Richmond, New York, Bronx, Westchester and Rockland counties. The program places restrictions on carbon monoxide, carbon dioxide and hydrocarbon emissions from these vehicles. Although Fort Drum is not located in the NYMAQCR and is therefore exempted from emission testing, vehicles operated in the area must still comply with annual vehicle inspection requirements.

3. Installation Traffic. Fort Drum, at the time of the EOR, had a total of 9,611 vehicles registered with the Vehicle Registration Clerk. This total includes: active duty military and their dependents; civil service, local hire, contractor and vendor employees; and retired military personnel. In addition, the installation operates a lesser number of General Services Administration (GSA), installational and military vehicles on post for mission and training purposes. No significant impact on air quality due to vehicular operation is expected due to the relative remoteness of Fort Drum.

F. Ambient Air Quality.

1. Air Quality Standards. Federal and State ambient air quality standards are contained in Annex B-3.

2. Regional Air Quality. The NYDEC operates air monitoring equipment in the City of Syracuse for the purposes of monitoring ambient sulfur dioxide, total suspended particulates (TSP), inhalable particulates (PM₁₀) and ozone. During CY 87 at the Hiawatha Boulevard site, the sulfur dioxide arithmetic mean concentration was 0.005 parts per million (ppm), while the TSP and PM₁₀ concentrations were 66 and 48.8 micrograms per cubic meter, respectively. The Teall Avenue and Court Street monitoring station recorded one observation in excess of the 1-hour ozone standard of 0.12 ppm during 1987.

EOR No. 32-24-7140-89, 11-21 Oct 88

G. Emergency Episode Plan. Installations located within an area subject to air pollution episodes and as dictated by State law are required by AR 200-1, paragraph 4-8a, to develop air pollution emergency episode plans. Part 207 of 6 NYCRR requires: that burning equipment with a maximum operating heat input exceeding 200 MBtu/hr, processing/exhausting/ventilating systems with particulate emissions in excess of 100 pounds per hour, and incinerators with a refuse charging capacity of 2,000 pounds per hour or more are required to submit a proposed episode action plan within 90 days of request by the State. Although the cogeneration facility will most likely have a maximum heat input of greater than 200 MBtu/hr, it will be the responsibility of the operator of the plant to submit such a plan if so requested by the NYDEC. However, it will be the responsibility of the installation to ensure compliance if such a request does arise.

IV. CONCLUSIONS.

A. Fort Drum has not applied for or possess all necessary certificates to operate for appropriate air pollution sources on the installation as required by NYDEC.

B. Specific facilities located in the new contonment area at Fort Drum may require permits to construct from the NYDEC.

C. The installation presently burns medical waste generated at the installation MEDDAC in a pathological unit located in Bldg 2415. Due to the expansion of the 10th Mountain Division, past operational problems with the existing incinerator, the absence of local incinerator capacity to adequately dispose of infectious waste, and the recently revised NYDEC regulations regarding infectious waste incineration, a new unit has been proposed to be included in the construction of the Medical Logistics Operations Building.

D. Fort Drum has conducted open burning operations for the purposes of fire fighter training, land clearing and the destruction of explosive ordnance.

E. The handling, removal and disposal of asbestos materials at Fort Drum generally appears to be in compliance with NESHAP and New York State requirements. Although great strides have been made in identifying and removing asbestos hazards, program planning and coordination, and training and regulatory notification warrants improvement.

F. The installation has begun the use of CARC paint for vehicle touchup and repair, and it is anticipated the requirements for the use of this paint will increase. The use of CARC will be subject to regulation under New York's recently

implemented Air Guide-1 (Guidelines for the Control of Toxic Ambient Air Contaminants, 6 NYCRR 212 and State permitting requirements).

V. RECOMMENDATIONS.

A. To ensure regulatory compliance, the following recommendations are made:

1. Contact the NYDEC to obtain certificates to operate for the paint spray booths located in Bldgs 197 (DEH), 1041 (TASC) and 6020 (NYARNG); sawdust collection cyclones at Bldgs 1041 (TASC) and 4000 (DEH); the plastics fabrication exhaust system in Bldg 1041 (TASC) and coal-fired combustion sources with heat inputs greater than or equal to 1.0 MBtu/hr (6 NYCRR 201.2).

2. Ensure that proper permits to construct are obtained for the medical waste incinerator to be installed at the Medical Logistics Operations Building, Pesticide Storage Facility, paint spray booth(s) to be installed in the SMA and any other applicable air pollution sources prior to modification or construction (6 NYCRR 201.2).

3. Continue with present plans to procure and install a 50-100 pound per hour medical waste incinerator at the site of the Medical Logistics Operations Building. Ensure that the unit will comply, through emission testing accomplished by the manufacturer or contractor, with the new NYDEC requirements for: particulate, visible, carbon monoxide and hydrogen chloride emissions; primary chamber, secondary chamber and exhaust gas temperatures; secondary chamber residence time and continuous emission monitoring. Institute a comprehensive waste segregation program to ensure that only wastes for which the unit is designed to burn are incinerated (6 NYCRR 219.3).

4. Obtain open burning permits for the EOD operations conducted at Range 17-8 (55th Ordnance Detachment) and by the Air Force, and ensure that such permits are obtained for land clearing (new construction area) in the event that such operations are resumed (6 NYCRR 215.2).

5. Develop an organized asbestos control program which includes as a minimum a post-wide standing operating procedure for asbestos removal and disposal, a survey plan to completely identify the location and condition of asbestos hazards, a prioritized schedule for removal, proper and timely regulatory notification of such removal, and training of installation personnel involved in asbestos control functions (40 CFR Part 61.145).

EOR No. 32-24-7140-89, 11-21 Oct 88

B. To ensure good environmental engineering practices, the following recommendation is made. Ensure that proper procedures are followed for the application of CARC and two component isocyanate paints to include proper respiratory equipment and paint booth design. Coordinate such paint spray process modifications with the NYDEC to ensure compliance with State requirements for the control of toxic air pollutants.



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APPROVED:



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EOR No. 32-24-7140-89, 11-21 Oct 88

ANNEX B-1

REFERENCES

1. AR 200-1, 15 June 1982, Environmental Protection and Enhancement.
2. AR 210-4, 15 May 1981, Personnel Parking Facilities and DA Ride Sharing Program.
3. Public Law (PL) 95-95, 7 August 1977, Clean Air Act Amendments of 1977.
4. Title 29, Code of Federal Regulations (CFR), 1987 rev, Part 1910, Occupational Safety and Health Standards.
5. Title 40, CFR, 1987 rev, Part 50, National Primary and Secondary Ambient Air Quality Standards.
6. Title 40, CFR, 1987 rev, Part 51, Requirements for Preparation, Adoption, and Submittal of Implementation Plans.
7. Title 40, CFR, 1987 rev, Part 61, National Emission Standards for Hazardous Air Pollutants.
8. Title 40, CFR, 1987 rev, Part 81, Designation of Areas for Air Quality Planning Purposes.
9. Title 40, CFR, 1987 rev, Part 86, Control of Air Pollution from New Motor Vehicles and New Motor Vehicle Engines: Certification and Test Procedures.
10. Compilation of Air Pollutant Emission Factors, 3d ed, EPA No. AP-42, with supplements 1 through 15, September 1985.
11. Title 6, New York Code of Rules and Regulations, Chapter III, Subchapter A, Parts 200-257.

EOR No. 32-24-7140-89, 11-21 Oct 88

ANNEX B-2
FUEL STORAGE TANKS
LOCATED AT FORT DRUM

B-2-1

Location	Fuel	No. of Tanks	Capacity Each	Total
36	No. 2 Fuel Oil	1	5,000	5,000
84/86	No. 2 Fuel Oil	2	6,000	12,000
91/93	No. 2 Fuel Oil	1	10,000	10,000
175	No. 2 Fuel Oil	1	15,000	15,000
682	No. 2 Fuel Oil	1	5,000	5,000
1195	Kerosene	1	5,000	5,000
1240	No. 2 Fuel Oil	1	6,000	6,000
1245	Diesel Fuel	1	5,000	5,000
1245	Diesel Fuel	1	12,000	12,000
1245	Diesel Fuel	1	25,000	25,000
1295*	Gasoline	5	20,000	100,000
1395	Diesel Fuel	2	25,000	50,000
1495	Gasoline	2	25,000	50,000
1595	Diesel Fuel	2	25,000	50,000
1595	Diesel Fuel	1	12,000	12,000
1750	No. 2 Fuel Oil	1	10,000	10,000
1795	Gasoline	2	25,000	50,000
1795	Gasoline	1	12,000	12,000
1800	No. 2 Fuel Oil	1	8,000	8,000
1895	JP-4	2	25,000	50,000
1995	Diesel Fuel	1	25,000	25,000
1995	Diesel Fuel	1	12,000	12,000
2050	No. 2 Fuel Oil	1	8,000	8,000
2059/2060	No. 2 Fuel Oil	2	15,000	30,000
2170	No. 2 Fuel Oil	1	5,000	5,000
2360	No. 2 Fuel Oil	1	8,000	8,000
3805	JP-4	2	12,000	24,000
4000	Diesel Fuel	1	5,000	5,000
4305	No. 2 Fuel Oil	1	8,000	8,000
4330	No. 2 Fuel Oil	1	8,000	8,000
6000	No. 2 Fuel Oil	1	10,000	10,000
6001	No. 2 Fuel Oil	1	5,000	5,000
1100	No. 2 Fuel Oil	1	10,000	10,000

* These tanks were inactive at the time of this review.

ANNEX B-3

STATE AND FEDERAL AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	Federal Standards		New York State Standards
		Primary	Secondary	
Sulfur Dioxide	Annual Arith. Mean	0.03 ppm	--	0.03 ppm
	24 hrs	0.14 ppm	--	0.14 ppm
	3 hrs	--	0.50 ppm	0.50 ppm
Particulate Matter (TSP)	Annual Geo. Mean	75 $\mu\text{g}/\text{m}^3$	60 $\mu\text{g}/\text{m}^3$	75 $\mu\text{g}/\text{m}^3$
	24 hrs	260 $\mu\text{g}/\text{m}^3$	160 $\mu\text{g}/\text{m}^3$	250 $\mu\text{g}/\text{m}^3$
Particulate	Annual Arith. Mean	50 $\mu\text{g}/\text{m}^3$	50 $\mu\text{g}/\text{m}^3$	50 $\mu\text{g}/\text{m}^3$
	24 hrs	150 $\mu\text{g}/\text{m}^3$	150 $\mu\text{g}/\text{m}^3$	150 $\mu\text{g}/\text{m}^3$
Carbon Monoxide	8 hrs	9 ppm	--	9 ppm
	1 hr	35 ppm	--	35 ppm
Ozone	1 hr	0.12 ppm	0.12 ppm	0.12 ppm
Nitrogen Dioxide	Annual Arith. Mean	0.05 ppm	0.05 ppm	0.05 ppm
Lead	Quarterly Arith. Mean	1.5 $\mu\text{g}/\text{m}^3$	1.5 $\mu\text{g}/\text{m}^3$	1.5 $\mu\text{g}/\text{m}^3$

* National standards, other than those based on annual averages or annual geometric means, are not to be exceeded more than once a year.



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MARYLAND 21010-6422



HSHB-MO-B

ENVIRONMENTAL OPERATIONAL REVIEW NO. 32-24-7140-89
10TH MOUNTAIN DIVISION (LIGHT INFANTRY) AND FORT DRUM
WATERTOWN, NEW YORK
11-21 OCTOBER 1988

APPENDIX C
ENVIRONMENTAL NOISE MANAGEMENT REVIEW

1. REFERENCES.

- a. AR 200-1, 15 June 1982, Environmental Protection and Enhancement.
- b. TM 5-803-2, 15 June 1978, Environmental Protection: Planning in the Noise Environment.
- c. Installation Compatible Use Zone (ICUZ) Program, Fort Drum, New York, March 1987
- d. Memorandum, USAEHA, HSHB-MO-B, 30 September 1988, subject: Environmental Noise Assessment No. 52-34-0442-88, Special Test Noise Measurements, Aberdeen Proving Ground, Maryland, 27 June - 21 July 1988.

2. PURPOSE. To evaluate the compliance status of the environmental noise program and its implementation, and to provide assistance in the attainment and maintenance of that compliance.

3. GENERAL.

a. Army Regulation 200-1 (reference 1a) implements all the Federal laws concerning environmental noise for Army activities. Three noise zones are defined in the regulation. Noise sensitive land uses will be considered as follows:

- (1) Zone I - Acceptable
- (2) Zone II - Normally Unacceptable
- (3) Zone III - Unacceptable

b. These noise zones are defined by specific A-weighted day-night level (ADNL), C-weighted day-night level (CDNL), and linear peak sound level (dBP). The acceptability levels for

ADNL, CDNL and dBP were developed through social surveys conducted by many government and private organizations. The Table represents the current consensus. A more complete description concerning noise levels, weighting schemes, standards and guidelines can be found in reference 1b.

TABLE. LAND USE PLANNING GUIDELINES.

Noise Zone	Percent of Population Highly Annoyed	ADNL	Noise Limits CDNL	dBP
I	< 15 %	< 65 dBA	< 62 dBC	< 87 dBP
II	15 - 39 %	65 - 75 dBA	62 - 70 dBC	87 - 104 dBP
III	> 39 %	> 75 dBA	> 70 dBC	> 104 dBP

dBA - A-weighted decibels
dBC - C-weighted decibels

c. Army noise environments are characterized by three types of noise. Aircraft and vehicles produce noise best described in terms of ADNL. The A-weighted scale closely resembles the frequency response of human hearing and, therefore, provides a good indication of the impact of noise produced by transportation activities. High amplitude noise resulting from armor, artillery and demolition activities is best described in terms of CDNL. The C-weighted scale measures the low frequency component of this noise which can cause buildings to shake and windows to rattle. This is an important ingredient in a person's perception of the annoyance from blast activities. The noise from small arms ranges is best described in terms of dBP.

d. The primary means of assessing environmental noise is through computer simulations since direct measurement of the noise levels would be impractical and expensive. Computer simulations can then be summarized on installation land use maps and incorporated into the installation master plan.

EOR No. 32-24-7140-89, 11-21 Oct 88

4. FINDINGS AND DISCUSSION.

a. Installation Compatible Use Zone (ICUZ) Program.

(1) The ICUZ study for Fort Drum was completed in March of 1987, meeting DA's initial October 1987 deadline. The document is descriptive and well written and its completion was the first big step towards a successful ICUZ program. The ICUZ study, however, is a living document to be used as a guide in a continuous ICUZ program. At this time, no active communication between the installation and local governments exists to specifically meet this purpose. It should be noted that the G-5 has had contact with county planners and has collected valuable information regarding noise sensitive land uses. However, his work has been project specific to identify flight paths for proposed helicopter approaches from Griffith Airfield. His work should be shared with and expanded by an ICUZ working group. With stationing of the 10th Mountain Division nearing completion, the G-5 will be called upon to concentrate his efforts elsewhere. The ICUZ program should not be allowed to stagnate, and one individual cannot be entirely responsible for its implementation.

(2) Fort Drum should continue with its ICUZ program as required by AR 200-1. The purpose of the ICUZ program is to protect the installation mission as well as the public by identifying noise impacted areas so the concerned public, local governments, and the installation can work together to use land-use planning controls to minimize noise-sensitive development. The implementation of the ICUZ program requires several fields of expertise including environmental, master planning, public affairs, legal, and airfield and range operations. An ICUZ committee or working group consisting of representatives of these groups with a command representative is needed to implement and manage the program.

(3) The ICUZ program includes quantification of the existing and future noise environments, coordination with the local community and its zoning and planning agencies, and exploration of noise mitigation methods to reduce the noise impact. The airfield and range operations representatives are the primary players in collecting the operational data required to quantify the noise environment and in exploring the feasibility of proposed mitigation methods. The public affairs officer is responsible for the coordination with the community, while the master planning office coordinates on a professional level with their counterparts in the community. The Staff Judge Advocate is responsible for the legal aspects of any agreements which may be established between Fort Drum and the community.

b. Noise Contours. The noise zone maps included in the ICUZ study are current at this time. However, several additional operations, which may be significant noise contributors, have been proposed. New contours should be generated in the event of new or relocated firing ranges, new weapon systems, revised flight patterns, or new aircraft activities. The noise contours must be kept current in order to be useful in the land use planning process. These contours should also be included in the installation Master Plan and used in siting future housing areas and other noise sensitive land uses on the installation.

c. Noise Complaints. The civil affairs office has been designated as the central point of contact for noise complaints. The Assistant G-5 is doing an outstanding job in handling these complaints. All complaints are first forwarded to appropriate personnel for investigation. Either range control or airfield command will determine the source and viability of the complaint and initiate mitigative measures when possible. These individuals will also answer the complaint telephonically when they are best suited to do so. The G-5 answers all other complaints or forwards them to the claims office when appropriate. From the complaint log it appeared that the majority of complaints were concentrated in Antwerp and Natural Bridge. The installation of a Noise Warning System to include monitors in both of these areas is expected to aid in identifying specific sources of complaints as well as having some public relations value. At this time, copies of the complaint transactions are not being forwarded to the Environmental Office. Doing so would allow that office ready access to this valuable information. This will be important to quality control once the Noise Warning System has been installed. Once an ICUZ committee has been formed, copies of noise complaints should be forwarded to all members to aid in collective action to resolve the complaints.

d. Noise Monitors. Fort Drum has appropriated funding for and is now awaiting the installation of a Construction Engineering Research Laboratories (CERL) Noise Warning System. Such a system can be valuable in determining compliance with regulations, in documenting peak levels to aid in the investigation of noise complaints and damage claims, and also has some public relations value. Our office has conducted several studies involving the CERL perimeter noise monitoring system at Aberdeen Proving Ground (APG), Maryland. The conduct of these studies included side by side monitoring and a comparison between other automated and manually operated monitors. In a U.S. Army Environmental Hygiene Agency report (reference 1d) the CERL system at APG was described as unreliable. The report concluded that the system could not be used with confidence to investigate

noise complaints. We do not know whether this deficiency is consistent in all CERL monitors. Though we have not conducted studies of other commercially available monitoring systems, Fort Drum should be aware that such systems do exist and may be more reliable and cost effective.

5. CONCLUSIONS.

a. Since the implementation of the ICUZ program requires several fields of expertise, an ICUZ committee or working group is needed to implement and manage the program. This committee should meet on a regular basis to keep current in the land use planning process.

b. Noise contours need to be included in the installation Master Plan.

c. The G-5 should forward copies of completed noise complaint transactions to the Environmental Office and all members of the ICUZ committee.

d. The CERL monitors may not be the most reliable or cost effective. Fort Drum should investigate the possibility of installing an alternate noise monitoring system.

6. RECOMMENDATIONS.

a. To ensure regulatory compliance, the following recommendations are made:

(1) Continue with the ICUZ program as required by AR 200-1, paragraph 7-3b(1).

(2) Update the noise contours to reflect any future changes in operations as required by AR 200-1, paragraphs 7-4g(2) and (8).

(3) Coordinate with the onpost master planning office to ensure land use compatibility as required by AR 200-1, paragraph 7-3b(1).

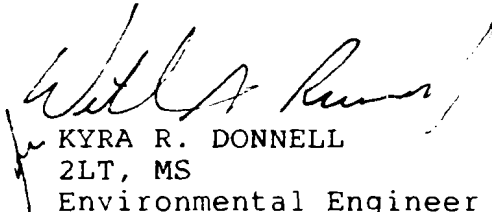
b. To ensure good engineering practices consistent with the ICUZ program, the following recommendations are made:

(1) Establish an ICUZ committee or working group.

(2) Investigate the reliability and cost effectiveness of alternate noise monitoring systems.

EOR No. 32-24-7140-89, 11-21 Oct 88

7. TECHNICAL ASSISTANCE. Questions, comments and/or technical advice concerning this report should be directed to 2LT Kyra R. Donnell, or the Chief, Bio-Acoustics Division, AUTOVON 584-3797.


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REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MARYLAND 21010-5422



56

HSHB-ME-SG

ENVIRONMENTAL OPERATIONAL REVIEW NO. 32-24-7140-89
10TH MOUNTAIN DIVISION (LIGHT INFANTRY) AND FORT DRUM
WATERTOWN, NEW YORK
11-21 OCTOBER 1988

APPENDIX D
GROUND WATER REVIEW

1. REFERENCES. Annex D-1 contains the references cited in this Appendix.
2. PURPOSE. Present the hydrogeology of Fort Drum. Evaluate the ground-water monitoring program and potential sources of ground-water contamination at Fort Drum.
3. REGULATORY REQUIREMENTS. Most regulations regarding ground water deal with monitoring, which is required for laws concerning other areas such as hazardous waste.
 - a. Title 40, Code of Federal Regulations, Part 264.101 (which is based on the Resource Conservation and Recovery Act amendments of 1984) requires ground-water monitoring at some sites.
 - b. The New York State Pollutant Discharge Elimination System (NY SPDES) regulations require wastewater monitoring for discharges to ground water. New York considers ground water "waters of the State."
 - c. Public Law 96-510 (Comprehensive Environmental Response, Compensation, and Liability Act) requires ground-water monitoring and cleanup at some sites.

4. FINDINGS AND DISCUSSION.

- a. Area Hydrogeology. Figure D-1 is a soils map of Fort Drum. As it shows, a sand body underlies most of the southern area of Fort Drum. This includes the area of the old cantonment area. The rest of the installation is underlain by soils high in clay with low permeabilities or very thin soils over bedrock. Figure D-2 is a geologic map of Fort Drum. The bedrock of the western and southern post area is sandstone and limestone. The northern post area has generally thin, clayey soils of low permeability. These are underlain by igneous and metamorphic rocks of very low permeability. The main aquifers are the sand

D-2

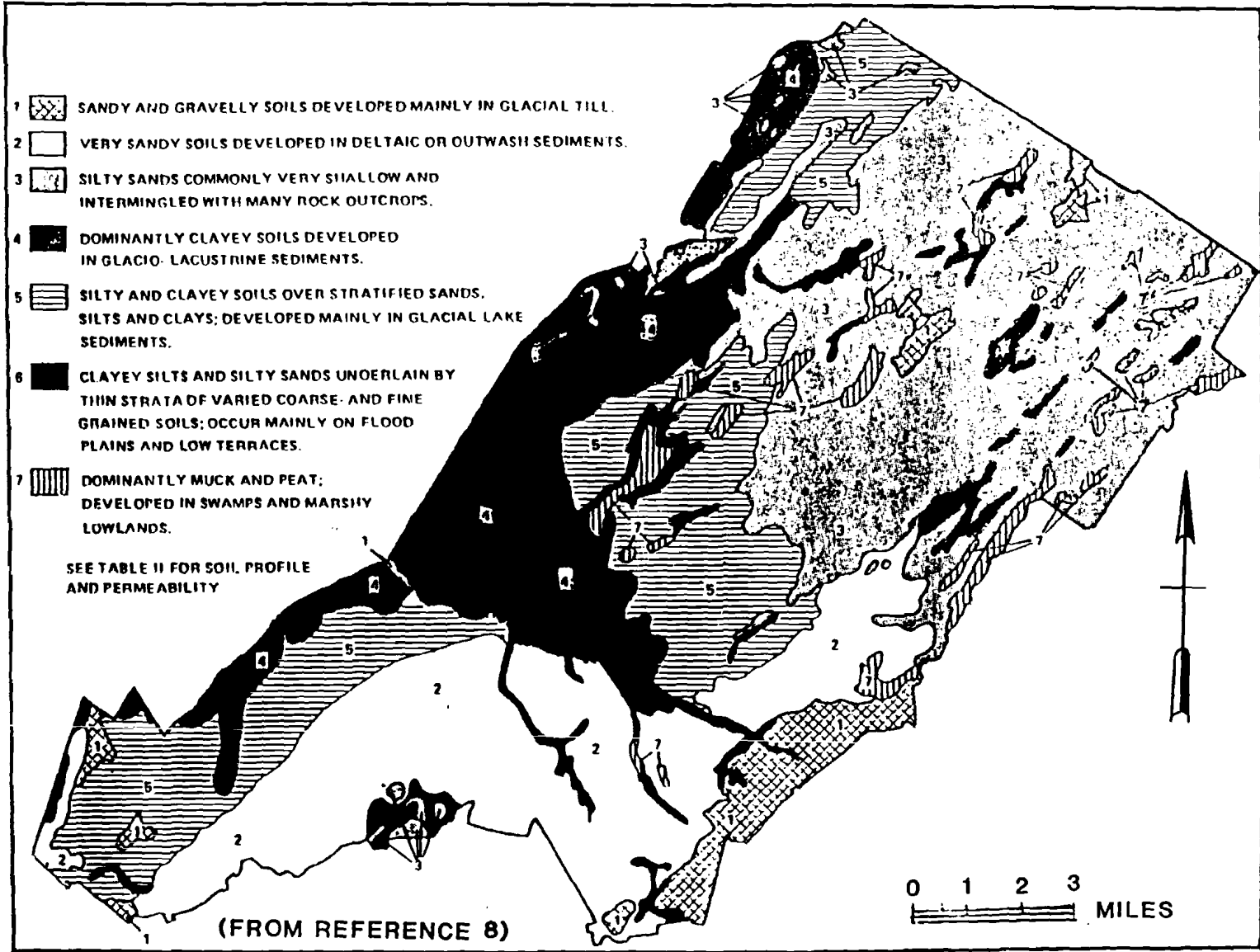


FIGURE D-1 SOIL MAP OF FORT DRUM, NY.

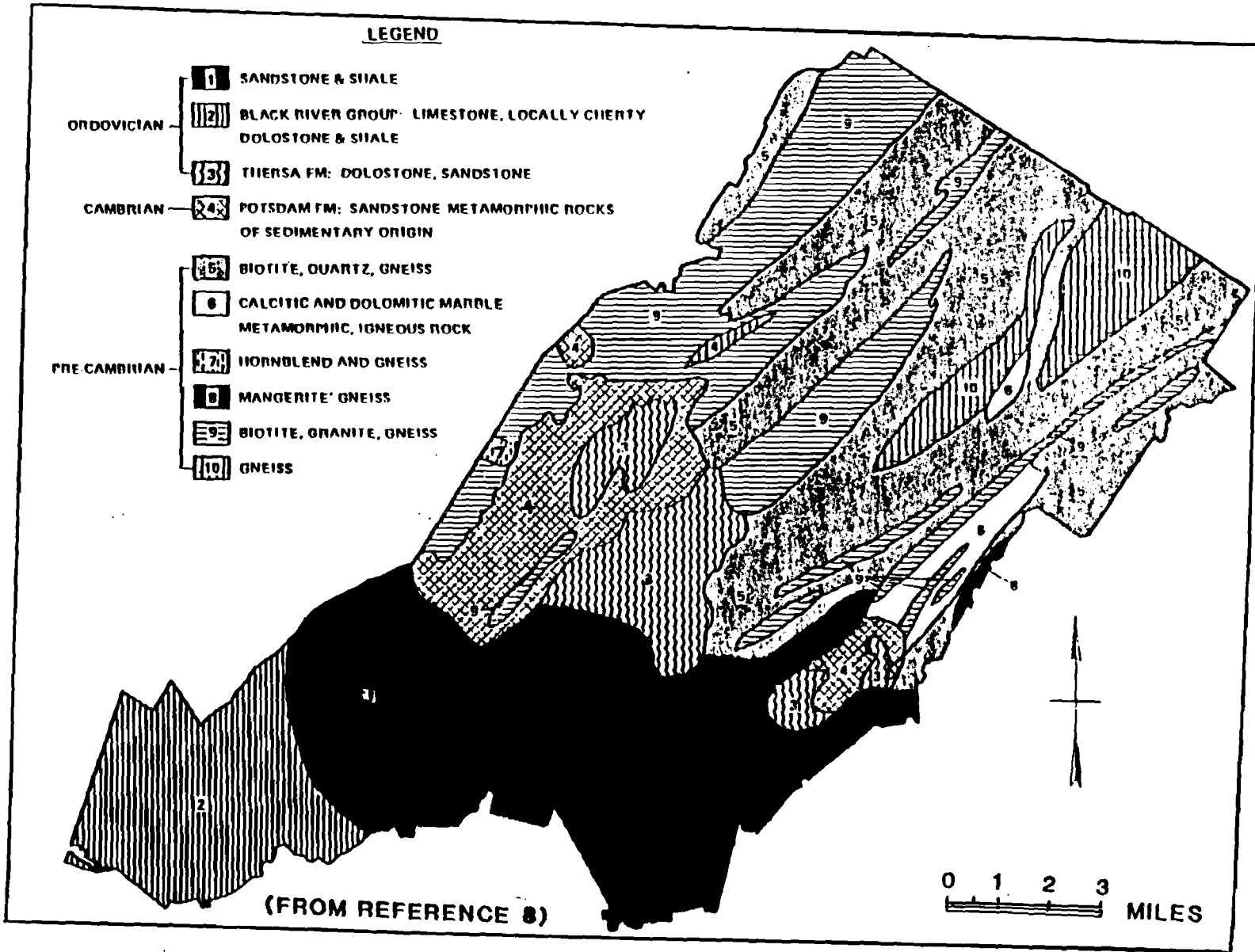


FIGURE D-2 GEOLOGIC MAP OF FORT DRUM, NY.

D-3

AD

body and the limestone and sandstone bedrock in the southern post area. The ground water in the shallow aquifer discharges to the Black River to the south and to the Indian River to the north. A ground-water divide exists under the old Main Post. Some ground water flows south into the Black River, and most ground water flows north, eventually into the Indian River. Most ground water discharges to surface water before it flows off post.

b. Ground-Water Production at Fort Drum. Almost all ground water produced for Fort Drum comes from the sandstone beneath the sand and clay soils beneath the airport. The water in the sandstone is protected to some degree by overlying clay layers. However, the shallow ground water may recharge the deeper aquifer. Most of the following sources of ground water pollution at Fort Drum are located over this sand aquifer. One previous study (reference 9) attempted to determine if there had been any impact on the deeper aquifer. A number of potentially hazardous chemicals were found. However, these same chemicals were found at equal or higher levels in the blanks so the positive values were discounted. Fort Drum is presently planning to resample the ground-water production wells for volatile and semivolatile organic compounds.

c. Sources of Ground-Water Contamination.

(1) Gasoline Alley. The one-way streets along the north edge of the old cantonment area, Oneida Avenue and Ontario Avenue, are lined with fuel points. Collectively, this area is known as Gasoline Alley. This is probably the single greatest threat to ground water on post. Each continuing investigation has only confirmed that there has been leakage from the underground storage tanks all along Gasoline Alley. These leaks have contaminated the ground water and surface water (references 4 and 7). The most obvious evidence of this is the 1595 area petroleum, oil, and lubricant (POL) spring which has been active for at least 14 years (reference 8). More recently, some traces of fuel have been found in nearly all the new monitoring wells installed along the length of Gasoline Alley (see Annex D-2). Recently, all underground storage tanks have been pressure tested, and all those found with leaks have been repaired or replaced [verbal communication, Deputy Director, Fort Drum Directorate of Engineering and Housing (DEH)].

(2) Old Landfills.

(a) Fort Drum has a number of old landfills including construction debris landfills, field dumps used by troops on maneuvers, and sanitary landfills (reference 8). Some landfills

EOR No. 32-24-7140-89, 11-21 Oct 88

were also the result of surrounding communities taking advantage of the open nature of the installation. The two landfills that are presently of most concern are the two largest closed landfills used as the main post landfills. Both of the landfills are located on the large highly permeable sand body that underlies most of the southern portion of the installation.

(b) The landfill northeast of the Main Post had been on a U.S. Army Environmental Hygiene Agency (USAEHA) monitoring program which included a State-required minimum number of parameters. Figure D-3 shows the landfill and the monitoring wells. It was also studied by the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA). They found many volatile organic chemicals. However, most of these chemicals were also found in their blanks and were discounted. They concluded that the only indications of any impact were elevated levels of iron and specific conductance (reference 9). However, the low levels of acetone and trifluorochloromethane may indicate there is a further problem. These were not found in the blanks and were commonly used for vehicle and aircraft degreasing. The State is presently considering declaring this a hazardous waste site (reference 6). They have established monitoring requirements which are listed in Annex D-2. Monitoring at this site may be complicated. There is a strong possibility that this site is downgradient from Gasoline Alley where there were confirmed tank leaks releasing benzene, toluene, xylene, and perhaps other chemicals.

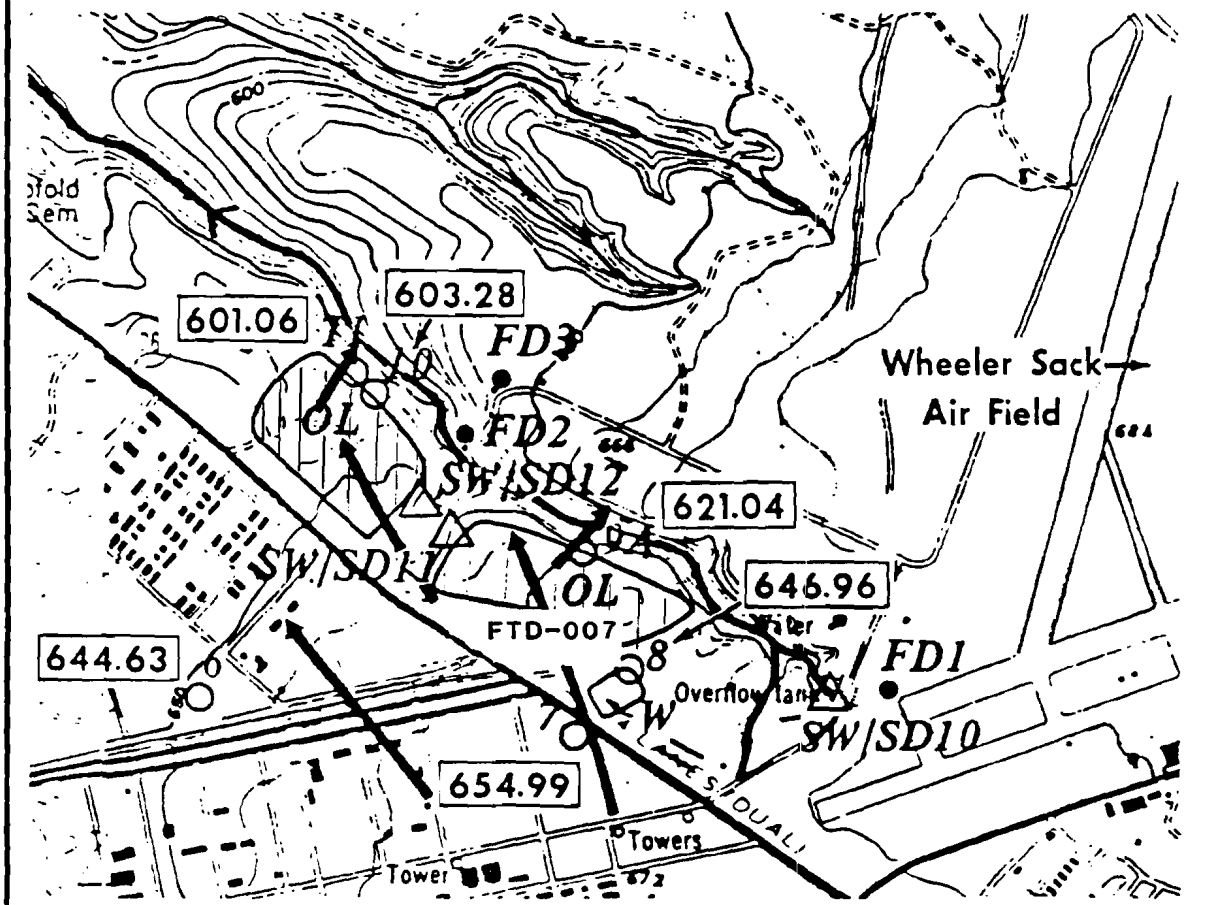
(c) Figure D-4 shows the most recently closed landfill and its monitoring wells. Monitoring has been specified by the State under closure regulations (reference 10). Annex D-2 contains a listing of the required parameters. This site was included in the USAEHA ground-water monitoring program. Past monitoring results showed some elevated levels of iron and lead (reference 9).

(d) Little is known about the other landfills onpost. They may be classified as solid waste management units under the Resource Conservation and Recovery Act. The permit, when issued, may require some action at these sites (reference 5). They should pose relatively little threat to human health or the environment. In addition, their exact locations are not known which makes any further action difficult. If possible, the first action should be to locate and inspect these sites.

FIGURE D-3
GENERALIZED GROUNDWATER FLOW MAP
INACTIVE (OLD) LANDFILL



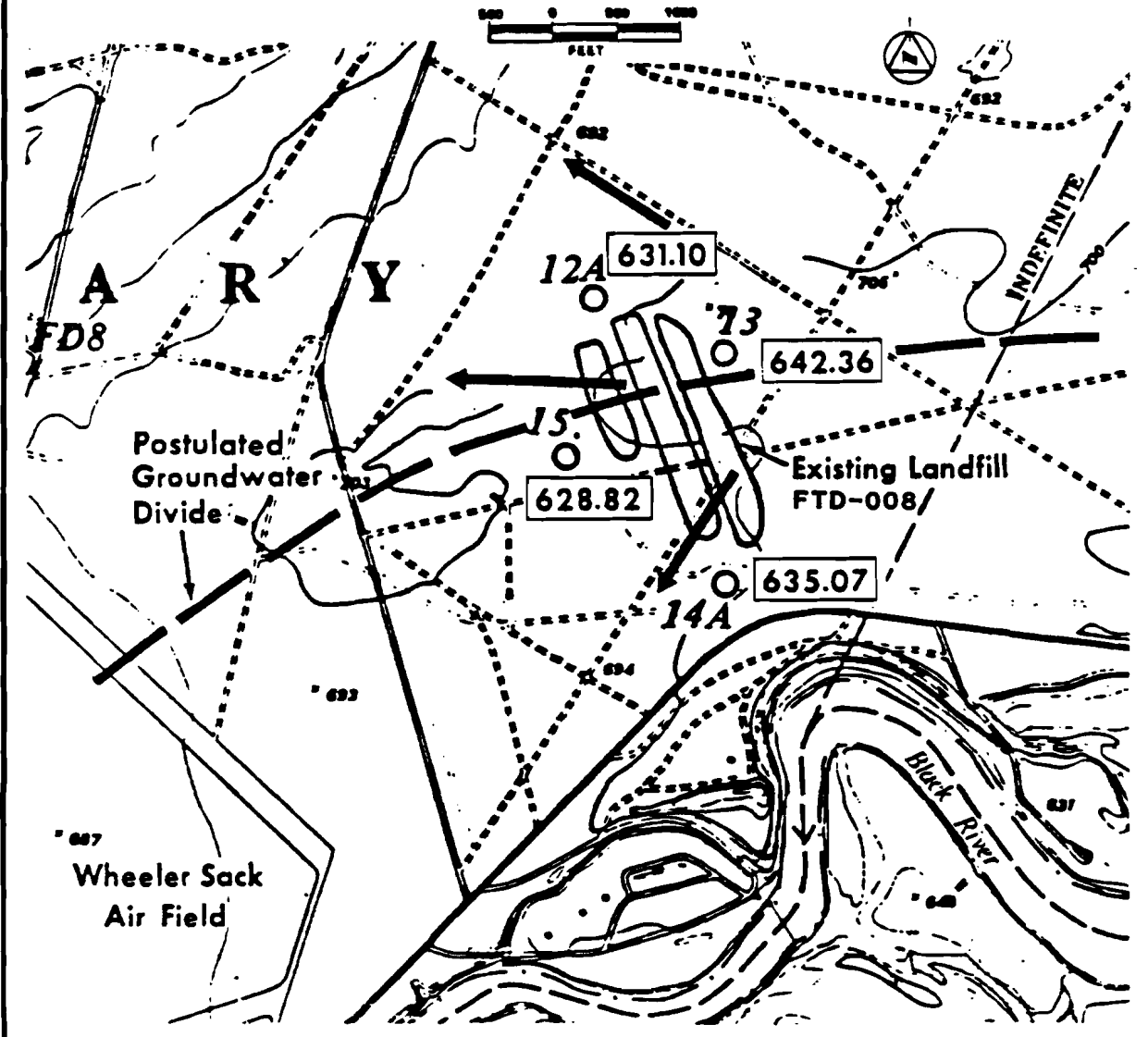
- DAMES & MOORE MONITORING WELL
- EXISTING WATER SUPPLY WELL
- W WASHRACK FACILITIES
- OL OLD LANDFILL
- 603.28 WATER TABLE ELEVATION IN FEET ABOVE MSL
(AVERAGE VALUE MAY - AUGUST, 1984)
- SURFACE DRAINAGE
- APPROXIMATE GROUNDWATER FLOW DIRECTION



FROM REFERENCE 9
Dames & Moore

FIGURE D-4
GENERALIZED GROUNDWATER FLOW MAP
EXISTING LANDFILL

- DAMES & MOORE MONITORING WELL
- 631.10 WATER TABLE ELEVATION IN FEET ABOVE MSL
(AVERAGE VALUE JUNE - AUGUST, 1984)
- POSTULATED GROUNDWATER DIVIDE
(Based on USGS, in preparation.)
- ← APPROXIMATE GROUNDWATER FLOW DIRECTION



(3) Wastewater Lagoon. The New Jersey National Guard wastewater lagoon on the west end of the old Main Post is a source of recharge of potentially hazardous chemicals directly to the ground water. The floor drains and the drains from the battery shop discharge to an unlined pond. This is also potentially illegal disposal of hazardous waste and should be discontinued. Past sampling of the pond has found lead, chromium, and cadmium at levels approaching hazardous waste limits. The Resource Conservation and Recovery Act requires investigation of this site (reference 5).

(4) Directorate of Logistics (DOL) Carburetor Shop. A drain pipe from the DOL carburetor shop discharges solvents and wastewater directly to the ground. It is possible this has been continuing for tens of years. This is illegal disposal of hazardous waste. Based on the nature of the waste and the area geology, there is potential for extensive soil and ground-water contamination. This site must be investigated as a solid waste management unit under the Resource Conservation and Recovery Act (reference 5). Potential contaminants include heavy metals (such as lead and cadmium) and volatile organic chemicals.

(5) Can Wash Facility. This site consists of a series of septic tanks and drain fields used to dispose of wastewater from a facility used to wash garbage cans and field mess/equipment. In the past, some acids and strong kitchen degreasers were used. Presently, only pine oil-based solvents and biodegradable soap are used. Based on the operation and types of cleaners used, there is nothing to indicate that the wastewater is or was toxic or a hazardous waste.

d. Ground-Water Monitoring Wells.

(1) Fort Drum has over 44 wells in place for monitoring shallow ground water (see Figure D-5). These wells were placed to monitor the most recently closed landfill, the closed landfill northeast of the cantonment area, the 1595 Area POL spring, and Gasoline Alley. The wells are in good condition.

(2) Fort Drum has requests in to do further work at many of the sites mentioned. Although this is good, an added dimension should be considered. These sites, as well as the post water supply, are all in the area of the best aquifers onpost. Although there is a great deal of information on ground water at Fort Drum, it has never been brought together in one comprehensive report. This would provide a much better understanding of the ground-water contamination problem and provide information of what needs to be done to protect Fort Drum's excellent water supply.

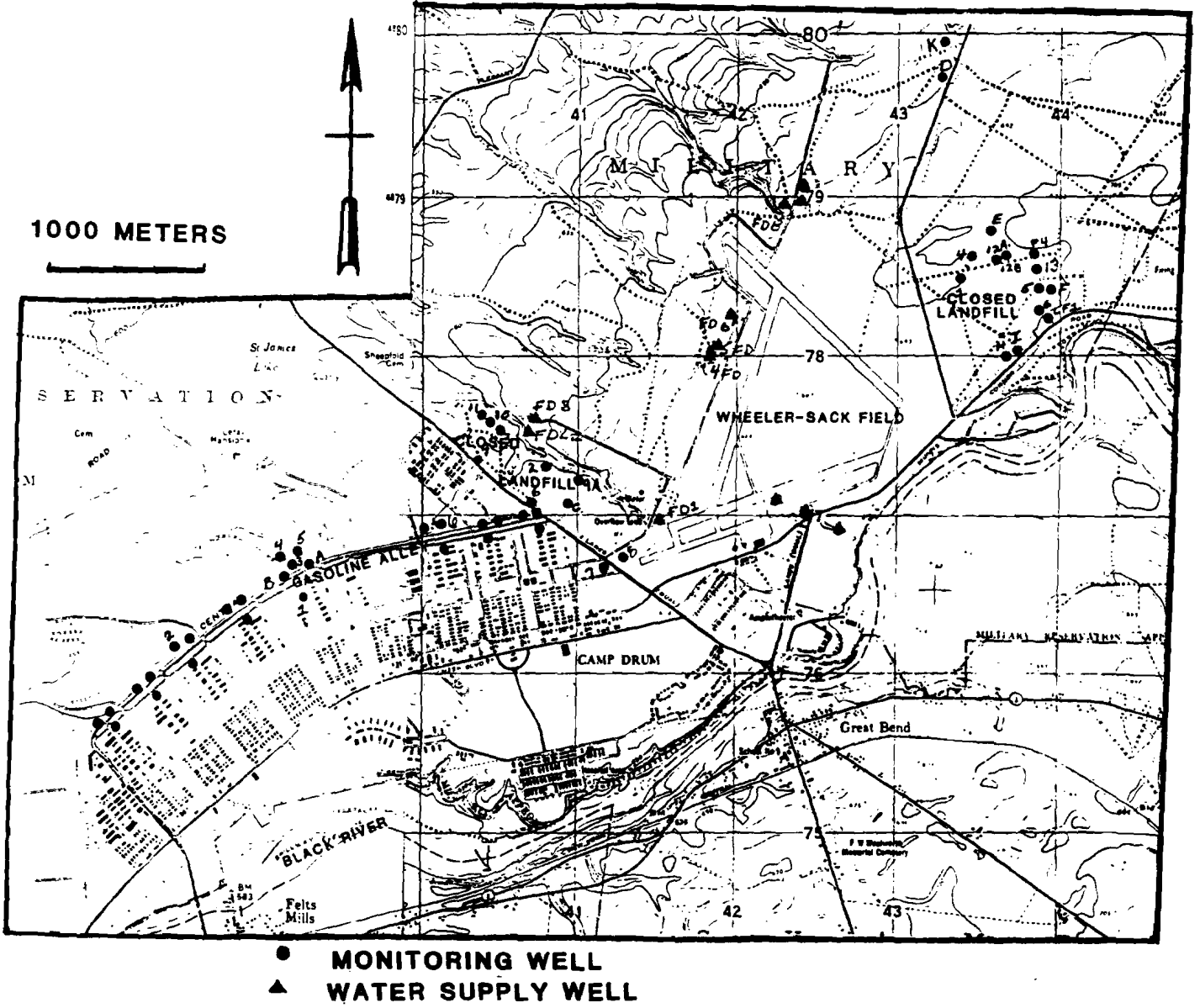


FIGURE D-5 MAP OF WELLS, FORT DRUM, NY.

(3) Fort Drum is contracting the actual sampling and analysis of their wells. The contract has some flaws. These include specifics on: measuring product thickness along Gasoline Alley, equipment and purging methods for Gasoline Alley and the landfills, and quality control samples. Although the environmental staff is aware of some of these problems, they are not in a position to readily correct them because the contract is managed out of a different office. Fort Drum should consider giving the environmental staff more control of the environment-related contracts.

5. SUMMARY AND CONCLUSIONS.

a. Fort Drum has an excellent aquifer system under the old Main Post. The aquifers consist of a large, highly permeable sand body at the surface which overlies limestone and sandstone bedrock aquifers. The post water supply comes from these aquifers. The vulnerability of the sand body aquifer should be a major concern.

b. The major confirmed source of ground-water contamination onpost is Gasoline Alley. Other potential sources are old landfills, the New Jersey National Guard wastewater lagoon, and the the DOL carburetor shop.

c. Fort Drum has already installed ground-water monitoring wells at most of the major sites. These wells are in good condition. The State is addressing most monitoring requirements, and Fort Drum is contracting out the sampling.

d. Fort Drum has never conducted a comprehensive ground water study. Such a study would address such problems as Gasoline Alley being upgradient of the monitoring wells at the old landfill along Oneida Road and protection of the water supply.

6. RECOMMENDATIONS.

a. We recommend the following based on regulatory requirements:

(1) Determine the extent of contamination from Gasoline Alley, and initiate product recovery and ground-water cleanup (NY SPDES).

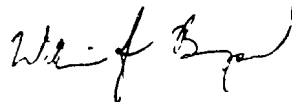
(2) Conduct a site investigation at the New Jersey National Guard wastewater lagoon to determine what impact the lagoon has had (40 CFR 264.101). This should include soil, sediment, surface and ground-water sampling. Analytical

EOR No. 32-24-7140-89, 11-21 Oct 88

parameters should include volatile and semivolatile organic compounds and metals. If indicated, conduct a cleanup of the site.

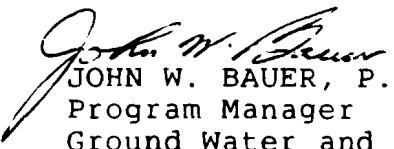
(3) Reroute the drain from the DOL carburetor shop. Conduct a site investigation at the DOL vehicle maintenance shop to determine what impact this disposal has had (40 CFR 264.101). This should include soil and ground-water sampling. Analytical parameters should include volatile and semivolatile organic compounds and metals. If indicated, cleanup the site.

b. Based on good environmental engineering practice we recommend Fort Drum arrange for a study to tie together the information from all the separate sites. The aim is to produce a comprehensive document on ground water protection and potential contamination in and around the Main Post.



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Environmental Engineer
Waste Disposal Engineering Division

APPROVED:



JOHN W. BAUER, P.G.
Program Manager
Ground Water and Solid Waste
Management

ANNEX D-1

REFERENCES

1. Title 40, Code of Federal Regulations (CFR), 1987 rev, Part 264.101, Corrective Action for Solid Waste Management Units.
2. Public Law 96-510, 11 December 1980, Comprehensive Environmental Response, Compensation and Liability Act of 1980, and amendments.
3. Title 6, New York Codes of Rules and Regulations, Chapter 360, Solid Waste Management Facilities.
4. Letter, Fort Drum DEH, 21 September 1988, subject: Ground-Water Monitoring Results Along Gasoline Alley.
5. Memorandum, USAEHA, HSHB-ME-SE, in progress, subject: Hazardous Waste Consultation 37-26-1673-89, Evaluation of Solid Waste Management Units, Fort Drum, New York, 13-17 July 1987.
6. Letter, NY State Department of Environmental Conservation, 13 January 1987, subject: Closed Landfill, Great Bend Road and Oneida Avenue, Fort Drum, New York (DEC Site No. - 632008).
7. Fact Sheet, Fort Drum, AFZS-EH-E, 29 September 1988, subject: Ground-Water Contamination - Gasoline Alley.
8. Installation Assessment of Fort Drum, New York, July 1981, prepared for the U.S. Army Toxic and Hazardous Materials Agency (Report No. DRXTH-ES-IA-81186).
9. Remedial Investigation of Fort Drum, New York, 22 August 1986, prepared for the U.S. Army Toxic and Hazardous Materials Agency (Report No. AMXTH-AS-CR-85054).
10. Letter, New York Department of Environmental Conservation, subject: Required Ground-Water Monitoring at Fort Drum.

EOR No. 32-24-7140-89, 11-21 Oct 88

ANNEX D-2
STATE GROUND-WATER MONITORING REQUIREMENTS

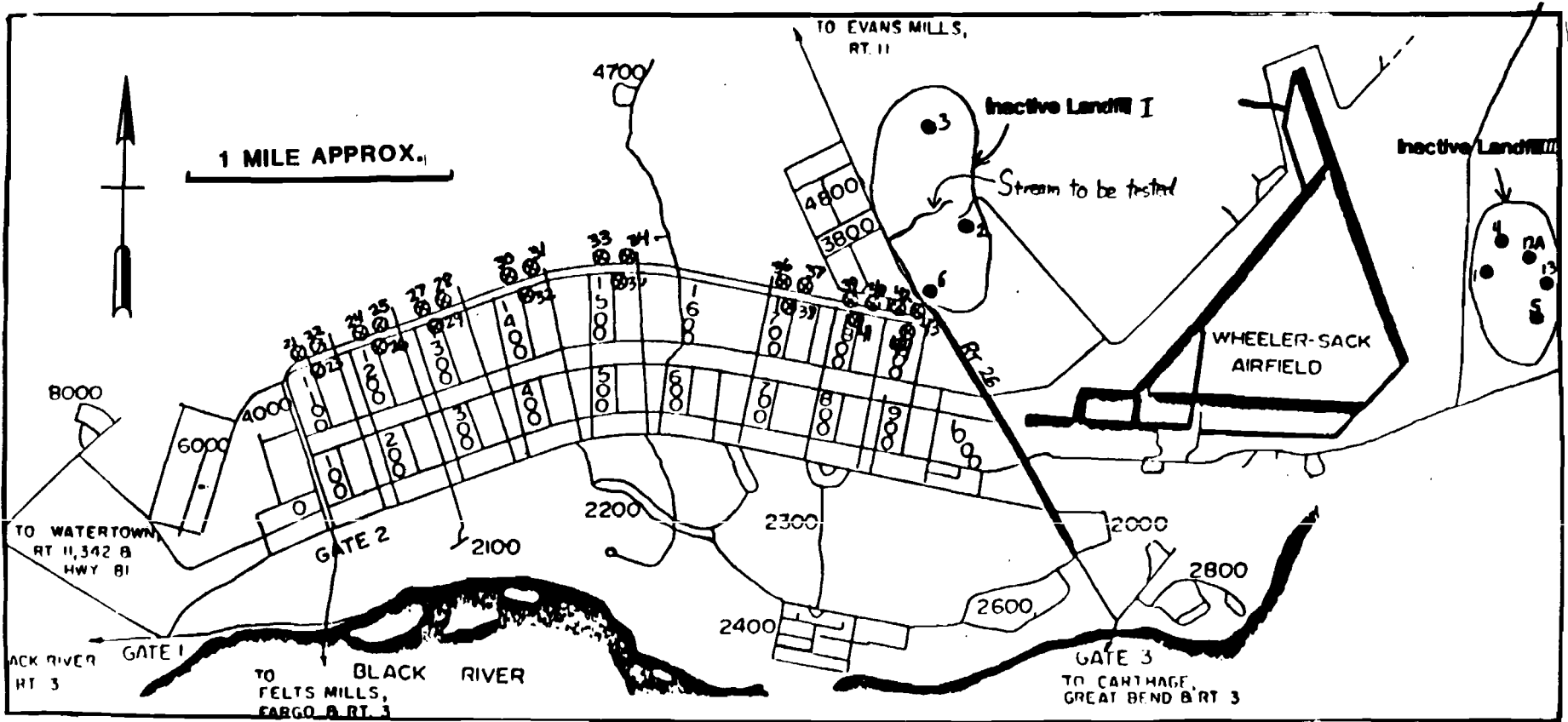


FIGURE D-2-1 WELLS STATE HAS DESIGNATED FOR MONITORING PROGRAM.

● - Landfill Monitoring Well & No.

⊗ - Fuel Storage Monitoring Well & No.

TABLE D-2-1 STATE-REQUIRED ANALYSES

New York State Department of Environmental Conservation
 Bureau of Municipal Waste
 Water Quality Analysis Protocol

	Groundwater/Leachate		Surface Water	
	Baseline	Routine ⁴	Baseline	Routine ⁴
1. A complete Priority Pollutant Analysis ¹	X		X	
2. Boron	X		X	
3. Total Kjeldahl Nitrogen (TKN)	X	X	X	X
4. Ammonia	X	X	X	X
5. Nitrate	X		X	
6. BOD ₅	X	X	X	X
7. COD	X		X	
8. TOC	X	X	X	X
9. TDS	X	X	X	X
10. Sulfate	X	X	X	X
11. Aluminum	X		X	
12. Chromium (Hexavalent and Total)	X		X	
13. Sodium	X		X	
14. Detergent (MDAS)	X		X	
15. Calcium	X		X	
16. Alkalinity	X	X	X	X
17. Color	X	X	X	X
18. Odor	X	X	X	X
19. Hardness (total)	X	X	X	X
20. Chloride	X	X	X	X
21. Iron	X	X	X	X
22. Manganese	X	X	X	X
23. Dissolved Oxygen			X	X
24. Specific Conductivity ²	X	X	X	X
25. Total Volatile Solids ³	X	X		
26. Static Water Level in Wells ²	X	X		
27. pH ²	X	X	X	X
28. Eh ²	X	X	X	X
29. Turbidity	X	X	X	X
30. Arsenic	X	X	X	X
31. Lead	X	X	X	X
32. Cadmium	X	X	X	X
33. Phenols	X	X	X	X
34. Barium	X		X	
35. Temperature	X	X	X	X

NOTE: All samples for metals should be taken in duplicate, one analysis shall be filtered in the field prior to preservation; no other samples shall be filtered. The other shall be unfiltered.

1. Listed in the Federal Register Volume 45, No. 98, Monday, May 19, 1980 pages 33573-33579, including Metals, Cyanide, Total Phenols, Volatile Compounds, Acid Compounds and Pesticides.

2. Field measured.

3. Leachate samples only.

4. Routine sampling frequencies shall be quarterly unless otherwise specified by the Contracting Officer. Baseline sampling shall be conducted annually.



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MARYLAND 21010-5422



HSHB-ME-SH

ENVIRONMENTAL OPERATIONAL REVIEW NO. 32-24-7140-89
10TH MOUNTAIN DIVISION (LIGHT INFANTRY) AND FORT DRUM
WATERTOWN, NEW YORK
11-21 OCTOBER 1988

APPENDIX E
HAZARDOUS WASTE MANAGEMENT REVIEW

1. REFERENCES. Annex E-1 contains a list of references used in this Appendix.
2. PURPOSE. To evaluate Fort Drum's compliance with regulations concerning the management of hazardous waste and polychlorinated biphenyls (PCB). To assess operations and practices that could effect Fort Drum's hazardous waste management program.
3. REGULATORY BACKGROUND.
 - a. New York State Regulations.

(1) The U.S. Environmental Protection Agency (EPA) granted New York the authority to operate its own hazardous waste management program on 27 December 1983. The basis for New York's program are the Industrial Waste Management Act (1978) and the 1979 amendments to the State's Environmental Conservation Law. The Division of Hazardous Substances Regulation of the Department of Environmental Conservation (DEC) is responsible for enforcing New York's hazardous waste regulations.

(2) Title 6 of the New York Codes, Rules, and Regulations (NYCRR) contains the State's hazardous waste management regulations (reference 1). These regulations are similar to those in Title 40 of the Code of Federal Regulations (CFR) and reflect the Federal Resource Conservation and Recovery Act (RCRA).

(3) Several of New York's regulations are more stringent than the Federal ones. Examples that could affect Fort Drum's operations follow:

(a) Polychlorinated biphenyl wastes are regulated under 6 NYCRR as "B" listed hazardous wastes.

(b) New York does not exclude wastes burned for energy recovery from regulation.

(c) Transporters who mix wastes of different chemical composition become generators of the resultant waste mixture.

(d) Wastewater treatment units and elementary neutralization units, operated by commercial facilities, are not exempt from hazardous waste regulations.

(e) Hazardous waste generators must submit an annual report to the DEC, rather than a biennial report.

(4) Because of the similarity between the Federal and New York regulations, we will cite RCRA rules from the CFR's (references 3 through 11) except in cases where more stringent State rules apply.

b. Army Hazardous Waste Policy.

(1) The Army hazardous waste policy appears in Army Regulation (AR) 420-47 (reference 12). This policy requires Army installations to comply with State and Federal hazardous waste regulations. In addition, AR 420-47 directs installations to form hazardous waste management boards to oversee waste generation, treatment, storage, and disposal.

(2) The Army recovers precious metals from hazardous wastes in accordance with the Department of Defense precious metals recovery program (reference 13). This program is a part of the Army's hazardous waste minimization (HAZMIN) efforts.

4. FINDINGS AND DISCUSSION.

a. Hazardous Waste Regulatory Status.

(1) Generator Status. Fort Drum is a hazardous waste generator since it produces more than 1,000 kilograms per month of hazardous waste. In 1987, Fort Drum generated an average of roughly 1,600 kilograms per month of hazardous waste. Most of this waste consisted of used degreasing solvents, spent batteries, unused DS-2 decontamination solution, and other excess mission stock.

(2) Permitted Hazardous Waste Storage Facilities. The Building T-4819 has a RCRA Part A permit as an interim status hazardous waste storage facility. Fort Drum does not plan to submit the Part B permit application for this building by the 8 November 1988 deadline. Instead, the installation has submitted a Part B application for a facility that has yet to be constructed.

(3) Permitted Hazardous Waste Treatment Facilities. Fort Drum has no permitted hazardous waste treatment facilities.

EOR No. 32-24-7140-89, 11-21 Oct 88

b. General Compliance with RCRA.

(1) Annex E-2 summarizes our findings. This Annex shows the facilities and operations visited, their compliance status, and any perceived cases of noncompliance. Additionally, this Annex in this Appendix cites areas where poor engineering and management practices may lead to accidents or noncompliance.

(2) Annex E-3 provides a synopsis of each site visited. These worksheets describe each operation, the operation's permit status, the types of hazardous waste generated, and a point of contact for the site. The forms indicate each facility's compliance status. They specify recommendations to ensure compliance and proper engineering practices. The Commander and Environmental Section can use these forms as guidance for each facility.

(3) Annex E-4 shows Notices of Violation (NOV's) that the New York State Department of Environmental Conservation has issued to Fort Drum. These violations were mainly recordkeeping deficiencies.

c. Potential Violations of Standards Applicable to Generators of Hazardous Waste.

(1) Temporary Hazardous Waste Storage Requirements.

(a) Many of the operations we visited did not store hazardous waste properly. Maintenance shops, motor pools, and paint shops stored waste containers outside with insufficient security and spill containment measures. Several shops had accumulated more than 55 gallons of hazardous waste for more than 90 days. Labels on many drums did not show the accumulation start date or an accurate waste description.

(b) Fort Drum personnel should provide adequate security and spill containment at hazardous waste accumulation points. Security measures could include a locked fence or shed for hazardous waste containers. Accumulating hazardous waste on curbed, impermeable surfaces would control any spills that did occur.

(c) In addition, generating activities must transfer hazardous waste to the permitted storage facility within 90 days of the accumulation start date. The accumulation start date commences when the generating activity accumulator in excess of 55 gallons of hazardous waste or 1 quart of acutely hazardous waste at or near any point of generation.

(d) These activities must also label hazardous waste containers with the accumulation start date, the words "Hazardous Waste," and an accurate description of the contents.

(2) Improper Waste Disposal.

(a) Units from the 10th Mountain Division (LI) and Army Reserve units have improperly disposed of hazardous waste at Fort Drum. In October 1988, Directorate of Engineering and Housing (DEH) Environmental personnel discovered several cans of rifle bore cleaner and dry cleaning solvent abandoned in an archeologically significant foundation. Some of the cans had leaked their contents into the soil. Also, the 514th Maintenance Battalion found full cans of toxic paint in its dumpster. The paint spilled and coated a contractor's garbage truck.

(b) To prevent inappropriate waste disposal, Fort Drum should train unit personnel in proper identification, labelling, and handling of hazardous waste.

(c) The installation should ensure that unit standing operating procedures (SOP's) call for turning in hazardous waste through DEH to the permitted storage facility. Fort Drum should take action against units that violate this procedure.

d. Compliance with Interim Status Standards for Owners and Operators of Treatment, Storage, and Disposal Facilities.

(1) Hazardous Waste Storage Facility.

(a) Building T-4819 did not comply with the Interim Status standards. Containers of incompatible wastes were stored adjacent to each other without adequate separation or physical barriers. Several drums lacked proper labels. The floor was not sealed. The safety shower and eye lavage did not work.

(b) To comply with standards and prevent chemical reactions, personnel should segregate incompatible waste types. The facility should have walls, curbing, or sufficient space for separation and containment of incompatible wastes. The floor should be sealed so that spilled chemicals do not seep through the concrete.

(c) Fort Drum must repair and maintain the safety equipment at this facility.

EOR No. 32-24-7140-89, 11-21 Oct 88

(2) Open Burning/Open Detonation (OB/OD).

(a) At the time of this EOR, neither of Fort Drum's OB/OD facilities had a RCRA permit. However, Fort Drum added the OB/OD grounds to the RCRA Part A permit by 8 November 1988 to obtain Interim Status for these facilities. In addition, the installation has modified the Part B permit application to include both of these sites.

(b) Army policy says that facilities used by the Explosive Ordnance Detachment (EOD) units for training do not require RCRA permits. The EOD units at Fort Drum burn explosives-contaminated boxes, cardboard tubes, and practice bombs at their open burning sites. This practice does not represent training for the demolition of explosive ordnance. Rather, it is a treatment service for field and Air Force units. If the explosives-contaminated wastes are reactive, both burning sites should remain on the RCRA permit application.

(c) At present, the 55th Ordnance Detachment (EOD) burns reactive wastes in a partially buried, vertical, cylindrical tank. This practice may not comply with RCRA standards for "miscellaneous" treatment units because of the potential for ground-water contamination.

(d) The 55th EOD should clean the ash out of the tank and determine whether or not the tank is water tight. If it is, the unit may continue to burn in the tank, checking it periodically for structural integrity. If the tank is not water tight, the unit should burn reactive wastes in steel pans as per Forces Command (FORSCOM) guidance.

(e) The Air Force OB/OD operation burns undetonated practice bombs in a trench in clay soil. Operators also burn pressure-treated dunnage and tires with the practice bombs. This facility may contaminate the ground water with arsenic salts, other toxic heavy metals, and residual explosives. This operation does not comply with RCRA standards for minimizing potential danger to the environment.

(f) To eliminate the potential for surface and ground-water contamination, the Air Force EOD unit should not burn reactive wastes directly on the ground. Rather, they should burn wastes in steel pans lined with sand. The unit should cover the pans when not in use. If the residue exceeds RCRA criteria for heavy metals or other listed hazardous constituents, Fort Drum should dispose of it as hazardous waste. The Air Force should not burn tires or dunnage at this site. These materials do not improve the burning of reactive wastes. They only add to potential ground-water contamination.

(g) Both EOD units should analyze the ash from their operations for Extraction Procedure (EP) Toxicity. If the residues are toxic, Fort Drum should dispose of them as hazardous waste.

(3) Battery Acid Neutralization.

(a) Battery shops at Fort Drum may violate RCRA hazardous waste treatment standards by neutralizing battery electrolyte that is both corrosive and toxic. Shops at the Directorate of Logistics (DOL), the New York Army National Guard, and the New Jersey Army National Guard neutralize spent electrolyte from lead-acid batteries by running it through limestone chips on its way to the sanitary sewer. The electrolyte may contain lead.

(b) To ensure regulatory compliance, analyze several samples of spent electrolyte for lead concentration. If the concentration exceeds 5 parts per million (ppm), the waste is toxic. This Agency will provide analytical assistance if Fort Drum desires.

(c) The RCRA does not allow neutralization of a waste that is both toxic and corrosive without a treatment permit. If the electrolyte has more than 5 ppm lead, Fort Drum should discontinue neutralization. In order of priority, disposal options include: offering the wet batteries to a permitted recycler, discharging the electrolyte to the sanitary sewer (only with the permission of the Watertown wastewater treatment plant), or obtaining a permit to neutralize the electrolyte.

e. Hazardous Waste Management Program.

(1) Hazardous Waste Management Plan. Fort Drum has a comprehensive Hazardous Waste Management Plan. The installation, however, does not practice many of the provisions in the plan. For example, only a few of the soldiers and operators working with hazardous materials and wastes have received the training specified for all hazardous material handlers. Further, some of the names and organizations in the plan are out of date. As a result, many workers are not/aware of regulations or organizational responsibilities for hazardous waste management. Fort Drum should update their Hazardous Waste Management Plan.

(2) Hazardous Waste Management Board. Army Regulation 420-47 requires that each installation establish a Hazardous Waste Management Board. At Fort Drum, an Installation Environmental Council and the Hazardous Waste Management Board exist on paper. However, neither board has ever met. Fort Drum should convene both of these boards to help clarify responsibilities for hazardous waste management.

(3) HAZMIN and Used Solvent Elimination.

(a) Fort Drum effectively reduces its disposal of hazardous waste by recycling petroleum, oil, and lubricant (POL) products, spent parts cleaning solvents, and silver from photographic labs. Canadian Oil, Inc. purchases off-specification fuels and used motor oil and refines it. Safety-Kleen manages parts cleaning solvents at all maintenance shops and motor pools. Most photographic shops recover silver from spent hypo solution as part of the Army's precious metals recovery program.

(b) To ensure regulatory compliance, the installation should screen used and off-specification POL products at unit storage tanks for chlorinated hydrocarbons prior to hauling. Fort Drum can purchase simple screening kits for roughly 5 dollars each. These kits will indicate possible contamination with PCBs or chlorinated solvents. If the POL products were contaminated with chlorinated wastes, they would lose their exemption from RCRA regulation.

(c) To further reduce its generation of hazardous waste, Fort Drum should train soldiers and maintenance personnel not to add anything but waste oil to waste oil storage tanks. Also, the installation should provide silver recovery units to labs that do not presently reclaim silver from spent hypo solution.

(4) Proposed Management Practices in New Cantonment Area.

(a) Hazardous Waste Storage at Future DOL Shops. The DOL Shops currently under construction have underground storage tanks for temporary storage of spent lead-acid battery electrolyte and caustic radiator washout. Although the tank specifications meet RCRA standards for secondary containment and leak detection, AR 420-47 prohibits storage of hazardous waste in underground tanks. To ensure compliance with this regulation, Fort Drum should provide aboveground tanks or containers for temporary storage of these wastes. This change should be incorporated into the Corps of Engineers' construction plan.

(b) Location of New Hazardous Waste Storage Facility (P-11864). The proposed location for Bldg P-11864 is in Area 2A. The site is in a depression drained by a small creek. The soil is sandy. The proposed location is generally upwind of the existing cantonment area. Prior to construction, Fort Drum should ensure that this site is sufficiently isolated from streams and ground water. New York State Department of Environmental Conservation personnel should visit the proposed site during review of the Part B permit application to avoid misunderstandings about the location.

f. PCB Inventory and Management.

(1) In 1979, Fort Drum replaced nearly all of its electrical transformers with units that do not contain PCBs. At present, the installation has nine transformers with fluid of unknown composition: four in the T-4819 hazardous waste storage building awaiting analysis, and 5 in service in the 2700 Area. Fort Drum owns three PCB transformers at an Army Reserve center in Niagara Falls, New York.

(2) The transformers in Bldg T-4819 stand on an unsealed floor. A leak or spill could contaminate the concrete with transformer fluid. To prevent such contamination, personnel should store the transformers in leak proof drip pans.

(3) To comply with 40 CFR 761, Fort Drum must inspect in-service PCB transformers at least once every 3 months to make sure they are not leaking (reference 14).

(4) Fort Drum is currently working with the U.S. Army Environmental Hygiene Agency to characterize PCB contamination at the Floyd Test Annex in Floyd, New York. Oil containing Aroclor® PCBs spilled from a storage tank at this site in 1981. The site was under Air Force operation at that time. Soil samples taken shortly after the spill showed low levels of PCB contamination. Fort Drum plans to resample the site before continuing cleanup procedures.

5. CONCLUSIONS.

a. Operations at the 55th Ordnance Detachment (EOD) site may not comply with RCRA standards. Operations at the Air Force EOD site did not comply with RCRA standards.

b. The hazardous waste storage facility (Bldg T-4819) did not comply with RCRA standards.

c. Small units had disposed of hazardous wastes improperly. In some cases, units had dumped or abandoned wastes.

d. Many maintenance shops and motor pools accumulated hazardous waste unsafely or in a manner that did not comply with RCRA standards.

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EOR No. 32-24-7140-89, 11-21 Oct 88

e. Battery shops may violate RCRA hazardous waste treatment standards.

f. The plan to store hazardous waste in underground storage tanks at the future DOL maintenance shop violates AR 420-47.

g. Fort Drum reduces its disposal of hazardous waste by recycling POL products, spent parts cleaning solvents, and silver from photographic labs.

h. Fort Drum has determined the PCB concentration of all but nine of its transformers.

i. Fort Drum's Hazardous Waste Management Board has not met.

6. RECOMMENDATIONS.

a. To ensure compliance with RCRA:

(1) Burn explosives-contaminated wastes in pans or similar structures to prevent hazardous constituents from leaching into the ground water. Test the ash from these wastes for EP Toxicity. If it is toxic, dispose of it as hazardous waste.

(2) Operate the hazardous waste storage facility (Bldg T-4819) according to RCRA standards by segregating incompatible materials, sealing the floor, and providing adequate safety and emergency equipment.

(3) Make sure that soldiers and shop employees who handle hazardous waste receive training in proper labelling, handling, and disposal.

(4) Accumulate hazardous waste in secure areas designed to minimize potential spills. Transfer hazardous waste from accumulation points to the permitted storage facilities within 90 days of the accumulation start date.

(5) Determine the lead concentration in spent lead-acid battery electrolyte neutralized at battery shops. If the electrolyte is EP toxic, do not treat it without a permit.

(6) Analyze waste oil and off-specification POL for chlorine prior to shipping to be sure it has not been contaminated.

EOR No. 32-24-7140-89, 11-21 Oct 88

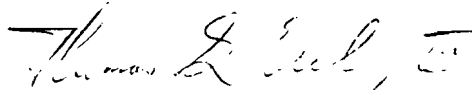
b. To ensure compliance with the Toxic Substances Control Act, inspect PCB transformers for leaks every 3 months. As a good management practice, assume unidentified transformers contain PCB fluids until proven otherwise.

c. To ensure compliance with AR 420-47:

(1) Modify the waste storage plan for the future DOL maintenance shop to eliminate storage of hazardous waste in underground tanks.

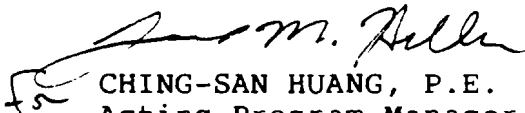
(2) Continue waste minimization and recycling programs.

(3) Convene the Hazardous Waste Management Board to clarify organizational responsibilities for hazardous waste management.



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EOR No. 32-24-7140-89, 11-21 Oct 88

ANNEX E-1

REFERENCES

1. Title 6, New York Codes, Rules, and Regulations (NYCRR); Parts 370 through 374.
2. Title 40, Code of Federal Regulations (CFR), 1987 rev, Part 260, Hazardous Waste Management System: General.
3. Title 40, CFR, 1987 rev, Part 261, Identification and Listing of Hazardous Waste.
4. Title 40, CFR, 1987 rev, Part 262, Standards Applicable to Generators of Hazardous Waste.
5. Title 40, CFR, 1987 rev, Part 263, Standards Applicable to Transporters of Hazardous Waste.
6. Title 40, CFR, 1987 rev, Part 264, Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.
7. Title 40, CFR, 1987 rev, Part 265, Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities.
8. Title 40, CFR, 1987 rev, Part 266, Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities.
9. Title 40, CFR, 1987 rev, Part 267, Interim Standards for Owners and Operators of New Hazardous Waste Land Disposal Facilities.
10. Title 40, CFR, 1987 rev, Part 268, Land Disposal Restrictions.
11. Title 40, CFR, 1987 rev, Part 270, EPA Administered Permit Programs: The Hazardous Waste Permit Program.
12. AR 420-47, 22 June 1987, Solid and Hazardous Waste Management.
13. DOD Directive 4160.22, 1 December 1976, Recovery and Utilization of Precious Metals.
14. Title 40, CFR, 1987 rev, Part 761, Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions.

ANNEX E-2

SUMMARY OF FINDINGS AT INDIVIDUAL SITES

Site Location	Type of Facility or Operation	Regulatory Compliance Status				
		RCRA	Complies with Regs: State	Army	Regulatory Noncompliance (cite regulations)	Potential Noncompliance or Poor Engineering/Management Practice (cite regulations or practices)
1. T-4B19	Hazardous Waste Storage Facility				40 CFR 262.31, 262.32, 265.35, 262.177	Asbestos waste stored in unsealed bags; Empty paint cans managed as hazardous waste; Usable materials managed as hazardous waste
2. Area 17-8	55th Ordnance Det OB/OD Ground					40 CFR 264 Subpart X; 40 CFR 270.10 and 270.41 This facility has no permit. Containment may be insufficient.
3. Area 35-16	Air Force OB/OD Ground				40 CFR 264 Subpart X; 40 CFR 270.10 and 270.41	
4. P-44	DOL Battery Shop					40 CFR 260.10 and 261.24; 6 NYCRR 373-1.1 May be neutralizing waste with two hazardous characteristics without a permit.
5. P-84	DOL Special Equipment Maintenance	X	X	X		
6. T-91	DOL Wheeled Vehicle Maintenance				40 CFR 262.11 and 264 Subpart M	
7. T-93	DOL Wheeled Vehicle Maintenance				40 CFR 262.31 and 262.34	
8. T-1132	DOL Inspection Section	X	X	X		
9. T-1142	DOL Special Equipment Maintenance	X	X	X		
10. T-197	DEH Paint Shop				40 CFR 262.34 and	

NOTE: This evaluation reflects Fort Drum's compliance status on 21 October 1988 according to AEMA interpretation. For a detailed description of individual operations and facilities, see Annex E-3 or the text of this report.

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Site Location	Type of Facility or Operation	Regulatory Compliance Status				
		RCRA	Complies with Regs: State Army		Regulatory Noncompliance (cite regulations)	Potential Noncompliance or Poor Engineering/Management Practice (cite regulations or practices)
11. T-1031	TRSC Production Shop	X	X	X		
12. T-1131	USAIC Publication Shop				40 CFR 262.34	
13. S-2059	Wheeler-Sack Airfield Hangar	X	X	X		
14. T-1454	1/7 Field Artillery Maintenance				40 CFR 262.34	
15. T-1644	1st Bde Motor Pool				40 CFR 262.34	
16. P-1750	ANSA Equipment Concentration Center	X	X	X		
17. T-1800	514th Maintenance Bn	X	X	X		
18. P-6000	NJ National Guard Equipment Maintenance					40 CFR 260.10 and 261.24; 6 NYCRR 373-1.1 May neutralize waste with two hazardous characteristics without permit
19. P-6020	NY National Guard Equipment Maintenance					40 CFR 260.10 and 261.24; 6 NYCRR 373-1.1 May neutralize waste with two hazardous characteristics without permit. Stores hazardous materials in unsafe manner.
20. T-598	DPCA Auto Crafts Shop					40 CFR 264 Subpart H
21. T-2509	DPCA Arts and Crafts Shop	X	X		DOD 4160.22	

NOTE: This evaluation reflects Fort Drum's compliance status on 21 October 1988 according to AEHA interpretation. For a detailed description of individual operations and facilities, see Annex E-3 or the text of this report.

E-2-2

ANNEX E-3

EVALUATION OF HAZARDOUS WASTE MANAGEMENT AT INDIVIDUAL SITES

1. Exact Location, Building Number: T-4819.
2. Brief Description of Unit/Operation: Hazardous Waste Storage Facility.
 - a. Type of Unit (storage, treatment, etc.): Storage.
 - b. Permit Status (Part A or Part B): Part A. Fort Drum has not included this building on its RCRA Part B permit application.
 - c. Types of Hazardous Waste (HW) Generated at Site: Not applicable.
 - d. Amount of HW Generated at Site: Not applicable.
3. Point of Contact/Location Supervisor: Mr. James Haynes, DEH Environmental Office.

4. Compliance Status:

	Complies	Does Not Comply
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RCRA:		X
-------	--	---

State:		X
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5. If Not in Compliance, Why?

a. Improper Labeling. Many drums had only general, handwritten descriptions of their contents. Personnel placed turn-in documents (Form 1348) on top of several drums without attaching them. Random, unlabeled vials of chemicals sat around and on top of drums. Approximately six unmarked 5-gallon containers held sodium hypochlorite.

b. Containment and Placement of Incompatible Materials. There were no physical barriers between incompatible hazardous waste types. For example, cans of sodium hypochlorite sat next to containers of DS-2 decontamination solution. If the containers ruptured or spilled, their contents could intermingle and cause a fire. Further, the concrete floor was not sealed. Spilled hazardous waste could contaminate the floor itself.

c. Safety. The eye lavage and shower do not operate. There is no collection sump for rinse water from these devices. In addition, the facility does not have adequate aisle space between containers of hazardous waste. A lack of space results in decreased accessibility and increased handling of waste containers.

d. Miscellaneous. Unserviceable transformers rested on the floor of the building with no curbing or secondary containment. Bags containing friable asbestos were unsealed. Empty paint cans awaited disposal as hazardous waste. The DOL had turned in unopened, usable materials as hazardous waste.

6. Cite Regulation(s) Pertaining to Item 5: 40 CFR 262.31, 262.32, 265.177, and 265.35.

7. Recommended Actions:

a. To ensure regulatory compliance:

(1) Affix proper Department of Transportation labels to the containers prior to shipping. As a minimum, the labels should display the words "Hazardous Waste" and the generator's name and address.

(2) Store incompatible wastes in separate parts of the building. Install curbing between incompatible waste areas. In lieu of curbing, place sandbag berms or other barriers between these wastes. Seal the concrete floor with an impermeable coating.

(3) Install a sump to collect rinseate from the eye lavage and safety shower. Repair the plumbing to these devices. Organize the waste containers and provide adequate aisle space between them.

b. To ensure sound engineering judgment:

(1) Label hazardous waste containers with a detailed description of their contents. Accurate identification of hazardous waste can reduce disposal costs or make recycling feasible.

(2) Place transformers in drip pans that will contain fluid spills or leaks.

(3) Tie off bags containing friable asbestos. Store these bags in a rigid container to prevent accidental tearing.

EOR No. 32-24-7140-89, 11-21 Oct 88

(4) Discard dried, nontoxic paint and empty cans as nonhazardous solid waste.

(5) Use or reuse serviceable hazardous materials. Do not dispose of them as hazardous waste.

EOR No. 32-24-7140-89, 11-21 Oct 88

1. Exact Location, Building Number: Area 17-8.
2. Brief Description of Unit/Operation: 55th EOD OB/OD.
 - a. Type of Unit (storage, treatment, etc.): Miscellaneous Thermal Treatment of Reactive Hazardous Waste (40 CFR 264, Subpart X).
 - b. Permit Status (Part A or Part B): None as of 21 October 1988.
 - c. Types of HW Generated at Site: Potentially hazardous residue or ash.
 - d. Amount of HW Generated at Site: Unknown.
3. Point of Contact/Location Supervisor: CPT Michael Donovan, CO, 55th EOD.
4. Compliance Status: RCRA: May not comply.
5. If Not in Compliance, Why?
 - a. This OB/OD facility may not comply with RCRA standards because containment may not be sufficient to prevent contaminants from reaching surface or ground water.
 - b. Presently, the 55th EOD burns paper, boxes, and metal contaminated with explosives and propellants. Burning takes place in a partially buried, vertical, cylindrical tank. Personnel do not know whether or not the tank has a bottom. If the tank has a perforated bottom, contaminants could leach to the ground water. The 55th EOD uses the tank for burning once or twice each year.
 - c. The EOD personnel detonate excess explosives and propellants in a crater approximately 100 yards from the burning tank. The crater is in sandy soil. Each detonation mixes and homogenizes the soil. Since proper detonation does not leave much residue, this operation should minimize contamination of the environment.
 - d. Fort Drum does not have a RCRA permit for its OB/OD operation. To continue to operate this facility, the installation must include it in the RCRA Part A permit by 8 November 1988. Fort Drum must also add this facility to the Part B permit application.

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EOR No. 32-24-7140-89, 11-21 Oct 88

6. Cite Regulation(s) Pertaining to Item 5: 40 CFR 264, Subpart X; 40 CFR 270.10 and 270.41.

7. Recommended Actions: To ensure regulatory compliance:

a. Clean the ash out of the burn tank. Analyze it to determine whether or not it is hazardous. Dispose of the ash properly.

b. Determine whether or not the tank is water tight. If it is, continue to burn in the tank checking it periodically for structural integrity. If the tank is not water tight, burn reactive wastes in steel pans as per FORSCOM guidance.

c. Add the OB/OD ground to the RCRA Part A permit application as a "miscellaneous facility" for thermal treatment of reactive hazardous waste. Resubmit this Part A application to Region II of the EPA by 8 November 1988. After this deadline, the EPA will not grant Interim Status to existing hazardous waste treatment facilities. (NOTE: USAEHA presented this recommendation on 20 October 1988.)

d. Modify the Part B permit application to include this OB/OD ground. The RCRA authorizes the New York DEC to modify a facility's Part B permit to include units not identified in the original application. However, the EPA has not granted any State the authority to permit OB/OD facilities. Consult with both the EPA and the DEC to make these changes while the application is still under review.

EOR No. 32-24-7140-89, 11-21 Oct 88

1. Exact Location, Building Number: Near Air Force Gunnery Range, Area 35-16.
2. Brief Description of Unit/Operation: Air Force OB/OD.
 - a. Type of Unit (storage, treatment, etc.): Miscellaneous Thermal Treatment of Reactive Hazardous Waste (40 CFR 264, Subpart X).
 - b. Permit Status (Part A or Part B): None as of 21 October 1988.
 - c. Types of HW Generated at Site: Potentially hazardous residue or ash.
 - d. Amount of HW Generated at Site: Unknown.
3. Point of Contact/Location Supervisor: TSgt Gary R. Daggett, HQ TAC/DOXSY, Langley AFB, Virginia (AV 574-4761) or MSgt Wayne Moore, AFNG, Fort Drum, New York (AV 341-5990).
4. Compliance Status: RCRA: Does not comply.
5. If Not in Compliance, Why?
 - a. This OB/OD facility does not comply with RCRA standards because there is no containment to prevent contaminants from reaching surface or ground water.
 - b. The Air Force burns undetonated practice bombs in a trench in clay soil. Operators also burn pressure-treated dunnage and tires with the practice bombs. This extra material is supposed to help the bombs burn faster. However, operators must douse the dunnage with fuel oil to make it burn at all.
 - c. Burning pressure-treated material and tires with unexploded practice bombs may contaminate the ground water with arsenic salts, other toxic heavy metals, toxic organics, and residual explosives.
 - d. Fort Drum does not have a RCRA permit for this OB/OD operation. To continue to operate this facility, the installation must add it to the Part A permit by 8 November 1988. Fort Drum must also modify its Part B permit application to include this OB/OD site.
6. Cite Regulation(s) Pertaining to Item 5: 40 CFR 264, Subpart X; 40 CFR 270.10 and 270.41.

24

EOR No. 32-24-7140-89, 11-21 Oct 88

7. Recommended Actions: To ensure regulatory compliance:

a. Do not burn reactive wastes directly on the ground. Rather, burn wastes to minimize the risk of surface and ground-water contamination. The Army's suggested method is to burn the waste in steel pans lined with sand. Cover the pans when not in use.

b. Dispose of the residue as hazardous waste if it exceeds RCRA standards for heavy metals or hazardous constituents. Do not burn dunnage or tires. These materials do not improve the burning of reactive wastes. They only add to potential ground-water contamination.

EOR No. 32-24-7140-89, 11-21 Oct 88

1. Exact Location, Building Number: P-44
2. Brief Description of Unit/Operation: DOL Battery Shop.
 - a. Type of Unit (storage, treatment, etc.): Treatment.
 - b. Permit Status (Part A or Part B): None.
 - c. Types of HW Generated at Site: Spent lead-acid battery electrolyte. This waste is corrosive. It may also have a toxic concentration of lead.
 - d. Amount of HW Generated at Site: Roughly 1,000 gallons per year.
3. Point of Contact/Location Supervisor: Mr. George Springsteen.
4. Compliance Status: RCRA: May not comply.
5. If Not in Compliance, Why?
 - a. This shop may be treating a waste that shows two characteristics of a hazardous waste: corrosivity and EP Toxicity.
 - b. Personnel at the battery shop drain spent electrolyte into a sink. Electrolyte runs from the sink into a sump filled with lime chips. The neutralized solution then flows to the sanitary sewer.
 - c. If the battery electrolyte has less than 5 ppm lead, this procedure is an acceptable form of elementary neutralization. However, if the solution contains more than 5 ppm lead, this process requires a RCRA treatment facility permit.
6. Cite Regulation(s) Pertaining to Item 5: 40 CFR 260.10 and 261.24; 6 NYCRR 373-1.1.
7. Recommended Actions: To ensure regulatory compliance:
 - a. Analyze several samples of spent electrolyte for lead concentration. If the concentration exceeds 5 ppm, the waste is toxic.
 - b. If the electrolyte has more than 5 ppm lead, pursue one of the following options:
 - (1) Include the battery acid neutralization process in the RCRA Part B permit application.

EOR No. 32-24-7140-89, 11-21 Oct 88

(2) Offer the wet batteries intact to a permitted recycler.

(3) Obtain permission from the Watertown wastewater treatment plant to discharge the unneutralized electrolyte to the sanitary sewer.

EOR No. 32-24-7140-89, 11-21 Oct 88

1. Exact Location, Building Number: P-84.
2. Brief Description of Unit/Operation: DOL Special Equipment Maintenance.
 - a. Type of Unit (storage, treatment, etc.): Not applicable.
 - b. Permit Status (Part A or Part B): Not applicable.
 - c. Types of HW Generated at Site: Spent Stoddard parts cleaning solvent (PD-680). This facility recycles its solvent through a Safety-Kleen contract.
 - d. Amount of HW Generated at Site: Unknown.
3. Point of Contact/Location Supervisor: Mr George Springsteen.
4. Compliance Status:

	Complies	Does Not Comply
RCRA:	X	
State:	X	
5. If Not in Compliance, Why? Not applicable.
6. Cite Regulation(s) Pertaining to Item 5: Not applicable.
7. Recommended Actions: None.

EOR No. 32-24-7140-89, 11-21 Oct 88

1. Exact Location, Building Number: T-91.
2. Brief Description of Unit/Operation: DOL Wheeled Vehicle Maintenance Shop.
 - a. Type of Unit (storage, treatment, etc.): Not applicable.
 - b. Permit Status (Part A or Part B): Not applicable.
 - c. Types of HW Generated at Site:
 - (1) Spent Stoddard solvent.
 - (2) Methylene chloride based carburetor cleaner.
 - (3) Caustic radiator boiling tank sludge.
 - (4) 1,1,1-Trichloroethane based fuel tank purge.
 - (5) Glass bead paint blast residue.
 - d. Amount of HW Generated at Site: Unknown.
3. Point of Contact/Location Supervisor: Mr. George Springsteen.
4. Compliance Status: RCRA: Does not comply.
5. If Not in Compliance, Why?

a. The drain pipe from the carburetor cleaning sink runs through the shop wall and ends outside. This pipe discharges a fountain of carburetor cleaning solvent and rinse water each time operators use the sink.

b. Personnel discard the glass bead paint blast residue as nonhazardous solid waste. This residue may be EP toxic.

6. Cite Regulation(s) Pertaining to Item 5: 40 CFR 262.11 and 40 CFR 264 Subpart M.

7. Recommended Actions:

a. To ensure regulatory compliance:

(1) Stop discharging carburetor cleaner directly to the ground. Disposal options include:

(a) Collecting the rinseate and disposing of it as hazardous waste.

(b) Obtaining permission from the Watertown wastewater treatment plant to discharge the rinseate to the sanitary sewer.

(2) Analyze the paint blast residue to determine the concentration of **leachable toxic metals**. If the concentrations are above the RCRA limits, dispose of the residue as hazardous waste.

b. To ensure sound engineering judgment:

(1) Continue experimenting with a biodegradable, citrus-based cleaner as a substitute for the methylene chloride carburetor cleaner.

(2) Continue to condense spent radiator cleaning solution prior to disposal as hazardous waste.

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EOR No. 32-24-7140-89, 11-21 Oct 88

- 1. Exact Location, Building Number: T-93.
- 2. Brief Description of Unit/Operation: DOL Wheeled Vehicle Maintenance.
 - a. Type of Unit (storage, treatment, etc.): Not applicable.
 - b. Permit Status (Part A or Part B): Not applicable.
 - c. Types of HW Generated at Site: Spent Type I Stoddard solvent.
 - d. Amount of HW Generated at Site: Unknown.
- 3. Point of Contact/Location Supervisor: Mr. George Springsteen.
- 4. Compliance Status:

	Complies	Does Not Comply
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RCRA:	X
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- 5. If Not in Compliance, Why?
 - a. Drums of contaminated Stoddard solvent had accumulated for more than 90 days.
 - b. These drums had inadequate labels. The shop had not painted over the old markings. The new markings were very **general descriptions** and did not show the accumulation start date.

6. Cite Regulation(s) Pertaining to Item 5: 40 CFR 262.31 and 262.34.

7. Recommended Actions: To ensure regulatory compliance:

- a. Turn in hazardous waste containers to the permitted storage facility (T-4819) or a permitted treatment/disposal contractor within 90 days of the accumulation start date.
- b. Label hazardous waste containers with the accumulation start date and an accurate description of their contents. Paint over old markings to avoid confusion.

EOR No. 32-24-7140-89, 11-21 Oct 88

1. Exact Location, Building Number: T-1132.
2. Brief Description of Unit/Operation: DOL Inspection Section.
 - a. Type of Unit (storage, treatment, etc.): Not applicable.
 - b. Permit Status (Part A or Part B): Not applicable.
 - c. Types of HW Generated at Site: Spent Type I Stoddard solvent.
 - d. Amount of HW Generated at Site: Small amounts. This shop does no heavy maintenance.
3. Point of Contact/Location Supervisor: Mr. George Springsteen.
4. Compliance Status:

	Complies	Does Not Comply
RCRA:	X	
State:	X	

5. If Not in Compliance, Why?
6. Cite Regulation(s) Pertaining to Item 5: Not applicable.
7. Recommended Actions: None.

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EOR No. 32-24-7140-89, 11-21 Oct 88

- 1. Exact Location, Building Number: T-1142.
- 2. Brief Description of Unit/Operation: DOL Special Equipment Maintenance Shop. This shop repairs generators, snowmobiles, and other small apparatus.
 - a. Type of Unit (storage, treatment, etc.): Not applicable.
 - b. Permit Status (Part A or Part B): Not applicable.
 - c. Types of HW Generated at Site: Spent Type I Stoddard solvent.
 - d. Amount of HW Generated at Site: Small amounts. The shop changes the solvent in its degreaser once every few months.
- 3. Point of Contact/Location Supervisor: Mr. George Springsteen.
- 4. Compliance Status:

	Complies	Does Not Comply
RCRA:	X	
State:	X	

- 5. If Not in Compliance, Why?
- 6. Cite Regulation(s) Pertaining to Item 5: Not applicable.
- 7. Recommended Actions: None.

1. Exact Location, Building Number: T-197.

2. Brief Description of Unit/Operation: DEH Paint Shop. This operation is responsible for painting buildings, signs, and miscellaneous small objects. The paint shop has a waterfall curtain spray booth.

a. Type of Unit (storage, treatment, etc.): Not applicable.

b. Permit Status (Part A or Part B): Not applicable.

c. Types of HW Generated at Site: Ignitable paint thinner contaminated with paint solids, contaminated paint, and wastewater from spray booth. Paint blasting residue may also be hazardous.

d. Amount of HW Generated at Site: Unknown. There were four drums of waste on pallets outside the building during this EOR.

3. Point of Contact/Location Supervisor: Mr. Tony Dumaw.

4. Compliance Status:

Complies Does Not Comply

RCRA:

X

5. If Not in Compliance, Why?

a. The paint shop stored hazardous waste in an unsafe manner. Drums of ignitable paint thinner and waste paint sat on pallets outside the building. The shop had not secured the storage area. As a result, paint cans from unknown sources appeared on the pallets. Also, people smoked near the area putting out cigarettes in an open drum of paint blasting residue. Containers were not marked clearly. The area had no curbing to contain spills.

b. The holding tank for the waterfall curtain spray booth drains directly to the ground outside the building. If the paint is toxic, discharging contaminated water to the ground is improper disposal of hazardous waste.

6. Cite Regulation(s) Pertaining to Item 5: 40 CFR 262.34 and 40 CFR 264, Subpart M.

169

EOR No. 32-24-7140-89, 11-21 Oct 88

7. Recommended Actions: To ensure regulatory compliance:

a. Store paint-related hazardous wastes safely. Suggested improvements include:

(1) Installing a fence with a locking gate around the area to prevent further contamination or physical damage to containers.

(2) Place a roof over the container storage area.

(3) Curb the storage area to contain hazardous waste in the event of a spill. As a minimum, ring the area with sandbags. Keep absorbent material on hand.

b. Analyze the wastewater from the waterfall curtain spray booth to determine whether or not it is EP toxic. Consult with the Watertown sewage treatment plant to make sure they can treat the wastewater. If they can, plumb the holding tank to the sanitary sewer. If not, dispose of toxic wastewater as hazardous waste.

1. Exact Location, Building Number: T-1030.
2. Brief Description of Unit/Operation: TASC Production Shop. This organization runs a silk screen shop, a photography lab, and paint shops for the production of training aids.
 - a. Type of Unit (storage, treatment, etc.): Not applicable.
 - b. Permit Status (Part A or Part B): Not applicable.
 - c. Types of HW Generated at Site: Contaminated paint thinner. The shop will generate contaminated paint filters when it begins operating its new dry spray booth.
 - d. Amount of HW Generated at Site: Unknown. The shop recovers silver from spent hypo solution. Silk screening and painting currently generate a few gallons of thinner each year.
3. Point of Contact/Location Supervisor: Mr. Bieth.
4. Compliance Status:

	Complies	Does Not Comply
RCRA:	X	
State:	X	

5. If Not in Compliance, Why?
6. Cite Regulation(s) Pertaining to Item 5: Not applicable.
7. Recommended Actions: To ensure regulatory compliance: Analyze paint booth filters for EP Toxicity prior to disposal. If they are toxic, dispose of them as hazardous waste.

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EOR No. 32-24-7140-89, 11-21 Oct 88

- 1. Exact Location, Building Number: T-1131.
- 2. Brief Description of Unit/Operation: U.S. Army Information Systems Command Publication Shop.
 - a. Type of Unit (storage, treatment, etc.): Not applicable.
 - b. Permit Status (Part A or Part B): Not applicable.
 - c. Types of HW Generated at Site: Used petroleum naphtha blanket cleaner. This waste is ignitable.
 - d. Amount of HW Generated at Site: Approximately 5 gallons per month.
- 3. Point of Contact/Location Supervisor: Mr. John Stirling.
- 4. Compliance Status:

	Complies	Does Not Comply
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RCRA:	X
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- 5. If Not in Compliance, Why? Most of the waste containers had no labels. The word "waste" was written on one 5-gallon can. Although this shop is very well maintained, personnel must label hazardous waste containers properly.
- 6. Cite Regulation(s) Pertaining to Item 5: 40 CFR 262.34.
- 7. Recommended Actions: To ensure regulatory compliance: Label hazardous waste containers with the words "hazardous waste." Also, include an accurate description of the contents on the label.

1. Exact Location, Building Number: S-2059.
2. Brief Description of Unit/Operation: Wheeler-Sack Airfield Hangar. The hangar stores off-specification JP-4 and other fuels contaminated with water and other POL products. Canadian Oil picks up this material for rerefining. The company usually mixes the fuel with waste oil prior to transportation. This practice is not subject to regulation under 40 CFR 262 due to the exemption for recyclable petroleum hazardous wastes generated as a result of transportation.
 - a. Type of Unit (storage, treatment, etc.): Not applicable.
 - b. Permit Status (Part A or Part B): Not applicable.
 - c. Types of HW Generated at Site: None.
 - d. Amount of HW Generated at Site: None.
3. Point of Contact/Location Supervisor: Wayne "Hank" Silk.
4. Compliance Status:

	Complies	Does Not Comply
RCRA:	X	
State:	X	

5. If Not in Compliance, Why?
6. Cite Regulation(s) Pertaining to Item 5: Not applicable.
7. Recommended Actions: As a good management practice, analyze waste fuel and oil prior to shipping to determine the concentration of halogenated organics. This analysis will indicate whether or not units have contaminated the oil with halogenated solvents or PCBs. Oil with an organic halogen concentration of more than 1,000 ppm would be subject to RCRA regulation if Fort Drum burned it for energy recovery.

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EOR No. 32-24-7140-89, 11-21 Oct 88

1. Exact Location, Building Number: T-1454.
2. Brief Description of Unit/Operation: 1/7 Field Artillery Maintenance Shop.
 - a. Type of Unit (storage, treatment, etc.): Not applicable.
 - b. Permit Status (Part A or Part B): Not applicable.
 - c. Types of HW Generated at Site: Spent Type I Stoddard solvent.
 - d. Amount of HW Generated at Site: Unknown.

3. Point of Contact/Location Supervisor: Cdr, 1/7 Field Artillery.

4. Compliance Status:

	Complies	Does Not Comply
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RCRA:		X
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5. If Not in Compliance, Why? This unit stored hazardous materials and wastes on uncurbed gravel. Solvents would run to surface water or seep to the ground water in the event of a spill.

6. Cite Regulation(s) Pertaining to Item 5: 40 CFR 262.34.

7. Recommended Actions: To ensure regulatory compliance, store hazardous wastes on an impermeable surface. Provide curbing to contain spills. Also, secure the area with a fence to prevent further contamination or physical damage to waste containers.

EOR No. 32-24-7140-89, 11-21 Oct 88

1. Exact Location, Building Number: T-1644.
2. Brief Description of Unit/Operation: 1st Brigade Motor Pool.
 - a. Type of Unit (storage, treatment, etc.): Not applicable.
 - b. Permit Status (Part A or Part B): Not applicable.
 - c. Types of HW Generated at Site: Contaminated fuels and parts cleaning solvents.
 - d. Amount of HW Generated at Site: Unknown.
3. Point of Contact/Location Supervisor: Cdr, 1st Brigade.
4. Compliance Status:

Complies Does Not Comply

RCRA:

X

5. If Not in Compliance, Why? This unit stored contaminated fuels outside on sandy soil. There was no curbing to contain spills. The unit had cleaned parts or weapons in this area. Bung caps were missing from drums. The soil was stained and smelled of fuel.
6. Cite Regulation(s) Pertaining to Item 5: 40 CFR 262.34.
7. Recommended Actions: To ensure regulatory compliance, store hazardous wastes on an impermeable surface. Cap bunge on waste drums. Provide curbing to contain spills. Do not clean parts or weapons in the waste storage area. Also, secure the area with a fence to prevent further contamination or physical damage to waste containers.

EOR No. 32-24-7140-89, 11-21 Oct 88

- 1. Exact Location, Building Number: P-1750.
- 2. Brief Description of Unit/Operation: AMSA Equipment Concentration Center.
 - a. Type of Unit (storage, treatment, etc.): Not applicable.
 - b. Permit Status (Part A or Part B): Not applicable.
 - c. Types of HW Generated at Site: Spent Type 1 Stoddard solvent. Fort Drum recycles this solvent through a Safety-Kleen contract.
 - d. Amount of HW Generated at Site: Unknown.
- 3. Point of Contact/Location Supervisor: Don Getman.
- 4. Compliance Status:

	Complies	Does Not Comply
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RCRA:	X
State:	X

- 5. If Not in Compliance, Why?
- 6. Cite Regulation(s) Pertaining to Item 5: Not applicable.
- 7. Recommended Actions: None.

EOR No. 32-24-7140-89, 11-21 Oct 88

1. Exact Location, Building Number: T-1800.
2. Brief Description of Unit/Operation: 514th Maintenance Battalion.
 - a. Type of Unit (storage, treatment, etc.): Not applicable.
 - b. Permit Status (Part A or Part B): Not applicable.
 - c. Types of HW Generated at Site: Spent Type I Stoddard solvent (recycled under Safety-Kleen contract), paint-related wastes.
 - d. Amount of HW Generated at Site: Unknown.
3. Point of Contact/Location Supervisor: 2LT Dennis Thies.
4. Compliance Status:

	Complies	Does Not Comply
RCRA:	X	
State:	X	

5. If Not in Compliance, Why?
6. Cite Regulation(s) Pertaining to Item 5: Not applicable.
7. Recommended Actions: None. This unit has a well enforced SOP for managing its hazardous wastes.

102

EOR No. 32-24-7140-89, 11-21 Oct 88

1. Exact Location, Building Number: P-6000.

2. Brief Description of Unit/Operation: New Jersey National Guard Equipment Maintenance Shop.

a. Type of Unit (storage, treatment, etc.): Treatment. This activity has a battery shop that neutralizes electrolyte from spent lead-acid batteries.

b. Permit Status (Part A or Part B): None.

c. Types of HW Generated at Site: Spent Type I Stoddard solvent (recycled through Fort Drum's Safety-Kleen contract), casings from spent lead-acid batteries.

d. Amount of HW Generated at Site: Unknown.

3. Point of Contact/Location Supervisor: SFC Gordon Johnson.

4. Compliance Status: RCRA: May not comply.

5. If Not in Compliance, Why?

a. This shop may be treating a waste that shows two characteristics of a hazardous waste: corrosivity and EP Toxicity.

b. Personnel at the battery shop drain spent electrolyte into a sink. Electrolyte runs from the sink into a sump filled with lime chips. The neutralized solution then flows to the sanitary sewer.

c. If the battery electrolyte has less than 5 ppm lead, this procedure is an acceptable form of elementary neutralization. However, if the solution contains more than 5 ppm lead, this process requires a RCRA treatment facility permit.

6. Cite Regulation(s) Pertaining to Item 5: 40 CFR 260.10 and 261.24; 6 NYCRR 373-1.1.

7. Recommended Actions: To ensure regulatory compliance:

a. Analyze several samples of spent electrolyte for lead concentration. If the concentration exceeds 5 ppm, the waste is toxic.

b. If the electrolyte has more than 5 ppm lead, pursue one of the following options:

(1) Include the battery acid neutralization process in the RCRA Part B permit application.

EOR No. 32-24-7140-89, 11-21 Oct 88

(2) Offer the wet batteries intact to a permitted recycler.

(3) Obtain permission from the Watertown wastewater treatment plant to discharge the unneutralized electrolyte to the sanitary sewer.

64

EOR No. 32-24-7140-89, 11-21 Oct 88

- 1. Exact Location, Building Number: P-6020.
- 2. Brief Description of Unit/Operation: New York National Guard Equipment Maintenance Shop.

- a. Type of Unit (storage, treatment, etc.): Treatment. This activity has a battery shop that neutralizes spent lead-acid batteries.

- b. Permit Status (Part A or Part B): None.

- c. Types of HW Generated at Site: Spent Type I Stoddard solvent (recycled through Fort Drum's Safety-Kleen contract).

- d. Amount of HW Generated at Site: Unknown.

- 3. Point of Contact/Location Supervisor: SGT Schmidt.

- 4. Compliance Status: RCRA: May not comply.

- 5. If Not in Compliance, Why?

- a. This shop may be treating a waste that shows two characteristics of a hazardous waste: corrosivity and EP Toxicity.

- b. Personnel at the battery shop drain spent electrolyte into a sink. Electrolyte runs from the sink into a sump filled with lime chips. The neutralized solution then flows to the sanitary sewer.

- c. If the battery electrolyte has less than 5 ppm lead, this procedure is an acceptable form of elementary neutralization. However, if the solution contains more than 5 ppm lead, this process requires a RCRA treatment facility permit.

- 6. Cite Regulation(s) Pertaining to Item 5: 40 CFR 260.10 and 261.24; 6 NYCRR 373-1.1.

- 7. Recommended Actions:

- a. To ensure regulatory compliance:

- (1) Analyze several samples of spent electrolyte for lead concentration. If the concentration exceeds 5 ppm, the waste is toxic.

(2) If the electrolyte has more than 5 ppm lead, pursue one of the following options:

(a) Include the battery acid neutralization process in the RCRA Part B permit application.

(b) Offer the wet batteries intact to a permitted recycler.

(c) Obtain permission from the Watertown wastewater treatment plant to discharge the unneutralized electrolyte to the sanitary sewer.

b. As good engineering judgment:

(1) Stop emptying oil drain pans on the sandy soil at the rear of the building. Allow the pans to drip into the waste oil storage tank.

(2) Do not store incompatible hazardous materials together. During this review, the shop stored sulfuric acid, DS-2 decontaminating solution, and manganese phosphate next to each other with no physical barriers to contain spills. The DS-2 containers were severely corroded. If DS-2 were to come in contact with these other chemicals, they could generate heat, fire, and toxic gas.

(3) Secure pressurized gas cylinders. During this review, bottles of argon and acetylene were stored upright with no chain to prevent them from falling. If pressurized cylinders fell, their tops could break and launch them through the storage area wall.

EOR No. 32-24-7140-89, 11-21 Oct 88

1. Exact Location, Building Number: T-598.
2. Brief Description of Unit/Operation: DPCA Auto Crafts Shop. Military personnel and dependents work on cars and change oil, antifreeze, and batteries.
 - a. Type of Unit (storage, treatment, etc.): Not applicable.
 - b. Permit Status (Part A or Part B): Not applicable.
 - c. Types of HW Generated at Site: Spent lead-acid batteries. The shop sells these batteries to a recycling contractor.
 - d. Amount of HW Generated at Site: Unknown.
3. Point of Contact/Location Supervisor: Mr. Gibeau.
4. Compliance Status: RCRA: May not comply.
5. If Not in Compliance, Why? Shop patrons clean radiators in the parking lot. If they use caustic cleaning solutions, they may be discharging a corrosive hazardous waste to the lot surface without a permit.
6. Cite Regulation(s) Pertaining to Item 5: 40 CFR 264, Subpart M.
7. Recommended Actions:
 - a. To ensure regulatory compliance, determine the pH and toxic metals concentration of the radiator washout. Do not drain antifreeze onto the parking lot or lawn around the building. Drain antifreeze to the sanitary sewer.
 - b. As good management practice, do not dump or store opened paint cans in the lot in back of the shop. Store them such that they do not spill. Discard empty and dried paint cans as regular solid waste.

1. Exact Location, Building Number: T-2509.
2. Brief Description of Unit/Operation: DPCA Arts and Crafts Shop.
 - a. Type of Unit (storage, treatment, etc.): Not applicable.
 - b. Permit Status (Part A or Part B): Not applicable.
 - c. Types of HW Generated at Site: Small amounts of photographic wastes.
 - d. Amount of HW Generated at Site: A few gallons per month.
3. Point of Contact/Location Supervisor:
4. Compliance Status:

	Complies	Does Not Comply
RCRA:	X	
State:	X	

5. If Not in Compliance, Why?
6. Cite Regulation(s) Pertaining to Item 5: Not applicable.
7. Recommended Actions: To comply with the Department of Defense's precious metals recovery program, recover silver from waste hypo solution. If possible, arrange use of the TASC production shop's silver recovery unit. Dispose of other photographic chemicals to the sanitary sewer.

ANNEX E-4

SUMMARY OF NOTICES OF VIOLATION

1. The EPA Region II issued notice of the following violations as the result of an inspection on 27 May 1987:

a. Fort Drum had not recorded all inspections of the facility in the inspection log or summary [6 NYCRR 373-3.2(f)(4)].

b. The contingency plan had not been updated to reflect changes in the facility [6 NYCRR 373-3.4(e)].

c. Closure cost estimates for the facility were not in current dollars [6 NYCRR 373-3.5(c)(vii)].

2. Fort Drum responded to this notice by:

a. Developing a new inspection log and policies for recording each facility inspection.

b. Preparing to update the contingency plan.

c. Planning to reestimate facility closure costs in current dollars.



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MARYLAND 21010-5422



HSHB-MR-E

ENVIRONMENTAL OPERATIONAL REVIEW NO. 32-24-7140-89
10TH MOUNTAIN DIVISION (LIGHT INFANTRY) AND FORT DRUM
WATERTOWN, NEW YORK
11-21 OCTOBER 1988

APPENDIX F
PEST MANAGEMENT REVIEW

1. REFERENCES. See the Annex for a list of references.
2. PURPOSE. To evaluate the status of the installation pest management program with regard to compliance with Federal, State, local, Army, Department of Defense (DOD), and all other applicable environmental regulatory requirements; in addition, provide good pest management practice and remedial guidance, as necessary.
3. FINDINGS AND DISCUSSION.

a. Introduction.

(1) The pest management program at Fort Drum, New York was administered by the Directorate of Engineering and Housing (DEH); the Pest Control Shop was responsible for arthropod, vertebrate, and weed control. At the time of this Environmental Operational Review (EOR), there were no pest control service contracts on Fort Drum.

(2) Fort Drum had developed a pest management plan that addressed pest control requirements, control operations, special safety measures, and all installation pest control activities.

(3) The DEH Environmental Coordinator had been officially designated, in writing, as the Fort Drum Pest Management Coordinator.

(4) The pest control shop personnel were DOD trained and certified in the appropriate categories.

(5) A reference library of regulations, technical guides and other publications was available to pest control shop personnel. Pesticide Material Safety Data Sheets were also available.

(6) All pest control personnel were enrolled in a medical surveillance program consisting of an annual physical examination, a pulmonary function test, and annual blood cholinesterase testing. Personnel protective equipment and clothing (i.e., overalls, gloves, respirators, and goggles) were maintained in a pesticide-free area of the pest control shop facility.

(7) Daily and monthly pest control records were being maintained on DD Form 1532-1, Pest Management Maintenance Record, and DD Form 1532, Pest Management Report, respectively. Pest surveillance time was recorded on DD Form 1532, and the completed form was submitted to the appropriate activities.

(8) Installation emergency services (fire, medical, and police) were notified, in writing, of the hazards of pesticides being used and stored on the installation so that proper precautions and actions could be taken in the event of a spill, poisoning or fire.

(9) The pest control shop had a pesticide-free office/break area and change room with locker space; toilet and shower were available (Bldg P-2517). An emergency deluge shower and eye lavage were present.

(10) The pest control vehicles were used only for pest control purposes, and they were equipped with lockable compartments and cab. A pesticide spill cleanup kit and a portable eye lavage were available on each vehicle during pest control operations.

(11) Pesticides were displayed and arranged properly in the commissary, and stored properly in the commissary warehouse. Store personnel were familiar with proper pesticide spill cleanup procedures. Pesticides spill cleanup kits were available. Sales personnel were also familiar with the requirement to bag pesticides separately from foodstuff or clothing.

(12) Pesticides were displayed and arranged properly in the exchange store. No pesticides were stored in the warehouse at the time of the EOR. Store personnel were familiar with proper pesticide spill cleanup procedures. Pesticide spill cleanup kits were available. Sales personnel were also familiar with the requirement to bag pesticides separate from foodstuff or clothing.

b. DEH.

(1) The Pest Management Plan (PMP) did not include a list of specific chemicals used for control. Information was not provided concerning who was responsible for surveillance and when surveillance was to be conducted.

02

EOR No. 32-24-7140-89, 11-21 Oct 88

(2) The PMP was not being updated and reviewed annually by the Forces Command (FORSCOM) Pest Management Coordinator (PMC).

(3) A Self-Help pest control program was not established at Fort Drum at the time of this EOR.

c. Environmental. The installation Spill Prevention Control and Countermeasure Plan/Installation Spill Contingency Plan (SPCCP/ISCP) did not include a current inventory of pesticides or an inventory of mobile application equipment. The plan indicated that the direction of a spill flow outside of Bldg P-2517 would be to the south. The site actually sloped to the west, and the majority of a spill probably would flow in that direction which was towards two sanitary sewer manholes. These manholes, which were not mentioned in the plan, were within 30 feet of the building and the outdoor mixing area. They were flush with the road and parking area on the west end of the building.

d. Insect and Rodent Control Shop. Directorate of Engineering and Housing personnel had submitted work requests to correct items in the following paragraphs (1) - (5).

(1) Building P-2517, the Insect and Rodent Control Shop, did not have a fire/smoke alarm system.

(2) The pesticide storage room (Bldg P-2517) did not have adequate ventilation.

(3) The light switch for the pesticide storage room (Bldg P-2517) was located inside the room.

(4) Access to the change room was through the mixing room (Bldg P-2517).

(5) The floors and curbing of the pesticide storage and the mixing rooms were not sealed.

(6) The shop employee was not provided appropriate work uniforms.

(7) An adequate outdoor mixing area was not available for the mixing of pesticides and the filling of large spray equipment at Bldg P-2517. Pesticide mixing occurred on a concrete slab outside of this building, with large equipment being filled from an elevated water fill pipe. If there was a spill, there is a possibility it would reach the sanitary sewer manholes located west of the building.

(8) Emergency phone numbers (installation emergency and CHEMTREC®) were not available on/in the pest control vehicles.

4. CONCLUSIONS.

a. DEH and Environmental. The PMP and SPCCP/ISCP were not adequately addressing pest management operations. The PMP did not provide enough detail in regards to chemical control and surveillance operations. Besides lacking the pesticide and equipment inventories specified by regulation, the SPCCP/ISCP provided erroneous spill flow information about the Insect and Rodent Control Shop site.

b. Insect and Rodent Control Shop. Physical deficiencies existing in the facility would negatively impact upon the health and safety of employees. Possible environmental contamination could result from the inadequate outdoor mixing area. These deficiencies had been noted previously and work requests had been submitted. Proper protective clothing was not available for the employee.

5. RECOMMENDATIONS.

a. DEH.

(1) Include in the PMP the specific chemicals used for control. Identify those who are responsible for surveillance and when surveillance is to be conducted (AR 420-76, Appendix C-6).

(2) Update the PMP annually; also get written documentation of approval from the FORSCOM PMC (AR 420-76, paragraphs 2-4f and 3-2a).

(3) Establish a Self-Help pest control program for use by housing occupants to control minor infestations of household pests (AR 420-76, paragraph 3-13).

b. Environmental. Update the SPCCP/ISCP to include current inventories of pesticides and an inventory of mobile application equipment. In addition, revise the information on the predicted direction of spill flow outside of Bldg P-2517 (AR 200-1, paragraphs 8-7 and 8-10).

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EOR No. 32-24-7140-89, 11-21 Oct 88

c. Insect and Rodent Control Shop.

(1) Install a fire/smoke alarm system in Bldg P-2517 [AR 420-76, paragraph 4-1b(1)].

(2) Install a ventilation system which will provide six air changes per hour in the pesticide storage room, Bldg P-2517 [AR 420-76, paragraph 4-1b(1)].

(3) Relocate the light switch for the pesticide storage room to the exterior of the room [AR 420-76, paragraph 4-1b(1)].

(4) Provide an alternative access to the change room so employees will not have to go through a chemically contaminated room to reach it [420-76, paragraph 4-1b(1)].

(5) Seal the floors and curbing within the pesticide storage and mixing rooms with an epoxy [AR 420-76, paragraph 4-1b(1)].

(6) Provide shop employee with a daily change of protective clothing along with additional sets for immediate change if a set should become contaminated (AR 385-32, paragraph 4a).

(7) Construct an outdoor area for mixing pesticides consisting of a concrete pad with curbing to contain any pesticide spills and a closeable drain [AR 420-76, paragraph 4-1b(1)].

(8) Post emergency phone numbers on/in pest control vehicles.

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ANNEX

REFERENCES

1. AR 40-5, 30 August 1986, Preventive Medicine.
2. AR 40-574, 26 April 1976, Aerial Dispersal of Pesticides.
3. AR 200-1, 15 June 1982, Environmental Protection and Enhancement.
4. AR 200-2, 15 March 1985, Environmental Effects of Army Actions.
5. AR 385-32, 31 October 1985, Protective Clothing and Equipment.
6. AR 420-76, 3 June 1986, Pest Management.
7. Public Law 92-516, 21 October 1972, The Federal Insecticide, Fungicide, and Rodenticide Act of 1972, as amended.
8. DOD Directive 4150.7, 24 October 1983, Department of Defense Pest Management Program.
9. TB MED 502, 15 February 1982, Respiratory Protection Program.
10. TB MED 576, 15 March 1982, Sanitary Control and Surveillance of Water Supplies at Fixed Installations.
11. TM 5-629, 1 August 1970, Herbicide Manual for Noncropland Weeds.
12. TM 5-632, 1 December 1971, Military Entomology Operational Handbook.
13. TM 5-660, 30 August 1984, Maintenance and Operation of Water Supply, Treatment, and Distribution Systems.
14. Title 29, Code of Federal Regulations (CFR), 1987 rev, Section 1910.151, Medical Services and First Aid.
15. Title 40, CFR, 1987 rev, Part 165, Regulations for the Acceptance of Certain Pesticides and Recommended Procedures for the Disposal and Storage of Pesticides and Pesticides Containers.
16. Technical Information Memorandum (TIM) No. 14, 1978, Protective Equipment for Pest Control Personnel.

EOR No. 32-24-7140-89, 11-21 Oct 88

17. TIM 15, September 1980, Pesticide Spill Prevention Management.
18. TIM 16, June 1981, Pesticide Fires, Prevention, Control and Cleanup.
19. TIM 17, November 1983, Pest Control Facilities.
20. Department of Defense Performance Work Statement, AFPMB, May 1984.
21. Quality Assurance Guide for Pest Control Services, AFPMB, May 1984.
22. USAEHA Technical Guide (TG) 114, March 1976, Guide for the Medical Surveillance of Pest Controllers.
23. USAEHA TG 133, November 1982, Respiratory Protection for Pest Control Personnel.



DEPARTMENT OF THE ARMY
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MARYLAND 21010-5422



REPLY TO
ATTENTION OF

HSHE-ME-WR

ENVIRONMENTAL OPERATIONAL REVIEW NO. 32-24-7140-89
10TH MOUNTAIN DIVISION (LIGHT INFANTRY) AND FORT DRUM
WATERTOWN, NEW YORK
11-21 OCTOBER 1988

APPENDIX G
POTABLE/RECREATIONAL WATER QUALITY REVIEW

I. REFERENCES. See Annex G-1 for a list of references.

II. PURPOSE. To ensure that water quality management practices were in compliance with mandatory requirements of the Safe Drinking Water Act (SDWA), the New York State Sanitary Code for Drinking Water Supplies, and applicable Army Regulations including the evaluation of the installation's Preventive Medicine Service's (PVNTMED Svc's) responsibilities.

III. FINDINGS AND DISCUSSION.

A. Potable Water Regulatory Criteria. Regulatory criteria used in evaluating potable water issues at Fort Drum were based on the SDWA (PL 93-523) and amendments thereto (reference 10), which authorized establishment of the National Primary Drinking Water Regulations (NPDWR) (reference 11) and the National Secondary Drinking Water Regulations (NSDWR) (reference 12). The State of New York had acquired primacy from the U.S. Environmental Protection Agency (EPA) for the supervision of public water systems. Additionally, AR 40-5, AR 200-1, AR 420-46, TB MED 575 (as implemented by AR 40-5), TB MED 576 (as implemented by AR 40-5 and AR 200-1), and TM 5-660 were consulted during this Environmental Operational Review (EOR) (references 1, 2, 3, 4, 5, and 6, respectively). Conformance with good environmental practices was also evaluated.

B. Population. At the time of the EOR, Fort Drum had a normal resident population of 7,601, a normal nonresident population of 5,751, and a normal effective population (resident population plus one-third nonresident population) of 9,518. It is important to note that Fort Drum's population was expected to increase dramatically over the next several years due to the expansion of the 10th Infantry Mountain Division (Light). Based on projected population data compiled as of September 1988, the resident population for the end of fiscal year (FY) 89 was expected to be 11,640, normal nonresident population 6,146, and the normal effective population 13,689.

C. Potable Water.

1. Water Supply.

a. Ground water obtained from a well field northeast of the cantonment area served as the installation's source of drinking water. Nine of the twelve drilled wells drew water from the water table aquifer, while the remaining were in artisan aquifers. The depth of the wells ranged from 76 to 350 feet. Fort Drum did not have any nonpotable water supplies.

b. Fort Drum was directed to connect to the water supply system of the nearby town of Watertown by FY 90. With present and projected water demands [projected demands being 3.0, 3.2, and 4 million gallons per day (mgd) by 1989, 1990, and 1991, respectively], the Fort Drum Plans and Operations Branch of Directorate of Engineering and Housing (DEH) had proposed to add 2 additional wells [730 gallons per minute (gpm) and 600 gpm totaling 1.25 mgd at an assumed pump running time of 16 hours] to their potable water well field to supplement current water production until the connection to the Watertown system was complete. This connection was expected to be completed by fall of 1990; while in the meantime, Fort Drum's water requirements were rising. Although the New York District Corps of Engineers and the Developmental Authority of the North Country's (DANC) Water Project was scheduled to be implemented in the 1990's, Plans and Operations personnel of DEH believe that these two additional wells will be necessary to meet the near term water demands of Fort Drum until the DANC project was complete.

c. The combination of an exceptionally hot and dry summer with the intense construction effort had taxed the installation's wells and reservoir system to critical levels this past summer by using up to 1.9 mgd. Past hydrogeological analysis of the Fort Drum aquifer had shown that the area supporting the 12 existing wells could only sustain a 1.7 to 2 mgd long-term production level, based upon the annual recharge to this area of the aquifer without mining the wells. In February 1987, the U.S. Army New York District Corps of Engineers had six water wells (730, 730, 730, 260, 500, and 730 gpm, respectively) drilled for potable water use due to the projected water needs of Fort Drum. The water demand estimated by this project at full strength was 4 MGD peak by 1990. The construction project was scrapped at 90 percent completion due to the decision that Fort Drum was going to connect to the Watertown water supply system. These six additional wells were abandoned but left in a usable condition. The Fort Drum DEH wanted to use two of these wells for the well field addition as mentioned above. It was felt by DEH personnel that when the

EOR No. 32-24-7140-89, 11-21 Oct 88

Watertown supply is connected to Fort Drum, a decision may be made to eliminate the existing water wells. It cannot be stressed enough that some of the wells be kept viable in order to have an emergency supply of water in the event that the main water supply gets cut off or contaminated which would not allow Fort Drum to obtain water. It is important to note that Fort Drum needs to obtain a permit to either abandon or open a well as regulated by the State (reference 13, part 5-2.4).

d. All 12 wells were located onpost (see Figure G-1), were adequately protected from environmental contamination, and had drawdown gauges. Three of the twelve wells (Nos. 3, 4, and 5) had emergency standby diesel generators. Well No. 1 was located across the road and about 500 feet southeast of the water treatment plant. Wells No. 2 and 3 were about 3/4 mile northwest of the water treatment plant. Wells No. 4, 5, 6, 8, 9, and 10 paralleled the airfield and extended to about 1 1/2 miles northeast of the water treatment plant. Wells No. 7, 11, and 12 were on the opposite side of the airfield from the water treatment plant and were about 1 mile southeast of the plant.

e. A microprocessor unit was used at the water treatment plant to assist in the sequential pumping of the water wells using FM transceivers to control the submersible well pumps. This system was also capable of printing a hard copy of wells that were running, wells that were next to be turned on, how long each well had been pumped for that month, and a reading of the water levels in the water storage tanks. In addition to this system, a "Chatter Box," model CB-4 voice synthesis remote monitor by RACO was recently installed which automatically calls key DEH personnel in the event of any malfunctions with the water treatment plant equipment. The system could be programmed for the particular needs of the Fort Drum water treatment system.

f. Figure G-2 is a potable water production histogram which illustrates Fort Drum's potable water production over a 3-year period. As Figure G-2 indicates, Fort Drum's water demands have dramatically increased since the end of FY 85. This surge in water usage was undoubtedly due to the conversion of the installation from an installation used mainly for providing training facilities and logistics support to active duty and reserve components to the home of the 10th Infantry Mountain Division. Several construction projects to expand the installation had been started since the decision was made in 1984 that Fort Drum would be the home of the 10th Mountain Division (Light Infantry), resulting in the increased demand for potable water.

G-4

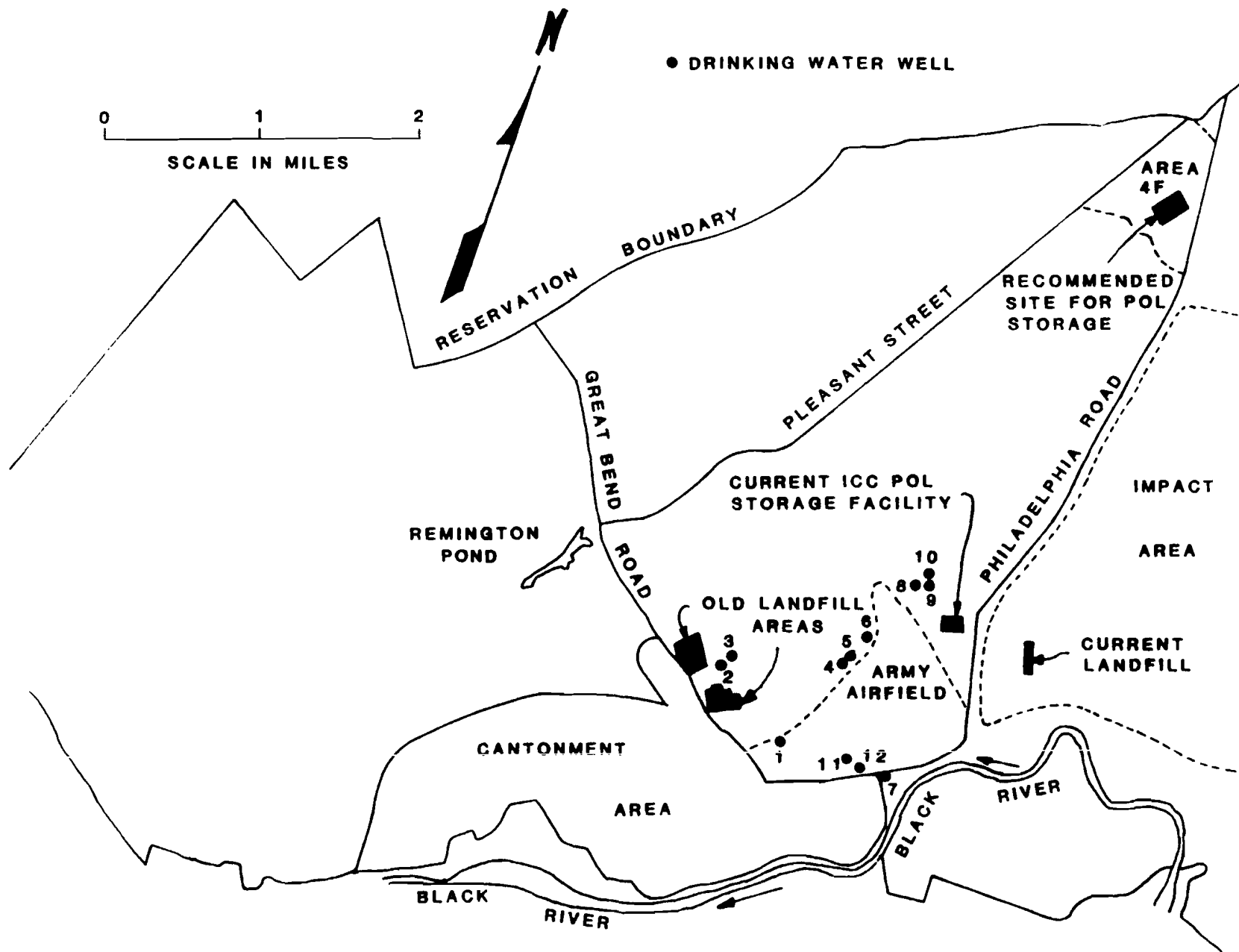
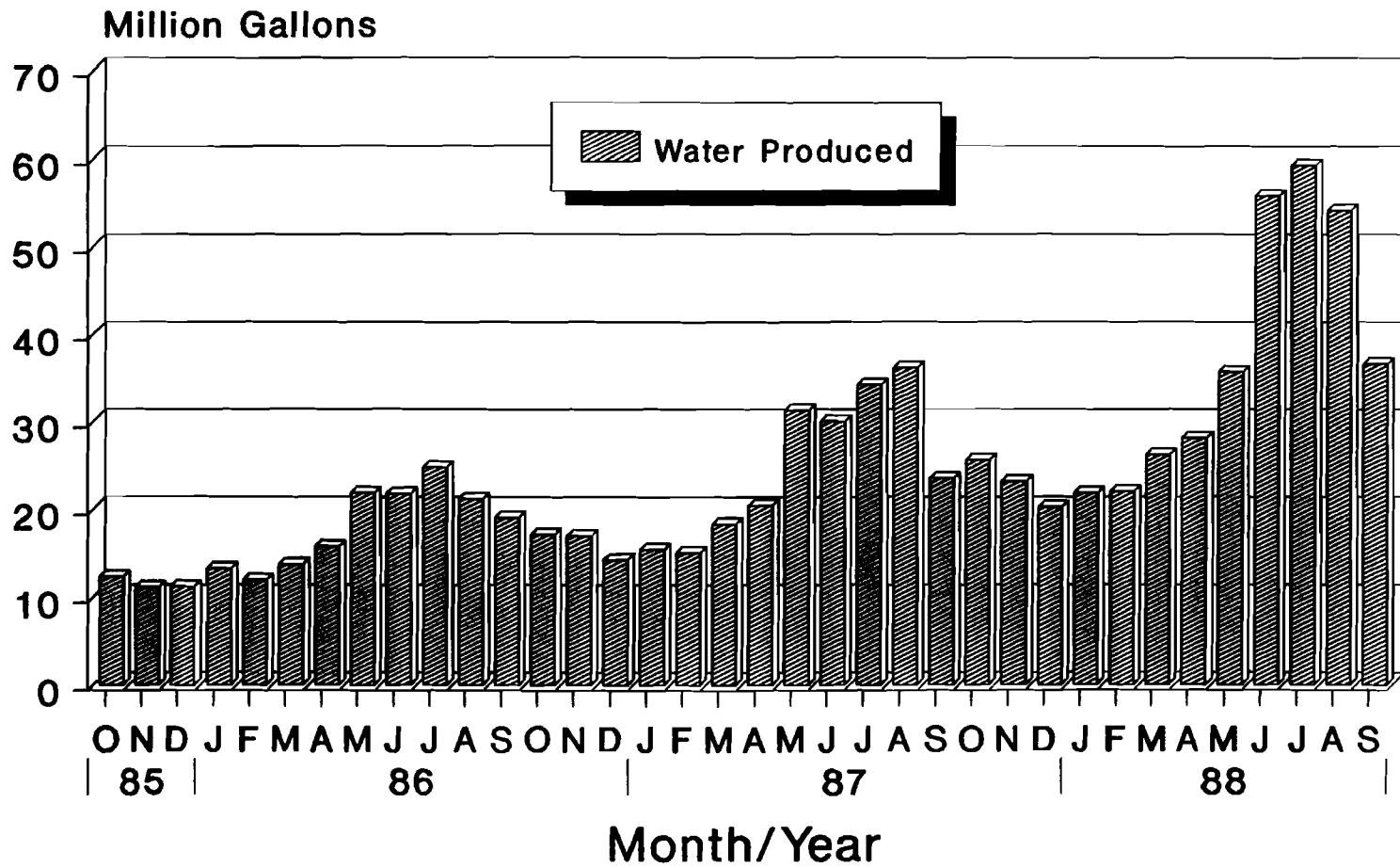


FIGURE G-1. WESTERN PORTION OF FORT DRUM SHOWING DRINKING WATER WELLS

FORT DRUM

Potable Water Production Histogram

EOR No. 32-24-7140-89, 11-21 Oct 88



G-5

FY 86-88 Operating Water Log Data

FIGURE G-2

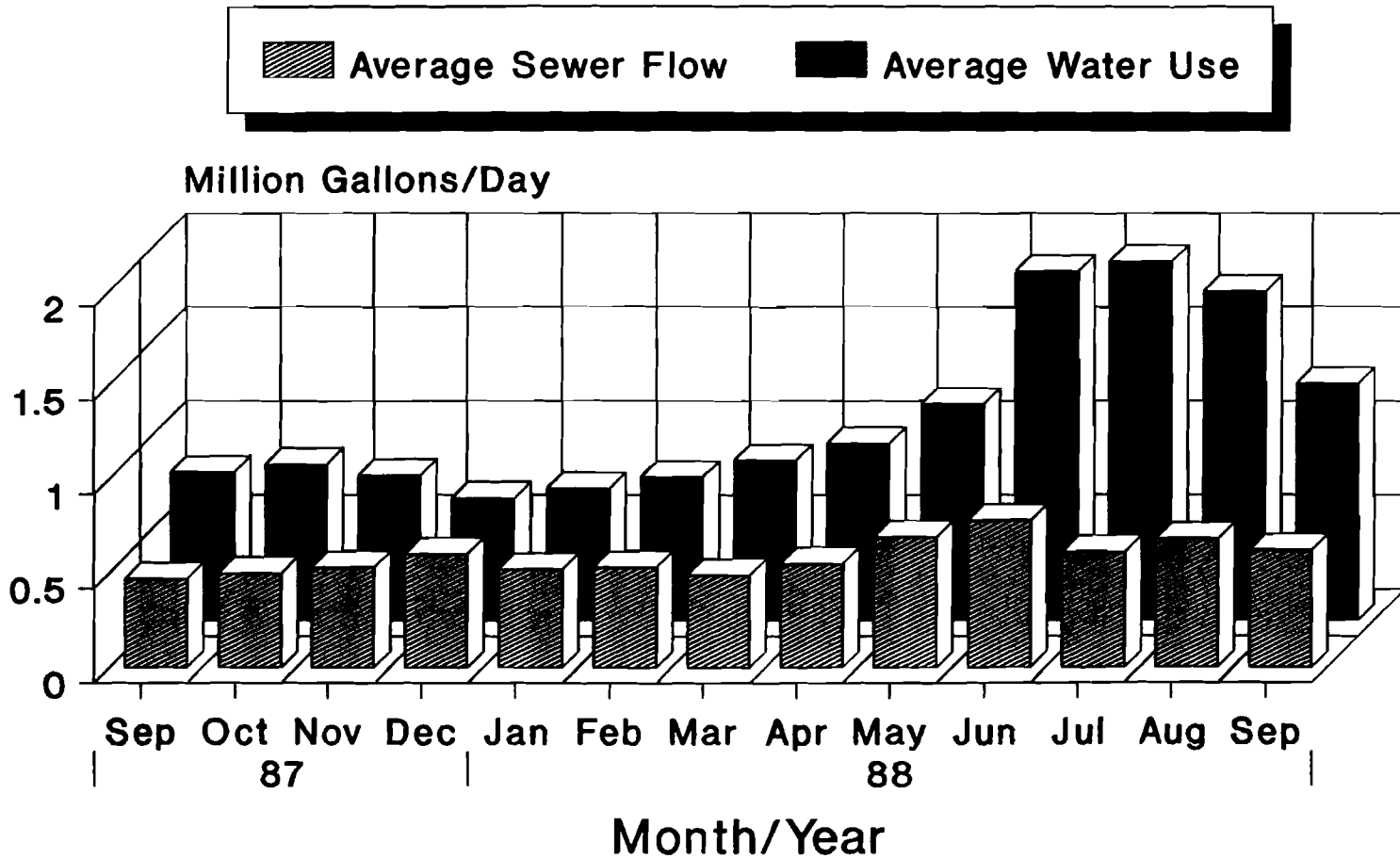
g. Figure G-2 shows a significant increase in water production during June, July, and August 1988. Fort Drum DEH personnel explained that this stretch of time was when contractors were using considerable amounts of water to cure large slabs of concrete as well as for dust control. Figure G-3 verifies this conclusion further. According to reference 14, the quantity of domestic and industrial sewage contributed by an area will generally be about one-third less than the water use of the area, (i.e., about 60 to 75 percent of the water supplied will reappear as sewage) with the remainder being used in industrial processes, for lawn sprinkling, etc. Hence, if the water use of a community is known, the probable output of sanitary sewage can be estimated. In this case, the actual average sewer flow was plotted against the average water use. As can be seen from the graph, up until May of 1988 the percentage of water used and reappearing as sewage flow was in the range of 59 percent to 93 percent. With all environmental factors taken into consideration, this range was normal up until June of 1988. At this point, the graph shows a dramatic increase in daily water usage accompanying a normal sewage flow. The percentage of water used and reappearing as sewage flow in this case ranged from 32 percent to 49 percent.

2. Water Treatment.

a. The potable water quality at Fort Drum had met the requirements of the NPDWR, the NSDWR, and the New York State Sanitary Code for Drinking Water Supplies. The water treatment Bldg S2067 was built in 1940. Initially, it provided flow measurement, chlorination, an office, a workshop, and a garage. At the time of this EOR, an equipment room had been converted into a small laboratory, fluoride addition had been provided, and a microprocessor was being used to sequentially pump the wells. The rated capacity of the treatment facility was 4 mgd. The chemical room contained a dual cylinder chlorinator with an automatic switch-over, which injected gaseous chlorine into the water supply. Free available chlorine (FAC) levels in the water were being maintained at approximately 1 part per million (ppm). The Fort Drum PVNTMED Svc had asked to have the FAC levels raised to 2 ppm due to the numerous construction projects currently in progress. The chlorine room was well ventilated but was not equipped with a chlorine detection alarm in the event of a chlorine leak. Although this is not yet a regulatory requirement, it is a necessary step to protect operations personnel, and nearby residents and employees. This equipment is particularly warranted at facilities which are not manned continuously. In such cases, a remote alarm should be located at the installation fire department or Provost Marshall (i.e., an emergency service which operates 24 hours per day), in addition to alarms sited at the WTP. The room did contain a self-contained breathing apparatus for use in an emergency; however, it was located inside the chemical room. Fluoridation equipment consisted of an upflow saturator and a high/pressure (120 psi) chemical pump. This system injected fluoride into the water supply with a resulting fluoride concentration of 1 ppm.

FORT DRUM

Average Sewer Flow vs. Average Water Use



G-7

FY 88 Sewer and Water Operating Log Data **FIGURE G-3**

b. The Fort Drum water treatment plant was classified as a >2.5 mgd plant and was operated by State-certified personnel. There were two IB and one IIB operators who performed daily analysis of chlorine, fluoride, temperature, flow, and pH on the raw, treated, and distributed water. The water treatment plant was also in the U.S. Army Environmental Hygiene Agency (USAEHA) Fluoride Quality Assurance Program. Static water level measurements of the 12 wells were conducted every month. The water treatment plant did not have an emergency power backup generator to allow for continuous uninterrupted disinfection of the water supply. The plant had recently installed a Gould "Hydraulic Ram" which would maintain the addition of chlorine in the event of a power failure. The "Hydraulic Ram" used the flow of water in the water main to produce a vacuum on the chlorine injection line in order to draw chlorine into the main.

3. Water Storage/Fire Protection.

a. Water storage consisted of a 1 million gallon (mg) elevated storage tank, a 750,000 gallon in-ground reservoir, and two 500,000 gallon elevated storage tanks. All the elevated storage tanks were equipped with cathodic protection. The in-ground reservoir was recently refurbished. Maintenance of the three elevated storage tanks was performed by DEH personnel when possible. Maintenance work not accomplished by DEH was done by a service contract. The tanks were inspected once per year. It is important to note that Fort Drum had a problem with their No. 2 500,000 gallon elevated storage tank. This tank did not have a regulating valve to allow for control of the water level in the tank. The tank just floated off the system. For this reason, the tank was put out of service over the winter months due to freezing. In the spring, the tank was reopened and disinfected prior to being put back into operation.

b. The total water storage available at Fort Drum was 2.75 mg which exceeded their storage requirement of 959,000 gallons as calculated using TM 5-813-4. See Annex G-2 for storage requirement calculations.

4. Water Distribution.

a. General. Figures G-4-1 and G-4-2 provide a general water map of the Fort Drum water distribution system. The installation distribution system consisted of approximately 70 miles of 3-, 4-, 6-, 8-, 10-, 12-, and 16-inch cast iron, transite, and cement pipe and some 10-inch polyvinyl chloride (PVC) pipe. The system was approximately 45 years old. It had undergone hydraulic analysis back in 1985. In the airfield area,

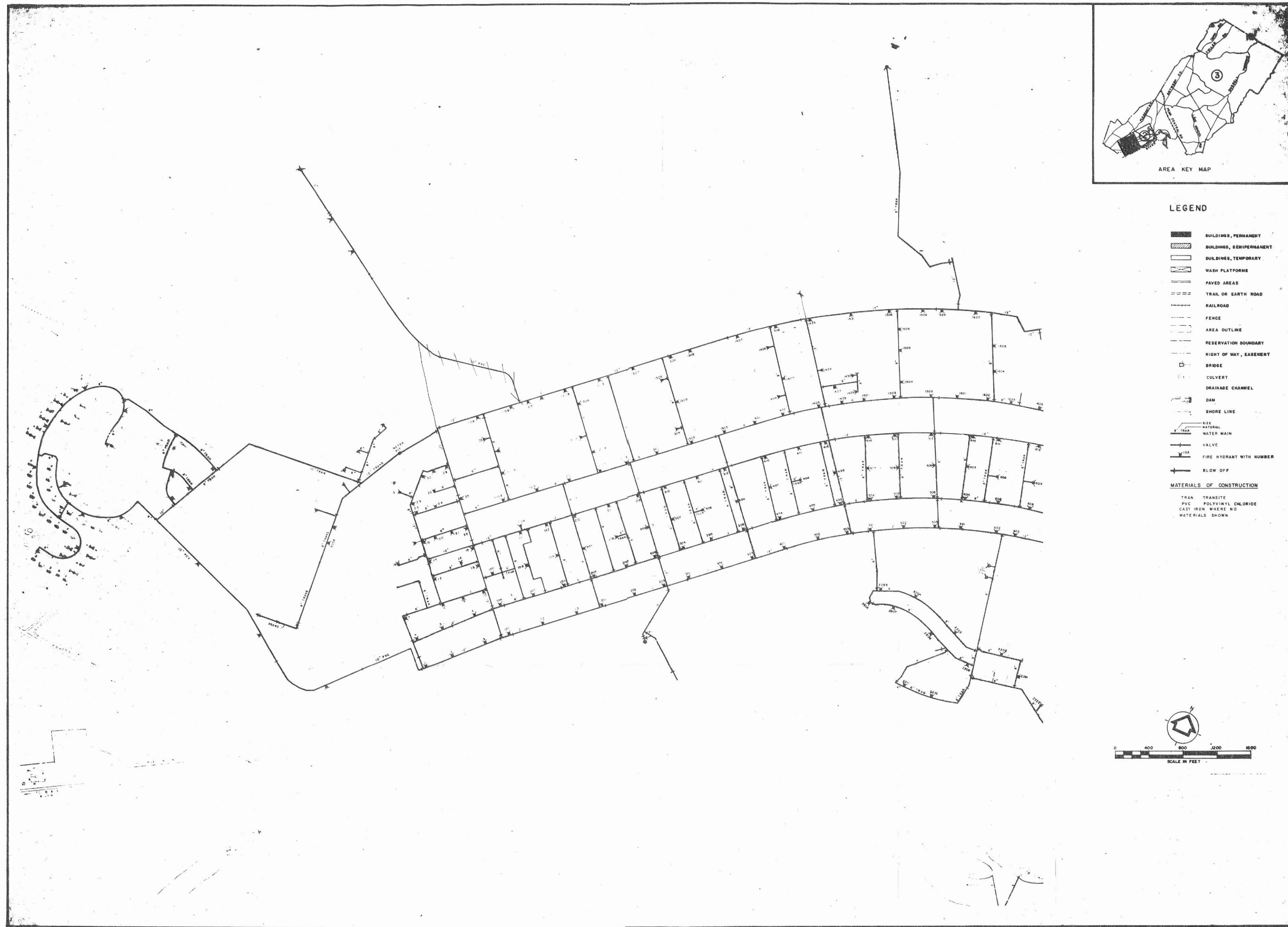


FIGURE G-4-1. FORT DRUM WATER DISTRIBUTION SYSTEM



FIGURE G-4-2. FORT DRUM WATER DISTRIBUTION SYSTEM

EOR No. 32-24-7140-89, 11-21 Oct 88

joints were said to be weak back in 1985 (reference 19), resulting in leaks from time to time. In May of 1988, a water distribution system coliform contamination study (reference 18) was performed by USAEHA to investigate a bacterial contamination problem. It was concluded that the problem arose due to the lack of maintenance on the distribution system. The old cantonment area of the Fort Drum distribution system was said to have been looped. Also, the new construction areas of the installation were being looped as well.

b. Water Main Flushing. Fort Drum flushed their potable water distribution system twice a year to remove settled or otherwise accumulated material in the water distribution lines. This frequency of flushing was adequate and complied with AR 40-5 and TB MED 576, paragraph 4-3b (reference 5). Though Fort Drum flushed their distribution system regularly, they did not have a documented flushing program to ensure program consistency in the future. Good engineering practice would be for Fort Drum to institute a written flushing program to help maintain continual periodic flushing of all water mains. These efforts should be coordinated with the Fort Drum PVNTMED Svc.

c. Potable Water Contingency Plan. Fort Drum did not have a Water Contingency Plan as required by AR 40-5 (reference 1). This plan is essential in order to address procedures necessary to be taken in emergency situations pertaining to the termination, curtailing, or contamination of the potable water supply. Also, the PVNTMED Svc personnel should be an integral part of this plan as contaminated water can be a major potential agent for the spread of disease. The contingency plan should contain, but not be limited to, the following:

- (1) Map of the distribution system.
- (2) Alternative source (s) of potable water.
- (3) List of potential emergencies that could cause an interruption and/or contamination of the potable water supply.
- (4) List of key operations where potable water supply is critical.
- (5) Procedures to evaluate disinfectant levels in the event of microbiological/chemical contamination.
- (6) Procedures for notification of residents and work force of emergency potable water considerations.

d. Cross-Connection Control. An organized Cross-Connection Control/Backflow Prevention Program was not in effect at Fort Drum in accordance with AR 40-5, paragraph 12-2f; TB MED 576, paragraph 4-2; and the New York State Sanitary Code for Drinking Water Supplies, part 5-1.31 (references 1, 5, and 13, respectively). An organized program includes instruction, inspection, and requires improvements in order to detect and remove all potential and existing cross-connections, as well as ensuring that proper measures (e.g., air gaps and other backflow prevention devices) are taken to prevent back siphonage. Only through routine inspection and periodic surveys can the control and elimination of existing and potential hazards be accomplished. Presently, new construction projects were incorporating backflow prevention devices, where necessary, on potable water lines. Also, Fort Drum had two water plant operators who were State-certified in the inspection of backflow preventers which could prove to be a great asset in the implementation of their future cross-connection control program. The USAEHA provided the Fort Drum DEH with additional information during the EOR to facilitate program completion (reference 17). Fort Drum needed to implement a formal Cross-Connection Control/Backflow Prevention Program without delay so that the installation would be in compliance with the State of New York and Army Regulations. Efforts to write and implement the program should be coordinated with the PVNTMED Svc.

e. Leak Detection/Disinfection of Repaired Water Mains.

(1) Fort Drum had an standing operating procedure (SOP), dated 15 February 1979, which described procedures to be followed in order to promptly and efficiently locate and repair water breaks or other malfunctions of water pumping equipment. This plan appeared to be adequate to detect water leaks and water equipment malfunctions if warning equipment identified in the SOP was still in working order. Though this SOP existed, DEH personnel were uncertain that it was still being used. If the SOP is still used, it would be in the best interest for Fort Drum to reevaluate the SOP to ensure that it was still adequate for their present water distribution system and that all warning equipment was still functional. Reference 21 provides excellent guidance on leak detection.

(2) Disinfection of new or repaired water mains were accomplished by guidelines set forth in AR 420-46 and TB MED 576 (references 3 and 5, respectively) as well as specific stringent cleaning guidelines set forth by the Fort Drum PVNTMED Svc.

EOR No. 32-24-7140-89, 11-21 Oct 88

D. Recreational Waters. Sanitary control and operation of Fort Drum's swimming pool was regulated under AR 40-5, AR 420-46, TB MED 575, and TM 5-662 (references 1, 3, 4, and 7, respectively).

1. Swimming Pool. Fort Drum operated and maintained one indoor swimming pool. This newly constructed indoor pool was a recirculation-type pool and was 290,648 gallons in capacity. It was cleaned using a high flow pressure sand filter with a 56.24 square foot surface area and a filter rate of 14.3 gpm/sq ft. The pool was disinfected with a 12 percent sodium hypochlorite solution and pH was adjusted using muriatic acid. Both chlorine and pH levels were continuously monitored using a Hydrotrack analyzer made by Hydrotech Systems, Ltd. This system automatically adjusted the chlorine and pH feed according to preset values. This system was calibrated every 2 months by DEH personnel using a Taylor chlorine and pH kit. Sodium bicarbonate was also added to the pool approximately every month for alkalinity control. It was reported by DEH personnel that four lifeguards were on duty while the pool was in operation. Lifeguards reportedly checked chlorine, pH, and temperature four times each day. Swimming pool logs were satisfactorily maintained. Lifeguards did not have the capability of adding additional chlorine. It was reported that PVNTMED Svc personnel acquired their required pool samples and performed pH, chlorine, and total coliform once per week. The PVNTMED Svc did have the capability of performing the Heterotrophic Plate Count (HPC) on the pool water as required by regulations; however, they did not perform the HPC analysis.

2. Natural Bathing Area. There was one natural bathing area, Remington Pond, also known as Saint James Lake, at Fort Drum. This area was only open from June to August. The PVNTMED Svc performed eight Fecal Coliform and Fecal Strep samples every other week while the area was open for use. It was thought that this area was going to be closed in the near future due to varying problems (i.e., cool weather and high coliform counts) encountered from time to time. With the new indoor pool, it may not be necessary to keep this area in operation.

E. Water Quality Monitoring.

1. Drinking Water Surveillance Program (DWSP). Until recently [calendar year (CY) 87], USAEHA, as part of its DWSP, routinely analyzed water samples for Fort Drum. The installation had been informed that routine analytical support from USAEHA would no longer be available (references 15 and 16, respectively). As a result, the installation was responsible for having its own samples analyzed in order to ensure compliance

with primary and secondary drinking water regulations. The Fort Drum DEH was in the process of writing a contract for the required sampling and analysis of their water distribution system. It was pointed out that it should be written into the contract that copies of the results be forwarded to the State, USAEHA, and the Fort Drum PVNTMED Svc. Fort Drum had also complied with the lead notification rule.

2. PVNTMED Svc.

a. The Fort Drum PVNTMED Svc had many requirements to follow as outlined in AR 40-5, AR 420-46, and TB MED 576 (references 1, 3, and 5, respectively). Continuous and effective coordination between the installation medical authority and the facilities engineer (DEH) is necessary to ensure the effective provision and sanitary control of the installation's potable water supply. In coordination with the facilities engineer, the installation medical authority has many specific responsibilities as delineated in AR 40-5, chapter 12; and TB MED 576, chapter 1, paragraph 1-6d; chapter 6, paragraph 6-3c(c); and chapter 8, paragraph 8-2, with respect to potable water quality. Some of these responsibilities include maintaining liaison with appropriate Federal, State, and local regulatory authorities regarding current drinking water regulations, interpreting results of water quality analyses, conducting programmed sanitary inspections of the entire potable water system on a yearly basis, coordinating fluoride surveillance, and maintaining records that reflect the chemical, radiological, and microbiological quality of the installation's potable water. The PVNTMED Svc performed some chemical analysis in their laboratory. The laboratory was not State-certified for Total Coliform: Membrane Filter Procedure. Bacteriological monitoring for regulatory compliance was accomplished by having the requisite number of monthly samples analyzed at a State-certified laboratory. As a result of the changes to the DWSP (references 15 and 16, respectively), the responsibility for conducting chemical analyses (either at the installation or at a contractor laboratory), reporting the results to the State, and maintaining records for regulatory purposes now rested with the facilities engineer. The PVNTMED Svc at Fort Drum was obtaining copies of analytical results to ensure that the installation maintained a safe source of drinking water. As with the case of obtaining chemical analysis, copies of records of microbiological analyses were being maintained at the PVNTMED Svc, as it is the responsibility of the PVNTMED Svc to provide information and guidance to the installation commander concerning certain water issues.

104^L

EOR No. 32-24-7140-89, 11-21 Oct 88

b. The Fort Drum PVNTMED Svc was complying with all Federal, State, local, and Army Regulations relating to medical surveillance and monitoring of the potable water quality. However, the PVNTMED Svc was not performing HPC analysis of the indoor swimming pool as required by Army Regulations. The PVNTMED Svc's performance of its role with respect to the water quality surveillance program was excellent. The relationship and communication with DEH was exceptional. The PVNTMED Svc was very much committed to ensuring that the drinking water was safe for consumption.

IV. CONCLUSIONS.

A. Fort Drum was directed to connect to the water supply system of the nearby town of Watertown by FY 90; however, with present and projected water demands the Fort Drum Plans and Operations Branch of DEH had proposed to add two additional wells to their potable water well field to supplement current water production until the Watertown system was connected (this Appendix, paragraph IIIC1b). Fort Drum should give consideration to this proposal.

B. The water treatment plant chlorine room was well ventilated but lacked a chlorine detection alarm in the event of a chlorine leak (this Appendix, paragraph IIIC2a).

C. The potable water quality at Fort Drum was meeting the requirements of the NPDWR, the NSDWR, and the New York State Sanitary Code for Drinking Water Supplies (this Appendix, paragraph IIIC2a).

D. The total water storage available at Fort Drum (2.75 mg) exceeded their storage requirement (959,000 gallons) (this Appendix, paragraph IIIC3b).

E. Fort Drum was adequately flushing their potable water distribution system as required by AR 40-5 and TB MED 576, Chapter 4. However, they needed to develop a documented flushing program to ensure program consistency in the future (this Appendix, paragraph IIIC4b).

F. Fort Drum did not have a Water Contingency Plan as required by AR 40-5 and TB MED 576, Chapter 9 (this Appendix, paragraph IIIC4c).

G. An organized Cross-Connection Control/Backflow Prevention Program was not in effect at Fort Drum in accordance with AR 40-5, paragraph 12-2f; TB MED 576, paragraph 4-2; and the New York State Sanitary Code for Drinking Water Supplies, part 5-1.31 (this Appendix, paragraph IIIC4d).

H. Fort Drum had an SOP which described the procedures to be followed in order to promptly and efficiently locate and repair water breaks or other malfunctions of water pumping equipment. Though this SOP existed, DEH personnel needed to look into the use, usefulness and adequacy of this SOP (this Appendix, paragraph IIIC4e).

I. Disinfection of new or repaired water mains was accomplished by guidelines set forth in AR 420-46 and TB MED 576 as well as specific stringent cleaning guidelines set forth by the Fort Drum PVNTMED Svc [this Appendix, paragraph IIIC4e(2)].

J. The Fort Drum PVNTMED Svc had the capability of performing the HPC on the indoor pool water as required by Army Regulations; however they did not conduct this required analysis (this Appendix, paragraph IIID1).

K. The Fort Drum PVNTMED Svc was complying with all Federal, State, local, and Army Regulations relating to the medical surveillance and monitoring of the Fort Drum potable water quality (this Appendix, paragraph IIIE2b).

V. RECOMMENDATIONS.

A. To ensure regulatory compliance, the following recommendations are made:

1. Forces Command (FORSCOM)-Fort Drum.

a. Implement a written, installation-wide Water Contingency Plan as explained in paragraph IIIC4c above (AR 40-5 and TB MED 576, Chapter 9).

b. Implement a written, installation-wide Cross-Connection Control/Backflow Prevention Program (AR 40-5, paragraph 12-2f; TB MED 576, paragraph 4-2; and the New York State Sanitary Code for Drinking Water Supplies, part 5-1.31).

2. U.S. Army Health Services Command (HSC)-Fort Drum U.S. Army Medical Department Activity (MEDDAC). Perform the HPC on the indoor swimming pool water (AR 40-5 and TB MED 575, Chapter 5, paragraph 5-1c).

EOR No. 32-24-7140-89, 11-21 Oct 88

B. To ensure good environmental engineering practices, the following recommendations are made for FORSCOM:

1. Equip the water treatment plant chlorine room with a chlorine leak detection system.
2. Give consideration to the DEH Plans and Operations Branch's proposal for the addition of two new (existing) wells so that Fort Drum is not faced with a water shortage in the near future.
3. Expand the present efforts of water main flushing with the implementation of a written flushing program.
4. Reevaluate the Fort Drum SOP for the procedures to be followed for locating and repairing water breaks or other malfunctions of water pumping equipment to ensure that it is still adequate for their present water distribution system and that all warning equipment is still functional. (Reference 21 gives excellent guidance on this subject.)

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EOR No. 32-24-7140-89, 11-21 Oct 88

ANNEX G-1

REFERENCES

1. AR 40-5, 30 August 1986, Preventive Medicine.
2. AR 200-1, 15 June 1982, Environmental Protection and Enhancement.
3. AR 420-46, 1 July 1978, Water and Sewage.
4. TB MED 575, 1 June 1982, Swimming Pool and Bathing Facilities.
5. TB MED 576, 15 March 1982, Sanitary Control and Surveillance of Water Supplies at Fixed Installations.
6. TM 5-660, 30 August 1984, Maintenance and Operation of Water Supply, Treatment, and Distribution Systems.
7. TM 5-662, 28 February 1986, Repairs and Utilities: Swimming Pool Operations and Maintenance.
8. TM 5-813-4, 20 September 1985, Water Supply: Water Storage.
9. TM 5-813-6, 20 October 1965, Water Supply: Water Supply for Fire Protection.
10. Public Law 93-523, 17 December 1974, Safe Drinking Water Act of 1974, as amended by Public Law 99-339, 19 June 1986, Safe Drinking Water Act Amendments of 1986.
11. Title 40, Code of Federal Regulations (CFR), 1987 rev, Part 141, National Primary Drinking Water Regulations.
12. Title 40, CFR, 1987 rev, Part 143, National Secondary Drinking Water Regulations.
13. New York State Sanitary Code, 1979, Drinking Water Supplies.
14. McGraw Hill Series in Sanitary Science and Water Resources Engineering, 1964, Water Resources Engineering.
15. Letter, USAEHA, HSHB-ME-WR, 21 November 1986, subject: Drinking Water Surveillance Program.
16. Letter, OTSG, DASG-PSP-E(M), 29 May 1986, subject: Change to the Army's Drinking Water Surveillance Program.

EOR No. 32-24-7140-89, 11-21 Oct 88

17. Letter, USAEHA, HSHB-AM-E, 28 August 1987, subject: Information Paper No. 42, Cross-Connection Control and Backflow Prevention.

18. Letter, USAEHA, HSHB-AG-E, 19 November 1987, subject: Water Quality Engineering Consultation No. 31-61-0101-88, Fort Drum, New York, 7-9 October 1987.

19. Letter, USAEHA, HSHB-EW-R/WP, 21 February 1985, subject: Potable/Recreational Water Quality Engineering Survey No. 31-24-0632-85, Fort Drum, Watertown, New York, 29 October - 2 November 1984.

20. Letter, USAEHA, HSHB-ME-WR, 8 March 1988, subject: Water Quality Questionnaire.

21. State of California, The Resources Agency, Water Audit and Leak Detection Guidebook No. 5, American Water Works Association California-Nevada Section, August 1986.

ANNEX G-2

WATER STORAGE CALCULATION*

1. Fort Drum has a 1 mg elevated storage tank, a 750,000 gallon in-ground reservoir, and two 500,000 gallon elevated storage tanks, providing a total storage capacity of 2.75 mg.

2. The required storage capacity is computed in accordance with TM 5-813-4 and TM 5-813-6†. The storage capacity shall not be less than the greatest value calculated using the following methods:

a. Method 1. Fifty percent of the average total daily domestic (atdd) requirement plus all industrial requirements.

(1) Fifty percent average daily demand (FY 88) = 1.12 mgd x 0.5 = 560,000 gallons.

(2) There is no industrial requirement.

(3) Total storage required = 560,000 gallons.

b. Method 2. The fire demand, which is the required fire flow for the fire period, plus 50 percent of the average domestic demand rate plus any industrial requirement that cannot be reduced during the fire period minus the amount of water available during the fire period.

(1) Fire flow (assuming two fires - one in an office area and one in troop housing) is estimated at 2,500 gpm for 4 hours plus 2,000 gpm for 2 hours: (2,500 gpm x 4 hrs + 2,000 gpm x 2 hrs) x 60 min/hr = 600,000 + 240,000 = 840,000 gallons

(2) Fifty percent average daily demand = 560,000 x 4/24 = 93,333 gallons (Fort Drum).

(3) There is no industrial requirement.

(4) Water available under emergency conditions (Well Nos. 3, 4, and 5 diesel generators operating) = 1,204,000/30 x 4 hrs/10.5 hrs + 2,957,000/30 x 4/7.3 hrs + 242,000/30 x 4 hrs/5.7 hrs = 75,000 gallons.

(5) Total storage required = 840,000 + 93,333 - 75,000 = 858,333 gallons.

See footnotes on page G-2-2.

c. Method 3. The sum of Methods 1 and 2 above, that is the sum of 50 percent of the atdd requirements, all industrial requirements for an average day that cannot be shut off during emergency conditions, and the required fire demand. The sum of the above items will be reduced by the amount of water available in 24 hours under emergency conditions.

(1) Fifty percent average domestic demand = 560,000 (see above).

(2) Fire demand = 840,000 gallons.

(3) There is no industrial requirement.

(4) Water available during 24 hours of emergency conditions = 450,000 gallons.

(5) Total storage required = $560,000 + 840,000 - 450,000$
= 959,000 gallons.

d. Greatest Method. The greatest storage requirement was found in Method 3, that is 959,000 gallons.

* Calculations done in accordance with TM 5-813-4 (reference 8).
† TM 5-813-6, Table B-1 (reference 9).



DEPARTMENT OF THE ARMY
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MARYLAND 21010-5422



REPLY TO
ATTENTION OF

HSHB-ME-SE

ENVIRONMENTAL OPERATIONAL REVIEW NO. 32-24-7140-89
10TH MOUNTAIN DIVISION (LIGHT INFANTRY) AND FORT DRUM
WATERTOWN, NEW YORK
11-21 OCTOBER 1988

APPENDIX H
SOLID WASTE MANAGEMENT REVIEW

I. REFERENCES. Annex H-1 contains the references cited in this Appendix.

II. PURPOSE. Review the solid waste management program at Fort Drum for regulatory compliance and sound environmental practice.

III. REGULATORY BACKGROUND.

A. Federal. Title 40, Code of Federal Regulations, Part 257 contains Federal criteria on solid waste management. The U.S. Environmental Protection Agency (EPA) is presently working to issue new solid waste disposal facility regulations in Parts 257 and 258 (reference 1).

B. New York. State regulations are contained in the New York Compilation of Rules and Regulations, Title 6, Chapter 360, Solid Waste Management Facilities (reference 2).

C. Army Regulation. Army Regulation 420-47 contains the U.S. Army's regulations on solid waste management (reference 3).

IV. FINDINGS AND DISCUSSION.

A. Solid Waste Management. The solid waste program at Fort Drum was operating very well under the Refuse and Recycling Branch.

1. Major Producers of Waste. The major producers of waste on Fort Drum are the mess halls (by group), the commissaries, and some supply shops. Much of the waste, especially from the commissaries and the supply shops, is cardboard which is now being recycled. Family housing and the mess halls produce the heaviest waste, a concern because Fort Drum pays for disposal by the ton. The weight probably comes from water, metal, and glass.

2. Storage.

a. Solid waste at Fort Drum is collected in 8-cubic yard and 4-cubic yard (less than ten) dumpsters around the Main Post, and in 50-gallon plastic wheeled cans in the family housing area. They presently have 300 dumpsters and anticipate going up to 400 once the new cantonment area is complete. In addition, a contractor keeps special 2-cubic yard dumpsters at all food processing facilities for grease (at least 10 were observed, but Fort Drum has approximately 50 mess halls).

b. There are two compactor units under local contract; one at each of the commissaries. In addition, the Refuse and Recycling Branch (Bldg 679) and the new commissary each have a bailer for recycling cardboard.

c. Fort Drum has a dedicated garbage can washing facility south of the airfield. The Directorate of Engineering and Housing (DEH) washes dumpsters on a schedule based on the types of waste they receive. It includes a boiler plant to generate steam and hot water for cleaning, an outside wash pad for the dumpsters, and an indoor washing facility for small cans and field mess equipment. The operators used to use acids and strong soaps for cleaning, but have discontinued those and now use milder biodegradable soap and pine oil cleaners. The washing facility closes down during the freezing months of winter. The dumpsters observed were quite clean and odor-free, as was the washing facility. The only reported pest problem is an occasional raccoon. The DEH handles them by putting a board in the dumpster so the animal can crawl out on it's own. The major dumpster problem noted during this EOR was that most users leave the lids open. This allows easy access to pests and increases the weight of the wastes during rain and snow. Fort Drum is paying over \$40 ton for disposal, so excess weight is expensive. In addition, the DEH has not labeled the dumpsters receiving food wastes as specified in AR 420-47.

3. Collection and Transportation.

a. Tricil, Inc. collects waste from the compactor units at the commissaries. The Fort Drum DEH collects waste everywhere else on post. The DEH has three front-loader compactor trucks for collection around the Main Post, and one rear-loader for family housing.

b. Wastes are disposed offpost at a commercial landfill (Tricil, Inc.). This landfill is about 7 miles south and east of the Main Post near the town of Felts Mill. All trucks going

EOR No. 32-24-7140-89, 11-21 Oct 88

there leave via Gate 2, by the Army and Air Force Exchange Service (AAFES) gas station. The landfill's permit expired recently, and because of measured leachate which exceeds New York limits, the permit could not be renewed. However, since this is the only landfill in the region, the State has granted them a consent order to accept waste and operate normally in what is now officially their closure mode. They will continue to operate under this status until a new regional landfill is developed. Fort Drum paid \$38 ton for disposal in early 1988. This has risen to \$42 ton at present and is expected to rise to \$48 ton within a year. Total disposal costs in fiscal year (FY) 88 were \$237,000.

B. Solid Waste Disposal.

1. Active Onpost Landfill.

a. The only active onpost landfill is known as the wood dump. It is located north of the Main Post near the post boundary (see Figure H-1). It is supposed to be a trench landfill, but it is really operated using the area fill method. It covers about 2 acres. The soils are clay-rich and have low permeability.

b. The DEH opened the wood dump in 1986. It is intended for their use only. The entrance now has a gate which is only open if a DEH operator is onsite. One large bulldozer is the only large piece of equipment kept at the landfill. The DEH also keeps a number of dumpsters at the landfill for disposal of nonconstruction wastes that might make their way to the site. The DEH keeps a log of how many truckloads are disposed. The landfill received 15,000 cubic yards of waste in FY 88. Although the DEH has no firm projection, they expect to operate the landfill for many years.

c. Most New York regulations for landfills are waived for those landfills that accept only inert construction debris and that operate for 1 year or less. In order to try and meet the second requirement, Fort Drum is trying to close each new cell at the wood dump in 1 year or less with limited success. This may be a marginal interpretation of the regulation and should be approved in writing by the State.

d. When first inspected by the U.S. Army Environmental Hygiene Agency (USAEHA) in 1987, the wood dump had a number of problems. These included dumping of the wrong types of waste and a lack of security. These problems have since been dealt with. A new problem is the disposal of sewage wastes at this landfill. These wastes are not inert construction debris which is the only

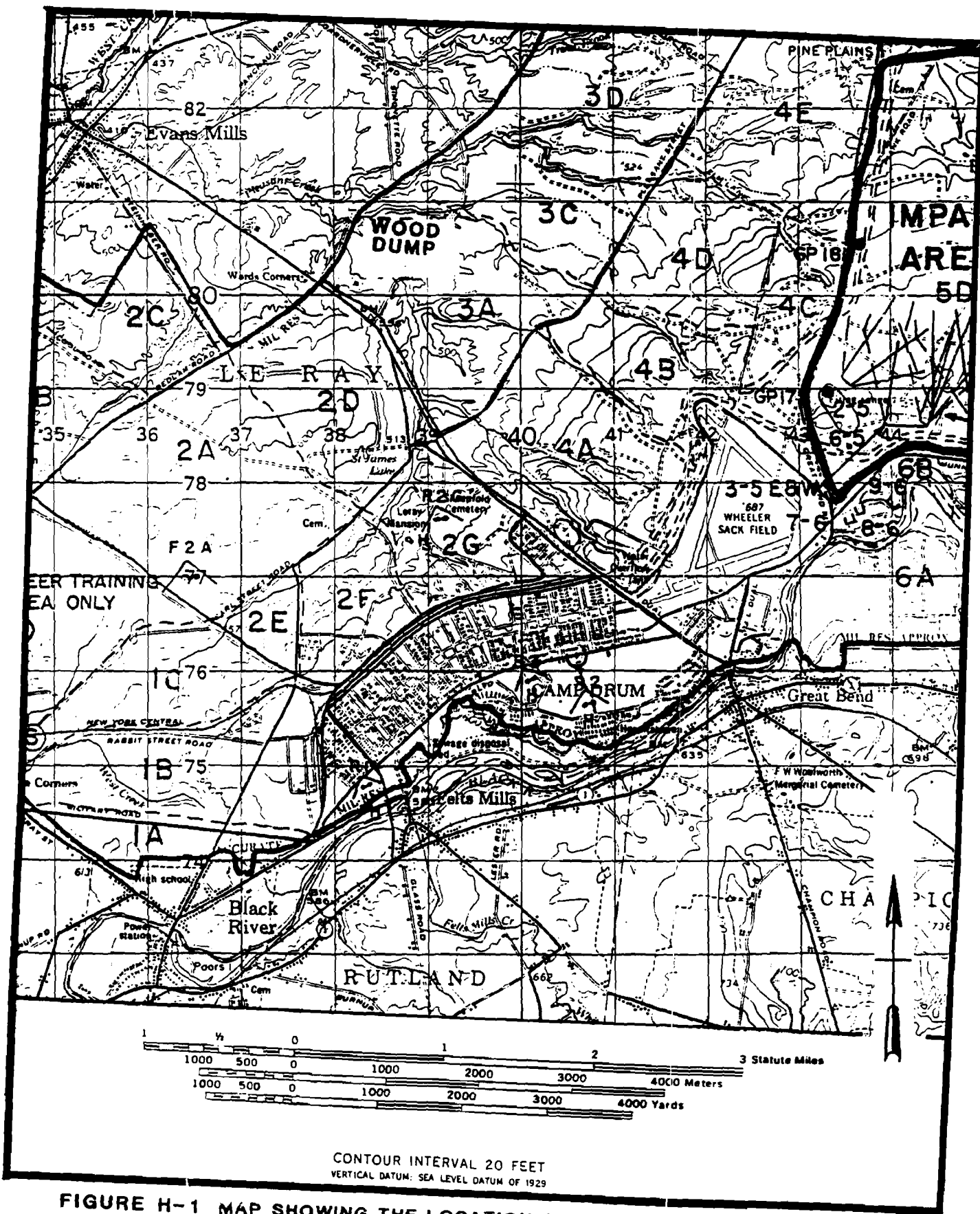


FIGURE H-1 MAP SHOWING THE LOCATION OF THE WOOD DUMP.

EOR No. 32-24-7140-89, 11-21 Oct 88

waste that can be legally disposed. The sewage wastes come from the bar screen at the sewage pumping station (formerly the post sewage treatment plant) and from various sumps and drains around post. This is improper dumping and should be stopped. Fort Drum personnel were aware of this problem and were trying to address it during the end of our site visit.

e. Contractor's Construction Debris Landfill. A contractor's construction debris landfill is at the same location as the wood dump. It appears to be operating within all regulatory constraints. However, there is no operator onsite, and the only security is a cable across the entrance which is only locked during nonworking hours. Again, this landfill must be closed within 1 year of its startup date in order to comply with New York regulations.

2. The Table shows a breakdown of how most solid waste is handled onpost. Recycling is a growing method of managing waste and is increasingly used at Fort Drum. This is further discussed below.

TABLE. TOTAL ESTIMATED WASTE PRODUCTION AND HANDLING AT FORT DRUM, 1988

Cubic Yards	Tons	Ultimate Disposition
33,400	6,200	offpost landfill
15,000	2,300	wood dump
22,000	3,300	recycled
Total		
70,000	11,800	

3. Proposed New Landfill. Fort Drum has been pursuing a permit for a new onpost landfill for the contingency that a planned large regional landfill is never developed. This is unlikely, since the region needs a landfill as much as Fort Drum. Fort Drum has already expended quite a bit of time and expense in trying to permit the new site. However, the State has recently said there is still not enough information to even review the application. Similarly, USAEHA has never endorsed this location as a site for a landfill (reference 5). We

conducted a site selection study a number of years ago, but Fort Drum is now considering a different location. In addition, a new landfill, properly run, is going to require a number of new personnel and long term monitoring. It also raises the possibility of future contamination requiring remedial measures. However, obtaining a permit for a landfill does not mean that Fort Drum will ever have to use the landfill.

4. Infectious Waste Incinerator. This is the only incinerator on post. Fort Drum has also used it as a classified documents incinerator. During this EOR, it was well operated, as was confirmed by a State inspector. The operators dispose of the ash in a nearby dumpster. No one has tested the ash for hazardous characteristics (heavy metals).

5. Inactive Landfills.

a. Fort Drum has a number of inactive landfills. They have included these sites as solid waste management units in Fort Drum's Part B application for a hazardous waste storage and treatment permit, as required (reference 4). The two largest landfills are located near the Main Post, one immediately northeast, and the other just east of Wheeler-Sack Airfield (see Figure H-2).

(1) The landfill northeast of the Main Post is the older of the two. It was developed to the edge of a stream. It operated from 1940 to 1973 (reference 8). It covers 40 to 50 acres and consists of two major cells divided by a deep ravine. According to some reports, the landfill received DDT, petroleum-saturated wastes, paint waste, and unused ammunition in addition to regular solid waste from mess halls, administration and housing (reference 8). Many barrels are now exposed along this bank. In addition, a large spring issues forth from the base of the landfill. The installation has covered about 38 acres of the site with a 0.20 mil polyvinyl chloride liner. They also added a soil cover, revegetated the site, and posted it. The State is considering designating this a hazardous waste site (reference 6). There is further discussion of this site in the ground water section of this EOR (Appendix D).

(2) The landfill east of the airfield operated from 1973 until last year. It covers about 10 acres. It received solid waste from the mess halls, administration, housing, maintenance shops, and training units. Fort Drum closed the site early in 1988. They covered a portion of the site with a polyvinyl chloride liner, and the entire site is covered with soil and revegetated. Again, there is further discussion of this site in the ground water section of this EOR (Appendix D).

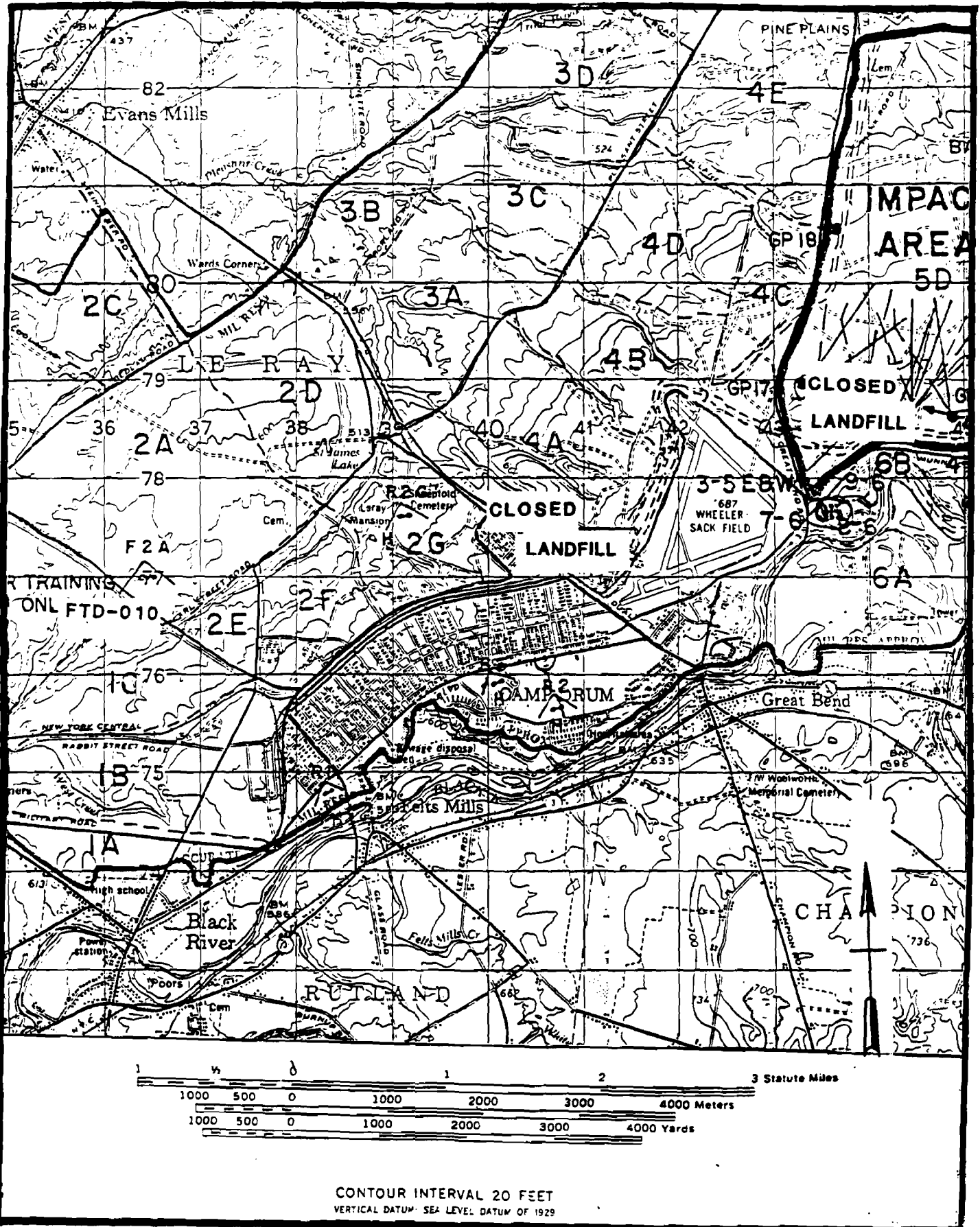


FIGURE H-2 MAP SHOWING THE TWO CLOSED LANDFILLS NEAR THE OLD MAIN POST, FORT DRUM, NY.

b. Field units used many locations as dump sites while on maneuvers. The locations of these sites are not generally known by DEH personnel. The DEH has setup a dumping station consisting of a dozen or so dumpsters next to the central wash rack where all vehicles are washed after an exercise. Troop participation appeared to be very good during this EOR. This was an excellent solution to the problem of improper dumping.

6. Power Plant Ash. The new power plant is a contractor owned/contractor operated activity. The contractor is responsible for proper disposal of all ash. They anticipate producing 35,000 tons/year of ash. The plant operators plan to test the ash to determine proper management and disposal. They propose to dispose of the ash in a landfill in Pennsylvania. If it tests nonhazardous, they will also petition the New York Department of Environmental Conservation (DEC) to sell the ash in New York as a soil supplement or to cement companies. Sludge from the coal pile runoff basin will be pumped back onto the coal.

C. Recycling.

1. Recycling is the highest form of waste management. It reduces the need for raw materials and reduces the amount of waste that must be disposed. The direct monetary return from recycling at Fort Drum may not be large, but the cost savings from lowered disposal costs are substantial. Fort Drum has recently initiated an aggressive plan (reference 7) to expand and promote it's recycling program. They concluded the greatest area of expansion lies in family housing. They were trying new ways of advertising the recycling program and thinking of ways to make recycling easier, and therefore, more attractive. As with anything on a military post, command emphasis is the most important aid. Everyone connected with the program at Fort Drum was enthusiastic and knowledgeable. They should be encouraged and supported. At the present (and rising) disposal cost of \$42 ton, recycling is an attractive option.

2. At present, Fort Drum has recycling operations which include at least the following materials: computer paper and cards; used petroleum products; solvents; newspaper; office paper; glass; metal; photographic waste containing silver; and kitchen grease. Annex H-2 contains a summary of recycling at Fort Drum.

3. Canadian Oil, Inc. removes the used petroleum products and transports them to Canada for recycling. This contract is setup so Canadian Oil buys all the product for 1 dollar per year. Personnel at Fort Drum anticipate negotiating a

EOR No. 32-24-7140-89, 11-21 Oct 88

more cost effective contract once they have better control of waste segregation. If they can assure a more consistent product, they can demand a higher price.

V. SUMMARY AND CONCLUSIONS.

A. Except for a few minor problems with the dumpsters, the storage, collection and handling of solid waste on post is very good.

B. Solid waste is disposed in a State-approved landfill off post. Fort Drum is 1 of about 17 local communities that require the services of a regional landfill.

C. The wood dump only marginally qualifies as a construction debris landfill. It has operated for more than 1 year, and it has received nonconstruction wastes.

D. The State is beginning to direct action at the two large closed municipal landfills on Fort Drum.

E. Fort Drum has recently initiated an aggressive program to expand and encourage participation in it's recycling program. Everyone connected with the program at Fort Drum was enthusiastic and knowledgeable. They should be encouraged and supported.

VI. RECOMMENDATIONS. We recommend the following based on regulatory requirements:

A. Keep lids closed on dumpsters, especially those which receive food wastes (AR 420-47, section 3-4).

B. Mark all dumpsters receiving food wastes as specified in AR 420-47, section 3-4b(5).

C. Obtain a letter from the State approving the operation of the wood dump (NY Title 6, Chapter 360).

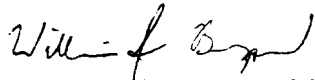
D. Discontinue dumping sewage wastes at the wood dump (NY Title 6, Chapter 360).

E. Close the contractors construction debris landfill after 1 year of operation as per State regulations (NY Title 6, Chapter 360).

F. Test the incinerator ash for EP Toxicity (40 CFR 261).

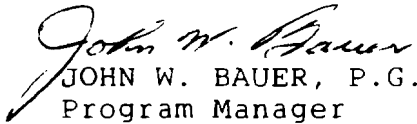
EOR No. 32-24-7140-89, 11-21 Oct 88

G. Continue informing people post-wide of recycling opportunities and encourage their participation (AR 420-47, chapter 5).



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EOR No. 32-24-7140-89, 11-21 Oct 88

ANNEX H-1

REFERENCES

1. 53 Federal Register 33314, Aug 30, 1988, EPA proposed regulation to revise RCRA Criteria for municipal solid waste disposal facilities and practices.
2. New York Compilation of Rules and Regulations, Title 6, Chapter 360, Solid Waste Management Facilities
3. Army Regulation 420-47, 1 December 1984, Solid and Hazardous Waste Management.
4. Report, USAEHA, HSHB-ME-SE, in progress, subject: Hazardous Waste Consultation 37-26-1673-89, Evaluation of Solid Waste Management Units, Fort Drum, New York, 13-17 July 1987.
5. Letter, USAEHA, HSHB-ES-E, 12 June 1985, subject: Solid Waste Disposal Study No. 38-26-0444-85, Landfill Site Selection Study, Fort Drum, Watertown, New York, 17-24 September 1984.
6. Letter, New York State Department of Environmental Conservation, January 13, 1987, subject: Closed Landfill, Great Bend Road and Oneida Avenue, Fort Drum, New York (DEC Site No. - 632008).
7. Letter, 10th Mountain Division and Fort Drum, 29 July 1988, subject: AR 420-47 Supplement, Procedures for Fort Drum Solid Waste Management Recycling.
8. Installation Assessment of Fort Drum, New York, July 1981, prepared for the U.S. Army Toxic and Hazardous Materials Agency (Report No. DRXTH-ES-IA-81186).
9. Remedial Investigation of Fort Drum, New York, 22 August 1986, prepared for the US Army Toxic and Hazardous Materials Agency (Report No. AMXTH-AS-CR-85054).
10. Title 40, Code of Federal Regulations (CFR), 1987 rev, Part 243, Guidelines for the Storage and Collection of Residential, Commercial and Institutional Solid Waste.
11. Title 40, CFR, Part 261, Identification and Listing of Hazardous Waste.

EOR No. 32-24-7140-89, 11-21 Oct 88

ANNEX H-2

SUMMARY OF THE RECYCLING PROGRAM AT FORT DRUM, NEW YORK

This is a very rough estimate, based partly on some of Fort Drum's recycling history, and partly on their projections. Although an inexact figure, it does indicate the magnitude of impact recycling can make.

TABLE. SUMMARY APPROXIMATION OF THE FORT DRUM RECYCLING EFFORT

Waste	Annual Generation Rate(tons)	Estimated Market Price	Estimated \$/tn Unless Shown Different	Estimated Revenue in \$	Estimated Avoided Cost in \$	Estimated Total Benefit in \$
Computer Scrap Paper	16-60	\$100/ton	42	2,000	800	2,800
Cardboard	250-800	\$50/ton	42	12,500	11,000	23,500
Used Oil	37,000 gallons	\$1/year	10/gal*	0	370,000	370,000
Office Paper	60	\$100/ton	42	6,000	2,500	8,500
Newspaper	240	\$45/ton	42	11,000	10,000	21,000
Metal	Unknown	Unknown	42	0	Unknown	0
Grease	Unknown	0	42	0	Unknown	0
Bottles/ Cans/ Plastics	Unknown	Unknown	42	0	Unknown	0

Approximate annual worth of recycling - E425,800

* Disposal cost as hazardous waste



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MARYLAND 21010-5422



HSHB-ME-WS

ENVIRONMENTAL OPERATIONAL REVIEW NO. 32-24-7140-89
10TH MOUNTAIN DIVISION (LIGHT INFANTRY) AND FORT DRUM
WATERTOWN, NEW YORK
11-21 OCTOBER 1988

APPENDIX I
WATER POLLUTION/SPILL PLAN REVIEW

1. REFERENCES. See Annex I-1 for a listing of references.
2. PURPOSE. To assess Fort Drum's compliance with the mandatory requirements of Federal, State, local, and Army environmental regulations with respect to wastewater management and spill prevention/control practices at the installation. Regulatory areas addressed during this review included:
 - a. Compliance with provisions of the Clean Water Act.
 - b. Compliance with New York State Waste Pollution Regulations.
 - c. Compliance with New York State Oil Spill Prevention and Control Regulations.
 - d. Compliance with rules and regulations governing underground storage tanks (UST's).
 - e. Compliance with spill plans preparation and implementation requirements.
 - f. Compliance with Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA).
3. FINDINGS AND DISCUSSION. A summary table of regulatory compliance is included in Annex I-2.
 - a. Wastewater Review.
 - (1) Sewage Treatment Plant (STP). The STP was no longer in operation and except for the head works (bar screen, grit chamber, comminutor, and parshall flume), has been abandoned (August 1987). Wastewater generated on the installation was being treated by the city of Watertown. Sewage was conveyed to the City's STP by sewer lines owned and operated by the Development Authority of The North Country (DANC). The DANC

assessed Fort Drum a conveyance fee based on the amount of wastewater generated by the installation. Wastewater flow from the old cantonment area was being monitored at the STP head works using a parshall flume measuring device and flow recorder. Wastewater flow from the new cantonment area was being monitored at the North Entry Road pumping station.

(2) Sanitary Debris Removal. Sanitary debris from the bar screen was being disposed of at the wood dump illegally. Inert construction debris is the only waste that can be legally disposed of at this landfill. According to installation personnel, this practice has been corrected since the time of the Environmental Operational Review (EOR). Debris from the STP head works will be removed to the existing STP drying beds with final disposition to an offpost sanitary landfill.

b. State Pollutant Discharge Elimination System (SPDES) Permit.

(1) Existing Permit. Discharge of pollutants into the waters of the State (including underground water) are regulated by the New York SPDES permit program (reference 10). An SPDES permit (No. NY0026905) has been issued to Fort Drum, effective 1 May 1988, by the New York State Department of Environmental Conservation (NYSDEC). Permitted facilities include the can wash septic tank leaching pit (outfall No. 002 - subsurface discharge) and overflow bypasses at three sanitary sewage pump stations [outfall No.(s): 003 - surface discharge, 004 and 005 - subsurface discharge]. There were no monitoring requirements. Conditions of the permit include:

(a) Except for outfall 002, all other outfalls are to be used in emergency situations only.

(b) Maintain a written record of all known overflow and bypasses.

(c) Overflows or bypasses of untreated sewage to the Black River shall be immediately reported to the city of Watertown Water Department and to the NYSDEC.

(2) STP Bypass. Sanitary sewage generated at the old cantonment area was conveyed by sewer lines to a wet well located at the STP. Sewage from the wet well was transferred to the DANC sewer system by pump. The wet well was equipped with an overflow bypass which discharged to the Black River (SPDES outfall 003). Review of Operations and Maintenance Division records indicated that the STP pump station had experienced power failures in the

past resulting in overflow of sewage from the wet well to the Black River (reported to the NYSDEC). The pump station was equipped with an emergency generator, but failure of the pump control system (automatic switch over) resulted in the pump station being shut down for several hours (personnel unaware of the failure). The pump station had been equipped with a remote telephonic alarm system; however, a dedicated phone line had not been installed. In order to prevent/reduce discharge of sewage to the river during pump station failure, installation of the dedicated phone line should be expedited.

(3) Hangar Drainage. The 3-25th Assault Helicopter Battalion utilized the old hanger, building (Bldg) 2059, for helicopter maintenance. Helicopters, including engines, were routinely washed within the hanger. Wastewater from this activity was discharged to the installation storm drainage system by way of hangar floor drains. Drainage water containing detergent was observed at the outfall of the drainage pipe servicing the hangar (discharges to Pleasant Creek). An absorbent oil recovery boom was in place below the outfall discharge pipe. This point source discharge was in violation of the New York Environmental Conservation Law (NYECL) because the discharge was not regulated by an SPDES permit.

(4) Wastewater Holding Pond. Wastewater from floor drains and the vehicle wash area at the New Jersey National Guard maintenance facility (Bldg P-6000) was being discharged to a holding pond located adjacent to the maintenance facility. The wastewater was not treated and was allowed to evaporate and/or percolate into the ground. The pond was equipped with an overflow bypass channel. In the event that the pond's capacity is exceeded, (excessive runoff during a storm) wastewater would be discharged to a nearby storm water drainage ditch. The holding pond was in violation of State law because the bypass and subsurface discharges are not regulated by an SPDES permit.

(5) Maintenance Facilities Floor Drains. Fort Drum has numerous vehicle maintenance facilities. Inspection of several Directorate of Logistics (DOL) maintenance shops and installation Support Maintenance Activities (old cantonment area) revealed that the principal source of industrial wastewater was from wash and steam cleaning operations (vehicles, engines, etc.). Wastewater from these operations was being discharged into floor drains. Maintenance and plumbing shop personnel indicated that a majority of the floor drains at these facilities were discharging to leaching pits or to the storm water drainage systems without treatment. Unpermitted wastewater discharges to the environment are in violation of State law. Minimal treatment would require

the wastewater to be processed through an oil/water separator prior to discharge (SPDES permit would be required). An alternative method of disposal would be to discharge the wastewater directly into the sanitary sewer. It was not practical to inspect and identify the final discharge point of floor drains at every maintenance facility during the course of this review. This project should be undertaken by the installation.

c. Storage Facilities.

(1) Major Facility. Major petroleum facilities (storage of 400,000 gallons and over) are required to be licensed under the provisions of article 12 of the New York Navigation Law (reference 11). Fort Drum had a total combined aboveground and buried petroleum storage capacity of over 400,000 gallons and had been issued a Major Petroleum Facility Storage License (No. 88-06-1200) by the NYSDEC effective 13 April 1988. In complying with the conditions of the license, the installation has submitted to the NYSDEC (region 6) an inventory of all underground and aboveground petroleum storage tanks (required by 30 June 1988) including relevant information (No., location, leak detection, etc). However, tightness testing of unprotected underground petroleum storage tanks (tanks 10 years old or of unknown age) had not been completed (test required by 27 December 1987). Department of Engineering and Housing (DEH) personnel indicated that the installation was in the process of contracting out for tank testing services. The Fort Drum underground tank testing program should be initiated as soon as possible in order to bring the installation into compliance with New York State underground tank testing requirements (reference 12). In addition, the installation UST program should ensure compliance with Federal technical standards and corrective action requirement regulation for UST (reference 5, effective 22 December 1988).

(2) Petroleum Facility Inspection. Inspection of Fort Drum's petroleum facilities by the NYSDEC (references 15 and 16) identified several deficiencies with installation petroleum operations including:

(a) Loading area drain valves (fuel loading areas along gasoline alley) are not being kept in the normally closed position (opened only during supervised discharge). The NYSDEC recognizes that this procedure is not practical because of the area's cold climate and has requested that oil/water separators be designed and installed to accommodate each loading rack drainage area.

(b) Some type of containment device is needed at the overhead loading arm (prevent product drippage). The device should be designed to direct all product drippage into the tank truck or back into an appropriate collection container.

EOR No. 32-24-7140-89, 11-21 Oct 88

(c) Transfers of fuel from vehicle to vehicle are done in areas where there is no containment over porous/sandy soil. Any spillage at these fueling points contributes over time to significant deterioration of ground-water quality and is unacceptable.

(d) Service pumps located on Gasoline Alley are located over sandy soil without any secondary containment. This creates the same potential for ground-water contamination identified above.

The installation should expedite remedial action to correct deficiencies identified by the NYSDEC.

(3) UST Notification. Federal law required registration of all UST's by 8 May 1986, unless exempt (reference 5). The U.S. Environmental Protection Agency (EPA) has designated the DEC at Albany, New York (Bulk Storage Section, Division of Water) as the agency to receive notification of UST(s) in the State of New York (reference 5 Appendix II). An official contacted at DEC (reference 17) indicated that Fort Drum was registered as a Major Petroleum Facility (State requirement); however, the DEC did not have an official record of UST registration at Fort Drum (Federal requirement, EPA Form). The installation should contact the Albany office of the DEC to determine what UST information must be submitted to bring Fort Drum into compliance with Federal UST registration requirements.

d. Spill Prevention Control and Countermeasure Plan (SPCCP). The installation, as an operator of a major petroleum facility, had prepared and implemented an SPCCP in accordance with Federal, State, and Army regulations (references 1, 4, and 11). However, the plan was found to be inadequate. Review of the plan and inspection of several maintenance and storage facilities revealed the following deficiencies:

(1) Two 1,000 gallon storage tanks containing kerosene and one 1,000 gallon storage tank containing fuel oil were located at the New Jersey National Guard (NJNG) maintenance facility (50th Armored Division MATES). There were no containment structures at any of the tanks. The kerosene tanks were positioned approximately 5 feet away from a storm drain. In the event of a major spill, spilled fuel would flow uncontrolled into the storm drainage system. The fuel storage tanks were not included as part of the NJNG potential spill site addressed in the SPCCP (site No. 2, Appendix 13).

(2) The DOL petroleum, oils, and lubricants (POL) storage area located behind the J. L. Jones heat generation plant was not included in the SPCCP. There were approximately 45-50 drums (55-gallon) stored at this site. The area was grass covered and enclosed by a chain link fence. There was no containment structure (berm) at this site.

(3) Two tank cars (10,000-gallon each), used for waste oil storage, had not been adequately addressed in the SPCCP. The two tank cars were located on a spur track adjacent to the round house. The cars are used for temporary storage of waste oil from waste oil collecting points (in the event waste oil contractor cannot remove oil in time to prevent overfilling). There were no containment structures at this site. If the installation plans to continue to use the tank cars for storage of waste oil, identification of this site in the spill plan should be expanded to conform to SPCCP requirements (exact location, potential for spill, containment, etc.).

(4) Field training exercises are routinely conducted on the Fort Drum installation. Field operations include hot refueling of helicopters at remote sites which involved field storage and portable fueling facilities. These types of mobile refueling operations should be addressed in the SPCCP in accordance with Army requirements (reference 1, paragraph 8-8).

(5) Gasoline dispensing stations along Gasoline Alley are located on sand and gravel areas. Spill events at pump dispensers at these stations would result in contamination of surrounding soil with the potential for ground-water contamination (ground-water contamination at this area is discussed in Appendix D). In order to minimize the contamination of soil and ground-water, in accordance with Army Regulation, the installation should consider providing concrete paving at the fuel pump dispensing areas. The potential for environmental contamination and the need for spill prevention modification at these sites should be discussed in the SPCCP.

(6) Army Regulation (reference 1, paragraph 8-6) requires that hazardous substance (defined in reference 7) stored in quantities that would present a threat to human health or the environment if a release should occur will be identified and addressed in the SPCCP. Pesticide storage (Bldg S-2017) and hazardous waste storage (Bldg T-4819) were the only hazardous substance sites identified in the SPCCP. Deficiencies found at these and other hazardous substance storage sites are identified in Appendix E and F of this report.

EOR No. 32-24-7140-89, 11-21 Oct 88

(7) The SPCCP should be expanded/ revised to correct deficiencies identified above in conformance with SPCCP requirements (references 1, 5, and 13). It was not practical to inspect all of the facilities at Fort Drum during this review. Environmental office personnel should undertake a survey of the entire installation to ensure that all potential spill sites have been identified and addressed in the SPCCP, including the locations where reportable quantities (defined in reference 7) of hazardous substances are stored. In addition, as new construction and expansion of facilities and activities at Fort Drum are completed, the spill control section of the SPCCP will have to be revised to include additional oil, fuel, pesticide, and hazardous material/waste storage areas.

e. Installation Spill Contingency Plan (ISCP). The ISCP and SPCCP were part of the same document. Elements of the ISCP were inadequate. The ISCP does not clearly identify the Installation On-Scene Coordinator (IOSC). An IOSC, with authority to commit installation resources and funds during an oil/hazardous spill cleanup effort, should be predesignated by the installation commander. The ISCP needs to be expanded to include more detailed information on the composition and duties of the installation response team (IRT). Quantity and location of manpower, equipment, and material resources should also be expanded. In addition, emergency points of contact and phone numbers, as well as reportable quantity listings for hazardous material spills, need to be updated. Additional information on ISCP requirements can be found in references 1 and 13.

f. SARA Title III.

(1) Title III of SARA is known as the Emergency Planning and Community Right to Know Act of 1986. Its purpose is to protect communities living near commercial industrial facilities from catastrophic release of toxic substances. Title III, by its wording, does not apply to Federal facilities. However, the Department of Defense (DOD) endorses the overall objective of the Act, which is to protect the public in the event of a release of toxic materials. As a matter of policy, all DOD components should comply with the conceptual objectives of the Act to the extent practicable (reference 14). As guidance, the DOD suggests the following:

(a) The SPCCP be upgraded to include hazardous materials.

(b) The ISCP include the requirement for training the IOSC in hazardous materials response.

(c) Notification of the Local Emergency Planning Committee (LEPC) in the event of a release of a reportable quantity of hazardous material.

(d) The installation should identify one official to act as the point of contact for the LEPC.

(2) The chief of the Fort Drum Environmental Division has been appointed as an advisory member to the LEPC. However, the SPCCP and ISCP did not address the requirements of Title III of SARA in accordance with DOD policy. Identification of extremely hazardous substances and locations where reportable quantities are stored (identified in reference 8) should be included in the SPCCP. The ISCP should be revised to include potential releases of extremely hazardous substances and to provide for notifying the LEPC in the event of a release of any of these substances.

4. CONCLUSIONS.

a. The STP was no longer in operation; wastewater generated on the installation was treated by the city of Watertown.

b. In the future, sanitary debris from bar screens at the abandoned STP will be disposed of at an offpost sanitary landfill.

c. The remote telephonic alarm system for the STP pumping station was not in operation.

d. Some wastewater discharges are not being regulated by an SPDES permit as required by State law.

e. Fort Drum has been licensed as a Major Petroleum Facility under New York State law.

f. Deficiencies with installation petroleum operations have been identified by the NYSDEC.

g. The installation was not in compliance with New York State UST testing requirements.

h. The installation was not in compliance with Federal UST notification requirements.

i. The SPCCP and ISCP were found to be deficient.

5. RECOMMENDATIONS.

a. To ensure regulatory compliance, the following recommendations are made:

(1) To avoid future discharge of sewage at the STP bypass, install a dedicated telephone line for the alarm system at the STP pumping station (NYCRR 751.1).

(2) Amend the existing SPDES permit to include the outfall discharge point of the storm water drainage system servicing floor drains at the old hangar, or connect floor drains to the sanitary sewer (NYCRR 751.1).

(3) Obtain an SPDES permit for the wastewater holding pond at the NJNG maintenance facility (Bldg P-6000) or connect facility wastewater discharges to the sanitary sewer (NYCRR 751.1).

(4) Determine if leaching pits and storm water drainage systems receiving maintenance facility floor drain wastewater require SPDES discharge permits, or connect floor drains to the sanitary sewer (NYCRR 751.1).


(5) Expedite the underground tank testing program in order to bring the installation into compliance with New York State underground tank testing requirements (6 NYCRR 613.5).

(6) Expedite remedial action to correct deficiencies at installation petroleum operations identified by the NYSDEC (references 15 and 16).


(7) Register UST with the Albany office of the DEC in compliance with Federal regulation (40 CFR 280.3).

(8) Revise and expand the SPCCP and ISCP to correct deficiencies identified in paragraphs 3d and 3e, this Appendix (AR 200-1, chapter 8).

b. To ensure good environmental practice, the following recommendation is made: Revise the SPCCP to include an inventory of extremely hazardous substances (at or above reportable quantities). Revise the ISCP to include potential releases of extremely hazardous substances and to provide for notifying the LEPC in the event of a release of any of these substances.


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ANNEX I-1

REFERENCES

1. AR 200-1, 15 June 1982, Environmental Protection and Enhancement.
2. Public Law 92-500, 18 October 1972, Federal Water Pollution Control Act Amendments of 1972, as amended by Public Law 95-217, 27 December 1977, Clean Water Act of 1977.
3. Title 40, Code of Federal Regulations (CFR), 1987 rev, Part 110, Discharge of Oil.
4. Title 40, CFR, 1987 rev, Part 112, Oil Pollution Prevention.
5. Title 40, CFR, 1987 rev, Part 280, Underground Storage Tanks as revised by 53 FR 37194, 23 September 1988, effective 22 December 1988.
6. Title 40, CFR, 1987 rev, Part 300, National Oil and Hazardous Substances Contingency Plan.
7. Title 40, CFR, 1987 rev, Part 302, Designation Reportable Quantities, and Notification.
8. Title 40, CFR, 1987 rev, Part 355, Emergency Planning and Notification.
9. Title 40, CFR, 1987 rev, Part 403, General Pretreatment Regulations for Existing and New Sources of Pollution.
10. Title 6, New York Codes, Rules, and Regulations (NYCRR), Environmental Conservation, Chapter X, Division of Water Resources, Parts 750 through 758, (New York Regulations on State Pollutant Discharge Elimination System) as amended, Effective 22 August 1987.
11. Title 17, NYCRR, Chapter 1, Parts 30 through 32, (New York Regulations on Oil Spill Prevention and Control) Effective 1 April 1978.
12. Title 6, NYCRR, Chapter V, Subchapter D, Water Regulations, Parts 610 through 614, (New York Water Pollution Regulations) as amended, Effective 27 December 1985.
13. Letter, USAEHA, HSHB-EW-S/WP, 17 June 1983, subject: Water Quality Information Paper No. 12, Oil and Hazardous Substance Spill Plans.

EOR No. 32-24-7140-89, 11-21 Oct 88

14. Memorandum, OASD, Production and Logistics, 3 June 1987, subject: Applicability of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) to the Department of Defense.

15. Letter, NYSDEC, March 4, 1988, subject: Terminal Inspection Report.

16. Letter, NYSDEC, December 14, 1988, subject: Inspection of Petroleum Facilities.

17. FONECON, Richard Coriale, Department of Environmental Conservation, Bulk Storage Section, Albany, New York, and Ken Lancellotti, USAEHA, 30 November 1988, subject: Underground Tank Notification.

ANNEX I-2
WASTEWATER MANAGEMENT REVIEW
10th MOUNTAIN DIVISION (LIGHT INFANTRY) AND FORT DRUM
SUMMARY OF REGULATORY COMPLIANCE

Site Location	Appendix I Paragraph	Type of Facility or Operation	Complies with Regulations				Regulatory Requirement	Potential Noncompliance or Poor Engineering Practices
			Federal	State	Army	Other		
STP	3b(2)	Pump Station Bypass		No			6 NYCRR 751.1	Dedicated telephone line for pump station alarm system needs to be installed
Hangar	3b(3)	Wastewater from Hangar Floor Drains		No			6 NYCRR 751.1	Drainage system servicing Hangar floor drains were not regulated by PDES Permit
New Jersey National Guard Maint. Facility (Bldg P-6000)	3b(4)	Wastewater Holding Pond		No			6 NYCRR 751.1	Bypass and subsurface discharges were not regulated by SPDES Permit
DOL Maint. Facilities [Bldg(s) P-84, T-1132, T-1142, T-91, T-93]	3b(5)	Wastewater from Floor Drains		No			6 NYCRR 751.1	Unpermitted discharges were in violation of State law
Petroleum Facilities	3c(1)	Major Petroleum Facility (400,000 gallons and above)		Yes			17 NYCRR 30	
Underground Tanks	3c(1)	UST Testing		No			6 NYCRR 613.5	Tightness testing of UST(s) has not been completed
Underground Tanks	3c(2)	UST Registration	No				40 CFR 280	UST(s) not officially registered with DEC (Albany Office)
Potential Spill Sites	3d	SPCCP	No	No	No		40 CFR 112 17 NYCRR 30 AR 200-1	All potential spill sites and required modification were not addressed in the SPCCP
Potential Spill Sites	3e	ISCP (Spill Response)			No		AR 200-1	Expand the ISCP to include more detailed information with respect to IOSC, IRT, resources, and hazardous substances.
Potential Spill Sites	3f	SRA Title III				No		Revise the SPCCP/ISCP to include inventory/potential release of extremely hazardous substances. Provide for notification of LEPC

121

I-2-1