U.S. Army Environmental Center

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT
ENVIRONMENTAL BASELINE SURVEY

FINAL ENVIRONMENTAL BASELINE SURVEY REPORT

CONTRACT DACA31-94-D-0061
TASK ORDER 0006

U.S. ARMY ENVIRONMENTAL CENTER
ABERDEEN PROVING GROUND, MARYLAND

DECEMBER 1996

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Prepared for:

United States Army
Environmental Center
Aberdeen Proving Ground, Maryland

Prepared by:

ABB Environmental Services, Inc.
Portland, Maine 04112

DECEMBER 1996

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The Stratford Army Engine Plant (SAEP) is a government-owned contractor-operated facility located in Stratford, Connecticut. The U.S. Department of the Army (Army) owns the land, the buildings, and some of the production equipment. Responsibility for the jurisdiction, control, and accountability of SAEP was transferred from the U.S. Army Aviation and Troop Command (ATCOM) to the U.S. Army Tank-Automotive and Armament Command (TACOM) on September 9, 1995. AlliedSignal currently operates SAEP under a facilities contract with TACOM. Prior to October 28, 1994 Textron Lycoming operated the facility.

In October 1995, SAEP was placed on the Base Realignment and Closure (BRAC) list, known as BRAC 95. Pursuant to the Defense Base Closure and Realignment Act of 1990 (P.L. 101-510), the BRAC Environmental Restoration Program dictates that environmental contamination on Army BRAC properties be investigated and remediated, as necessary, prior to disposal and reuse. For BRAC 95, the Environmental Restoration Program begins by conducting an Environmental Baseline Survey (EBS), which describes the environmental condition of the property. This is used to determine the suitability to lease or transfer excess BRAC property. This document presents the EBS for SAEP.

The U.S. Army Environmental Center (USAEC) has been tasked by the Army Materiel Command (AMC) to complete the EBS for SAEP. The USAEC has contracted the EBS to ABB Environmental Services, Inc. (ABB-ES) under Contract No. DACA31-94-D-0061.

The activities that were completed by ABB-ES included the following:

- Review of SAEP records, including reports, engineering drawings, and historical photographs;

- Discussions with SAEP personnel who are familiar with current and past site activities;

- Visual reconnaissance of the site and areas immediately adjacent to the site;

- Collection of information pertaining to the site or adjacent areas from public organizations;

- Review of the Phase I Remedial Investigation Report and Draft Phase II Remedial Investigation Report, including a review of baseline risk assessment, human health risk assessment, and ecological risk assessment.

SITE DESCRIPTION AND HISTORY

SAEP is located in Stratford, Connecticut, on the Stratford Point peninsula in the southeast corner of Fairfield County. The Army-owned property at SAEP consists of approximately 124 acres, of which approximately 76 acres are improved land and 48 acres are riparian rights. A riparian right is a right of access to, or use of, the shore, bed, or water of land on the bank of a natural watercourse. The riparian rights property consists of intertidal flats of the Housatonic River; an estimated

2 acres of this property comprise a causeway constructed in the 1930s to provide access to the river channel. The 76 acres of improved land include an estimated 10 acres along the Housatonic River where fill was placed over tidal flats during the early development of SAEP.

The plant is bounded by: a paved parking lot and wetlands to the north; the Housatonic River to the east; an open field, a drainage channel, and small commercial businesses to the south; and hangar buildings, the Sikorsky Memorial Airport, several small businesses, and Frash Pond to the west.

Historically, land in the SAEP vicinity was used for agricultural and residential purposes. At present, local agricultural activities are minimal. The primary agricultural (aquaculture) activity in the area involves growing oysters in shallow waters of the Housatonic River. The SAEP property itself is zoned light industrial, and land in the vicinity of SAEP is zoned light industrial, business, commercial, or residential.

The SAEP site has been used for development, manufacture, and assembly of aircraft or engines since 1929, and the plant history has been categorized into the following periods:

- 1929 to 1939. Sikorsky Aero Engineering Corporation developed and manufactured sea planes at the Stratford plant.

- 1939 to 1948. Chance Vought Aircraft located its operations at the Stratford plant in 1939, and the company became known as Vought-Sikorsky Aircraft Division. Sikorsky developed the helicopter and left the plant in 1943 because of overcrowding. Chance Vought developed the "Corsair" for the U.S. Navy, and mass produced Corsairs during World War II. Chance Vought vacated the Stratford plant in 1948.

- 1948 to 1951. The Stratford plant was idle.

- 1951 to 1976. The U.S. Air Force procured the Stratford plant in 1951 and named it Air Force Plant No. 43. The Avco Corporation (AVCO) was contracted by the Air Force to operate the plant. Avco manufactured radial engines for aircraft in the 1950s, and developed and manufactured turbine engines, primarily for aircraft, in the 1960s and 1970s.

- 1976 to Present. The plant was transferred from the U.S. Air Force to the Army in 1976; at that time the plant was renamed the Stratford Army Engine Plant, although it continued under AVCO operations. Avco was contracted by the Army to develop the AGT-1500 engine to power the Abrams tank. Avco also developed and manufactured marine and industrial engines. Avco merged with Textron in December 1985, and subsequently formed the Textron Lycoming Stratford Division. The contract for operation of SAEP was transferred from Textron Lycoming to AlliedSignal, Inc. in 1994.

Currently, turbine engines for both military and commercial aircraft and land vehicles continue to be developed, manufactured, and tested at SAEP by AlliedSignal.

The primary types of industrial waste generated at SAEP prior to the 1950s are reported to have been waste oils, fuels, solvents, and paints (W-C, 1991). Since 1951, most of the wastes generated at SAEP have resulted from engine production operations such as plating, metal working, and finishing, as well as cleaning operations. Wastes are also generated as a result of engine and engine component testing, research and development, raw materials testing, vehicle and other maintenance, and on-site waste treatment.

ENVIRONMENTAL SETTING

A review of environmental setting information for the SAEP site and vicinity identified the following:

- The land at SAEP is almost entirely less than 10 feet above mean sea level, with the exception of a dike along the Housatonic River constructed for flood protection. SAEP is within the 100-year floodplain, and the site was flooded by the Housatonic River in 1951 and 1968, with limited flooding in 1993 (low spots near storm drains).

- Surface water bodies in the site vicinity include: Long Island Sound, the Housatonic River, Frash Pond, and the Marine Basin and drainage channel. Long Island Sound receives all of the Stratford region's drainage, in large part via the Housatonic River.

- Most of the SAEP surface is paved or covered with buildings, such that there is little infiltration, resulting in significant surface runoff during storm events. Most of the precipitation is drained to the Housatonic River. Storm drainage is generally pumped through the oil abatement treatment plant, except in times of heavy precipitation, when some runoff is pumped directly to the Housatonic River.

- The Bridgeport Hydraulic Company supplies the cities of Bridgeport and Stratford with potable water from the Trap Falls Reservoir in Shelton, Connecticut, about 6.5 miles north-northwest (upgradient) of SAEP. In 1989, the Trap Falls Reservoir supplied drinking water to 99.9 percent of the populations of Bridgeport and Stratford, including residents in the immediate area of SAEP. There are no water supply wells within a 0.5 mile radius of SAEP according to a well survey conducted by CTDEP and the Stratford Health Department.

- Bedrock at the site reportedly ranges from about 100 to 150 feet below the land surface. The site's shallow geology is characterized by five distinct units: sand, gravel and construction fill material; highly organic silt and peat (tidal inlet or marsh deposits); silt and sandy silt alluvium associated with the peat; estuarine silt; and stratified drift consisting of outwash sand with some gravel and ice-contact sand, gravel, and cobble deposits.

- Stratified drift deposits (sand and sand/gravel) form the upper aquifer at the SAEP, which may be up to 150 feet thick. This aquifer contains fresh water, but no information was found to indicate the presence of a salt water wedge typical of coastal environments. Water wells for drinking supply or other domestic uses are reportedly not present in the SAEP vicinity (W-C, 1991).

- Freshwater wetlands, intertidal flats, and tidal marshes occur both in the vicinity of SAEP and on site. Freshwater wetlands in the vicinity are associated with Frash Pond, Salby Pond, and a small acreage of land abutting the SAEP property to the north. Intertidal flats in the vicinity are located in a band along the shoreline of the Housatonic River and Long Island Sound. SAEP's riparian rights encompass an estimated 51 acres of intertidal flats. Large tidal marshes occur in the site vicinity, including the Great Meadow Salt Marsh, areas along the Housatonic River, Nells Island, and land around Sikorsky Airport.

- No federally-listed threatened or endangered mammalian, amphibian, invertebrate, aquatic, or plant species have been reported to occur in the vicinity of SAEP. Two federally-listed (the piping plover and roseate tern) and 11 state-listed threatened, endangered, or special concern birds have the potential to occur in the vicinity of SAEP. The intertidal flats area of SAEP may be feeding areas for the plover and tern.

- Two prehistoric archeological sites are reportedly located on SAEP property, as well as, an Indian burial site (W-C, 1991).

- Short Beach Park is located 1 mile south of SAEP, and there are three marinas within 2 miles of SAEP.

ENVIRONMENTAL COMPLIANCE

Most federal facilities must comply with all state and local statutes, regulations, and ordinances. Additionally, government-owned contractor-operated facilities such as SAEP do not qualify for some of the exemptions that exist for other federal facilities. A review of SAEP's environmental compliance history, its current compliance status, and future compliance issues identified that SAEP has experienced some violations in the past, but is currently in compliance with environmental regulations.

KNOWN OR POTENTIAL AREAS OF ENVIRONMENTAL CONTAMINATION

Several areas of the SAEP property have known or potential environmental contamination caused by operational or waste disposal practices:

- Intertidal Flats. This 48.5-acre area is a site runoff and effluent depositional area; it is not a past or current site operational area. The

Preliminary Draft Baseline Ecological Risk Assessment by Woodward-Clyde Consultants (W-C, 1995) indicates that PCB and metals concentrations in the sediments of the intertidal flats in the vicinity of the outfalls create a risk to indigenous benthic macroinvertebrates and wading birds. However, as of July 1996, this document remains a draft and may undergo revisions before being published in the final, approved form.

- Shoreline Fill Area. This area is located along the Housatonic River shoreline, and was largely developed using hydraulically placed river sediments (W-C, 1991). However, debris of other types has also been found in this area (SAEP, 1995), which has been used for storing fuels, oils, wastes, and solvents. Phase I Remedial Investigation results from samples collected in this area indicate subsurface soil and groundwater contamination by polynuclear aromatic hydrocarbons (PAHs), fuel-related volatile organic compounds (VOCs), halogenated solvents, and/or metals (W-C, 1993).

- Plating and Manufacturing Area. This area is located in the central portion of the SAEP facility, and includes the plating operations in Building B-2 and the former plating operations in B-3. In addition to plating operations, there were also paints, solvents, fuels, and oils stored and used in B-2. During dewatering operations for the foundation of B-10 (late 1970s) and B-70 (mid-1980s), water pumped from the ground was "greenish-blue" (W-C, 1991). This color was attributed to chromium contamination as confirmed by the Phase I Remedial Investigation results. Halogenated solvents, PAHs, metals (including chromium and lead), and cyanide have been detected in groundwater and subsurface soils beneath this area (W-C, 1993).

- Building B-2, North Parking Lot, and West Parking Lot. B-2 (excluding plating operations) is the primary manufacturing building at SAEP. The Preliminary Assessment Screening (PAS) (W-C, 1991) indicates that ash and cinders were found in subsurface soils during foundation excavations of the northern portion of B-2. Phase I Remedial Investigation results indicate groundwater contamination by halogenated solvents beneath the northwest corner of B-2, and subsurface soil contamination by PAHs on the western edge of B-2. Data from the Phase II Remedial Investigation used in the Preliminary Draft Risk Assessment (W-C, 1995) indicate groundwater contamination by halogenated solvents beneath the western edge of the west parking lot.

- Building B-65. During the construction of building B-65, soils were encountered contaminated with chromium and petroleum. Concentrations were higher on the northeastern side of the building. These contaminated soils were removed as needed to complete the B-65 construction; however, additional contaminated soils may remain at the site.

- Research and Development Area. This area includes Buildings B-3A, B-4, B-69, B-79, and the eastern half of B-3. Phase I Remedial Investigation data from surrounding areas indicate the potential for subsurface soil and/or groundwater contamination by halogenated solvents and fuel-related VOCs.

- South Parking Lot, Chemical Waste Treatment Plant (CWTP), and Closed Lagoons. This area of SAEP has been used for parking facilities and treatment of chemical wastewater. Three equalization and sludge lagoons, used for the chemical wastewater treatment process, were decommissioned in 1990 in accordance with Connecticut Department of Environmental Protection (CTDEP) RCRA regulations. Formal closure documents have been submitted to the CTDEP. A groundwater monitoring program in this area is currently in its twelfth year; halogenated solvents and metals continue to be detected (CA Rich, 1995).

- Testing Area. This area, which includes Buildings B-6, B-6A, B-17, B-53, B-60, B-61, and B-72, has been used for experimental testing of engines and fuel storage. Phase I Remedial Investigation results indicate subsurface soil contamination by PAHs, fuel-related VOCs, and halogenated solvents, and groundwater contamination by halogenated solvents.

- Additional monitoring wells and soil borings may be needed to assess source area conditions and distribution of contaminants at SAEP.

CERFA ASSESSMENT

The SAEP property was divided into 33 parcels based on geographic setting, historical manufacturing processes or operations, and storage or release of hazardous materials or petroleum products. Information from the EBS investigation was used to divide the installation into seven categories of parcels that are depicted by seven colors on the CERFA map. These categories, as defined by the Department of Defense BRAC Cleanup Plan (BCP) Guidebook, Fall 1995, are as follows:

1. Areas where no storage, release or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas) *[white]*

2. Areas where only storage of hazardous substances or petroleum products has occurred (but no release, disposal, or migration from adjacent areas had occurred) *[blue]*

3. Areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, but at concentrations that do not require a removal or remedial action *[light green]*

4. Areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, and all remedial actions necessary to protect human health and the environment have been taken *[dark green]*

5. Areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, removal and/or remedial actions are under way, but all required remedial actions have not been taken *[yellow]*

6. Areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, but required response actions have not yet been implemented *[red]*

7. Areas that are unevaluated or require additional evaluation *[gray]*

No CERFA parcels or CERFA parcels with qualifiers were identified as a result of the CERFA assessment. All 33 parcels were determined to be CERFA disqualified. Of the 33 parcels, two were categorized as Category 6/Red, needing remediation based on the preliminary draft risk assessment and on discussion with TACOM about the probable needs for remediation for the plating area in B-2. One parcel (Parcel 21, the former sludge lagoons) was colored yellow (Category 5) based on the ongoing monitoring program. One parcel was Category 4 (Dark Green), indicating that remediation was completed. This is Parcel 22, where petroleum-contaminated soil was treated, then used as fill material. One parcel (Parcel 2, the intertidal flats) was classified as Category 3 (light green) as not needing remediation. The remaining 28 parcels were classified as Category 7 (Gray) as needing additional investigation. Some of these parcels need additional environmental sampling to evaluate source areas or assess the distribution of contaminants. Others were classified as Category 7 because there were exceedances of the CTDEP remediation standards and the site-specific risk assessment has not been finalized. This risk assessment may show no cleanup is needed in a parcel even though remediation standards are exceeded.

1.0 INTRODUCTION

1.1 AUTHORITY FOR THE ENVIRONMENTAL BASELINE SURVEY (EBS)

The Stratford Army Engine Plant (SAEP) is a government-owned contractor-operated facility located in Stratford, Connecticut. The U.S. Department of the Army (Army) owns the land, the buildings, and some of the production equipment at SAEP. Responsibility for the jurisdiction, control, and accountability of SAEP was transferred from the U.S. Army Aviation and Troop Command (ATCOM) to the U.S. Army Tank-Automotive and Armament Command (TACOM) on September 9, 1995. AlliedSignal Engines (AlliedSignal) operates SAEP under a facilities contract with TACOM. AlliedSignal manufactures and tests turbine engines, primarily for the U.S. Army. AlliedSignal also produces turbine engines at SAEP for the U.S. Navy, for foreign military sale, and for commercial use.

In October 1995, SAEP was officially placed on the Base Realignment and Closure (BRAC) list, known as BRAC 95. Pursuant to the Defense Base Closure and Realignment Act of 1990 (P.L. 101-510), the BRAC Environmental Restoration Program dictates that environmental contamination on Army BRAC properties be investigated and remediated, as necessary, prior to disposal and reuse. For BRAC 95, the Environmental Restoration Program begins by conducting an Environmental Baseline Survey (EBS). The EBS describes the environmental condition of the property, which is used to determine the suitability to lease or transfer excess BRAC property.

The environmental condition of the site is being assessed through a phased site characterization process. The status of site environmental characterization of SAEP is currently between Phases II and III. A Phase II site investigation identifies if there has been release to the environment. A Phase III site evaluation quantifies the release identified in Phase II.

The U.S. Army Environmental Center (USAEC) has been tasked by the U.S. Army Materiel Command (AMC) to complete the EBS for SAEP. ATCOM, a major subordinate command to AMC, was formerly responsible for SAEP until a transfer occurred to TACOM on September 9, 1995. The USAEC has contracted the EBS to ABB Environmental Services, Inc. (ABB-ES) under Contract No. DACA31-94-D-0061.

This EBS Report is based upon the Final Preliminary Assessment Screening (PAS) Report (Woodward-Clyde, 1991) performed for the U.S. Army Corps of Engineers (USACE). The purpose of the PAS Report was to evaluate the environmental condition of SAEP, in the process of considering the lease or sale of government-owned property at SAEP to the operating company at that time, Textron Lycoming Corporation. This EBS Report includes information obtained from the Final PAS and other environmental reports, ABB-ES' site visits to SAEP in 1995 and early 1996, and ABB-ES' discussions with AlliedSignal personnel. Results from the preliminary draft baseline risk assessment, human health risk assessment, ecological risk assessment, and preliminary draft Phase II Remedial Investigation have been incorporated into this EBS. Revisions to the risk assessments and/or remedial investigation based on comments from CTDEP and USEPA may change the findings of this EBS. The risk assessment(s) assumed an industrial reuse of SAEP. As a result, the risk assessment focused on potential exposures to construction workers on site, and commercial fishermen and recreators in the tidal flats. Exposures were not considered for occupational workers, because the entire site is paved.

1.2 OBJECTIVES

The objective of the EBS is to assess the environmental condition of SAEP using the current available environmental information. The EBS is based upon existing environmental information related to storage, release, treatment or disposal of hazardous substances or petroleum products on the property and adjacent property. This environmental information has been used to determine or discover the presence, or likely presence, of a release or threatened release of any hazardous substance or petroleum product. Ultimately, the EBS information will be used to determine the suitability to lease or transfer excess BRAC property at SAEP.

1.3 ORGANIZATION OF EBS

This introduction (Section 1.0) provides a brief overview of the authority and scope of the EBS. The survey methodology is presented in Section 2.0, including regulatory record searches, interviews, and visual inspections. Section 3.0 presents the property characterization with a description of facilities, a history of operations and tenant activities, and environmental compliance and permit status. Investigation results are presented in Section 4.0, and the Community Environmental Response Facilitation Act (CERFA) letter report is presented in Section 5.0.

2.0 SURVEY METHODOLOGY

The following subsections describe the methodology used to complete the EBS.

2.1 EXISTING INVESTIGATION DOCUMENTS

Numerous existing investigation documents have been used in the preparation of this EBS Report. All documents are listed in the References at the end of this report; the most important and useful documents are described as follows:

Installation Assessment of SAEP. Environmental Science and Engineering, Inc. 1981. Environmental Science and Engineering, Inc. (ESE) conducted the Installation Assessment for the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA) to determine the existence of toxic and hazardous materials and related contamination at SAEP, emphasizing those substances posing a potential for migration off the installation.

Installation Assessment - SAEP (Historical Aerial Photo Assessment). U.S. Environmental Protection Agency. 1990. The report presents an analysis of historical aerial photography of SAEP from 1943 to 1980. The purpose of the report was to identify the potential contamination sources within the study area resulting from activities occurring at SAEP.

Final Preliminary Assessment Screening. Woodward-Clyde Consultants. 1991. Woodward-Clyde Consultants (W-C) was retained by USACE to complete the PAS for SAEP. In 1991, the U.S. Army was considering the lease or sale of government-owned property at SAEP to Textron Lycoming, Stratford Operations. U.S. Army Regulation 200-1 (AR 200-1) required that a PAS be completed for any real property for which a transaction was being proposed. The purpose of the PAS was to determine the Army's potential liabilities associated with the environmental condition of SAEP. Information was collected to outline the type and extent of the real property transaction being considered, to generally describe the environmental setting, and to identify and evaluate subject areas of concern. A PAS is similar to an EBS; consequently, information contained in the PAS has been used in this EBS Report in a manner that avoids duplicative investigations. The PAS was prepared as part of the Installation Restoration Program while the EBS was prepared as part of the BRAC environmental restoration program. As such, issues such as asbestos, lead-based paint, and radon, are addressed in the EBS but not in the PAS.

Waste Minimization Study. Idaho National Engineering Laboratory (INEL). 1991. This report presents a detailed account of industrial practices, chemicals used, and wastes generated. Schematic diagrams and tables describing various processes at SAEP are also included.

Supplementary Hydrogeologic Investigation Report. CA Rich Consultants, Inc. 1991. The purpose of the hydrogeologic investigation performed in the south end of SAEP by CA Rich Consultants, Inc. was to address issues referenced in a Comprehensive Groundwater Monitoring Evaluation conducted by the Connecticut Department of

Environmental Protection (CTDEP) in 1989. The scope of investigation included evaluation of existing chemical and hydrogeological data to determine any trends and significance of contaminant concentrations in the groundwater.

Eleventh Year, 1994 Annual Summary Report, Groundwater Assessment Monitoring. CA Rich Consultants, Inc. 1995. This report summarizes the groundwater elevations, flow directions, and chemical data collected during quarterly monitoring in 1994.

RCRA Facility Assessment. CDM Federal Programs Corporation. 1992. CDM Federal Programs Corporation conducted a Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) of the Textron Lycoming, or SAEP, facility for the U.S. Environmental Protection Agency (USEPA). The purpose of the RFA was to identify and gather information on potential and actual releases from Solid Waste Management Units and other areas of concern (AOCs) at the facility, and to evaluate their potential for future impact to human health and to the environment. As part of this assessment, CDM identified 58 AOCs at SAEP. These AOCs are areas where CDM believed releases of hazardous materials or petroleum may have occurred.

Final Remedial Investigation Report. Woodward-Clyde Consultants. 1993. The primary objective of the Remedial Investigation was to evaluate the presence or absence of contamination at the SAEP facility and to recommend further action regarding the disposition of the eight areas of concern identified in the PAS. Evaluation of the extent of contamination was not included in the scope of this investigation. The overall approach of the investigation was to sample areas which had, or potentially had, contaminant releases, or which were locations for disposal activities. The sampling program included surface and subsurface soils, groundwater, sediment, and surface water.

Phase II Remedial Investigation Report. Woodward-Clyde Consultants. 1996. The Preliminary Draft Phase II Remedial Investigation Report was published in January 1996. The Phase II Remedial Investigation was conducted as recommended in the Remedial Investigation Report (W-C, 1993). Activities of the Phase II investigation included: sediment sampling for contamination delineation, sediment toxicity sampling and benthic community characterization, subsurface soil sampling and analysis, monitoring well installation, and groundwater sampling. The Phase II Remedial Investigation Report also includes a baseline human health risk assessment and a baseline ecological risk assessment. As part of the Phase II Remedial Investigation, data were compared to CTDEP pollutant mobility criteria, Industrial/ Commercial Direct Exposure Standards, and surface water protection criteria for groundwater. Exceedances were detected across SAEP in various media, and the risk assessments will be used to assess the significance of these exceedances. The risk assessments assumed an industrial reuse of SAEP; as a result, the risk assessments focused on potential exposures to construction workers on site, and commercial fishermen and recreators in the tidal flats. Exposures were not considered for occupational workers because the entire site is paved.

Nuclear Regulatory Commission Records for License Numbers 06-08612-01, 06-08612-03, 06-08612-04, 08-08612-05, and STB-393. These NRC records provided documentation pertaining to the possession and use of licensed material at SAEP.

The NRC recovered records from 1956 through 1989 pertaining to four terminated byproduct material licenses (06-08612-01, 06-08612-03, 06-98621-04, 08-08612-05), and records from an active source material license (STB-393).

2.2 FEDERAL, STATE, AND LOCAL GOVERNMENT REGULATORY RECORDS

ABB-ES contracted with Environmental Database, Inc. (EDI) of Littleton, Colorado to perform a search of Federal, state, and local government records pertaining to SAEP and adjacent properties, to identify areas where storage, release, or disposal of hazardous substances or any petroleum product, or their derivatives, has occurred.

The following federal government informational databases were searched for information:

- National Priorities List (NPL)
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Information System (CERCLIS)
- Superfund Amendments and Reauthorization Act (SARA) Toxic Release Inventory System (TRIS)
- Emergency Response Notification System (ERNS)

- RCRA Corrective Action Sites

- RCRA Treatment, Storage, and Disposal Facilities (TSDF)

- USEPA Facility Index Database System (FINDS)

- Site Enforcement Tracking System (SETS)

- Civil Enforcement Docket (DOCKET)

- Toxic Substances Control Act (TSCA) Chemicals in Commerce Information System (CICS)

- Polychlorinated Biphenyls (PCB) Activity Database System (PADS)

- Federal Insecticide, Fungicide, and Rodenticide Act/Section Seven Tracking System (FIFRA/SSTS)

The following state government informational databases were searched for information:

- State Superfund Cleanup Sites
- State CERCLIS Equivalents
- State Landfill/Solid Waste Disposal Sites
- Registered Underground Storage Tanks (USTs)

- Leaking USTs

Results of the database search are summarized in Section 4.2. The report prepared by EDI is presented in Appendix A.

2.3 INTERVIEWS

Interviews of SAEP personnel were conducted by W-C in 1991 as part of the PAS. A list of interviewees is presented as Appendix B of the Final PAS (W-C, 1991). To complete the data gaps regarding SAEP activities and environmental issues occurring between the years 1991 and 1995, ABB-ES held discussions with several SAEP personnel from AlliedSignal during site visits in August and October 1995. AlliedSignal personnel providing information on SAEP activities were:

AlliedSignal Personnel	Department
Mr. Tim Russell	Health, Safety, and Environmental
Mr. John Fleming	Health, Safety, and Environmental
Mr. Scott Jacobs	Health, Safety, and Environmental
Mr. Jim Morrell	Health, Safety, and Environmental
Mr. Alan Monelli	Plant Engineering
Mr. Michael Flach	Plant Engineering

Mr. Jim Kuehnle, P.E., of ATCOM also provided information regarding SAEP past activities and environmental issues.

2.4 Visual Inspections

To supplement visual inspections performed by W-C as part of the PAS, ABB-ES conducted on-site surveys of SAEP from August 28 to August 30, and October 23 to October 25, 1995. These on-site surveys included site walkovers led by SAEP/AlliedSignal environmental and plant engineering personnel (see Section 2.3). Site visit notes for these two ABB-ES visits are presented in Appendix B. Site visit information has also been incorporated into EBS worksheets used in parcel categorization (Appendix C).

Properties adjacent to SAEP were identified during a review of records at the Stratford Town Clerk Office on October 25, 1995. The condition of the adjacent properties was then observed by driving and walking through the neighborhood on August 29 and October 25, 1995. Condition of adjacent properties was also assessed by a review of the database search for the site.

2.5 Title Inspections

Title inspections for SAEP will be conducted by the U.S. Army Corps of Engineers New York District (COE-NYD).

3.0 PROPERTY CHARACTERIZATION

3.1 GENERAL PROPERTY INFORMATION

SAEP is located in Stratford, Connecticut, on the Stratford Point peninsula in the southeast corner of Fairfield County (Figure 3-1). The plant lies on the borderline of the Bridgeport and Milford Quadrangles. Latitudinal and longitudinal coordinates of SAEP are approximately 41°-10' North and 73°-07' West.

SAEP consists of approximately 124 acres, of which about 76 acres are improved land and 48 acres are riparian (water) rights (Figure 3-2). For purposes of this report, directions (i.e., north, south, east, and west) are referenced to the SAEP facility plan north direction, which deviates approximately 26 degrees from magnetic north (Figure 3-2). The plant is bounded as follows:

- North. AlliedSignal-owned property, consisting of paved parking lot and a small wetlands area;
- East. Housatonic River;
- South. Open field, a drainage channel that flows to the Marine Basin, and several commercial businesses; and

- West. City of Bridgeport property occupied by a hangar, the Sikorsky Memorial Airport, several businesses including a strip mall, gas stations, and restaurants, and Frash Pond.

3.2 Description of Facilities

The SAEP land and buildings are owned by the U.S. Army, and plant equipment is owned by both the U.S. Army and AlliedSignal. The U.S. Army-owned land, buildings, and equipment are provided to AlliedSignal in a facilities contract for executing government contracts. AlliedSignal also pays rent to the U.S. Army for the use of the plant in manufacturing commercial products (AMC, 1988). The SAEP property has been improved, and consists of 49 buildings, paved roadway and grounds, and five paved parking lots (Figure 3-2). Subsection 3.3 presents the history of SAEP, including evolution of the existing facilities.

3.3 Property History

The first manufacturing facility at the SAEP property was constructed on approximately 26 acres in 1929. Prior to that time, the land use in and around the plant was agricultural. Since 1929, the plant has been expanded by the acquisition of land and construction of buildings. SAEP now consists of 49 buildings situated on about 126 acres. The historical growth and use of SAEP property is documented by aerial photographs, site plans, property maps/titles/deeds, and reports prepared by various agencies and individuals (USEPA, 1990; BTI, 1984; Stine, 1983).

The expansion of plant property as well as building construction from 1929 to present is shown in the aerial photographs and site plans of Figures 4-1 through 4-10 of the Final PAS (W-C, 1991). A list of buildings and their construction/demolition dates is provided in Table 3-1. A chronology that includes the history of property usage, property acquisition, and building construction is provided in Appendix D. For purposes of clarity in this report, all building numbers (e.g. B-1, B-2, etc.) are referenced to their current designations, although some numbers have changed over the life of the plant.

Sikorsky Aero Engineering Corporation/Sikorsky Aviation Corporation (1929 to 1939)

The Sikorsky Aero Engineering Corporation was established in March 1923. Sikorsky manufactured twin-engine metal sea planes at a plant on Long Island, New York, from 1923 to 1929. In July 1929, Sikorsky Aero Engineering Corporation became a subsidiary of the United Aircraft and Transport Corporation of East Hartford, Connecticut. At that time, Sikorsky erected a plant on approximately 26 acres in Stratford, Connecticut. Sikorsky continued to develop and manufacture sea planes at the Stratford plant from 1929 to 1939.

The original Stratford plant consisted of an administration building, a manufacturing facility, and a service building. In 1930, another 11 acres of land was acquired and an engineering building added. These original buildings, which have been renovated and/or expanded, are still in use, and are now identified as B-1, B-2, B-10, and B-3, respectively (Figure 3-2). A 1929 site plan indicates that the west and south sides of B-3 are constructed on up to 5 feet of fill that was placed in a low-lying area at the head of the drainage channel that runs to the Marine Basin.

The 1,000-foot-long by 30-foot-wide causeway extending from SAEP into the Housatonic River was constructed in the early 1930s. The causeway served to launch seaplanes. No documentation was found to indicate the type of fill materials used.

Vought-Sikorsky Aircraft/Chance Vought Aircraft (1939 to 1948)

Sikorsky experienced economic difficulties in the latter part of the 1930s, and production at the plant nearly halted in 1938. Chance Vought Aircraft, another subsidiary of United Aircraft and Transport Corporation, relocated to the Stratford plant in April 1939, and the new subsidiary became known as Vought-Sikorsky Aircraft Division.

At the outbreak of World War II in 1939, United Aircraft decided to abandon the manufacture of seaplanes. Following this decision, Sikorsky launched a research project to develop the helicopter, and the prototype made its first free flight at the Stratford plant in May 1940. The U.S. Army Air Corps ordered production models of the helicopter, and their manufacture started at the Stratford plant in 1942. Meanwhile, the "Kingfisher" airplane, which had been developed by Chance Vought in the mid-1930s for the U.S. Navy, was mass-produced at the Stratford plant from

1940 to 1942. Chance Vought also developed the "Corsair" for the U.S. Navy from 1938 to 1940, and mass-production of the Corsair began in June 1941. Sikorsky left the Stratford plant in January 1943 to manufacture helicopters in Bridgeport, Connecticut.

To accommodate the wartime production demands for the Corsair, extensive additions were made to the original Sikorsky plant. An aircraft assembly plant addition was constructed on the north end of the manufacturing facility (B-2) in 1942, and a second addition was constructed north of the 1942 addition in 1944. Other buildings constructed during this time period are listed in Table 3-1 of this EBS Report, and shown in Figures 4-3, 4-4, and 4-5 of the Final PAS (W-C, 1991).

In 1944, the shoreline of the plant was extended eastward into the intertidal flats of the Housatonic River. Based on historical photographs, the source of fill was river sediments that were hydraulically dredged and placed. Excavations for utilities and building foundations have revealed the presence of industrial trash in the fill, including battery cases and miscellaneous airplane parts (SAEP, 1995). This filling operation increased the area of land at the plant by approximately 10 acres.

Chance Vought developed its first jet aircraft from 1944 to 1946. Production of the first three models was underway in 1948 when Chance Vought moved its operations to Texas.

Vacant (1948 to 1951)

Chance Vought moved its entire manufacturing operation to Texas in 1948. Following that, a severe flood of the Housatonic River rendered the Stratford plant's 1,580,000 square feet of manufacturing space unusable. The plant was listed for sale, and in 1951 the U.S. Air Force purchased the plant and renamed it Air Force Plant No. 43.

Air Force Plant No. 43/Bridgeport Lycoming Division (1951 to 1976)

In February 1951, the Avco Corporation, through its Bridgeport Lycoming Division, occupied the Stratford plant as the contractor for the U.S. Air Force. Water-damaged buildings at the plant were repaired and the dike along the Housatonic River was constructed for flood protection.

Avco produced the Curtis Wright nine-cylinder radial engine and major components of the J-47 jet aircraft engine. Avco also developed and manufactured various gas turbine helicopter engines throughout the remainder of the 1950s. During the 1960s and early 1970s, Avco continued to develop and manufacture turbine engines for more diversified uses, such as helicopters, amphibious hydrofoils, hovercraft, and land vehicles. Avco also manufactured reentry vehicles for the Titan and Minuteman missile system.

Machinery for manufacturing aircraft engines was installed in May 1951, and the plant was equipped for electroplating operations at this time. In 1953, Avco constructed an aircraft engine test cell building (B-16) for acceptance testing. In 1958, the chemical waste treatment plant (CWTP) was put into operation; and in 1975, the oil abatement treatment plant (OATP) was constructed. Other buildings constructed during this period are listed in Table 3-1 of this EBS Report and shown in Figures 4-6, 4-7, and 4-8 of the Final PAS (W-C, 1991).

Stratford Army Engine Plant/Avco Lycoming or Textron Lycoming, Stratford Division (1976 to 1994)

The Stratford plant was transferred from the U.S. Air Force to the U.S. Army in 1976. At that time the plant was renamed the Stratford Army Engine Plant. In 1978, Avco was contracted by the Army to manufacture the AGT-5000 engine to power the Abrams tank. Avco also developed and manufactured aircraft, marine, and industrial engines. Avco Lycoming merged with Textron in December 1985 and formed the Textron Lycoming Stratford Division. Turbine engines continued to be developed, manufactured, and tested at SAEP for military and commercial aircraft as well as land vehicles.

From 1976 to 1994, the U.S. Army and Avco-Textron/Lycoming invested considerably in improvements to the plant's property and equipment (AMC, 1988). In 1986, a cyanide/chromium treatment facility was constructed and improvements were made to CWTP. Other buildings constructed from 1976-1995 are listed in Table 3-1.

Stratford Army Engine Plant/AlliedSignal Engines (1994 to Present)

The contract for SAEP operation was transferred to AlliedSignal, Inc. in 1994. Turbine engines for military and commercial aircraft, as well as land vehicles, continue to be developed, manufactured, and tested at SAEP. In September 1995, SAEP was placed on the BRAC 95 list for realignment and closure.

3.4 TENANT ACTIVITIES AND PRACTICES

The following subsections discuss historical tenant activities and practices including:

- Industrial Operations
- Accumulation and Storage
- Waste Disposal Practices
- Use of Pesticides, Rodenticides, and Herbicides
- Explosives/Ordnance Storage and Use
- Use of Radiological Materials

Information in these subsections is primarily from the Final PAS Report (W-C, 1991), but has been updated to reflect changes between 1991 and present.

3.4.1 Industrial Operations

A detailed account of industrial operations, chemical materials used, and generated waste is provided in the Waste Minimization Study for SAEP (INEL, 1991). Operational information is also contained in the Installation Assessment of SAEP (ESE, 1981). Information regarding manufacturing operations and chemical materials used prior to the early 1970s is limited. This limitation should not, however, affect the conclusions of this survey. Although manufacturing processes have changed over the past 60 years, many of the types of chemical products used (e.g., acids, hydroxides, oils, solvents, and fuels) at SAEP have not changed significantly over that time period.

Wastes were informally tracked on an as-needed basis prior to 1985. Since 1985, SAEP has had a computerized system to formally track wastes. Currently, raw materials used by each department are tracked against total wastes generated.

Past industrial operations with potential environmental impact at SAEP may be categorized into the following processes: machining; electrochemical machining (ECM); electroplating; corrosion prevention; cleaning; miscellaneous treatments; painting; and engine testing. Other operations at SAEP in support of manufacturing include maintenance, stockpiling and storage of raw materials and wastes, wastewater treatment, and waste recycling/recovery. Plant operations use, and have used, a large variety of materials that may eventually become waste, either by degradation of their performance characteristics or by mixing with other materials. An historical summary of the manufacturing operations at SAEP, including the primary types of chemicals used during each process, as well as a description of waste generated and the waste's fate, is provided in Table 3-2.

3.4.1.1 Machining. Machining processes at SAEP include broaching, drilling, grinding, lathing, stamping, and forging. Most of the machining processes at SAEP are associated with production work done in B-2 (Figure 3-2). Machining is also done for production of recuperators in B-10, and for experimental development and testing in B-3 and B-6 (Figure 3-2).

A variety of fluids are used in machining:

- Cutting oils and coolants are required for many metal working processes to reduce friction, cool the tool and work piece, and remove metal chips from the working surface.

- Oils, greases, and hydraulic fluids are used to lubricate internal machine parts and for transfer of hydraulic energy, respectively.

- Penetrants are used to aid in the inspection of finished pieces for hairline fractures and defects.

Most of the wastes generated by metal working processes at SAEP are associated with coolants. Prior to mid-1990, coolants entered the waste collection stream as waste water soluble oil, or as halogenated solvent waste if the coolant mixed with a solvent such as 1,1,1-trichloroethane (1,1,1-TCA). The coolants were pumped into vacuum carts, placed in concrete pits north of B-13, and then pumped into waste oil tanks in the tank farm. Since mid-1990, a coolant recycling unit has been used to eliminate this waste collection stream. Coolants continue to enter the waste collection stream in small amounts because they stick to the metal cuttings. These were discharged into a steel-lined, concrete pit on the west side of B-13 until 1993. The coolants drained from the cuttings into a sump, where they were pumped by vacuum cart and transferred into a waste oil tank at the tank farm. Since 1993, the concrete pit on the west side of B-13 has not been used; instead, cuttings have been stored in a covered roll-off container in the north end of B-13 and recycled. The concrete pit was removed in 1993.

Waste lubricating oils, greases, and hydraulic fluids from manufacturing machinery are not major contributors to the waste collection stream at SAEP. These noncontact fluids are contained in reservoirs at each tooling machine and are not as prone to contamination by metal chips and dust. When a fluid is changed, or when there is a leak or spill, it enters the waste collection stream as waste oil to be recycled.

A fluorescent metal penetrant is used for inspection of machined work pieces for hairline fractures and other imperfections. Prior to late 1989, penetrant-contaminated wastewater was reportedly treated on-site at the OATP and the resulting waste sludge was disposed of off-site. In 1989, two separate penetrant wastewater processes were installed. Wastewater is continually processed through two 200-pound disposable carbon filters. Processed water is discharged to the OATP, and the spent carbon filters are recycled off-site.

3.4.1.2 Electrochemical Machining. ECM is a process whereby a metal work piece is placed into a salt brine bath and then cut using an arc welder. This results in the metal being removed by dissolution into the ECM brine. The ECM process conducted in B-4 was decommissioned in 1987, and is no longer used at SAEP. Wastewater from the ECM process had been treated on site at the OATP to recover nickel, and resulting waste sludges were disposed of off site in a USEPA RCRA-permitted facility (AMC, 1987).

3.4.1.3 Electroplating. Electroplating is a process whereby metallic coatings are ionically deposited on other metal surfaces, typically by the induction of an electrical current to a solution. Electroplating at SAEP has included chromium, nickel, copper, and cadmium plating; however, cadmium plating is no longer performed. The majority of plating is located in the southeast corner of B-2. In addition, the southwest part of B-3 was formerly used for electroplating. This area of B-3 currently houses the main frame computer for SAEP. A new floor was constructed above the old, and numerous cables were noted beneath new floor grates during the 1991 site reconnaissance (W-C, 1991).

Cyanide-contaminated wastewater is routed to the cyanide destruction facility (CDF), and from there to the CWTP. The CDF destroys cyanide, reducing it to nitrogen and carbon dioxide. CDF was constructed in 1986, and prior to that time cyanide wastewaters were piped directly to the CWTP for treatment. Other plating wastewater is routed directly to CWTP. Chlorinated solvent wastes from the vapor degreaser are removed by vacuum cart and pumped into the halogenated waste solvent tank at the tank farm.

3.4.1.4 Corrosion Resistance. Various surface finishing technologies are used at SAEP to impart corrosion resistance to metallic surfaces, as follows:

- Aluminum - anodizing, chemical coating, and painting;
- Magnesium - anodizing, dichromate finishing, painting, and plasma spraying; and
- Steel (various grades) - black oxidation, phosphate finishing, passivation, painting, oil slushing, and plasma spraying.
- HAE magnesium immersion (no longer in process)

Surface finishing is conducted in the southeast corner of B-2.

The anodizing of aluminum and magnesium, and passivation of steel are accomplished by placing the work piece in an acid bath and imposing an electrical current. This produces an oxide coating on the metal that is corrosion resistant or provides a foundation for other finishes, such as paint. The acids enter the waste collection stream as wastewaters that are routed to CWTP and treated. The other finishes listed above are applied without an electrical current. Chemical coating, dichromate finishing, black oxidation, and phosphate finishing generate wastewaters that are also routed to CWTP for treatment (see Table 3-2 for types of chemicals required for each finish).

Paints used currently or in the past include epoxies, enamels, silicones, and zinc chromate primers. There are three dry paint spray booths near the plating room in B-2. The booths are about 4-feet by 4-feet by 10-feet, and are equipped with air filters. At present, painting is limited to small quantities that are brushed on to the work piece. Used filters, paint sludge, and waste thinners are drummed and enter the waste collection stream as hazardous (ignitable) solid waste, or as non-halogenated solvents.

Painting was apparently the primary finishing process at the plant during the 1940s, when the plant was used to assemble aircraft such as the Corsair. From 1941 to 1949, paint and waste solvents from the paint shop were reportedly piped to a septic tank between B-2 and B-3. Most of the paint used at that time was zinc chromate primer (ESE, 1981).

For temporary corrosion protection, SAEP uses a blended slushing oil. The slushing oil provides a thin coating on the metal that can be easily removed for further processing at a later time. Spent slushing oil was formerly collected by vacuum cart, discharged into a concrete pit west of B-13, and pumped to a waste oil tank in the tankfarm. Spent slushing oil is currently collected by vacuum cart and transported to a waste oil tank in the tank farm.

3.4.1.5 Cleaning. Metal surfaces must be cleaned before applying a finishing coat. Cleaning is a necessary part of the electroplating, corrosion prevention, and heat treatment processes in B-2. Limited cleaning of engine parts has been conducted in B-16 in the past. Cleaning products used throughout SAEP have included halogenated solvents (1,1,1,-TCA and trichlorotrifluoroethane (freon) were the only halogenated solvents used at SAEP [SAEP, 1995]) and non-halogenated solvents, hydroxides, acids, detergents, and abrasives (Table 3-2).

Historically, halogenated solvents were used as degreasers at numerous locations at SAEP. At one time, 38 vapor degreasing units were used in B-2 and B-3, (which have been reduced to one unit); 1,1,1-TCA is the most predominantly utilized solvent (INEL, 1991). Spent halogenated solvents from the vapor degreasing units are removed using a vacuum cart and then pumped into a waste solvent tank at the tank farm. Halogenated solvents formerly entered the waste collection stream from engine cleaning and component testing in B-16 and B-19, and from maintenance activities in B-9. Non-halogenated organic solvents such as paint thinners, alcohols, and mineral spirits have been or are currently used at SAEP. Since the early 1990s, the use of halogenated solvents has been significantly reduced, replaced by non-halogenated solvents and biodegradable aqueous solutions. Trichlorotrifluoroethane was used in one vapor degreasing unit for wipe and touchup cleaning (INEL, 1991).

Varsol (a mineral spirit and cold cleaner) was used at SAEP prior to 1985; however, since 1985 cold cleaners have been replaced with a nonphotoreactive aliphatic solvent.

Engine cleaning after testing at B-16 is now done periodically, using an emulsion cleaner. Emulsion cleaning utilizes an organic solvent, detergent, and water mixture. Spent emulsion wastewater is collected by vacuum cart and stored in a tank at the tank farm. Water is pumped out and treated at OATP. Waste oil is sent off site for recovery.

Alkalines and acids are used throughout the electroplating and corrosion resistance processes at B-2 to prepare the metal surface for the desired finish. When the alkaline or acid solutions are no longer usable, they are discharged into pipes that drain to CWTP where the wastewaters are treated.

Historically, wastes from the periodic reverse anodic cleaning process were cyanide-contaminated. Wastewater from this tank was treated at CDF before going to CWTP. Prior to the construction of CDF in 1986, cyanide wastewaters were piped directly to CWTP for treatment.

Abrasive blasting and abrasive slurry cleaning using sand, glass beads, and grit is also performed at B-2. These types of cleaning are used to remove rust or scale buildup and to smooth edges or other imperfections following machining. Waste from these processes are typically collected by container and enter the waste collection stream as nonhazardous solid waste. In cases where contamination by solvents or oils is possible, the waste material is tested before being disposed off site.

3.4.1.6 Miscellaneous Processes. Miscellaneous processes at SAEP include coating metal parts with solid film lubricants, masking, peening, and heat treatment.

A variety of greases, lubricants and epoxies are used in relatively small quantities throughout manufacturing and support operations at SAEP.

Masking seals off areas of a metal work piece during plating or other finishing process. Typical maskants used in the past at SAEP include wax, lacquer, tape, rubber, and plastic. Presently, the only maskant used at SAEP is plating wax, which is collected for disposal.

Shot peening is a process whereby a metallic surface is subjected to impact, which modifies the metallurgical properties and smoothes sharp points or edges. Ceramic and glass beads are typically used at SAEP for shot peening, and wastes generated by this process are containerized and enter the waste collection stream as nonhazardous solid waste.

Heat treatment of metal parts improves their metallurgical properties. Heat treatment at SAEP is conducted in B-2 next to the boiler room. Prior to heating, the metal parts are cleaned in various alkaline or acid baths. After cleaning, the metal part is subjected to heat in one of several furnaces and then quenched in oil or water.

3.4.1.7 Engine Testing. Engines are tested in test cells that have been constructed in B-16 and B-6. Engine testing at SAEP began in the early 1950s. Tests may run from several minutes to thousands of hours, but a typical production test lasts between three and six hours. In addition to engine testing, some assembly and disassembly of engine parts is performed.

According to personnel interviews, large amounts of solvents have been used for cleaning test engines, including Varsol and 1,1,1-TCA. Waste solvents were reportedly discharged into floor drains of test cells. These drains have been piped directly to OATP since 1976; however, prior to that time, the drains ran to an oil/water separator on the west side of B-16 and then to plant outfalls along the Housatonic River. The iron drain pipes corroded over time, and in 1988 were plugged with concrete (SAEP, 1995).

Emulsion cleaning replaced solvent cleaning of test engines in 1990. Current practice requires a maintenance crew to collect wastes from this process using a vacuum cart. The wastes were formerly placed into tanks within a concrete pit west of B-13, and then pumped into waste oil tanks located at the tank farm. Currently, wastes are transported with a vacuum cart directly to the waste oil tanks located at the tank farm. Waste oil/fuel and wastewater are allowed to separate in the waste oil tanks, and wastewater is drained to OATP for treatment. Waste oil/fuel is disposed of off-site.

Mercury manometers were formerly used at the engine testing facilities to measure engine system pressure. Occasionally, a high pressure surge would blow the mercury out of the manometer tube and onto the ceilings, walls, and floors, and into the floor drains. Mercury was reportedly handled carefully because of its cost; however, little mercury was recovered from the described accidental spills.

3.4.1.8 Maintenance. General automotive maintenance and repair is performed in B-9. Waste motor oils and other waste fluids (brake fluid, transmission fluid, etc.) are collected in sumps, which are pumped daily and transferred to the waste oil tank for later recycling. Vehicle motors are overhauled in B-12. According to interview information, the maintenance department at SAEP is responsible for blending oils in B-15, dispensing them to workstations, and collecting waste oils.

3.4.2 Accumulation and Storage

Information contained in this section was drawn primarily from the Final PAS (W-C, 1991), but has been updated to reflect current SAEP activities and practices. Worksheet A of Appendix C provides a tabular review of storage of hazardous substances and petroleum products at SAEP.

3.4.2.1 Storage Tanks. Currently, 58 aboveground storage tanks at SAEP are used to store liquid products and wastes (Table 3-3). Storage tanks at SAEP are used to store fuel oil for the boiler; fuel for engine testing; diesel fuel for compressors and generators; solvents for degreasing and other metal cleaning; water for extinguishing fires; waste oil and chlorinated waste oil; waste fuels; waste 1,1,1-TCA; and waste volatile solvents.

All but two of the aboveground storage tanks are currently situated on concrete pads and have concrete containment dikes. The two exceptions are the oil-alum tank (located near B-13 until 1992, now located next to B-44), which was not surrounded by a concrete containment dike, and the 400,000-gallon fuel oil tank located near B-44, which is underlain by a synthetic liner rather than a concrete pad. A storm drain was observed within approximately 50 feet of the uncontained oil-alum tank (W-C, 1991).

Based on a review of historic photographs and site plans, the majority of aboveground storage tanks at SAEP were installed on concrete cradles or pads, and tanks were usually surrounded by a containment berm (W-C, 1991). It is not known if the bottom surfaces of the containment areas were sealed and maintained to prevent leakage. In the 1970s, a tank located near B-18 was noted to be resting on cradles with no containment berm; however, the tank is now contained by concrete dikes.

Records indicate that all of the known 43 USTs have been removed or abandoned at SAEP since 1955 (Table 3-3).

3.4.2.2 Storage Areas. The primary chemical storeroom identified in the 1991 PAS and this EBS investigation is located adjacent to B-15. This storage area has concrete floors and walls, and no floor drains. Chemicals in this area are segregated and stored by chemical type. Oils, solvents, and cleaners are stored inside B-15. Additionally, raw chemicals formerly were stored in B-13, although the specific types and quantities of chemicals are unknown (SAEP, 1996). Additionally, CTDEP file photos indicate that the areas adjacent to B-13 formerly were used for storage of drums of raw and waste chemicals (SAEP, 1996).

Sulfuric acid, sodium hydroxide, and sodium hypochlorite were formerly stored outside B-70 in 55-gallon drums. These drums were apparently stored in an uncovered and unbermed area (SAEP, 1996).

Another chemical storage area is located next to the plating room in B-2. Chemicals in this storage area are segregated into three types: acids, cyanides, and alkalines. The acids occupy two storage bays, and the cyanides and alkalines occupy a third. The containers are situated on wood pallets on concrete floors.

Flammable materials are stored in B-8 on wood pallets or on metal shelves. Barrel racks in B-8 are surrounded by a concrete containment dike. The floor in this area is covered with absorbent material and no floor drains were observed in the building.

Batteries, oil, grease, and hydraulic fluid are stored in B-9, a maintenance shop area. The floors in this building are concrete, but there is a hydraulic lift pit and floor drains that lead to the OATP.

Machining oils and engine oils are stored in 55-gallon drums on metal racks on the east side of B-4. These oils are used in the engine testing and development areas.

Environmentally hazardous material storage locations identified in the 1991 PAS are indicated on Figure 3-3. Information regarding hazardous material storage locations from this figure and the EBS investigation are combined, and discussed in Section 4.0 of this EBS Report.

3.4.2.3 Temporary Storage Areas. Since 1990, numerous satellite accumulation areas have been established in various locations at SAEP. Satellite accumulation areas serve as temporary storage areas for small quantities (one to six 55-gallon drums) of waste liquids and/or solids. Several of these satellite areas do not have containment systems, and storm drains were observed near some of them. At the time of this report, the number of satellite accumulation areas has been reduced to 27, and plans are in place for a significant reduction in the number of these areas during 1996.

A temporary storage area for 55-gallon drums containing liquid or solid wastes, primarily from plating processes, is located between the tank farm and B-37. Approximately six to 12 drums are normally stored in this area. This storage area serves as a staging area for drums that require testing of contents prior to disposal off site.

3.4.3 Waste Disposal Practices

Little information regarding specific disposal practices at SAEP prior to the 1960s was found by this study. However, it may be assumed that disposal practices at SAEP were similar to industry standards at that time, when there was little public awareness of problems caused by releasing chemicals to the environment.

The primary types of waste generated at SAEP before the 1950s are believed to have been waste oils, fuels, solvents, and paints. Drains at SAEP were piped directly to outfalls to the Housatonic River before construction of OATP in 1976, so any materials discharged into drains flowed to the river. Also, the river received surface runoff, which may have contacted wastes potentially spilled on the site grounds. Several historical aerial photographs show active discharge from several of these outfalls into the river (W-C, 1991).

Since 1951, when the plant was taken over by the U.S. Air Force for the purpose of manufacturing engines, most of the wastes generated at SAEP have resulted from production operations at B-2 and B-10. Wastes have also been generated as a result of engine and engine component testing at B-16 and B-19; research and development at B-3; raw materials testing at B-3, B-6, B-7, and B-58; and vehicle maintenance at B-9.

Quantities of waste generated at SAEP from 1985 to 1990 are listed by waste type in Table 3-4. SAEP-manifested wastes from 1992 to 1994 are listed by waste collection stream in Table 3-5. The information in Tables 3-4 and 3-5 was compiled by SAEP environmental staff based on manifests in their files. Generated waste is either treated on site or disposed of by a private contractor.

3.4.3.1 Known or Suspected Areas of On-site Disposal or Release. The causeway that extends into the Housatonic River was constructed in the 1930s using an unknown source of fill. Additional materials were deposited along the northern edge of the causeway during the 1950s and 1960s. The type of materials deposited in the causeway at that time is not known. Some of the fill is reported to consist of asbestos-containing materials, as well as construction debris (W-C, 1991). The causeway was also reportedly used as a training area for the plant's fire department. Fires were started and extinguished on the causeway.

The shoreline along the plant has been extended several times. Shoreline filling was done in the early 1930s in the area around the entrance to the causeway. The shoreline was further extended both north and south of the causeway to provide land area for additional buildings in the 1940s. Based on aerial photographs, site plans, and historic photographs, approximately 8 acres of land was added in 1944 by hydraulic dredging of the Housatonic River. There are many fill projects in the Town of Stratford that have utilized asbestos waste derived from the former Raymark facility, which is now a National Priorities List site. The EBS investigation produced no verification that fills from the Raymark Site were used at SAEP, although sampling for asbestos in fill areas has not been performed.

A 1943 aerial photograph shows four outfalls from the plant discharging to the intertidal flats area, and several of the 1944 photographs show the pipelines being extended through the hydraulic fill area. Presently, there are eight outfalls from the plant to the intertidal flats. Specific amounts or constituents of materials/wastes that may have been discharged from the outfalls in the past is not known; however, any material or waste discharged or spilled into storm drains prior to construction of OATP was potentially released to the intertidal flats through one of the outfalls. Four documented chemical releases to the intertidal flats were discovered during the present record search (see Appendix C, Worksheet B). These releases involved chromic acid (1978 and 1987), oil (1979) and fluorescent metal penetrant dye (1981).

The shoreline area (i.e., area where hydraulic fill was placed) has been used to store raw stock such as castings (which were manufactured elsewhere), fuels and oil, scrap metals, and waste fuels, oils, and solvents. This area has also been used for testing engines and engine components since the early 1950s. Past disposal or releases in this area include:

B-3A

- A spill of liquid cleaning solvents to the ground surface immediately north of B-3A occurred in April 1989 (SAEP, 1995).

B-19

- A dry well, located inside B-19, was used for disposal of waste fuels, oils, and solvents. Although the dry well is not currently used, no records were found to indicate that it had been investigated or removed.

- A drum storage area, located east of B-19, formerly had a drainage system comprised of a grate underlain by a gravel trench.

- Fuel storage tanks in this area were occasionally overfilled.

B-5, B-16, and B-34

- Manometers formerly used in B-16 for pressure measurements would occasionally release mercury to test cells, and some mercury was potentially washed down the drains.

- Solvents used for engine cleaning were used in large amounts, and at one time waste solvents/oils/fuels were discharged into drains. Waste solvents have been also been contained in drums or carts that were collected on small docks located on the east side of B-16; some spills have reportedly occurred in this area.

- Fuel storage tanks near B-34 have historically been overfilled, resulting in spills to the ground surface (SAEP, 1995).

B-13, B-15, B-58, and Tank Farm

- This area of the site has been used for oil blending, waste reclamation, and waste storage since the 1940s. Although no major releases or spills in this area have been reported or documented, numerous small spills have reportedly occurred and there is potential of leakage from drain lines and pits.

- Minor overfills of tanks at the tank farm have reportedly occurred in the past.

- The Tank Farm, which consists of aboveground storage tanks, formerly was located approximately 50 feet to the south of the current location (SAEP, 1996).

3.4.3.2 Industrial Wastewater. Industrial activities at SAEP result in the generation of wastewater that is contaminated with heavy metals, cyanide, caustics, acids, oils, greases, fuels, and solvents. These industrial wastewaters are currently separated into three waste collection streams for on-site treatment prior to discharge. On-site wastewater treatment facilities include:

- The CWTP (B-18), constructed in 1958 and upgraded in 1986
- The CDF (B-70), constructed in 1986
- The OATP (B-64), constructed in 1976

SAEP is authorized to discharge from eight outfalls (OFs) (Figure 3-2) under National Pollutant Discharge Elimination System (NPDES) Permit No. CT0002984 (see Section 3.5.4 for discussion of discharge permits). OF-007 discharges wastewater treated at OATP to the Housatonic River; OF-008 discharges wastewater treated at CWTP to a drainage channel that flows to the Marine Basin south of the plant; OF-001 through OF-006 discharge intermittently to the Housatonic River when heavy runoff enters the plant's storm water drainage system.

<u>Chemical Waste Treatment Plant (CWTP) and Cyanide Destruction Facility (CDF)</u>

From 1951 (when plating operations began at SAEP) to 1958, wastewater from plating and related operations was neutralized in the process tank and then discharged to the storm water system for disposal (ESE, 1981). At that time, storm water drained directly to the Housatonic River. CWTP began operating in May 1958 to handle wastewaters generated by electroplating and other corrosion resistance operations.

As originally designed, CWTP had a bentonite-lined equalization lagoon, which has been closed under RCRA Subtitle C requirements. Treatment processes at CWTP originally involved alkaline chlorination for cyanide oxidation; hexavalent chromium reduction; and coagulation and sedimentation of metal hydroxide precipitates. Sludges generated by these treatment processes were disposed of in one of three on-site, unlined lagoons. These lagoons were also closed under RCRA Subtitle C requirements.

In the 1980s, various problems associated with operations at CWTP were recognized, such as: the disposal of waste sludge in lagoons, discharges above permitted pH limits, and potentially unsafe mixing of wastestreams that could result in generation of hydrogen cyanide gas (Weston, 1982). To address these issues, the plant and piping were upgraded to segregate wastestreams, add a separate cyanide destruction facility, add equalization tanks, renovate existing tanks and clarifier, and add a sludge dewatering facility.

Currently, cyanide-contaminated wastewater is separated from other industrial wastewater. Cyanide wastewater is piped to CDF, where it is treated by alkali chlorination and converted to nitrogen and bicarbonate. Effluent from this process is combined with other wastewaters and pumped to equalization tanks at CWTP. Treatment at CWTP involves chromium reduction, precipitation of chromium and other heavy metals, and clarification. Effluent from the clarifier passes through sand filters before final discharge at OF-008. Sludges from the clarifier are dewatered by a sludge thickener and filter press. The filter cake is disposed of off- site, and the filtrate is returned to CWTP for further treatment.

Oil Abatement Treatment Plant (OATP)

OATP began operations in 1976, to remove oil and grease from wastewater in the plant's storm drainage system prior to discharge to the Housatonic River. OATP operates continuously, with an average flow of 1.8 million gallons per day, and a maximum design flow of about 4,200 gallons per minute (INEL, 1991).

The plant drainage system is currently equipped to convey dry weather flow, including the first flush of storm water, to OATP for treatment; however, some runoff (dependent on the magnitude of the storm event) is discharged directly to the Housatonic River. Wastewater is delivered to OATP by six pump stations. Pump stations B-36, B-37, and B-38 serve the northern half of SAEP, and pump stations B-41, B-40, and B-64 serve the southern half. Each half of the plant is served by its own transmission main to convey water to OATP (Genovese and Associates, 1990).

Influent to OATP enters a surge tank for flow equalization. Treatment processes involve coagulation and flocculation by addition of liquid alum in a flash mixer, and dissolved air flotation and skimming in a flotation chamber. Effluent from OATP is discharged to the Housatonic River through OF-007.

OATP is presently being redesigned to bring it into compliance with new toxicity performance standards. Several problems were noted during a 1990 design investigation, including: the continuous or intermittent presence of oil, copper, 1,1,1-TCA, and ammonia discharge to the waste collection stream; and inadequate pump capacities at B-36, B-37, B-40, and B-41 to prevent localized flooding and resulting direct discharge to the Housatonic River caused by a two-year return frequency storm event (Genovese and Associates, 1990).

3.4.3.3 Sanitary Wastewater. Sanitary wastewater generated at SAEP is conveyed to the Town of Stratford's treatment plant. Sanitary sewers from plant buildings connect into a main discharge line that runs across the site and connects into a pump station located in the north parking lot (Figure 3-2), owned and maintained by the Town of Stratford. The Town of Stratford has an easement across SAEP for their sewer line and pump station, which was granted in early 1982, consisting of approximately 1,250 linear feet and 0.22 acres of land at SAEP.

The Town of Stratford's treatment system consists of activated sludge secondary treatment; effluent is discharged into the Housatonic River. The discharge outfall is located about 1/2-mile upstream of SAEP. There are no known problems resulting from SAEP's sanitary sewerage discharge.

3.4.3.4 Solid Waste. Solid wastes generated at SAEP include sludges from treatment at CWTP and OATP, scrap metal and wood, waste paper, and small amounts of waste food scraps and medical waste.

At present, scrap wood, waste paper, food scraps, and wastes from the on-site medical dispensary are collected for disposal or reclamation by private contractors. Reportedly, ash and cinders from incineration have been disposed of on site (W-C, 1991).

Waste sludges generated by CWTP were formerly stored in three unlined sludge lagoons. From 1957 to 1968, about 7,000 gallons of sludge were removed biannually by a private contractor and disposed of at the Town of Stratford's landfill. This practice ceased in 1968, when the landfill refused to accept sludge. In 1981, a USACE project removed approximately 10,000 cubic yards of sludge for disposal in Bridgeport's Seaside Park landfill (ESE, 1981). These lagoons were closed in 1990.

Waste sludges generated by OATP are stored on site in the oil-alum tank near B-48. A private contractor periodically removes these wastes for off site incineration.

3.4.4 Use of Pesticides, Rodenticides, and Herbicides

Pesticides and rodenticides have been used at SAEP to control pest-related structural problems and to prevent health problems. All pest control services are currently contracted to State of Connecticut certified applicators. According to interview information, in the past, pest control was accomplished by SAEP maintenance crews. However, no evidence of widespread pesticide or rodenticide use or storage has been discovered by this study.

Currently, pesticides or rodenticides are not stored or mixed at SAEP. As needed, they are transported premixed to the site by a licensed contractor. No containers, excess product, or rinse waters from pesticides or rodenticides are known to have been disposed of on site, based on interview information and other reports (ESE, 1981).

Small quantities of herbicides were formerly stored in B-13. Herbicides were mixed outside, generally on paved areas, without containment. No wastes were reportedly generated, because all the mixed product was used at the time of application. Currently, herbicides are applied as needed by a licensed contractor (AMC, 1987).

3.4.5 Explosives/Ordnance Storage and Use

Explosives were stored in B-59 during the late 1960s and 1970s, for use in the manufacturing of reentry vehicles for the Titan and Minuteman Intercontinental Ballistic Missile (ICBM) systems. The explosives used at SAEP were reportedly for explosive bolts or explosive materials used in the guidance systems of the ICBMs, packed inside cylindrical containers. Because some of these records are classified, and others were not located during this study, the type and quantity of explosives used and stored at SAEP is not known.

No unexploded ordnance was reported or observed at SAEP during site visits.

3.4.6 Use of Radiological Materials

The only radiological materials currently licensed and handled at SAEP are magnesium- and nickel-thorium (thorium) alloys (2 percent thorium). These alloys, used as part of the turbine engine intake structures, are handled under U.S. Nuclear Regulatory Commission (NRC) License Number STB-393. The maximum licensed amount of thorium alloy that can be stored on site at a given time is 2,300 kilograms (kg).

The thorium alloy is machined at SAEP as part of the engine production and requires special handling. All machine turnings of the alloy and machining fluids are recovered and recycled. Radiation and contamination surveys are performed and recorded semi-annually at SAEP, and the SAEP Safety Office ensures compliance with the conditions of the NRC license and AlliedSignal's Standard Operating Procedures (SOP). Readings reportedly average 0.001 millirem per hour (mrem/hr). This radiation level is well below the 5-mrem/hr level allowable for occupational exposure (ESE, 1981). In accordance with license requirements, radiological inspections of the installation are conducted by the NRC every three years on an unannounced, random basis.

Historical operations conducted at the SAEP utilized instruments and materials containing radioactive nuclear byproduct materials (i.e., cobalt 60, silver 110, cadmium 109, cesium 134, cesium 137, iridium 192, phosphorous 32, krypton 85, strontium 90, and hydrogen 3). The instruments and materials were used in the 1960's and 1970's in the production and testing of missile components, and were regulated under NRC License Numbers 06-08612-01, 06-08612-03, 06-08612-04, and 06-08612-05. Possession and use of the licensed materials was discontinued in the 1970's when the licenses expired. The instruments were used in testing and evaluating material thickness, density, temperature, corrosion, and ablation, and contained sealed sources of radioactive material. A sealed source means that the radioactive source material is shielded to prevent emission of radiation outside of the instrument. Metallic materials (e.g., bearings) containing radioactive byproducts were used in the production and testing of missile components. All licensed radioactive materials and their uses reported in the NRC licenses are presented in the Table 3-6.

3.5 ENVIRONMENTAL COMPLIANCE AND PERMIT STATUS

This section provides a summary of compliance issues related to the various state and Federal environmental statutes and regulations that apply to SAEP. This summary highlights past compliance problems, compliance actions in progress, and possible areas for future concern. This summary does not, however, serve as a detailed compliance audit, which would list every violation of environmental requirements whether or not it has been addressed by a regulatory agency. Audits for this purpose have been conducted in the last few years by the AMC (AMC, 1987) and Textron Lycoming Stratford (TESS, 1990).

This section was not prepared by legal counsel and does not constitute a legal analysis, opinion, or advice. This summary briefly addresses: records of past inspections and compliance actions; reports submitted by SAEP to the CTDEP, USEPA, and other regulatory agencies; and compliance issues that may be encountered in the future.

3.5.1 Resource Conservation and Recovery Act (RCRA) Status (includes Lagoons, Waste Storage Areas, and USTs)

3.5.1.1 Resource Conservation and Recovery Act (RCRA) Subtitle C: Hazardous Waste Management. SAEP is listed on the USEPA Federal Agency Hazardous Waste Compliance Docket (originally published in 53 FR 4280, February 12, 1988). The docket serves three purposes:

- to identify the universe of federal facilities that must be evaluated to determine if they pose risk to public health and the environment;
- to compile and maintain the information submitted to USEPA on these facilities under the provisions listed in section 120(c) of CERCLA; and
- to provide a mechanism to make this information available to the public.

SAEP was included on the original February 12, 1988 list, and its listed status has not changed in the subsequent revisions. SAEP is listed because of activities or reporting related to RCRA Sections 3005, 3010, and 3016, but is not listed under the remaining category of CERCLA Section 103. RCRA Section 3005 concerns submission of permit applications for TSDFs; this listing presumably concerns the Part A application submitted by SAEP in 1980. RCRA Section 3010 concerns notification to USEPA by generators or TSDFs stating the location and description of hazardous waste activities and the identified or listed hazardous wastes generated, treated, stored, or disposed of at the facility. RCRA Section 3016 requires that each federal agency identify facilities it owns (or has owned) or operates (or has operated) that have been the site of some type of TSDF operation; for example, the lagoons at SAEP. CERCLA Section 103 requires reporting to the National Response Center of non-permitted releases of hazardous substances in excess of the reportable quantity (CERCLA Section 102). Generally, a release that is required to be reported under the Emergency Planning and Community Right-to-Know Act (EPCRA) will also be required to be reported under CERCLA Section 103.

3.5.1.1.1 State/Federal Authority

Until January 31, 1986, CTDEP had authority for managing Subtitle C in Connecticut. At that time, the program reverted to USEPA. As of January 1, 1991, CTDEP regained authority from USEPA for management of this program.

3.5.1.1.2 Compliance History.

Part A and Part B Applications. The Part A application for interim status as a hazardous waste TSDF was submitted on November 13, 1980. SAEP is currently operating under interim status (40 CFR 265) as a large-quantity generator under ID No. CTD001181502 (AlliedSignal, Inc.).

USEPA regulations (40 CFR 270.73[g]) specify that interim facility status expires on November 8, 1992 unless the facility submits a Part B application for final permit status as a TSDF by November 8, 1988. A facility must either have gone through the closure process for each hazardous waste management unit (HWMU) listed in the Part A application by November 8, 1992 or have submitted the Part B application for change to final permit status (40 CFR 264). Although SAEP intends to close all units that would be subject to the TSDF regulations (40 CFR parts 264 and 265), a Part B application was submitted to fulfill regulatory requirements, since closure would not be complete by November 8, 1992. The Part B application for SAEP was submitted on November 8, 1985 (received by CTDEP on November 13, 1985); therefore, SAEP is compliant with the regulations even though no action has been taken by CTDEP. After closure has been completed on all HWMUs, SAEP will operate under generator-only status, with less stringent operating and reporting requirements than under TSDF requirements.

Annual/Biennial Reports. Annual reports required of SAEP include those for exporters of hazardous waste (40 CFR 262.56) and for groundwater monitoring systems at interim status facilities (40 CFR 265.94).

Biennial reports required of SAEP include those for generators of hazardous waste (40 CFR 262.41), and for interim status TSDFs (40 CFR 265.75).

Inspections/Compliance Actions/Current Regulatory Status

Inspections. SAEP is inspected annually for compliance with the requirements of RCRA Subtitle C. Inspection reports in the SAEP files indicate that past inspections were conducted by CTDEP or USEPA, or were joint CTDEP/USEPA inspections.

Manifest Warning Letters. Since 1984, 37 Letters of Warning have been sent to SAEP by CTDEP for deficiencies in completion of hazardous waste manifests: one in 1984; three in 1985; seven in 1986; seven in 1987; 14 in 1988; four in 1989; and one in 1990. SAEP is unaware of any warning letters regarding manifests from 1991 to 1995. To the best of SAEP's knowledge, all prior warning letters have been resolved (SAEP, 1995). Deficiencies include missing analytical results, transporter name or ID number, manifest document numbers, waste ID numbers (DOT or USEPA), and waste quantities; container type not specified; use of incorrect USEPA generator ID number; point of departure from the United States not specified for international shipments; failure of the generator or transporter to sign and date the manifest; illegible manifests; and failure to respond to a manifest warning letter (April 1989 letter [date is not legible] regarding a June 24, 1988 Letter of Warning). All but six of the warning letters are marked "OK", indicating that the required corrections were made and submitted to CTDEP. The six letters that have not been marked "OK" by CTDEP are the August 12, 1988; October 10, 1988 (2); October 31, 1988; April, 1989; and November 12, 1990 letters.

Other Warning Letters/Notices of Violation. In a May 22, 1986 letter, CTDEP notified AVCO (sic) that it had failed to submit the 1985 generator biennial report by March 1, 1986, as required, and that the report must be submitted before June 30, 1986. In an August 6, 1986 "Notice", CTDEP informed SAEP that the submitted report had been completed incorrectly. The letter states that "combined reports are not acceptable. Facility and the Generator information should be described on separate reports," referring to the biennial interim status TSDF facility report required by 40 CFR 265.75 and the biennial generator report required by 40 CFR 262.41. The letter indicates that an incorrect code, referring to underground injection (not allowed in Connecticut), was used on the report. CTDEP records indicate that the corrected report was received on August 26, 1986.

On November 28, 1986, CTDEP issued Notice of Violation No. 291 for violations noted on the June 10, 1986 inspection.

In a June 15, 1989 warning letter, CTDEP notified AVCO Lycoming Textron (sic) that it had failed to submit the 1988 facility hazardous waste biennial report by March 1, 1989, as required, and that the report must be submitted before July 15, 1989. The report was submitted by SAEP, but there was no notation on CTDEP's copy of the warning letter to indicate that the report had been received.

CTDEP Orders. Several orders have been issued by CTDEP to bring SAEP into compliance with hazardous waste management regulations.

Order No. HM-215. Issued October 22, 1984 to "Bring all waste handling procedures and facilities into compliance with the State's Hazardous Waste Management Regulations," and to "Effect the removal and proper disposal of all hazardous, toxic, and other industrial waste now stored on-site in a manner approved by the Commissioner of Environmental Protection."

In a "Letter of Compliance" dated February 18, 1986, the CTDEP determined that AVCO Lycoming (sic) had achieved compliance with CTDEP Order No. HM-215, as determined by a January 6, 1986 compliance inspection.

Order No. HM-358. Issued September 25, 1986 and modified November 26, 1986 to change the compliance schedule, ordered SAEP to "Investigate the rate and extent of contaminant migration and degree of groundwater contamination resulting from chemical and hazardous waste management practices at the South Main Street site." A hydrogeologic assessment and groundwater monitoring plan was to be submitted, along with recommendations for further investigation. A certificate of compliance was issued on November 17, 1992.

Order No. HM-572. Issued January 23, 1988 to "Bring all waste handling procedures and facilities into compliance with all Connecticut Hazardous Waste Management Regulations," including:

- Compliance with closure requirements
- Submission of a revised Part A application
- Submission of a detailed description of hazardous waste management procedures to be implemented in order to bring the facility into compliance
- Updating of the site contingency plan, waste analysis plan, and preparedness and prevention plan.

No correspondence from the CTDEP acknowledging compliance or non-compliance with this order was discovered during this study. It is not known if any correspondence exists.

Order No. HM- (number missing). Issued for improper completion of manifests for shipments of hazardous waste to Canada. This issue was resolved under RCRA docket I-91-1078, dated August 1, 1991. All exports to Canada were ceased as of July, 1992 (SAEP, 1995).

Groundwater Monitoring. The present groundwater monitoring system is limited to the area near the now-closed lagoon system. SAEP has been submitting the required (by 40 CFR 265.94) annual groundwater monitoring (GWM) reports for eleven years (the eleventh annual report was completed in February 1995 and submitted to CTDEP). SAEP appears to be complying with CTDEP GWM installation and reporting requirements. CTDEP closed out Order HM-358 on November 17, 1992.

3.5.1.1.3 Closure Requirements.

Lagoon Closure. Closure of this unit, which includes three former storage lagoons and a former equalization basin, was completed in the summer of 1989. The certification of closure has been submitted to CTDEP. The CTDEP did not sign the certification, although the regulations (40 CFR 265.115) require only that the owner or operator sign and submit the certification.

Drum Storage Area Closure. A closure plan for the drum storage area located in a steel-roofed building next to B-18 was submitted to the CTDEP for review and approval. CTDEP estimated the closure plan review would take between 1.5 to 2 years because TSDF permits have a higher priority than closure plans. SAEP is currently seeking permission to go forward, not with the original closure plan, but with complete demolition and shipment of the pad to a permitted disposal facility.

3.5.1.1.4 RCRA Facility Assessment.

In 1992, the USEPA conducted an RFA of SAEP (CDM, 1992). The results of the RFA were published in a Final Draft form in June 1992. The purpose of the RFA was to identify and gather information on potential and actual releases from AOCs at SAEP and to evaluate their potential for future impact to human health and the environment.

Within the RFA, the following subjects were addressed: site location and owner/operator history, facility process and waste management practices, regulatory history, previous work conducted on the site, and environmental setting.

A total of 58 AOCs were identified in the RFA and are summarized on Table 3-6. It appears that the AOCs have either been addressed during the course of Phase I and Phase II Remedial Investigations or will be addressed in future investigations at SAEP.

3.5.1.1.5 Future Regulatory Status/Issues.

Post-closure Requirements. USEPA regulations require post-closure monitoring and reporting for 30 years after closure of a HWMU, such as the lagoons at SAEP. The lagoon closure cannot be considered a "clean closure", because contaminated soil was removed only to the low tide water level. It is possible that the monitoring system will continue to detect residual contamination from the site, which could require the implementation of corrective measures to remediate the soil and groundwater.

RCRA Corrective Action vs. CERCLA Remedial Action. RCRA corrective actions are meant to be more flexible than those under CERCLA and are meant to lend consistency to state implementation of remedies (Environment Reporter, 1990). Draft RCRA corrective action regulations were proposed on July 27, 1990 and have not been finalized at the time this report is being published (March 1996).

At this time, it appears that any corrective actions for contaminated soil or groundwater at SAEP would be undertaken through the RCRA process. Previous investigations conducted by and for USEPA have resulted in a recommendation that no further remedial action be planned for SAEP under CERCLA. RCRA corrective action rules are meant to be used at operating RCRA facilities, such as SAEP; the risk to public or private water supplies from contamination at SAEP has been determined to be insignificant; and USEPA seems to be shifting the regulatory authority over cleanups to the states (under RCRA) when possible. Corrective actions at SAEP under RCRA would likely be undertaken under CTDEP authority, while USEPA would likely have authority over CERCLA remedial actions.

3.5.1.2 Subtitle I: Regulation of Underground Storage Tanks.

3.5.1.2.1 Information From File and Textron Environmental Self-Survey (TESS) Report

There are no existing USTs at SAEP as of February, 1996.

Information indicating the type of tanks (concrete, steel, fiberglass) and the age of storage tanks was reported in the TESS report (TESS, 1990) and is contained in Table 3-3.

3.5.1.2.2 Compliance With Regulations

Several CTDEP requirements are more stringent than federal requirements; these are the: schedule for upgrading tanks; regulation of aboveground storage tanks; and immediate reporting of releases. Heating fuel tanks of 2100-gallon capacity or greater are regulated under state law.

The TESS report indicates that all USTs are provided with secondary containment and leak detection, and that all required notifications were completed. Based on information in the TESS report, this program appears to be in compliance with applicable federal requirements.

3.5.2 CERCLA Status

3.5.2.1 State/Federal Authority. CERCLA is a federal program with state involvement in determining whether a site presents a significant enough hazard to warrant inclusion on the NPL (also referred to as the "Superfund" list). As noted below, SAEP is not under consideration at this time for addition to the NPL.

Connecticut has its own "Superfund" for funding remediation at sites that are not included on the NPL, and/or for which a responsible party cannot be identified or is unwilling or unable to pay. This fund is intended to pay for remedial activities completed by the State, and the State is required to seek reimbursement for these costs from the responsible parties (i.e., the Superfund is not a grant program to be used by responsible parties for remediation of contaminated sites).

No information was found in SAEP files to indicate that the CTDEP is considering inclusion of SAEP on the State Superfund Priority List (SPL).

The statutes regarding the State Superfund are found in the Connecticut General Statutes, Title 22a, Chapter 445, at 22a-133. The State Superfund regulations are found in the Regulations of Connecticut State agencies, Title 22a, Chapter 133f.

3.5.2.2 Regulatory History/Current Regulatory Status. A preliminary assessment (PA) of SAEP, dated June 10, 1987, and a site inspection (SI), dated 1988, have been completed by USEPA. Following completion of the PA and SI, an NUS Corporation Field Investigation Team (FIT) conducted a population/water supply survey for SAEP. In a memo dated June 12, 1990, NUS recommends "no further remedial action be planned," based on their finding that "there are no known public or private drinking water sources along the groundwater and surface water pathways within a three-mile radius" of SAEP. This recommendation effectively removed SAEP from consideration for the NPL; the official notice of removal from further consideration came to SAEP in a July 16, 1990 letter from USEPA. This recommendation does not indicate that there is no hazard associated with the site; rather, that the site does not require further investigation under CERCLA. Further corrective action under RCRA could be required.

3.5.3 Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA, or SARA Title III)

3.5.3.1 Federal Authority. Federal facilities are exempt from reporting requirements found in Subtitle B of SARA Title III. However, according to USEPA, government-owned contractor-operated facilities "are subject to Title III to the same extent as any other operator and, therefore, are statutorily required to comply with the full range of requirements under the Emergency Planning and Community Right-to-know Act (USEPA, 1988).

3.5.3.2 Current Regulatory Status. A review of SAEP files indicates that the facility has been complying with the reporting requirements of Subtitle B of SARA Title III.

3.5.4 Clean Water Act Status (includes NPDES Permit Status)

3.5.4.1 State/Federal Authority. Connecticut has the authority to administer all Clean Water Act (CWA) programs, including the NPDES permit program, the industrial pretreatment program, and the storm water discharge permit program. Cleanup of sediments potentially contaminated by SAEP's wastewater discharges could be administered through the CWA by the CTDEP, although the RCRA or CERCLA units of CTDEP or USEPA could become involved if other corrective measures were required under either of those programs.

3.5.4.1.1 Discharge to Surface Waters

SAEP's NPDES permit (No. CT0002984), issued to Textron Lycoming-SAEP by CTDEP in 1991, expires on July 29, 1996. The renewal application will be submitted to CTDEP in the near future (SAEP, 1995). The permit allows direct discharge to the Housatonic River from eight outfalls, designated as discharge serial numbers OF-001 through -008.

The NPDES permit classifies the Housatonic River at the point of discharge for SAEP as SC/SB, according to Connecticut Water Quality Standards. The SB classification requires a dissolved oxygen (DO) content of 5.0 milligrams per liter (mg/l) at all times, while SC waters may experience lower concentrations. SC waters may exceed the SB coliform bacteria concentration criterion of a log mean of 200 organisms/100 milliliters (ml). Further, concentrations of chemical constituents in SC waters may be present in concentrations that limit the distribution or abundance of aquatic life. Designated uses for SB waters are marine fish, shellfish, and wildlife habitat, and recreational, industrial, or other uses, including navigation. The SC/SB classification for the SAEP point of discharge signifies that the water quality goal for the river is class SB, but the river is not presently meeting SB water quality criteria, and thus is classified as SC.

The draft NPDES permit requires quarterly sampling and analysis of effluent from OF-007 and OF-008 for acute and chronic aquatic toxicity (see Section 3.5.4.3.2 for discussion of draft NPDES permit).

On March 18, 1991, the regulatory deadline, Textron submitted a Part 1 application for a group storm water discharge permit, on behalf of 37 Textron Inc. facilities. Subsequently, this application was withdrawn for the SAEP facility, which was registered under the Connecticut General Permit Program (SAEP, 1995). This registration was then transferred to AlliedSignal.

3.5.4.1.2 Compliance History/Orders

Several spills of hazardous materials have resulted in discharges to surface waters in the SAEP site vicinity.

- October 29, 1981. Approximately 20 gallons of fluorescent metal penetrant, a dye used for nondestructive inspection of metal parts, was spilled into a storm drain and discharged from OF-007.

- July 29, 1979. Approximately 75 gallons of oil sludge from the OATP bypassed clogged skimmers and discharged from OF-007. SAEP was notified of the problem by the U.S. Coast Guard, which was searching for the source of an oil slick on the Housatonic River. (SAEP was apparently the sole source.)

- May 8, 1978. Twenty-five to 30 pounds of chromic acid was spilled, and most flushed into a storm drain. About 50,000 gallons of diluted acid was intercepted in the drain and pumped into a holding tank. Remaining pools of the diluted acid were pumped to the CWTP. Acid that was not intercepted or contained discharged to the Housatonic River from OF-007. Chromium concentrations of effluent from OF-007 were measured at 30 mg/l on May 8, 1978, 2.5 mg/l on May 10, 1978, and were not detectable by May 11, 1978.

- August 1978. CTDEP was advised by SAEP that a yellow plume with a pH of 2.9 and 64.0 parts per million (ppm) of hexavalent chromium was extending approximately 200 yards from Textron's point of discharge (OF-007) into the Housatonic River (CDM, 1992).

No records of enforcement actions or fines relating to these releases were found during this records search.

CTDEP Order No. 3644. Issued December 21, 1983 to SAEP to make modifications to OATP in order to bring OF-007 into compliance with the NPDES permit by "proper treatment of oily wastewaters." SAEP has reportedly complied with this order.

Consent Decree, Civil Action No. H84 441 MJB. Signed April 10, 1984, resulted from a citizens' suit initiated by the Connecticut Fund for the Environment (CFE) and the Natural Resources Defense Council, Inc. (NRDC) for violations of permit discharge limitations. SAEP agreed to "use its best reasonable efforts" to achieve compliance with the permit, to complete the upgrading of the CWTP, and to complete several other actions to achieve compliance. The decree expired when these actions were completed, and CFE and NRDC had given written notice of the completion.

Records indicate that frequent and severe violations of permit limitations (i.e., effluent concentrations more than five times the permit limit) occurred prior to the mid-1980s. Violations have occurred since that time less frequently, and with less severity. Since November 1994, the only violation has been associated with the failure to meet aquatic toxicity criteria. Upon retesting of the sample, the parameter in question was found to be in compliance.

3.5.4.2 Current Regulatory Status.

3.5.4.2.1 Discharge to Sanitary Sewer

No notices of violation or noncompliance were found in the files. According to SAEP's environmental coordinator, SAEP is currently in compliance with the requirements of the permits.

3.5.4.2.2 Direct Discharge

No violations of the NPDES permit have been found since November 1994.

3.5.5 Clean Air Act

SAEP is located in the New Jersey-New York-Connecticut Interstate Air Quality Control Region (40 CFR 81.13). Additionally, Connecticut is a designated part of the single transport region for ozone (Clean Air Act [CAA], section 184.(a)). This Ozone Transport Region (the only one specifically established by the CAA) also includes Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and the Consolidated Metropolitan Statistical Area that includes the District of Columbia.

The Stratford area is included in a severe nonattainment area for ozone (O_3) and a moderate nonattainment area for carbon monoxide (CO).

3.5.5.1 State/Federal Authority. CTDEP has been delegated the authority by USEPA to implement and enforce most CAA programs, with the exceptions of the acid rain and ozone depletion programs under the 1990 CAA amendments, and the radionuclide regulations in National Emission Standards for Hazardous Air Pollutants (NESHAPS, 40 CFR 61). CTDEP is awaiting USEPA approval for its state operating permit program under CAA Title V.

Although CTDEP has the lead in enforcing the CAA, the 1990 amendments (PL101-549) enhanced USEPA's authority to initiate enforcement actions if it determines that the state has not initiated an enforcement in a timely manner (i.e., within 30 days after the notice of violation for a State Implementation Plan (SIP) violation or within 90 days for a permit violation). This can include a compliance order, an enforcement order, or a civil action with a maximum penalty of $25,000 per day per violation. Violations of NESHAPS requirements could also lead to criminal action, including a fine and imprisonment (CAA, Section 113). The amendments also provide, at CAA Section 113(f), for the award of up to $10,000 to any person who provides information leading to the criminal conviction for violations of Titles I, III, IV, V, or VI of the CAA.

3.5.5.2 Compliance History.

3.5.5.2.1 Permits or Registrations

Permits under the CAA are issued for individual emission sources. However, some emission sources, such as air vents and fugitive dust sources, do not require a permit, although they are subject to the CAA and applicable emission limitations (e.g., particulate emission limitations).

Permits are required and have been obtained for a number of sources at SAEP, including engine test cells, boilers, and plating lines. A review of SAEP records indicates that in 1986/1987, one permit was not obtained as required for an emergency generator for the OATP because of a disputed interpretation of definition of "mobile" vs. "stationary" sources.

3.5.5.2.2 Inspections

SAEP is inspected annually by CTDEP. Prior to the inspection, SAEP must complete a pre-inspection questionnaire and submit it to CTDEP. The inspection consists of an on-site visit by a CTDEP inspector to confirm information contained in the questionnaire.

Inspection reports from 1990-1992 indicate occasional violations of CAA requirements, such as: fumes escaping from vapor degreasers; failure to notify CTDEP of modifications to or additions of processes that could increase emissions; and excess emissions of chromic acid. SAEP was determined to be in compliance with chromic acid emission requirements and appears to be in compliance with other CAA requirements.

3.5.5.3 Current Regulatory Status.

3.5.5.3.1 Asbestos Emissions

A consent decree was sent to AlliedSignal on May 10, 1990 for NESHAPS violations of the asbestos standards. This consent decree references a complaint that was not found in SAEP's files (W-C, 1991).

To date, no asbestos fibers have been detected in the air of this area (W-C, 1991). SAEPs Health and Safety Officer reported that monthly air monitoring is performed in a hallway between B-1 and B-2 because of a worker complaint.

According to SAEP's Environmental Coordinator, SAEP was still in compliance when the consent order expired in January 1995 (SAEP, 1995).

3.5.5.3.2 Radionuclide Emissions

NESHAPS regulations set limits on the emissions of radionuclides (40 CFR 61, Subpart I, effective July 13, 1990) from facilities holding NRC licenses. These regulations would apply to emission points (e.g., ventilation system exhausts) from areas where thorium alloy are machined or where thorium dust could be generated. Emissions to the ambient air cannot exceed an amount that would result in a member of the public receiving an effective dose equivalent of 10 millirems per year (mrem/yr) in any year (40 CFR 61.102). The SAEP Safety Office ensures compliance with the conditions of the NRC license and AlliedSignal's SOP.

As part of the NRC License Number STB-393, the NRC periodically inspects the installation to evaluate compliance with NRC regulations and license conditions. Failure to adhere to NRC regulations and license conditions could result in issuance of a notice of violation, imposition of a civil penalty, ordering of license suspension, or revoking of license as specified in the General Policy and Procedures for NRC Enforcement Actions, 10 CFR Part 2, Appendix C. The NRC inspection includes a review of monitoring results to ensure compliance with applicable regulations. No information was found in flies indicating non-compliance with these requirements. The last NRC inspection was conducted in September of 1994, no items of non-compliance were found.

3.5.6 Toxic Substances Control Act (TSCA)

3.5.6.1 State/Federal Authority. The two main groups of substances presently regulated under TSCA are asbestos and PCBs. Presently, TSCA regulates asbestos-related activities in schools, and the manufacture, import, processing and distribution of asbestos-containing products. SAEP is not involved in any such activities, therefore, the asbestos regulations do not apply. The TSCA regulations do affect SAEP for remediation of PCB-contaminated material and the management of PCB-containing electrical equipment, such as transformers.

3.5.6.2 Compliance History.

USEPA Consent Agreement and Order, TSCA Docket No. 84-1006. Signed February 8, 1984 in response to findings that SAEP failed to maintain adequate inspection and maintenance records for 20 PCB transformers. SAEP agreed to subsequently ensure that transformers would be inspected and that records of inspections and maintenance history of the transformers would be maintained.

3.5.6.3 Current Regulatory Status. SAEP appears to be in compliance with the requirements of the regulations and the consent agreement.

3.5.7 Safe Drinking Water Act (SWDA)

3.5.7.1 State/Federal Authority. Federal facilities must comply with the Safe Drinking Water Act (SDWA), except where a Presidential waiver is determined necessary for purposes of national security. SDWA Section 1449 provides for citizen suits against federal facilities in cases of noncompliance.

The SDWA primarily applies to owners and operators of public water supply systems. SAEP purchases its water from the Bridgeport Hydraulic Company, and is therefore not subject to most SDWA requirements. The section of the SDWA that does apply to SAEP is Section 1417, prohibiting use of lead pipes, solder, and flux in any plumbing in residential or nonresidential facilities connected to a public water system after the effective date of the 1986 SDWA amendments.

3.5.7.2 Compliance History. No indication was found in the SAEP files to indicate any past compliance problems related to the requirements of this Act.

3.5.7.3 Current Regulatory Status. Available information indicates that SAEP is in compliance with the requirements of the SDWA.

3.5.8 Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

3.5.8.1 State/Federal Authority. The USEPA, through FIFRA, regulates the registration of pesticides, registration of pesticide manufacturing facilities, use of pesticides, and certification of pesticide applicators.

3.5.8.2 Compliance History. No information was found in the SAEP files to indicate any past compliance problems related to the requirements of this Act.

3.5.8.3 Current Regulatory Status. Current regulatory status could not be determined from information in SAEP files. Pesticide application is subcontracted, and no storage or application records were found in the files.

3.5.9 Endangered Species

3.5.9.1 State/Federal Authority. The Connecticut Endangered Species Law (Volume 8, Section 26, Chapter 495 of the Connecticut General Statutes) was passed in 1989. This law establishes a program to protect threatened and endangered (T&E) species. Under this program, the CTDEP "may conduct studies of wildlife and plants to better understand their distribution, population, habitat needs, and the limiting factors which" would determine the protection necessary to sustain the population. The CTDEP maintains a database for locations of T&E species.

U.S. Fish and Wildlife Services (USFWS) is the federal agency responsible for implementation of the Endangered Species Act of 1973 (ESA). Two of the main purposes of the ESA are to conserve T&E species and to conserve the ecosystems that support these species. Under the ESA, federal agencies must ensure that "any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species," unless the agency is granted an exemption. The identification of endangered species and the effect of an action on them would normally be carried out as part of the environmental impact analysis process under the National Environmental Policy Act (NEPA).

3.5.9.2 Compliance History. A complete determination could not be made of compliance with the ESA. No records were found of any site-specific field investigations at SAEP and no information on NEPA assessments regarding T&E species was found in the SAEP environmental files.

3.5.9.3 Current Regulatory Status. No threatened or endangered plant or animal species have been identified on SAEP by the CTDEP; however, as noted above, no records were found of any investigations at SAEP. T&E species identified within 2 miles of SAEP are listed in Section 3.6.6.3.

3.5.10 Radioactive Materials

3.5.10.1 Federal Authority.

3.5.10.1.1 Nuclear Regulatory Commission (NRC)

An NRC materials license was issued to AVCO Lycoming Textron on January 5, 1995, for possession and use of thorium. A maximum amount of 2,300 kg of thorium may be possessed at any one time at this facility. The thorium is in the form of thorium alloy (not more than 4 percent thorium by weight). Radioactive waste is not to be stored for more than two years before shipment. The license expires on August 31, 1997. SAEP is operating under this permit while the NRC is processing the application for permit renewal submitted by SAEP on February 8, 1990.

NRC licenses (License Numbers 06-08612-01, 06-08612-03, 06-08612-04, and 06-08612-05) for the instruments and materials containing radioactive nuclear byproduct materials used in the 1960's and 1970's in the production and testing of missile components expired in the 1970's. Possession and use of the licensed materials was discontinued in the 1970's when the licenses expired.

NRC Standards for Protection Against Radiation are contained in 10 CFR 20, and include regulations regarding permissible doses and concentration, precautionary procedures, waste disposal, required reports and notifications, and enforcement.

3.5.10.1.2 U.S. Environmental Protection Agency (USEPA)

The USEPA regulates radiation and radioactive materials in several areas, including radionuclide emissions to the air (40 CFR 61, regulations on NESHAPS under the Clean Air Act, effective March 15, 1990) from facilities licensed by the NRC; radionuclides in drinking water (40 CFR 141); radiation protection for the general public from nuclear power operations (40 CFR 190); radiation protection standards for managing spent nuclear fuel (40 CFR 191); and protection against uranium mill tailings (40 CFR 192).

Apparently, the only USEPA regulations that apply to SAEP are the NESHAPS regulations that regulate the emissions of radionuclides, which became effective in 1990. This subject was discussed in Section 3.5.5 of this report, concerning compliance with the CAA. Emissions to the ambient air cannot exceed an amount that would result in a member of the public receiving in any year an effective dose equivalent of 10 mrem/yr (40 CFR 61.102).

3.5.10.2 Compliance History/Current Regulatory Status. No letters of warning or evidence of other compliance action concerning the NRC license were found in SAEP files.

As part of an NRC license, the NRC has the right to periodically inspect the installation to evaluate compliance with NRC regulations and license conditions. Failure to adhere to NRC regulations and license conditions could result in issuance of a notice of violation, imposition of a civil penalty, ordering of license suspension, or revoking of license as specified in the General Policy and Procedures for NRC Enforcement Actions, 10 CFR Part 2, Appendix C. The NRC inspection includes a review of monitoring results to ensure compliance with applicable regulations. No information was found in flies indicating non-compliance with these requirements. The last NRC inspection was conducted in September of 1994, no items of non-compliance were found.

3.5.11 National Environmental Policy Act (NEPA)

3.5.11.1 Federal Authority. NEPA requires that all federal government agencies evaluate the environmental impact of actions proposed by that agency, and adopt systematic approaches to: ensure that environmental considerations relating to an action would be taken into account along with the economic and technical considerations; prepare reports to document the environmental impacts of the actions and possible alternative actions; and provide the report to the appropriate federal, state, and local agencies, and to the public.

The process generally involves a preliminary study to determine whether the action fits one of the "categorical exclusions" that would exempt it from the requirement for further study. If further study is required, the subsequent environmental assessment results in either a finding of no significant impact (FONSI) requiring no further action, or a finding that a detailed environmental impact statement (EIS) must be prepared.

3.5.11.2 Compliance History/Current Regulatory Status. SAEP does not appear to be in compliance with the requirements of NEPA; i.e., no record was found that environmental evaluations have been conducted prior to beginning construction projects since 1970. No information indicated that site-specific field studies have been conducted at SAEP to detect the presence of endangered plant or animal species or to assess the effects of SAEP activities (such as construction) on them. Disposal of equipment was monitored and screened for environmental concerns as required prior to disposition.

3.6 SURROUNDING ENVIRONMENT AND LAND USES

Historically, land in the SAEP vicinity has been used for agricultural and residential purposes. At present, local land-based agricultural activities are practically nonexistent. The primary agricultural (aquaculture) activity in the area involves growing oysters. Oysters are seeded in areas of the Housatonic River in the spring, collected in the fall, and placed in Long Island Sound to mature. The seed oyster beds are carefully managed by the State of Connecticut Department of Agriculture because of concerns regarding bioaccumulation of contaminants from the Housatonic River.

The SAEP property is zoned light industrial, and land in the vicinity of SAEP is zoned light industrial, business, commercial, or residential (Figure 3-4). Recreational facilities in the area include Short Beach Park, and nearby public wildlife areas include Nells Island and the Great Meadow Salt Marsh (Sections 3.6.6 for discussion of ecological baseline).

3.6.1 Demographics

The Greater Bridgeport Regional Planning Agency's population census of Stratford was 49,389 people in 1990. Slow population growth has been a trend in Stratford for nearly two decades, and the Connecticut Office of Policy and Management anticipates a continued slow or declining growth rate for Stratford through the end of the century, with a population projection of 48,650 for the year 2000, and 45,800 for the year 2010 (W-C, 1991).

The age of the population in Stratford is decidedly older than the state average. The town's median age in 1980 was 38.2, compared to 32 for the State of Connecticut. The Connecticut Office of Policy and Management anticipates the median age of Stratford to be 45.7 by the year 2010. Nearly 23 percent of Stratford's population had reached age 60 by 1980, compared to the state average of 17 percent.

The population of Stratford represents various races and nationalities. Over 8 percent of the 1980 population in Stratford was non-white. This compares closely to a non-white population of 9.9 percent for the State of Connecticut (W-C, 1991).

The work force at SAEP is currently made up of approximately 1200 workers, of which approximately one-half are "white-collar" and one-half are "blue-collar" (SAEP, 1995). Over the past 13 years, the work force population has varied from about 5,100 in 1982 to the current 1200. With SAEP placed on the BRAC list, the work force population is expected to diminish significantly in the next two years.

SAEP is located about 3/4-mile southeast of Johnson Junior High School and Birdseye School. The number of students at each school was not identified by this study. SAEP is located about 1/2-mile northwest of Short Beach Park, which had over 80,000 users reported for the year 1991. There are several businesses located west of Main Street, across from SAEP, including a small strip mall, several gas stations, and a restaurant. The numbers of workers or customers at these businesses was not identified by this study.

Access into the plant is restricted, with a perimeter fence and security guards. Boaters, fishermen, and shell fishers could potentially access unrestricted intertidal flats within SAEP property.

3.6.2 Climatology

The climate of the SAEP area is strongly influenced by a land-sea breeze, which is most pronounced from spring to early autumn. The sea breeze promotes air mixing, that results in slightly higher amounts of precipitation and slightly cooler temperatures at SAEP than inland.

The monthly and annual climatic averages at SAEP are listed in Table 3-7 (NOAA, 1994). The prevailing wind is from the southwest at an average speed of about 11 miles per hour. Precipitation averages about 44 inches per year, with about 16 inches per year of snowfall. Average monthly temperatures range from a low of about 28° Fahrenheit (F) in January, to a high of about 73°F in July.

SAEP is located in an area that is subjected to hurricanes, and has an intermediate tornado frequency. On average, SAEP is subject to hail approximately twice each year.

3.6.3 Hydrology and Surface Water Supply Capabilities

Topography

SAEP is located in the Western Highlands of Connecticut, part of the New England Physiographic Province. The local area is part of a coastal belt of dissected hilly country that extends along the coast of Connecticut. The coastal belt is characterized by uplands that range from mean sea level (MSL) to 650 feet above MSL, with an irregular, rocky coastline. Within the coastal belt, hilltops slope southward at a rate of about 50 feet per mile. Topographic features in the area mostly trend in the north-south or northeast-southwest direction, reflecting the structural trends of the local bedrock (Flint, 1968).

SAEP is situated on the Stratford Point peninsula that extends into Long Island Sound. The peninsula is relatively flat, with a slight slope toward the sound. Almost all the land at SAEP is less than 10 feet above MSL. The exception to this is a dike that was constructed along the Housatonic River in 1951 for flood protection. SAEP is within the 100-year floodplain, and wetland areas surround the plant (see Section 3.6.6.1 for discussion of wetlands).

Surface Hydrology

Approximately 51 acres of SAEP property (riparian rights property) consists of intertidal flats of the Housatonic River, and 10 acres along the Housatonic River consists of man-placed fill over what was once intertidal flats. Based on historical site photographs and plans, the site once had a low-lying area at the head of the drainage channel that is connected to the Marine Basin (in the vicinity of B-3 and B-6). The drainage channel abuts a portion of the plant's property line (Figure 3-5).

Surface water bodies in the site vicinity include: Long Island Sound, the Housatonic River, Frash Pond, and the Marine Basin and drainage channel (Figure 3-5). The coastal and marine surface waters have been classified by CTDEP Water Quality Standard regulations as SC/SB (NUS, 1990). The SC indicates that the CTDEP recognizes existing water quality problems in the coastal waters; however, the SB classification indicates the CTDEP's goal of improving the water quality conditions (see Section 3.5.4.1.1 for discussion of SC/SB classification). Frash Pond is not currently classified. According to CTDEP, unclassified surface waters default to an A classification. This designates the following water uses: potential drinking, agricultural, or industrial water supply; fish and wildlife habitat; and recreational.

Long Island Sound receives all of the region's drainage, in large part via the Housatonic River. Water discharges from the Housatonic River range from 40 to over 100,000 cubic feet per second (cfs) and average 3,000 cfs (USGS, 1989). Reported tidal levels for the Housatonic River at Stratford are:

- Low tide level = 0.8 feet MSL
- Mean tide level = 2.9 feet MSL
- High tide level = 5.5 feet MSL

Most of the SAEP surface is paved or covered with buildings. Typical coefficients of runoff for paved surfaces range from 0.8 to 0.9 (i.e., 80 or 90 percent runoff), and runoff from building rooftops is expected to be equal, if not higher. Thus, runoff during storm events is heavy. Most of the precipitation that falls on SAEP is treated and drained to the Housatonic River; two exceptions are small roof areas of B-2 that drain to either Frash Pond or to the airport.

Runoff at SAEP is collected by one of a network of six storm drainage systems. Each of the storm drain systems is equipped with a pumping station because of the low elevation of the plant and proximity of the Housatonic River and Long Island Sound. Effluent from the storm drainage system is pumped through the OATP, except in times of heavy precipitation, when some runoff is pumped directly to the Housatonic through individual outfalls (see Section 3.4.3.2 for a discussion of OATP and drainage system).

SAEP is located within the 100-year floodplain (CTDEP, 1979). The site is partially protected from flooding by a dike that runs the entire length of the property abutting the Housatonic River; however, the dike is not tied into high ground, which would prevent floodwaters from going around the dike. The site was flooded in 1951 when the Housatonic River flooded, and again in 1968.

Surface Water Supply Capabilities

The Bridgeport Hydraulic Company supplies the cities of Bridgeport and Stratford with potable water from the Trap Falls Reservoir located in Shelton, Connecticut, about 6.5 miles north-northwest of SAEP. In 1989, the Trap Falls Reservoir supplied drinking water to 99.9 percent of the populations of Bridgeport and Stratford, including residents in the immediate area of SAEP. The South Central Connecticut Regional Water Authority supplies the city of Milford with potable water from Lake Gaillard, located in North Branford, Connecticut, about 21 miles east-northeast of SAEP. Both of these water supplies are upgradient of SAEP (NUS, 1990).

3.6.4 Geology and Hydrogeology

The bedrock geology underlying SAEP is reported to consist of lower Ordovician age metamorphic schists, phyllites, and paragniesses of the Oronoque Member of the Derby Hill Schist (Fritts, 1965). Flint (1968) identifies these rocks as the Orange Formation. Exposures of bedrock do not occur in the SAEP vicinity. Borings made along the Housatonic River (Flint, 1968) and borings completed on-site (ESE, 1991) encountered bedrock at depths ranging from about 100 to 150 feet below the land surface.

The troughs of synclines were filled with unconsolidated glacial sediments consisting of stratified drift and till in Quaternary time. Recent deposition of alluvium, estuarine, tidal marsh, beach sediments, and man-placed artificial fill occur along the Housatonic River. The surficial unconsolidated sediments reported at SAEP are Stratford Outwash, tidal marsh peat, and artificial fill (Flint, 1968, and U.S. Department of Agriculture, 1981). Lordship Outwash sediments are found south of the SAEP (Flint, 1968).

Stratified drift is the main water-bearing hydrogeologic unit in the site area, consisting of sorted sediments deposited in streams formed by the meltwater of glaciers. The stratified drift forms two depositional facies, known as ice-contact stratified drift and outwash (Flint, 1968). Ice-contact stratified drift is defined as "sediments deposited in streams and other bodies of water against, upon, beneath, or otherwise in immediate contact with melting glacier ice", and is characteristically poorly sorted, and contains irregular beds with large and abrupt changes in grain sizes ranging from clay to boulders. Conversely, outwash is defined as "sediments deposited by streams beyond the glacier, and free of any influence of buried ice", and is generally well sorted sand to fine gravel with lenticular beds. A groundwater contour map is included as Figure 3-6.

Borings completed near the mouth of the Housatonic River encountered post-glacial estuarine mud unconformably overlying stratified drift at depths as great as 60 feet below MSL (Flint, 1968). The estuarine sediment is described as a gray mud consisting of silt and clay with organic matter. It has a maximum reported thickness of about 60 feet.

The tidal marsh and swamp deposits in the area consist of decayed plant matter, peat, and mixtures of silt and clay with high amounts of peat. These deposits may be as thick as 15 feet. The SAEP area is influenced by tidal marsh sediments deposited at and upstream from the mouths of tidal inlets (due to rise in sea level since the last glaciation and daily tides) that discharge to the ocean (Flint, 1968). Tidal marsh sediments consist of peat and very organic silt or clay that form wedge-shaped deposits, which become thicker towards the ocean or mouth of the streams.

Stratford Outwash is found along the fringes of the Housatonic River and consists of well sorted sand with small amounts of gravel. Borings completed for the Washington Bridge (Highway 1, about 2 miles north of SAEP) encountered outwash sand underlying more recent alluvium, tidal marsh and swamp peat, and estuarine sediments to an elevation of about 115 feet below MSL (Flint, 1968). This indicates that the outwash had filled the entire valley of the Housatonic, but after extensive erosion by the river and rise in sea level, only remnants of the deposit remain. In some exposures along the Housatonic River north of the site, the Stratford Outwash is found overlying ice-contact stratified drift (Flint, 1968).

SITE GEOLOGY AND HYDROGEOLOGY

The assessment of the geology and hydrogeology at the SAEP was made by evaluating existing data from boring logs and monitoring wells from the following sources:

- Test Boring Data (Borings 1-53 through 54-53) at locations across most of the site, from an AVCO Manufacturing Corporation plant engineering drawing dated June 3, 1953

- Subsurface Explorations (DH1-80 through DH14-80) at B-44 and B-48, from a Corps of Engineers drawing dated January 30, 1980

- Drilling logs of groundwater monitoring wells (MW1-81 through MW5-81) drilled at the lagoon area by East Coast Drilling & Boring, Inc., between November 10 and November 12, 1981

- Drilling logs of groundwater monitoring wells (MW6-83 and MW7-83) drilled at the lagoon area and logged by Leggette, Brashears & Graham, Inc., on July 20, 1983

- Drilling logs of soil borings (D1-86 through D11-86) drilled at the plating area of B-2 by East Coast Drilling & Boring, Inc., between May 4 and May 11, 1986

- Boring logs contained in geotechnical and environmental engineering reports by Haley & Aldrich (1987, B-65), Metcalf & Eddy (1990, B-5), and Metcalf & Eddy (1987, lagoon area)

- Groundwater data environmental engineering reports by Metcalf & Eddy (1987 and 1990) and ESE (1991).

Generalized geologic cross-sections A-A′ and B-B′ (Figures 3-7 and 3-8, respectively) were developed from this information (W-C, 1991). Cross-section locations are indicated on the individual figures. None of the above-referenced borings on site were drilled to the bedrock surface. The identification number shown on the cross-sections represents the boring number and year the boring was drilled, and corresponds to the references listed above.

The borings and cross-sections show that the shallow geology is characterized by five distinct units: sand, gravel and debris fill material; organic silt and peat (tidal inlet or marsh deposits); silt and sandy silt alluvium associated with the peat; estuarine silt; and stratified drift consisting of outwash sand with some gravel and ice-contact sand, gravel, cobble deposits. A description of these units and their distribution across the SAEP follows:

Fill

SAEP is mantled with sand, gravel, and debris fill associated with buildings, roads, utilities, site grading, and other structures. The fill is generally about 5 feet thick, but locally extends about 14 feet (Boring 16-53) to 19 feet (Boring 14-81) below the land surface (about 8 to 13 feet below MSL) near the former lagoon area (Figure 3-7). A tidal inlet was presumably filled in the area of B-6, B-72, and B-3 because deposits of peat and silt were encountered below the fill in borings from this area. At B-3 (Boring C13-53), the fill is about 8 feet thick and a thin wedge of peat and silt was found below the fill.

The fill as described in most of the borings is a granular material, which has presumably been placed to improve drainage for the structures in this near coastal environment. Since most of the SAEP is covered with pavement or buildings, overland runoff is expected to be high. Water that infiltrates is expected to drain rapidly, but may accumulate as perched water where the fill is underlain by peat and silt deposits, because of decreased specific yield in the peat and silt relative to other areas underlain by the stratified drift. Water levels recorded at the time of drilling some borings, and the water levels reported in existing monitoring wells, show the base of the fill is saturated. The depth to water at SAEP ranges from about 4 to 11 feet below the land surface depending on the surface elevation and tidal influence.

Peat and Silt Alluvium

An organic silt and peat has been found below the fill in two general areas on-site (see Figures 3-7 and 3-8). The largest peat deposit is at the south part of SAEP and includes the former lagoon area, B-72 and B-6, and the west part of B-3. A smaller area of peat and organic silt was also found near B-65.

The peat and silt at the south part of SAEP forms a wedge-shaped deposit that likely accumulated in a tidal inlet channel and was later artificially filled. The peat deposit is about 4 feet thick near the northwest part of B-3 (Boring C13-53) and becomes progressively thicker to the south (seaward), reaching a maximum thickness within SAEP property, ranging from 9 to 15 feet south of B-72. A 1929 site grading plan shows a planned cut and fill in this area of the site. At that time, up to 5 feet of fill was placed in the low-lying area at the head of the drainage channel that runs to Marine Basin. Beneath the south part of the site, the peat deposit appears to be about 250 feet wide and about 1100 feet long, extending from the north end of the drainage channel to the northwest corner of B-3. This drainage channel can be seen in the historical aerial photographs of the SAEP. Photographs taken during this study show the existing, unfilled portion of this drainage. Historically, this drainage appears to have meandered northward to at least the northwest corner of B-3.

Groundwater studies indicate a groundwater mound located near the former lagoons and the existing drainage channel. The groundwater mounding coincides with the estimated area of the peat and silt deposits found in this area. The groundwater mound may be caused by a lower specific yield (vertical drainage due to gravity) in the peat and silt relative to the adjacent stratified drift deposits. High tides may also contribute to the groundwater mound; high tide water entering the drainage channel from Marine Basin may enter the buried portions of the inlet through the overlying granular fill. The groundwater mound could be caused by a slow leaking water line in the area.

The peat layer is located in a former natural tidal inlet that drained from the SAEP and is now filled with granular material. The granular fill overlying the peat layer at the south end of the SAEP may form a localized, preferential groundwater migration pathway. Water and/or contaminants that enter the environment near the peat deposit may preferably flow along this deposit and be dispersed to the south. VOCs detected in monitoring wells located south of Sniffen Lane are concentrated at those wells within the area of peat and organic silt (ESE, 1991). This provides some evidence that this layer may be a controlling factor in the movement of contaminants beneath this part of the facility.

Stratified Drift

Glacial sand and gravel deposits underlie the fill and peat deposits. The deposits are divided into units of sand, with trace amounts of coarser material of sand and gravel with clay, silt, cobbles and occasional boulders (see Figures 3-7 and 3-8). The sand

and the sand/gravel units may be the Stratford Outwash and ice-contact stratified drift, respectively (Flint, 1968). These units are continuous across the site, but are eroded along the Housatonic River. Borings completed near or in the river encountered up to about 40 feet of silt (river sediment) overlying the sand and gravel deposits.

The sand and sand/gravel deposits form the upper aquifer at the SAEP, which may be up to 150 feet thick. This aquifer apparently contains fresh water, based on conductivity results reported by ESE (ESE, 1991), but no information was found to indicate the presence of a salt water wedge typical of coastal environments. Water wells for drinking supply or other domestic uses are not present in the vicinity of the SAEP (see Section 3.6.3 for discussion of water supply).

Estuarine Silt

An estuarine deposit consisting of silt, fine sandy silt, and silty sand with some organic material and sea shells has been identified along the Housatonic River (see Figures 3-7 and 3-8). The stratified drift in this area was eroded by the rising sea level and Housatonic River, and estuarine silt was deposited. The estuarine silt creates a facies change that will significantly reduce the rate of groundwater flow from the glacial sand and gravel to the estuarine deposits within the Housatonic River. Local groundwater flow near B-5 was determined to be towards the Housatonic River (Metcalf & Eddy, 1990). Estuarine and peat deposits are found east of the Frash Pond near B-65. This could indicate a former natural outlet of the pond.

The groundwater monitoring program has established an easterly groundwater flow direction towards the Housatonic River and a northwesterly flow towards Frash Pond. Very little flow reversal, as related to tidal influences, has been measured.

Groundwater flow at SAEP is generally towards the intertidal flats of the Housatonic River and Frash Pond, in the shallow and deep aquifer zones of the underlying aquifer (W-C, 1993). The water table is relatively flat across the site, but steepens within 500 feet of the shore (W-C, 1993). There may be a groundwater divide and buried tidal inlets on SAEP, and other buried outlets from Frash Pond may pass under SAEP (Envirosphere, 1984). These types of features appear to be a factor controlling groundwater movement patterns and fate of potential contaminants.

3.6.5 Regional Air Quality

SAEP is located in the New Jersey-New York-Connecticut Interstate Air Quality Control Region (IAQCR). Connecticut is also a part of an Ozone Transport Region that includes many northeastern states. This region is highly developed and contains some of the most densely populated and industrialized cities of the United States.

The Stratford area is currently in a severe nonattainment area for O_3, a moderate attainment area for CO, and an attainment area for suspended particulates (see Section 3.5.5 for discussion of CAA). Total suspended particulates in the Stratford area are generally higher when the wind is from the southwest (ESE, 1981).

3.6.6 Ecological Baseline

3.6.6.1 Wetland Resources. The Stratford area is located in a coastal region characterized by extensive tidal marshes, beaches, and estuaries. Wetlands in this area generally include tidal marshes, intertidal flats, and freshwater marshes.

Tidal marshes are influenced by seawater tides, and they generally have high nutrient levels and high biological productivity. They are usually important feeding grounds for shorebirds and waterfowl, and can be important shellfish spawning and rearing areas. Vegetation in tidal marshes consists primarily of sedges, rushes, and grasses that typically provide nesting habitat for birds.

Intertidal flats are generally level to gently sloping areas subjected to alternating periods of tidal inundation and exposure. Sediments in intertidal flats may range from clays and silts to sand. Although they have little or no vegetation, intertidal flats are typically nutrient enriched and support populations of macroinvertebrates, which are important food sources for fish and shorebirds.

Freshwater wetlands occur frequently along the coastline of Connecticut. Soil saturation is the dominant factor concerning the types of plants and wildlife that can survive in the wetland. Many wetland areas are void of trees and shrubs, with soft-stemmed plant vegetation such as cattails, spatterdock, and pickeralweed. These types of wetlands act as filters to trap nutrients, sediments, and in some cases toxic materials. Wetlands with high nutrient levels are high biological productivity areas and are important feeding and nesting grounds for birds.

All three types of wetland areas discussed above occur in the vicinity of SAEP (Figure 3-9). Of the three, freshwater wetlands have the smallest areal extent. Freshwater wetlands in the vicinity are primarily associated with two freshwater bodies: Frash Pond and Sally Pond. A small acreage of land that abuts the SAEP property to the north has also been designated as wetlands. Intertidal flats in the vicinity of SAEP are located in a band along the shoreline of the Housatonic River and Long Island Sound. SAEP's riparian rights encompass an intertidal flats area. Large areas of tidal marshes occur in the site vicinity, including areas along the Housatonic River, Nells Island, land around Sikorsky airport, and the Great Meadow Salt Marsh (see Figure 3-9).

The Great Meadow Salt Marsh was originally 1,450 acres, reportedly one of the largest tidal wetland ecosystem in the Long Island Sound area (W-C, 1991). Since the 1920s, the Great Meadow Salt Marsh has been modified by man's activities, including construction of Sikorsky Memorial Airport, disposal of dredge material, landfill operations, construction of Lordship Boulevard, and fill placement to create industrial, commercial, and residential areas. Presently, only 406 acres (about 28 percent) of this tidal wetland complex remains.

Nells Island and the Great Meadow Salt Marsh have a recognized value to wildlife, and both have been set aside as wildlife refuges. Such designation should allow local natural ecosystems to be maintained in the future.

3.6.6.2 Biological Resources.

Vegetation

Plant life in the vicinity of SAEP is limited to the tidal marshes. The urbanized areas of Stratford, Bridgeport, and Milford have little vegetation resources.

The tidal marsh plant life consists primarily of soft stemmed plants. Sedges, rushes, and grasses comprise the majority of plant life. Cordgrass (*Spartina patens*) and weed (*Phragmites communis*) are the dominant species in the marshes. A number of southeastern Piedmont and Coastal Plain plant species reach their northern native range limits in this region.

Wildlife

Because of the urbanized nature of the Stratford, Connecticut region, wildlife is primarily concentrated into the tidal marshes and intertidal flats of the area. These areas are important feeding habitats for shore birds and waterfowl. The SAEP property contains about 51 acres of riparian rights, most of which is intertidal flats. The Great Meadows Salt Marsh and Nells Island (tidal marshes) are located in the vicinity of SAEP (see Figure 3-9).

Tidal marshes provide habitat for mammals such as rodents and insectivores. The primary mammal species include muskrats (*Ondatra zibethica*), cottontail (*Sylvilagus sp.*), and raccoons (*Procyon lotor*). Cordgrass provides an ideal forage and building material for muskrats. Raccoons feed on crustaceans and small rodents. Few, if any, reptiles or amphibians are known to exist in the SAEP vicinity. Because of a lack of preferred habitat on SAEP property, none of these wildlife species would be expected on-site.

There have been 220 species of birds observed in the site area. Of these, 185 species are considered to be regular users of the region's habitats, and the other 35 are considered to be occasional visitors. Shore birds and waterfowl constitute the majority of bird life in the SAEP vicinity. The wetlands near SAEP are known breeding grounds for transitory birds such as the great egret (*Casmerodius albus*), snowy egret (*Nyctanassa vidacea*), black-crowned night heron (*Nycticorax nycticorax*) glossy ibis (*Plegadis falcinellus*), and fish crow (*Corvus ossifragus*).

Two bird species that nest in the site area are the least tern (*Sterna antillarum*) and piping plover (*Charadrius melodus*). The number of least tern breeding pairs in the area has increased from 30 pairs in 1973 to 170 pairs in 1986. From 1983 to 1991, 8 to 19 pairs of piping plover are known to have nested at Long Beach, Short Beach, and Milford Point (W-C, 1991). Both species would use tidal marshes as feeding areas during the breeding season. The occurrence of shore birds and waterfowl on SAEP property is expected to be limited to the intertidal flats area of the Housatonic River.

Aquatic Life

Aquatic life in the vicinity of SAEP exists in one of three ecosystems: the Housatonic River and its estuaries provide a freshwater and saltwater environment; Long Island Sound provides a marine environment; Frash Pond provides a freshwater environment. The brackish waters associated with the Housatonic River have varying degrees of salinity that provide different biota characteristics than Long Island Sound.

The Housatonic River supports limited sportfishing for finned fish, and sportfishing for shellfish is restricted because of water quality concerns. Sportfishing for striped bass, winter flounder, blackfish, bluefish, scup, and lobster is common in Long Island Sound. Frash Pond is also reportedly used for sportfishing.

Shellfishing has been an important commercial industry in the area for decades. In 1895, over one million bushels of oysters were harvested from Stratford's natural oyster beds. By 1960, production of oysters had dropped considerably. Fishing for seed oysters along the shallow waters of the Housatonic River, from its mouth to several miles upstream, has become an important part of the area's shellfishing industry. Seed oysters are sold to commercial oyster companies that plant the seeds in designated areas of Long Island Sound. Although the eastern oyster is the primary species of shellfish harvested from the area, other shellfish include the hard clam (quahog), bay scallop, soft-shelled clam (steamer), blue mussel, and razor clam.

3.6.6.3 Threatened or Endangered Species. USFWS, National Marine Fisheries, and the CTDEP were contacted to obtain information on federal- and/or state-listed

T&E species that have been reported to occur near the SAEP. Information was also obtained from other reports prepared for the general area, including the Stratford Coastal Plan (W-C, 1991). Federal- and state-listed threatened, endangered, or special concern species that have the potential to occur in the vicinity of SAEP, and the status of each, is provided in Table 3-8.

As shown on Figure 3-10, several habitat areas with the potential to be utilized by threatened, endangered, or special concern species are located in the vicinity of SAEP. These areas include salt marshes, saltwater intertidal flats and shores, and coastal sand dunes. The presence of these areas have contributed to the number of threatened, endangered, and special concern plant and bird species in the vicinity of SAEP.

As shown on Table 3-8, no federally-listed T&E plant species have been reported to occur in the vicinity of SAEP. However, a total of 13 plant species have been proposed to be listed by the State of Connecticut. Several of these species have not been reported recently in the vicinity of SAEP (saltpond grass - 1901, seabeach sandwort - 1907, mudwort - 1897, yellow-fringed orchid - 1909, salt marsh bulrush - 1943, and coast violet - 1905) and may be extirpated from the area. Since no native vegetation presently occurs on SAEP, no state-listed species would occur within the plant boundaries.

Two federally-listed and 11 additional state-listed threatened, endangered, or special concern birds have the potential to occur in the vicinity of SAEP. The two federally-listed species include the piping plover and roseate tern. The last report of the roseate tern in the vicinity of SAEP was in 1969.

The piping plover frequently occurs in the vicinity of SAEP, and nesting habitat is located on Short Beach, Long Beach, and Milford Point. These areas are extremely important to the continued survival of the piping plover, and select areas of these beaches are closed to public activity during the nesting and rearing period. From 1983 to 1991, between 8 and 19 pairs have nested annually on these three areas (CTDEP, 1990). The highest nesting activity occurred in 1989 and 1990, when 17 and 19 pairs nested, respectively. The previous high had been 12 pairs. During this period, 11 to 29 young birds (fledges) were produced annually, with 1989 and 1990 also being the highest years (CTDEP, 1990). The beach area utilized as nesting habitat by the piping plover is probably also used by the least tern, which is a state-listed threatened species.

Although not identified by USFWS or CTDEP, both the federally-listed southern bald eagle (*Haliaeetus ℓ. leucocephalus*) and the peregrine falcon (*Falco peregrinus*) have been reported to possibly pass through the SAEP area as migrating transients.

Since SAEP does not contain habitat utilized by most threatened, endangered, or special concern bird species, they would not be expected to occur on the site. However, the intertidal flats along the Housatonic River provide feeding areas for waterfowl and shore birds. Therefore, it would be expected that piping plover and least tern that nest in the general area would use this feeding area.

The northern diamondback terrapin, a federal candidate species (Category 2), was identified as having the potential to occur in the vicinity of SAEP. Collection records indicate that the diamondback terrapin has been collected from the mouth of the Housatonic River (USFWS, 1991). Presently, information is not available to determine whether the terrapin uses the beaches or adjacent uplands for nesting. Since this type of habitat does not exist within SAEP property, it would not expected to be present on-site. While federal candidate species are not protected under the ESA, USFWS encourages their consideration in environmental planning. If unnecessary impacts to candidate species can be avoided, the likelihood that they will be placed on the federal list is reduced.

The DEP Natural Resources Center conducted a review of the Natural Diversity Data Base, to determine if the SAEP is designated as an area of special concern. The Natural Diversity Data Base includes biological information compiled from the DEP, private conservation groups, and the scientific community. The search of the data base revealed that State Threatened Atlantic sturgeon (*Acipenser oxyrhynchus*) are found in the vicinity of the SAEP. This anadromous fish species is typically found in marine habitats over unconsolidated mud and sand bottoms and in freshwater in deep pools of large rivers, and could potentially occur in, or utilize, deepwater habitats at the mouth of the Housatonic River to the southeast of the site.

No federal- or state-listed mammal, amphibian, invertebrate, or aquatic T&E species are expected to occur in the vicinity of the SAEP.

3.6.7 Cultural Resources

An archeological overview and management plan has been prepared for SAEP (Envirosphere Company, 1984). Much of the information presented in this section was obtained from that report.

The National Historic Preservation Act of 1966 as amended (94 Stat. 2988) affirmed the policy of the federal government (Sec. 2[3]) to "administer federally owned, administered or controlled prehistoric and historic resources in a spirit of stewardship for the inspiration and benefit of present and future generations". The United States AMC is committed to the implementation of that policy, following the guidelines for historic resource management set forth in the 1966 Act and related laws, regulations, and technical guidance.

The cultural history of the SAEP vicinity is presented in Table 3-9. Evidence for prehistoric occupation of the area has been identified around the various water bodies. At the bank of the Housatonic River, near its mouth, a collection of artifacts and features is suggestive of a Late Archaic encampment. This site consisted of steatite bowls and fragments, projectile points, fire-cracked rock, charred ash, charred hickory nuts, and heat-treated debris from stone tool manufacture. Late Archaic skeletal remains, associated with stone tools, pestle, axe, and projectile points have been uncovered near Frash Pond (Envirosphere Company, 1984). Known archeological sites in the vicinity of SAEP are shown on Figure 3-11.

Late Archaic sites tend to be temporary campsites, frequently situated on small knolls. Most likely, knolls were chosen for their dry ground surfaces and visibility of the landscape. The Late Archaic period in southern New England was characterized by alternating seasons of aggregation and dispersal. The Late Archaic sites reported from the Stratford region indicate small numbers of people staying at a site for a short period of time.

Sites of the Late Woodland period in the SAEP vicinity are frequently village sites, containing such features as post molds and hearths, an abundance of pottery, and ground stone and chipped stone tools. The high density of Woodland period sites along the coast may indicate a shift from the inland to the coast at this time. Further, Late Woodland village sites may be suggestive of the exploitation of the coast's fertile land for the practice of horticulture. Several cemeteries also occur from the Woodland period in the general region of the SAEP.

The lack of sites from Paleo-Indian through Middle Archaic times may be the result of: (1) the submersion of these sites by rising postglacial sea levels; (2) the destruction of these sites by wave action erosion; and (3) bias in data recovery due to the low archeological visibility of small, early period sites.

The first European settlement in the vicinity of the SAEP was at Sandy Hollow, a short distance from the Housatonic River. In the mid 1600s, SAEP was part of an English plantation that included four major "common fields": the "Ould Field" lay immediately south of Stratford Village; the "New Field" lay from Clapboard Hill to Mill Creek, including Nesumtaw's Creek; the "New Pasture" was situated just south of Old Mill Green, now in Bridgeport, from Mill Creek, to the river; and the "Great Neck Field" was located south of the "Ould Field". The economy at this time was based on the cultivation of wheat, rye, corn, oats, grass, and flax, and the production of cider brandy, butter, cheese, port, lard, and flaxseed. Fishing and cattle raising were also practiced through the 1800s. Mills along the Housatonic and other rivers gave way to a fully industrial-based economy in the mid- to late-nineteenth century (Envirosphere Company, 1984).

All buildings at SAEP have been constructed on either concrete slabs and/or piles, presumably because of drainage problems at the site. For that reason, it is likely that ground disturbance in developed portions of the SAEP (other than those identified as cut and fill areas) is relatively shallow. However, even shallow disturbance when considered along with the poor drainage characteristics of the site, is sufficient reason to believe that these areas are not likely to contain important archeological resources.

The Connecticut State Historic Preservation Officer reported that two prehistoric archeological sites are located within SAEP property (see Figure 3-11). Envirosphere Company (1984) reported that the extensive modification of shoreline areas, combined with the site's poor drainage characteristics, made it unlikely that intact, previously unrecorded resources existed on the on-shore portion of the SAEP.

During the present record search, a newspaper article written sometime during the 1930s was found, reporting an archaeological site discovered when expanding a parking lot at SAEP. This site was reported to be an Indian burial ground. The extent that this site was studied or the credibility of this report is not known, nor is it known whether any resources remain. If this area is planned to be disturbed at some future date, the State Archeologist would be notified, and a more detailed archaeological survey may be required.

3.6.8 Recreational Resources

The recreational potential for the Stratford area is enhanced by its location near the Housatonic River and Long Island Sound, because access to these waters provides for water-based recreational uses. Such water-based recreational activities include swimming, windsurfing, recreational boating (canoeing, sailing, and yachting), and recreational fishing. Recreational fishing is mostly for fish at this time, as recreational shellfishing is strictly regulated because of water quality conditions, including elevated coliform bacteria levels.

The shoreline area is important for passive recreational use including picnicking, sightseeing, and sunbathing. Some developed areas in the coastal shoreline area also provide facilities for golf, beach volleyball, softball, and tennis. Through public or private involvement, recreational facilities that have been developed in the Stratford area include one private and two public beaches, four marinas (a fifth has been approved), several public fishing areas, one public boat launching ramp, and two informal boat launching areas (CTDEP, 1979).

Recreational land and water use in the immediate site vicinity (2 mile radius) includes all the activities discussed above. Although the shallow waters of the

Housatonic River are used as an initial rearing area for oysters, it provides little recreational shellfishing because of water quality concerns. The Housatonic River and Long Island Sound are utilized for recreational boating and fishing, and Frash Pond is a popular fishing spot (CTDEP, 1979). There are three marinas located in the SAEP vicinity.

Short Beach Park, a public recreational area, is located about 1 mile south of the site. Park facilities include beach frontage with beach volleyball courts, children's playground, picnic areas, tennis courts, basketball courts, softball fields, bike paths, jogging trails, and a golf course. The golf course was constructed on a municipal landfill.

4.0 INVESTIGATION RESULTS

This section of the EBS Report identifies areas of SAEP property where there is known or potential environmental contamination resulting from past operational and waste disposal practices. Information contained in this section was derived from:

1) the Final PAS Report (W-C, 1991),
2) communication with SAEP employees (SAEP, 1995 and 1996),
3) the Remedial Investigation Report (Phase I) for SAEP (W-C, 1993),
4) a preliminary draft of the Phase II Remedial Investigation report (W-C, 1996), including a baseline human health risk assessment and baseline ecological risk assessment (W-C, 1995), and
5) the final draft RCRA Facility Assessment for AVCO/Textron Lycoming (CDM, 1992).

4.1 KNOWN AND POTENTIAL AREAS OF ENVIRONMENTAL CONTAMINATION IDENTIFIED BY EBS INVESTIGATION

The following section is based on information obtained from the sources listed in Section 4.0. Table 4-1 presents a site numbering system developed as part of this EBS, which links AOCs identified in the RFA, and areas of environmental concern identified in the EBS investigation, to the CERFA parcels. Site numbers 1 through 58 correspond to RFA AOCs 1 through 58, respectively. Subordinate designations to site numbers 1 through 58 (e.g., 21a) correspond to other areas of hazardous material or petroleum storage, release, or disposal which are co-located with RFA AOCs (Table 4-1). Site numbers 59 through 75 correspond to those areas of environmental concern due to storage, release or disposal of hazardous materials or petroleum not associated with RFA AOCs. As used in this section, the term "site" will refer to an AOC or an area of known hazardous material or petroleum storage, release or disposal.

The SAEP property has been divided into 33 separate parcels based upon the following:

- geographic setting,
- historical manufacturing processes and operations,
- storage of hazardous materials or petroleum products, and
- release or disposal of hazardous materials or petroleum products

The locations and boundaries of these parcels are presented in Figure 4-1.

Known and potential areas of environmental contamination are presented in the following subsections on a parcel-by-parcel basis. Table 4-1 indicates the associated parcel for each site. Unless otherwise specified, contamination described in each parcel is considered to be limited to unsaturated soil. With the exception of Parcel 32 (near shore intertidal flats), the preliminary draft risk assessments (W-C, 1995) indicated that there was acceptable risk to humans and the environment for contaminants detected in groundwater, subsurface soils and sediments analyzed during the Phase I and II Remedial Investigations.

Parcel 1 (North Parking Lot)

Aerial photographs taken in 1943 indicate the presence of possible pits or small lagoons (USEPA, 1990). No disposal history is available for this area. Groundwater contamination by halogenated solvents beneath adjacent Parcel 3 (W-C, 1995) indicates the potential for groundwater contamination beneath Parcel 1. Contaminant concentrations in groundwater exceed CTDEP remediation standards based on surface water protection criteria.

There are no buildings in Parcel 1, and therefore no other potential hazards (i.e., asbestos, lead paint, radon, etc.)

Parcel 2 (Outlying Intertidal Flats)

During the Phase II Remedial Investigation, sediment sampling in this outlying portion of the intertidal flats detected PCBs and metals, although the concentrations detected do not pose an unacceptable risk to ecological receptors (W-C, 1995).

Two sites are located in Parcel 2. Site 5 (AOC No. 5) is the stormwater and wastewater collection system (Table 4-1). Site 52 (AOC No. 52) consists of outfalls OF-001 through OF-006, three of which empty into Parcel 2. Worksheet B (in Appendix C) identifies potential releases of hazardous substances and petroleum products to this parcel. There are no other known or potential hazards (i.e, asbestos, lead paint, radon, etc.). There are no CTDEP remediation standards for the sediments in the intertidal flats..

Parcel 3 (Northern portion of B-2)

The PAS (W-C, 1991) indicates that ash and cinders were found in subsurface soils during foundation excavations for the northern portion of B-2, providing a potential source for heavy metal contamination. In addition, Phase I Remedial Investigation results indicate halogenated solvent contamination in groundwater beneath the northwest corner of B-2 (W-C, 1993). The Preliminary Draft Phase II Remedial Investigation Report concludes that given the type of solvents detected in groundwater and their distribution, an off-site source is likely. PAHs, explosives compounds (dinitrotoluene), and phenolic acids were detected in subsurface soils at the same location. Contaminant concentrations in soils exceed CTDEP remediation standards based on soil pollutant mobility criteria.

Parcel 3 does not contain any RFA AOCs. No hazardous materials or petroleum storage or release/disposal areas were identified during the EBS investigation. A portion of Building B-2 is in Parcel 3. This section of B-2 is known to have asbestos containing materials (ACM). The building was built between 1930 and 1978, and therefore there is also potential for lead-based paint.

Parcel 4 (B-65)

Evidence of former paint disposal activities was found during construction of the foundation for B-65 in 1990. The source of the paint contamination is believed to have been zinc-chromate undercoat used to paint the Corsair aircraft in the 1940s (W-C, 1991). Zinc-chromate contaminated soils were removed to the low-tide level and properly disposed off site. Petroleum contaminated subsurface soils also found during the construction of B-65 were excavated and reused on site (Parcel 22) in accordance with CTDEP requirements. Post-remediation sampling data was not identified during the EBS investigation. Phase I Remedial Investigation data from adjacent Parcels 3, 5, 6, and 9 indicate groundwater contamination.

Site number 21 (AOC No. 21) is within Parcel 4. The site is identified as the Building B-65 area (former location of Buildings B-52 and B-55). Sites 21a and 21b (paint-contaminated soils and petroleum-contaminated soils) describe locations where a release or disposal has occurred. These are identified in Table 4-1 as well as Worksheet B (in Appendix C) of this EBS report. The EBS investigation identified no other known or potential hazards associated with Parcel 4 (i.e., asbestos, lead paint, radon, etc.).

Parcel 5 (B-36 and B-73)

B-73 was used for staging of radiological waste (consisting of thoriated metal chips), and is designated Site/AOC No. 47 (Figure 4-1). A radiological survey of this area has not been performed. The Phase I Remedial Investigation found subsurface soil contamination by PAHs, halogenated solvents, and metals, and groundwater contamination by chromium. No spills of hazardous substances or petroleum products have been reported in this area. B-36, a storm drain pumping station, was built prior to 1978, therefore the potential exists for lead paint in the building.

Parcel 6 (B-58)

Phase I Remedial Investigation results indicate subsurface soil contamination by PAHs, halogenated solvents, and PCBs. Groundwater results indicate contamination by halogenated solvents, fuel-related VOCs, and metals. Contaminant concentrations in groundwater exceed CTDEP remediation standards based on surface water protection criteria. During pile driving operations for the construction of B-58, oil reportedly gushed from the ground around the piles (W-C, 1991).

Site 27 (AOC No. 27) is located within Parcel 6 and is described as B-58 and associated hazardous waste satellite accumulation areas. The storage of jet fuel and 1,1,1-TCA at and around B-58 have been identified as Sites 27a and 27b (Table 4-1), however no spills or releases have been reported. The EBS investigation identified no other known hazards in the parcel, however there is the potential for lead paint and ACMs to exist in B-58.

Parcel 7 (Western portion of B-2, including cafeteria and office space)

This portion of B-2 is composed of the SAEP cafeteria and office space. Phase I Remedial Investigation results indicate subsurface soil contamination by PAHs on the western edge of this parcel (outside B-2). Contaminant concentrations in subsurface soils exceed CTDEP remediation standards based on soil pollutant mobility criteria. Phase I Remedial Investigation results also indicate groundwater contamination by halogenated solvents and metals. Contaminant concentrations in groundwater exceed CTDEP remediation standards for surface water protection criteria.

There are no known sites of environmental concern within Parcel 7. A portion of B-2 is within this parcel and is known to contain ACMs; there is also potential for lead paint.

Parcel 8 (Central portion of B-2)

This parcel encompasses the primary manufacturing and machining areas for the SAEP facility. Although no subsurface soil or groundwater samples were collected beneath this parcel, Phase I Remedial Investigation data from adjacent Parcels 3, 4, 7, 12, and 29 indicate subsurface soil and groundwater contamination.

There are two sites of environmental concern within Parcel 8. Site 26 (AOC No. 26) is identified as the former septic system location beneath B-2. No releases associated with this site were identified during the EBS investigation. Site 49 (AOC No. 49) is identified as the B-2 manufacturing area. This area has been used to store hazardous materials such as paint, solvents, and acids. The central portion of B-2 has the same known and potential hazards as those identified for the building in Parcel 7.

Parcel 9 (B-13, B-15, B-37, B-38, B-44, B-48, B-68, B-74, B-81, and Oil Tank Farm)

Phase I Remedial Investigation results indicate subsurface soil contamination by fuel-related VOCs, halogenated solvents, and PAHs. Halogenated solvents, fuel-related VOCs and metals were detected in the groundwater beneath this parcel. Both subsurface soil and groundwater contaminant concentrations exceed CTDEP remediation standards.

Parcel 9 contains 10 sites previously identified as AOCs in the RFA. Sites 1 (AOC No. 1) and 2 (AOC No. 2) are the Waste Oil Tanks and Hazardous Waste Accumulation Tanks, respectively, in the Oil Tank Farm. Worksheet A in Appendix C identifies the tanks associated with Site 1 as storage areas 1a through 1e (waste oils), and those associated with Site 2 as 2a through 2i (oils and solvents). Numerous small spills have been reported in this area. Releases associated with Site 1 are labeled as 1f and 1g. Site 3 (AOC No. 3) defines the hazardous waste and waste oil transfer systems located between B-13 and B-15. Storage of hazardous materials and petroleum also occurred in this area and is labelled as Sites 3a through 3c. Site 7 (AOC No. 7) is the oil/alum tank at the northeast corner of B-13 in Parcel 9. The container accumulation area and associated drains is designated as Site 12 (AOC No. 12). Hazardous materials (solvents, acids, fuels, caustics) storage area 12a is affiliated with this site. The original container storage area east of B-13 (Site/AOC No. 13) and the metal chips oily sump (Site/AOC No. 16) are also located in Parcel 9. Site 28 (AOC No. 28) identifies B-15 and associated satellite accumulation areas, which are labeled as 28a and b, 1,1,1-TCA sludge and waste oil, respectively. Site 29 (AOC No. 29) consists of B-48 and associated accumulation areas. Site 53 (AOC No. 53) consists of the drum staging area between the tank farm and B-37. Sites 70 through 72 can also be found in Parcel 9, and consist of aboveground storage tanks (Table 4-1). B-15 is known to have ACMs while B-13, B-15, B-37, B-38, B-44, and B-48 could all potentially contain lead paint, based on their dates of construction.

In July 1996, Sound Environmental Solutions (SES) (SES, 1996) collected two subsurface soil and two groundwater samples from beneath the floor of Building 13. The samples were collected to characterize subsurface conditions that maybe encountered when a portion of the floor is removed to install an oil/water separator.

Soil samples were analyzed for SVOCs, while groundwater samples were analyzed for VOCs, TPH, and total metals. Results of soil analysis indicated the presence of polycyclic aromatic hydrocarbons at concentrations exceeding Industrial/Commercial Direct Exposure Criteria of the State Remediation Standards. Results of groundwater analysis indicated the presence of cadmium, copper, lead, and zinc at concentrations exceeding Surface Water Protection Criteria of the State Remediation Standards. Groundwater results also indicated the presence of TPH and VOCs (benzene ethylbenzene, and total xylene), but concentrations were below regulatory thresholds.

Parcel 10 (West Parking Lot)

Data from the Preliminary Draft Phase II Remedial Investigation used in the preliminary draft risk assessment (W-C, 1995) indicate groundwater contamination by halogenated solvents, and subsurface soil contamination by metals, beneath the western edge of the lot. Contaminant concentrations in soil and groundwater exceed CTDEP remediation standards. The Preliminary Draft Phase II Remedial Investigation report indicates that the solvents detected and their distribution suggest an off-site source is likely.

There are no Sites within this parcel (Table 4-1). There are also no buildings and therefore no known or potential hazardous (i.e., asbestos, lead paint, radon, etc.).

Parcel 11 (B-1)

This area is primarily office space, with no historical industrial activities. Phase I Remedial Investigation results indicate subsurface soil contamination by PAHs, and groundwater contamination by VOCs. Contaminant concentrations exceed CTDEP remediation standards for soil pollutant mobility and surface water protection criteria.

There are no Sites within Parcel 11. B-1 is known to contain ACMs and lead paint is also likely.

Parcel 12 (B-2 plating area, B-3 former plating area, B-63, B-70, and B-77)

During dewatering operations for the foundation of B-70 in the mid-1980s, water pumped from the ground turned "greenish-blue" (W-C, 1991). Chromium contamination was found in this area during the Phase I Remedial Investigation. Halogenated solvents and PAHs have been detected in subsurface soils beneath this parcel (W-C, 1993). Halogenated solvents, metals, and cyanide were detected in groundwater beneath this parcel.

There are 5 Sites (Sites 8, 9, 50, and 51) identified within Parcel 12. The chemical wastewater collection system, pump stations, and associated piping in and adjacent to B-63 have been identified as Site 8 (AOC No. 8). Site 9 (AOC No. 9) is the cyanide destruction facility within B-70, with aboveground storage areas 9a through 9h. From 1945 to 1950, Chance Vought discharged paint wastes into a concrete vault on the east side of B-70. This vault has been designated as Site 22 (AOC No. 22).

There are no separate storage or release areas related to this site. Sites 50 (AOC No. 50) and 51 (AOC No. 51) are the B-2 and B-3 plating areas, respectively. Metal plating operations have historically been conducted in this portion of B-2 and B-3. A number of plating chemicals and acid storage areas (50a through 50g) and various satellite accumulation areas (50h through 50l) have been identified with the plating area and plating operations, however there have been no known releases or disposal of CERCLA wastes.

B-2 is known to contain ACMs and PCBs from transformers. Based on construction dates, both Buildings B-2 and B-3 are suspected to contain lead paint. B-63 also potentially contains ACMs and lead paint. B-77, which has historically been used for office space, may also contain lead paint.

Parcel 13 (B-7, B-7A, B-8, B-9, B-10, and B-12)

The buildings within this parcel have historically been used for manufacturing, machining, engine testing, and storage of petroleum products and hazardous materials. During dewatering operations for the foundation of B-10 in the late 1970s, water pumped from the ground was "greenish-blue" (W-C, 1991). Halogenated solvents and PAHs have been detected in subsurface soils beneath this parcel (W-C, 1993). The groundwater beneath this parcel contains halogenated solvents.

Site 36 (AOC No. 36) describes B-12 and associated jet fuel and waste oil satellite accumulation areas, which are identified as 36a through 36b. Site 37 (AOC No. 37) describes B-10 and associated satellite accumulation areas. Site 37a is an 80,000 gallon aboveground fuel oil tank. A former plating operation (Site 59), waste oil and waste paint satellite accumulation areas (Sites 63 and 65), and a flammable materials storage area (Site 64) are also located within Parcel 13. B-12 is known to contain ACMs and B-7 has potential to contain ACMs. Based on building construction dates, B-7, B-8, B-9, B-10, and B-12 all have potential to contain lead paint.

Parcel 14 (B-64-2 and B-64-1)

Phase I Remedial Investigation results indicate subsurface soil contamination by halogenated solvents and PAHs. Halogenated solvents, fuel-related VOCs, PAHs, and metals were detected in groundwater beneath the parcel.

B-64-2 houses the OATP and is identified as Site 6 (AOC No. 6). Storage tanks (Sites 6a and 6b) are within the OATP area. There have been no known releases of CERCLA wastes. However, B-64-1 has the potential for both ACMs and lead paint, and B-64-2 for lead paint.

Parcel 15

This parcel consists of an asphalt-covered parking lot located south of B-2. Although no subsurface soil or groundwater samples have been collected beneath this parcel, Phase I Remedial Investigation data from adjacent Parcels 12 and 19 indicate the potential for subsurface soil and/or groundwater contamination.

There are no Sites associated with this parcel. There are no buildings within Parcel 15 and therefore, no other known or potential hazards (i.e., asbestos, lead paint, radon, etc.).

Parcel 16 (B-3 and B-67)

Although no subsurface soil or groundwater samples have been collected beneath this parcel, Phase I Remedial Investigation data from adjacent Parcels 12, 13, and 27 indicate the potential for subsurface soil and/or groundwater contamination.

The portion of B-3 included in this parcel has been used for research and development engineering. This area has been designated as Site 53 (AOC No. 53). The known and potential hazards associated with the construction materials of B-3 are discussed under Parcel 12. B-67 has historically been used for general storage and has no hazards associated with it.

Parcel 17 (B-16, B-33, and B-40)

Phase I Remedial Investigation results indicate subsurface soil contamination by halogenated solvents, fuel-related VOCs, PAHs, and PCBs. Halogenated solvents fuel-related VOCs, PAHs, and metals were detected in groundwater beneath the parcel. Concentrations of metals detected in groundwater exceed CTDEP remediation standards for surface water protection criteria.

B-16 has historically been used for engine testing, a process that made use of fuels and solvents. Site 4 (AOC No. 4) encompasses the B-16 floor drains and sumps and all associated piping. Sites 4a and 4b describe known solvent and petroleum releases through those drains. Site 48 (AOC No. 48) is described as B-16 and associated fuel-related satellite accumulation areas, which are labeled as 48a through 48h. Two 40,000 gallon diesel and jet fuel storage tanks (Sites 48i and 48j) are also located in this area. Mercury and waste solvent release areas associated with B-16 are designated as Sites 48k and 48l. Site 58 (AOC No. 58) is identified as the scrap metal yard north of B-16.

B-16 is known to contain ACMs. All three buildings on the parcel (B-16, B-33, and B-40), potentially contain lead paint.

Parcel 18 (Causeway and B-59)

The causeway was initially constructed and used as a means of launching seaplanes in the 1930s. B-59 was constructed to house the nose cones of missiles, including the explosive charges used to open the nose cones. The source of the fill used to construct the causeway is unknown, and has been suspected to contain asbestos (W-C, 1991). Analyses of surface soil samples collected from the causeway during the Phase I Remedial Investigation did not indicate the presence of asbestos. Although no subsurface soil or groundwater samples have been collected beneath this parcel, Phase I Remedial Investigation data from adjacent Parcel 17 indicates the potential for subsurface soil and/or groundwater contamination.

The causeway has been identified as Site 20 (AOC No. 20). It was reported that paint solvents and wastes were burned on the causeway as part of fire training operations (ESE, 1981). This reported release is identified as 20a. B-59 has no known hazards, however, ACMs and lead paint are suspect.

Parcel 19 (South Parking Lot)

The historical use of this area has been for employee parking. A groundwater monitoring program associated with the lagoon closures (Parcel 21) in this area is currently in its twelfth year, and halogenated solvents and metals continue to be detected (CA Rich, 1995). Metal concentrations in groundwater exceed CTDEP remediation standards for surface water protection criteria.

A soil pile, which originated as contaminated soil at B-65 and the B-34 UST removal, was treated on-site in the south parking lot. This was reportedly approved by CTDEP for use as on-site fill material. There are no buildings on the parcel, and therefore no other known or potential hazards are known.

Parcel 20 (B-18, B-71, B-75, and B-76)

Although no groundwater or subsurface soil samples have been collected beneath this parcel, groundwater chemical data for adjacent Parcels 19 and 21 indicate contamination by halogenated solvents and metals (CA Rich, 1995). This parcel encompasses the area occupied by the CWTP. Hazardous wastes and materials stored within this parcel have historically included plating wastewater and water treatment chemicals (sodium hydroxide and sulfuric acid). Sites 10 (AOC No. 10) and 11 (AOC No. 11) are the CWTP in B-18 and the CWTP solids area in B-71, respectively. Plating wastewater, sodium hydroxide, sulfuric acid, and fuel oil tanks associated with the CWTP in B-18 are listed in Table 4-1 as Sites 10a through 10h. Sites 14 (AOC No. 14) and 15 (AOC No. 15) consist of chemical storage areas and a sludge roll-off container north of B-71, respectively. Site 43 denotes a former underground fuel oil storage tank.

Parcel 21 (CWTP Equalization Lagoon and Three Sludge Lagoons)

The equalization and sludge lagoons were used from 1958 until 1990, and received treated effluent and sludge from the treatment process. The lagoons were closed under RCRA Subtitle C provisions in 1990. Overflow of the lagoon has resulted in at least one discharge of chromium-contaminated wastewater to the ground surface (SAEP, 1995). Groundwater chemical data indicate contamination by halogenated solvents and metals beneath this parcel (CA Rich, 1995).

The Equalizing Impoundment (also referred to as Lagoon #1) is called out as Site 18 (AOC No. 18), with the overflow event 18a (Table 4-1). Site 19 (AOC No. 19) is the Sludge Drying Beds with 19a and 19b describing closure activities. There are no buildings on Parcel 21, and therefore no other known or potential hazards.

Parcel 22 (South Parking Lot, Eastern Section)

This portion of the south parking lot was filled and leveled using petroleum-contaminated soils excavated from beneath B-65 in 1990 (Textron Lycoming, 1992). This operation was approved by the CTDEP, as a result of TPH concentrations in the soil being reduced to less than 100 ppm by an aeration process. The soils were subsequently capped with asphalt to be used as a parking area. Although no groundwater or subsurface soil samples have been collected beneath this parcel, groundwater chemical data for adjacent Parcels 19, 21 and 24 indicate contamination by halogenated solvents and metals (CA Rich, 1995).

Site 17 (AOC No. 17) describes the B-65 excavated soil pile that was placed in the south parking lot in the area bounded by Parcel 22. Location 17a identifies the petroleum-contaminated soil from B-65 as a disposal site.

Parcel 23 (B-72)

Phase I Remedial Investigation results indicate subsurface soil contamination by PAHs, fuel-related VOCs, and halogenated solvents. Although no groundwater samples have been collected beneath this parcel, groundwater data from adjacent Parcels 21 and 24 indicate groundwater contamination by halogenated solvents and metals (CA Rich, 1995 and W-C, 1993). Metals concentrations in Parcel 24 groundwater exceed CTDEP remediation standards for surface water protection criteria.

Site 55 (AOC No. 55) describes Building B-72. Fuels have historically been stored at B-72 and sites 55a through 55h identify those storage and satellite accumulation areas (Table 4-1). Petroleum-stained soils were discovered on the south side of B-72 (in Parcel 21) in 1988 during excavation of the sludge lagoons (Parcel 21). There are no buildings associated with this parcel and therefore there are no other known or potential hazards.

Parcel 24 (B-6, B-6A, and B-17)

B-6 was historically used as an experimental hangar and for research and design. Halogenated solvents were formerly used in this building for cleaning of engines and electronics components. B-6A and B-17 were used for engine mechanical component testing and steam generation, respectively. Phase I Remedial Investigation results indicate groundwater contamination by halogenated solvents and metals beneath this parcel. Metals concentrations in groundwater exceed CTDEP remediation standards for surface water protection criteria.

Site 31 (AOC No. 31) is identified as B-6 and associated solvent, petroleum, TPC, and freon satellite accumulation areas (31a through 31f). There are four former petroleum USTs associated with Site/AOC No. 40 (40a through 40c). B-17 is designated as Site 54 (AOC No. 54) with 54a being the 1,1,1-TCA storage area (55-gallon drum). B-6A has two satellite accumulation areas that were not identified in the original RFA and are labeled as Sites 60 and 61 in this report (Table 4-1). B-6A is known to contain ACMs, and B-17 is suspected to contain ACMs. B-6, B-6A and B-17 all have the potential to contain lead paint.

Parcel 25 (B-53, B-60, and B-61)

B-53 has been used for surplus equipment stores; B-60 is a natural gas pumping station; and B-61 is a refrigeration plant used for cold-weather simulation and engine testing. Phase I Remedial Investigation results indicate groundwater contamination by halogenated solvents, PAHs, and metals. There are no Sites identified within

Parcel 25. Each of the three buildings within the parcel have the potential to contain ACMs and lead paint.

Parcel 26 (B-69, B-79, and B-82)

The interiors of buildings within this parcel have not been used for industrial processes or storage of hazardous substances. However, up to 250 drums of fuel oil were historically stored in an open area near B-69 (SAEP, 1995), which was bermed after 1991. Although no subsurface soil or groundwater samples have been collected beneath this parcel, Phase I Remedial Investigation data from adjacent Parcels 27 and 28 indicate the potential for subsurface soil and/or groundwater contamination. The drum storage area for fuel oil is listed as Site 73 (Table 4-1). The buildings within this parcel contain no other known or potential hazards.

Parcel 27 (B-3A, B-4, B-5, and B-41)

B-3A has been used as an engineering laboratory; B-4 has been used for storage, AGT-1500 repair, and electrochemical machining; B-5 has been used for fuel testing; and B-41 is a storm water pumping station. Petroleum-contaminated soils, associated with the storage tanks in B-34 extend into this parcel. A spill of liquid cleaning solvents was also reported north of B-3A in 1989 (SAEP, 1995). Phase I Remedial Investigation results indicate groundwater contamination by halogenated solvents beneath this parcel to the north of B-3A.

Site 32 (AOC No. 32) is B-5 and associated petroleum satellite accumulation and storage areas (32a through 32e). Site 34 (AOC No. 34) is B-3A and associated petroleum and solvent satellite accumulation areas (34a through 34c). A spill of liquid cleaning solvents was reported north of B-3A in 1989 and is listed as Site 34d. Two PCB transformers are located inside B-3A. The former brine UST at B-4 is labeled as Site 39 (AOC No. 39) and the Research and Development area in the northern portions of Buildings B-3, B-3A and B-4 are labeled as Site 56. Site 60 is the drum storage area located at B-4. B-3A, B-4 and B-5 are all known to contain ACMs. Each of those building could potentially contain lead paint as well.

Parcel 28 (B-19 and B-43)

Components testing has historically been performed within B-19, involving fuel and solvents. Records indicate waste fuels, oils, and solvents were discharged to a dry well (constructed with a gravel bottom) in the southwestern corner of B-19 from the 1940s until 1987 (W-C, 1991).

In addition, fuel storage tanks north of B-19 were occasionally overfilled (SAEP, 1995). Phase I Remedial Investigation results indicate subsurface soil contamination by halogenated solvents and fuel-related VOCs. Halogenated solvents were detected in groundwater beneath this parcel.

The dry well in the southwestern corner of B-19 is designated as Site 23. The release of waste fuels, oils, and solvents to the dry well is designated as Site 23a. Site 33 (AOC No. 33) is B-19 and the associated petroleum satellite accumulation areas (Sites 33a through 33c). There are two PCB transformers located within B-19 (Site 33d). Site 35 (AOC No. 35) is B-43 and associated satellite accumulation areas. There are no accumulation areas associated with B-43 at this time. There are four

USTs associated with B-19 and are designated as Site 44. Site 57 is described as the drum storage area east of B-19. Sites 68 and 69 are two large fuel storage tanks. The releases associated with occasional overfilling of the fuel storage tanks is designated as Site 68a. B-19 is known to contain ACMs. B-19 and B-43 could potentially contain lead paint.

Parcel 29 (Northeast corner of B-2, and B-52)

There is documented historical fuel storage in USTs beneath this parcel. Although no subsurface soil or groundwater samples have been collected beneath this parcel, Phase I Remedial Investigation data from surrounding parcels, and documented contamination beneath B-65, indicate the potential for subsurface soil and/or groundwater contamination.

The former sanitary and oil USTs beneath B-2 are designated as Site/AOC No. 38 (Sites 38a and 38b). The B-52 former oil UST is designated as Site 46. The known and potential hazards associated with B-2 have been previously described in the discussion of Parcel 2. B-52 potentially contains ACMs and lead paint.

Parcel 30 (B-34)

B-34 is a fuel pump station associated with the fuel tank farm adjacent to the building. An investigation performed by Metcalf and Eddy in 1990 discovered petroleum contamination in the subsurface soils in the vicinity of B-34 (Metcalf and Eddy, 1990). However, in 1989 the USTs and a portion of the associated contaminated soils were removed. Post-remediation sampling was not conducted.

A slurry wall was installed to prevent recontamination of clean fill by residual oil contamination in the surrounding soil.

Site 30 (AOC No. 30) consists of B-34, associated satellite accumulation areas (Sites 30a and 30b), the aboveground storage tanks (Sites 30c through 30i), and the former USTs at the fuel tank farm adjacent to B-34 are designated Site/AOC No. 45 (Sites 45a through 45i). Releases caused by overfilling this cluster of tanks, and subsequent petroleum contamination, is designated as Site 45j. B-34 has the potential to contain lead paint.

Parcel 31 (drum pack and storage area east of B-19)

In 1991, a drum containing 1,1,1-TCA, stored in the drum storage rack east of B-19 leaked, resulting in discharge to the ground surface (SAEP, 1995). Contaminated soils were excavated as close to the foundation of B-19 as possible, and removed from the site for proper disposal.

Sites 66 through 67 are aboveground fuel storage tanks within Parcel 31. The drum rack at B-19, used for 1,1,1-TCA and oils, is designated as Site 57 (AOC No. 57) and Sites 57a and 57b describe known and potential associated releases. There are no buildings within Parcel 31 and therefore no other known or potential hazards exist (i.e., asbestos, lead paint, etc.).

Parcel 32 (Near Shore Intertidal Flats)

Numerous discharges and spills from the process wastewater outfalls to the intertidal flats have been documented (see Section 3.4.3 and Appendix C). The Preliminary Draft Baseline Ecological Risk Assessment (W-C, 1995) indicates that PCB and metals concentrations in the sediments of the intertidal flats in the vicinity of the OFs-002, -003, -004, and -007 create a risk to indigenous benthic macroinvertebrates and wading birds. However, PCB congeners not used at SAEP, but found at SAEP and upstream suggest other sources for at least some of these contaminants.

Sites 5 (AOC No. 5) and 52 (AOC No. 52) are the storm and wastewater collection system and outfalls, respectively. These Sites are described in Parcel 2. Site 24 (AOC No. 24) is described as the discharge to the Housatonic River through OF-007. Three documented releases of chromic acid, oil sludge, and hexavalent chromium are designated as Sites 24a, 24b, and 24c. There are no buildings within Parcel 32 and therefore there are no other known or potential hazards (i.e., asbestos, lead paint, etc.).

Parcel 33 (Former UST Sites South of B-9)

This parcel has historically been used for gasoline USTs (see Table 3-3) associated with the garage located in Building B-9 to the north. The final two remaining USTs were removed in December 1995. Soil analyses indicate no residual gasoline contamination in the subsurface soils (SAEP, 1995), although sampling data was not available for the EBS report.

Off-Site (from outfall OF-008)

Discharge from the CWTP and equalization and sludge lagoons described in Parcel 21 is to outfall OF-008. OF-008 is located in a tidally-influenced drainage channel which is connected to nearby Marine Basin and the Housatonic River. The tidally-influenced drainage channel has received treated effluent from the CWTP since 1958. The drainage channel and Marine Basin are not within the SAEP property boundary, and subsequently are not shown as a CERFA parcel. However, the outfall and drainage ditch are labeled as Site 25 (AOC No. 25) and three documented releases (Sites 25a through 25c) to the drainage channel have occurred.

4.2 ADJACENT OR SURROUNDING PROPERTY SOURCES

A database search of USEPA and CTDEP records was completed by EDI for the area within a 1-mile radius of SAEP. Some of the facilities identified by the database search are listed under more than one file category. The names and addresses of listed facilities within a 1-mile radius of SAEP are provided in Table 4-2, along with comments and observations concerning the listing. The locations of adjacent sites with environmental records are depicted in Figure 4-2. The database search report, including mapped locations of adjacent properties with environmental records, is presented in Appendix A. However, if the databases are not updated in a timely fashion or contain errors, this database search may contain inconsistent out-dated information. The USEPA and CTDEP file categories included in the database search, and associated number of sites with records, are:

- NPL or "Superfund" list sites. No NPL sites were identified within the search radius.

- USEPA FINDS. One adjacent site was identified; however, the location is unknown.

- USEPA CERCLIS Database. Five facilities were found on nearby properties. One facility was found outside the 1/2-mile search radius, but may encroach upon the SAEP facility. The locations of two additional sites (with insufficient location information) are unknown.

- USEPA SARA/TRIS. One site located within a 1/4-mile radius of SAEP was identified.

- ERNS. No adjacent sites were identified.

- RCRA Facilities. Five facilities were found within a 1-mile radius on nearby properties. Two facilities were found outside the SAEP boundary, but may encroach upon SAEP. The location of one additional site (with insufficient location information) is unknown.

- State Superfund Sites. Seven facilities were found on nearby properties. One facility was found outside the 1-mile search radius, but may encroach on the SAEP facility. The locations of three additional facilities (with insufficient location information) is unknown.

- Landfills. Four landfills are located within a 1/2-mile radius of SAEP. An additional landfill was found outside the 1/2-mile search radius, but may encroach on the SAEP facility. The location of a sixth landfill (with insufficient location information) is unknown.

- Leaking USTs. Four leaking USTs were identified within a 1/2-mile radius of SAEP. Two additional leaking USTs were also identified; however, their locations are unknown.

  CTDEP maintains records of spills and releases that are significant enough to require reporting to the CTDEP. Several such releases have occurred from UST leaks at Sikorsky Memorial Airport (W-C, 1991).

- Registered USTs. Five registered USTs were identified within a 1/2-mile radius. Two additional registered USTs were also identified; however, their locations are unknown.

4.3 Non-CERCLA Related Environmental, Hazard, and Safety Issues

The following subsections address regulatory issues outside CERCLA that may affect the closure and transfer of SAEP.

4.3.1 Asbestos

Asbestos was a common building material with widespread use from the 1920s to the mid-1970s. Generally, asbestos is only hazardous when it is friable (i.e., in a state from which fibers may become airborne, such as when an asbestos-containing material [ACM] has been damaged or disturbed). Current federal law (Asbestos Hazard Emergency Response Act of 1986 [AHERA]) requires the removal of ACM from schools, but there are currently no requirements for removal of ACMs from other buildings unless it becomes exposed and can be released to the air. The National Emissions Standards for Hazardous Air Pollutants (NESHAPS) regulations (40 CFR 61) contain requirements to limit potential emissions during removal or demolition of ACM. For buildings at SAEP with ACM, any renovation or demolition would need to be in compliance with NESHAPS and State of Connecticut requirements.

Since the mid-1970s, SAEP has implemented a policy to not use ACMs for any new construction or renovation. When asbestos is identified, it is removed by a licensed contractor and disposed of properly in a licensed landfill.

Based on interviews of SAEP personnel, as well as review of some building plans and specifications and limited site reconnaissance, the potential sources of asbestos associated with site structures is primarily in pipe wrap insulation, pipe gaskets, wiring insulation, transite wallboard, and floor tile. The potential for ACM in SAEP buildings is provided in the listing of Table 4-3. The actual presence or absence of ACM should be confirmed by a detailed survey that includes visual inspection and sampling.

4.3.2 PCBs

PCBs are regulated under the TSCA, which regulates the containment, removal, and disposal of PCBs. PCBs are toxic, tend to bioaccumulate in animal and human tissue, and resist degradation. USEPA regulations provide specific policies regarding registration, inspection, reporting, and cleanup of transformers or other equipment that contain PCBs.

There are currently 17 transformers at SAEP that contain PCBs (Table 4-4). The 17 transformers are classified as "PCB-transformers" (i.e., PCB concentration greater than 500 ppm). Two PCB spills are noted in a former environmental site assessment report (ESE, 1981). This report does not contain information regarding dates, locations, and quantities of each spill; therefore, the quantities spilled or spill locations have not been determined by this study. Drip pans have been placed beneath each transformer, and all but one transformer is contained by a concrete curb or vault. Substation 43 at B-3 is the only transformer that is not contained within a bermed area.

4.3.3 Lead-Base Paint

Based on a review of specifications, some of the paints used on site between the 1930s and 1970s contained lead. For the purposes of this study, buildings constructed prior to 1978 are assumed to potentially contain lead-based paint (see Table 3-1). The extent of possible lead-containing paints on site has not been determined.

4.3.4 Radon

Based on interview information, a radon survey of SAEP was completed by the Textron Lycoming environmental department in 1989-1990 in cooperation with the State of Connecticut. Since no radon was detected in this survey, it is not considered to be an existing contaminant at SAEP.

4.3.5 Unexploded Ordnance

No unexploded ordnance (UXO) was reported or observed by W-C during the PAS investigations in 1991 (W-C, 1991). ABB-ES did not observe any UXO during two site visits in 1995. Discussion of explosives storage at SAEP is provided in Subsection 3.4.5.

4.3.6 Radionuclides

Radiological isotopes (cesium, iridium, phosphorous, krypton, strantum, hydrogen, cadmium, cobalt, and silver) have been used at SAEP. A radiation protection study was performed by the U.S. Army Environmental Hygiene Agency (USEHA) in 1988 to evaluate the presence and extent of any health hazards resulting from operations involving thorium at SAEP (USAEHA, 1988). The results of instrument surveys indicated that radiation levels detected within B-2 did not exceed background levels. A review of the findings and sampling indicated no apparent health hazards resulting from the operations involving thorium at SAEP.

A comprehensive radiological survey of the buildings and grounds will be conducted as part of the NRC permit closure.

4.4 RISK ASSESSMENT SUMMARIES

The following subsections are based on the Preliminary Draft Baseline Ecological Risk Assessment and Preliminary Draft Baseline Human Health Risk Assessment prepared by W-C in November 1995. The conclusions in the risk assessments may need to be updated as they receive review and comment.

4.4.1 Baseline Ecological Risk Assessment

There are portions of the SAEP study area where sediment-bound constituents likely represent some degree of risk to ecological receptors. These findings can be summarized as follows:

- Population-level risks to indigenous benthic macroinvertebrates that colonize the intertidal mudflat in the vicinity of OFs-002, -003, -004, and -007; potential risk likely due to exposure to PCBs and metals

- Population-level risks to indigenous benthic macroinvertebrates that colonize the drainageway in the vicinity of OF-008; potential risk is likely due to metals

- Potential risks to individual large wading birds such as the great blue heron, which regularly use the intertidal mudflats as a forage area; potential risk due to ingestion of mercury and PCB-contaminated prey and incidental ingestion of contaminated sediments

- Potential risks to individual small wading birds such as the sandpiper, which regularly use the intertidal mudflats as a forage area; potential risk is likely due to ingestion of metal-contaminated prey and incidental ingestion of contaminated sediments

These potential risks may impact localized portions of the study area (in the case of the benthic habitat) or individual birds that occasionally feed at the site. Owing to the conservative assumptions of the exposure assessment, the small size of the site, the availability of large areas of more suitable habitat in the vicinity, and the observed distributional pattern of the site-related constituents, it is not likely that these potential risks pose a threat to the entire estuarine system, but only to the limited areas or individuals exposed.

4.4.2 Baseline Human Health Risk Assessment

The risk assessment for SAEP considered three receptor populations to have potential exposures at the site. Constructions workers were assumed to be exposed to contaminants for a maximum of 40 days in one year; commercial fishermen were assumed to be exposed to contaminants for a maximum of 30 years; and recreational receptors were assumed to be exposed to contaminants for a maximum of seven years. Site workers were not evaluated, because their potential exposure to contamination is minimal due to pavement that covers most of the site. All receptors were assumed to be exposed via ingestion, dermal contact, and inhalation pathways. Environmental media considered in the risk assessment included soil, sediment, groundwater, surface water, and fish. Current and future exposures were evaluated for the commercial fishermen and the recreational receptors. The receptor-specific media and exposure pathways are discussed in detail in the body of the report. Based on the available information from the Phase I and Phase II Remedial Investigations, the noncarcinogenic hazard index for all receptors is below 1.0, and the cancer risk for all receptors is within or below USEPA's target risk of $1x10^{-4}$ to $1x10^{-6}$ range; therefore, adverse human health effects are not expected at SAEP. A brief summary for each receptor follows.

Construction Workers

The highest noncarcinogenic hazard index calculated for exposures to construction workers was 0.1. This is below 1.0, indicating that no unacceptable adverse human health effects are expected, even to sensitive individuals. The highest cancer risk calculated for construction workers was $2x10^{-6}$. This is within the USEPA's target risk range of $1x10^{-6}$ and $1x10^{-4}$ for exposure to chemicals released from hazardous waste sites (USEPA 1990a; 1990d; 1991d; 1992c). The estimate risks are driven by dermal contact with 1,1-dichloroethene and vinyl chloride in the groundwater. Actual site worker risks are probably significantly less than those indicated in the risk assessment, because 1,1-dichloroethene and vinyl chloride concentrations were high in only a few well clusters at the site. Potential risks from groundwater across most of the site is significantly less than the calculated risk given above.

Commercial Fishermen

The highest noncarcinogenic hazard index calculated for exposure to commercial fishermen was 0.8. This is below 1.0, indicating that no unacceptable adverse human health effects are expected even to sensitive individuals with 30 years exposure. The highest excess cancer risk calculated for commercial fishermen was $9x10^{-5}$. This is within the USEPA's target risk range. Dermal contact with sediment containing PCBs is the primary contributor to the carcinogenic risk estimate. The estimated risk due to PCBs is likely overstated, because the highest concentrations of PCBs are in the shallowest area of the Intertidal Flats. In this shallow area, access by boat is extremely limited and hunting, fishing, and oyster harvesting is not allowed.

Recreational Receptors

The highest noncarcinogenic hazard index calculated for exposure to recreational receptors was 0.08. This is below 1.0, indicating that no unacceptable adverse human health effects are expected, even to sensitive individuals. The highest cancer risk calculated for recreational receptors was $1x10^{-6}$. This concentration is near the lower end of USEPA's target risk range. Dermal contact with PCBs in the sediments, and ingestion of arsenic in the sediments are the primary contributors to the carcinogenic risk estimate. It is likely that the actual site risk is significantly less, because the sediment samples used in the risk assessment were collected near the OF-008 discharge pipe. The concentrations of PCBs are the highest at this location; however, this location represents an extremely limited portion of the site that the recreational receptors are likely to use.

4.5 Remediation Efforts

The following section is based on information obtained from the sources listed in Section 4.0. This section is organized to correlate with CERFA parcelization, presented in Section 5.0 of this EBS Report. Documented and reported remediation efforts are described below by parcel.

Parcel 4 (B-65)

Paint-contaminated soils, below the footprint of B-65 in 1990, were partially removed in 1990. The source of the paint contamination is believed to have been zinc-chromate undercoat used to paint the Corsair aircraft in the 1940s (W-C, 1991). Petroleum-contaminated subsurface soils were also found during the construction of B-65, and were partially removed and used as fill in the south parking lot (Parcel 19).

Parcel 9 (Concrete Pit)

A concrete pit, formerly used as a collection point for metal chips and turning wastes was excavated and removed from the area between Buildings B-13 and B-15 in 1993.

Parcel 21 (Equalization Lagoon and Three Sludge Lagoons)

The equalization and three sludge lagoons were used from 1958 until 1990, and received treated effluent and sludge from the treatment process. The four lagoons were excavated to the low tide level and closed under RCRA Subtitle C in 1990.

Parcel 30 (B-34)

Overfilling of the fuel storage tanks resulted in subsurface soil contamination. Some of the contaminated soil has been excavated and replaced with clean fill. A slurry wall has been installed to impede remaining contaminant migration (SAEP, 1995).

Parcel 31 (Drum Storage Rack East of B-19)

1,1,1-TCA was detected in subsurface soil samples during the construction of berms for the tank farm east of B-19 (SAEP, 1995). The contaminated soils were excavated as close to the foundation of B-19 as possible.

5.0 CERFA LETTER REPORT

This letter report presents the results of the CERFA investigation conducted by ABB-ES at SAEP, a U.S. Government property selected for closure in 1995 by the BRAC Commission, under Public Laws 100-256 and 101-510. In October 1992, Public Law (P.L.) 102-426, CERFA amended Section 120(h) of CERCLA, and established new requirements with respect to contamination assessment, cleanup, and regulatory agency notification/concurrence for federal facility closures. CERFA requires the Federal government, before termination of federal activities on real property owned, to identify property on which no hazardous substances or any petroleum products or their derivatives were stored, released, or disposed. In addition, the designation must be concurred with by the appropriate regulatory agency (USEPA on NPL bases and the state agencies on non-NPL bases). The primary CERFA objective is for Federal agencies to expeditiously identify real property offering the greatest opportunity for immediate reuse and development. Although CERFA does not mandate the Army transfer real property so identified, the first step in satisfying the objective is the requirement to identify real property where no CERCLA-regulated hazardous substances or petroleum products were stored, released, or disposed of.

Supporting information for this CERFA Letter Report was obtained during the preparation of the EBS Report for SAEP, and was current as of July 1996.

5.1 DEFINITION OF TYPES OF CERFA PARCELS

The following definitions are used in this CERFA report:

- CERFA parcel - A portion of the installation real property for which investigation revealed no evidence of storage for one year or more, release, or disposal of CERCLA hazardous substances, petroleum, or petroleum derivatives and no evidence of being threatened by migration of such substances. CERFA parcels include areas where PCB-containing equipment is in operation, but there is no evidence of release. CERFA parcels also include any portion of the installation that once contained related environmental, hazard, or safety issues including UXO, radon, stored (not in use) PCB-containing equipment, products that contained radionuclides being used for their intended purposes, asbestos contained within building materials, and lead-based paint applied to building material surfaces, but that has since been removed or fully remediated.

- CERFA parcel with qualifier(s) - A portion of the installation real property for which investigation revealed no evidence of storage for one year or more, release, or disposal of CERCLA hazardous substances, petroleum, or petroleum derivatives and no evidence of being threatened by migration of such substances. The parcel does however contain related environmental, hazard, or safety issues including UXO, radon, stored (not in use) PCB-containing equipment, products that contained radionuclides being used for their intended purposes, asbestos contained within building materials, or lead-based paint applied to building material surfaces.

- CERFA disqualified parcel - A portion of the installation real property for which investigation reveals evidence of a release, disposal, or storage for more than one year of a CERCLA hazardous substance, petroleum, or petroleum derivative; or a portion of the installation threatened by such a release or disposal. CERFA disqualified parcels also include any portion of the installation where PCB, asbestos containing material, lead-based paint residue, or any ordnance has been disposed of, and any locations where chemical ordnance has been stored. Additionally, CERFA disqualified parcels include any areas in which CERCLA hazardous substances or petroleum products have been released or disposed of and subsequently fully remediated.

Site parcelization and CERFA designations are presented in Section 5.2 of this report.

5.2 PROPERTY PARCELIZATION AND CERFA ASSESSMENT

The SAEP property was divided into parcels based upon geographic setting, historical manufacturing processes, or operations, storage of hazardous materials or petroleum products, and release/disposal of hazardous materials or petroleum products, as discussed in Subsection 4.1 of the EBS Report. Information from the EBS investigation was used to divide the installation into seven categories of parcels that are depicted by seven colors on the CERFA map. These categories, as defined by the Department of Defense BRAC Cleanup Plan (BCP) Guidebook, Fall 1995, are as follows:

1. Areas where no storage, release or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas) *[white]*

2. Areas where only storage of hazardous substances or petroleum products has occurred (but no release, disposal, or migration from adjacent areas had occurred) *[blue]*

3. Areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, but at concentrations that do not require a removal or remedial action *[light green]*

4. Areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, and all remedial actions necessary to protect human health and the environment have been taken *[dark green]*

5. Areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, removal and/or remedial actions are under way, but all required remedial actions have not been taken *[yellow]*

6. Areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, but required response actions have not yet been implemented *[red]*

7. Areas that are unevaluated or require additional evaluation *[gray]*

Areas of the facility that contained non-CERCLA related environmental or safety issues, including asbestos, lead-based paint, PCBs, radon, UXO, and radionuclides, have also been identified.

In addition, the following guidance, provided by USAEC, was used in the delineation of parcels:

- Buildings constructed prior to 1978 are assumed to contain lead-based paint. A similar assumption is made for asbestos in buildings constructed prior to 1985.

- Storage of petroleum products, petroleum derivatives, and CERCLA-regulated hazardous substances will prevent an area from becoming a CERFA parcel as long as storage is for one year or longer. The quantity of substances stored is not relevant to determining the applicable parcel category. However, if the functional operation requiring such substances is in the immediate area, and the storage is in limited quantities for immediate use, the area is not precluded from being a CERFA parcel.

- Non-leaking equipment containing less than 50 ppm PCBs does not preclude an area from becoming a CERFA parcel. Parcels containing non-leaking, out-of-service equipment with greater than 50 ppm PCBs can be designated as CERFA parcels (i.e., Category 1) with a PCB qualifier. An area is designated CERFA disqualified if there is a known release containing greater than 50 ppm PCBs.

- Areas where there are transport systems or process equipment that handle hazardous material or petroleum products and upon which there has been no release, storage, or disposal are categorized as CERFA parcels.

- Ordnance disposal locations are designated CERFA disqualified. This does not include ordnance impact areas that are designated CERFA parcels with qualifiers.

- Routine pesticide and herbicide application in accordance with manufacturer's directions, and chlorofluorocarbons and halon in operational systems do not preclude an area from becoming a CERFA parcel.

- Coal storage piles and railroad tracks do not by themselves preclude an area from becoming a CERFA parcel.

Figure 5-1 (color), Figure 5-2 (black and white) and Table 5-1 summarize the categorization of 33 parcels on the basis of the above definitions. No CERFA parcels or CERFA parcels with qualifiers were identified as a result of the CERFA assessment. All 33 parcels were determined to be CERFA disqualified.

Of the 33 parcels, two were categorized as Category 6/Red, needing remediation based on the preliminary draft risk assessment and on discussion with TACOM about the probable needs for remediation for the plating area in B-2. One parcel (Parcel 21, the former sludge lagoons) was colored yellow (Category 5) based on the ongoing monitoring program. One parcel was Category 4 (Dark Green), indicating that remediation was completed. This is Parcel 22, where petroleum-contaminated soil was treated, then used as fill material. One parcel (Parcel 2, the intertidal flats) was classified as Category 3 (light green) as not needing remediation. The remaining 28 parcels were classified as Category 7 (Gray) as needing additional investigation. Some of these parcels need additional environmental sampling to evaluate source areas or assess the distribution of contaminants. Others were classified as Category 7 because there were exceedances of the CTDEP remediation standards, and the site-specific risk assessment has not been finalized. This risk assessment may show no cleanup is needed in a parcel even though remediation standards are exceeded.

This CERFA Letter Report should be read only in conjunction with the complete EBS report for this installation. The EBS report provides the relevant environmental history to substantiate the parcel categorization. This report does not address other property transfer requirements that may be applicable under the NEPA, nor does it address natural resource considerations such as the threat to plant or animal life.

The SAEP property was divided into parcels based largely on known or probable environmental contamination. The original eight areas of environmental concern previously defined by W-C during the PAS (W-C, 1991) were used to guide the initial parcel delineation and categorization. However, since the PAS was published, substantial additional information has become available, particularly from the Phase I and Phase II Remedial Investigation Reports. Information from these reports was used to complete the parcel categorization.

Preliminary Draft Baseline Human Health and Ecological Risk Assessments were published in November 1995 (W-C, 1995). The Draft Final Phase II Remedial Investigation report was submitted to the USEPA and CTDEP in April 1996, and their review has not yet been completed. The risk assessments generally indicate acceptable risk (with the exception of the near-shore intertidal flats). Many of the parcels are categorized as areas that have not been evaluated or require additional evaluation (gray). However, until the risk assessments and remedial investigation are finalized, it is not possible to completely define which parcels require remediation and what remedial actions could be used or completed at this site. Thus, areas where the draft risk assessment showed acceptable risks, but there were exceedances of the CTDEP RSRs, were categorized as needing additional evaluation (gray) in recognition of the need for the finalization of the risk assessment.

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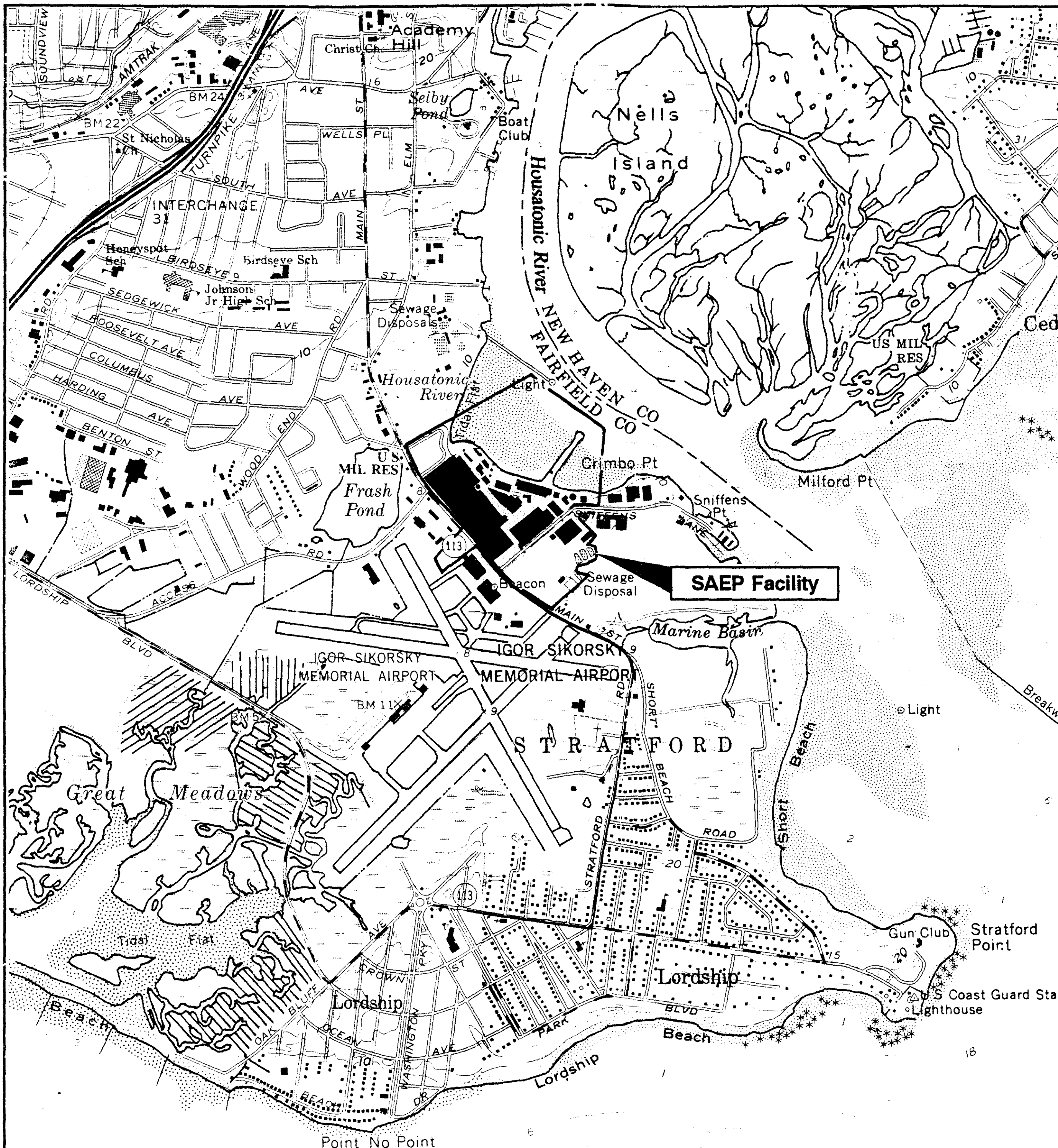


FROM: **Bridgeport and Milford CT. USGS Quadrangle Maps. 1970 and 1960, Photorevised 1984.**

CONNECTICUT

QUADRANGLE LOCATION

N

SCALE IN FEET

0 2,000 4,000

ABB Environmental Services, Inc.

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

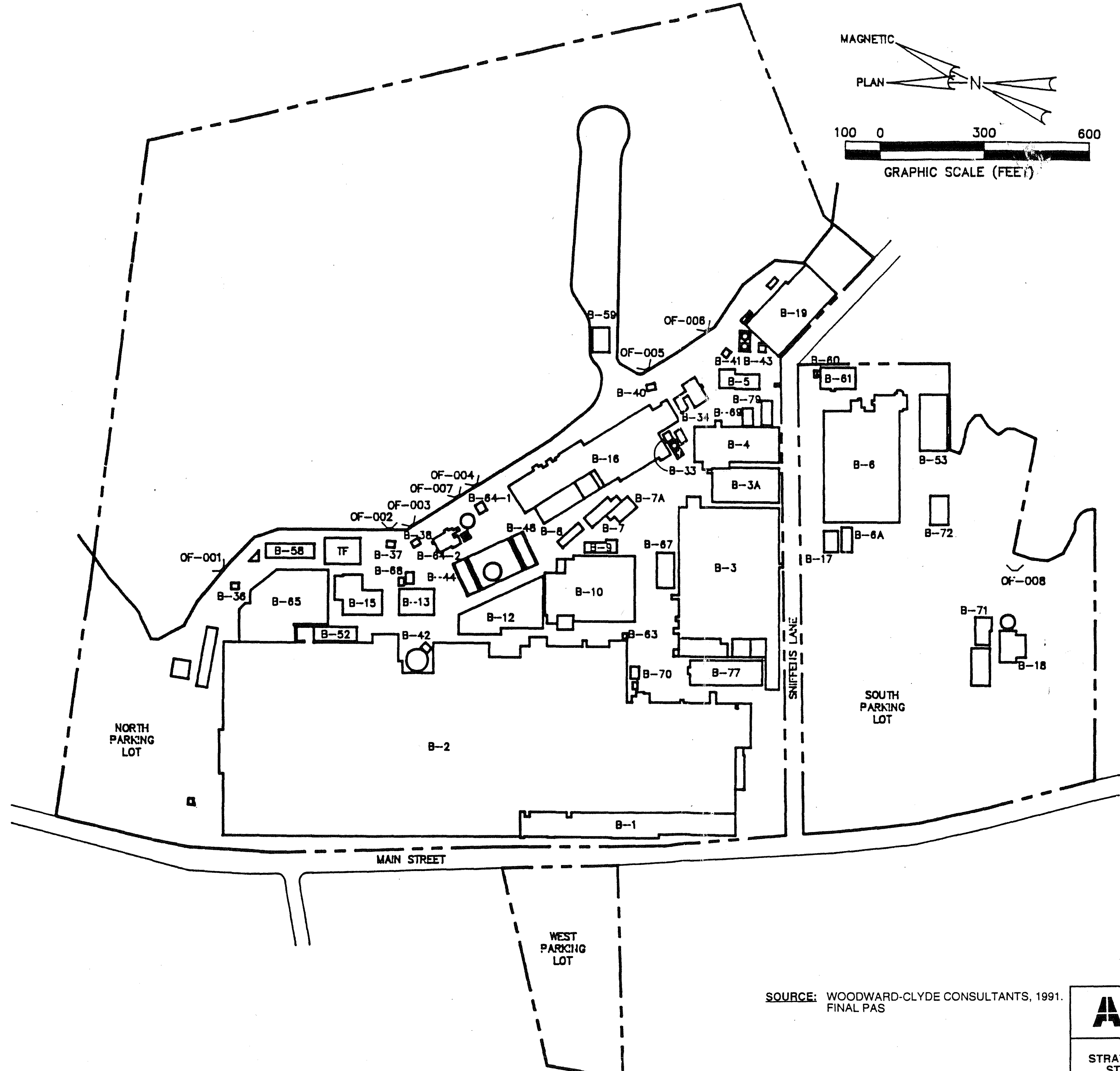
SITE LOCATION MAP

ENVIRONMENTAL BASELINE SURVEY

9336-10

FIGURE 3-1

W9607010D c&p



BUILDING NUMBER	BUILDING NAME
B-1	MAIN ADMINISTRATIVE & GOVERNMENT OFFICES
B-2	MANUFACTURING OPERATIONS
B-3	RESEARCH & DEVELOPMENT ENGINEERING
B-3A	ENGINEERING LABORATORIES
B-4	STORES AND AGT-1500 REPAIR
B-5	FUEL SYSTEM TEST
B-6	ENGINE ENVIRONMENTAL & COMPONENT TEST
B-6A	ENGINE MECHANICAL COMPONENT TEST
B-7	ENGINE FUEL SYSTEM TEST
B-7A	ENGINE FUEL SYSTEM TEST
B-8	VOLATILE STORAGE
B-9	AUTOMOTIVE MAINTENANCE
B-10	RECUPERATOR MANUFACTURE
B-12	MAINTENANCE DEPARTMENT
B-13	SCRAP & MATERIAL RECLAMATION
B-15	LUBRICATION STORAGE & FIRE HOUSE
B-16	PRODUCTION & DEVELOPMENTAL TEST CELLS
B-17	ENGINEERING TEST FACILITY
B-18	CHEMICAL WASTE TREATMENT PLANT (CWTP)
B-19	COMPONENT TEST FACILITY
B-33	COOLING TOWER PUMP STATION
B-34	FUEL PUMPING STATION
B-36	STORM DRAIN PUMPING STATION (OF-001)
B-37	STORM DRAIN PUMPING STATION (OF-002)
B-38	STORM DRAIN PUMPING STATION (OF-003)
B-40	STORM DRAIN PUMPING STATION (OF-004)
B-41	STORM DRAIN PUMPING STATION (OF-005)
B-42	SPRINKLER BOOST PUMP STATION (400K GAL.)
B-43	FUEL PUMPING STATION
B-44	STORES & CARPENTER SHOP
B-48	ENGINE CONTAINER REBUILD
B-52	STORES & ADJUNCT TO B-2
B-53	SURPLUS EQUIPMENT STORAGE
B-58	QUALITY & TESTING FACILITY
B-59	ENGINEERING STORAGE
B-60	HI-PRESSURE NATURAL GAS PUMPING STATION
B-61	REFRIGERATION PLANT
B-63	CWTP PUMPING STATION
B-64-1	OIL ABATEMENT PLANT PUMP HOUSE
B-64-2	OIL ABATEMENT TREATMENT PLANT (OATP)
B-65	STORAGE FACILITY
B-67	GENERAL STORES
B-68	EMERGENCY GENERATOR
B-69	USACE RESIDENT ENGINEER
B-70	CYANIDE DESTRUCTION FACILITY (CDF)
B-71	CWTP SOLIDS HANDLING
B-72	FUEL PUMPING STATION
B-77	OFFICE
B-79	SSE BUILDING

LEGEND

— — — PROPERTY LINE

SOURCE: WOODWARD-CLYDE CONSULTANTS, 1991. FINAL PAS

ABB Environmental Services, Inc.

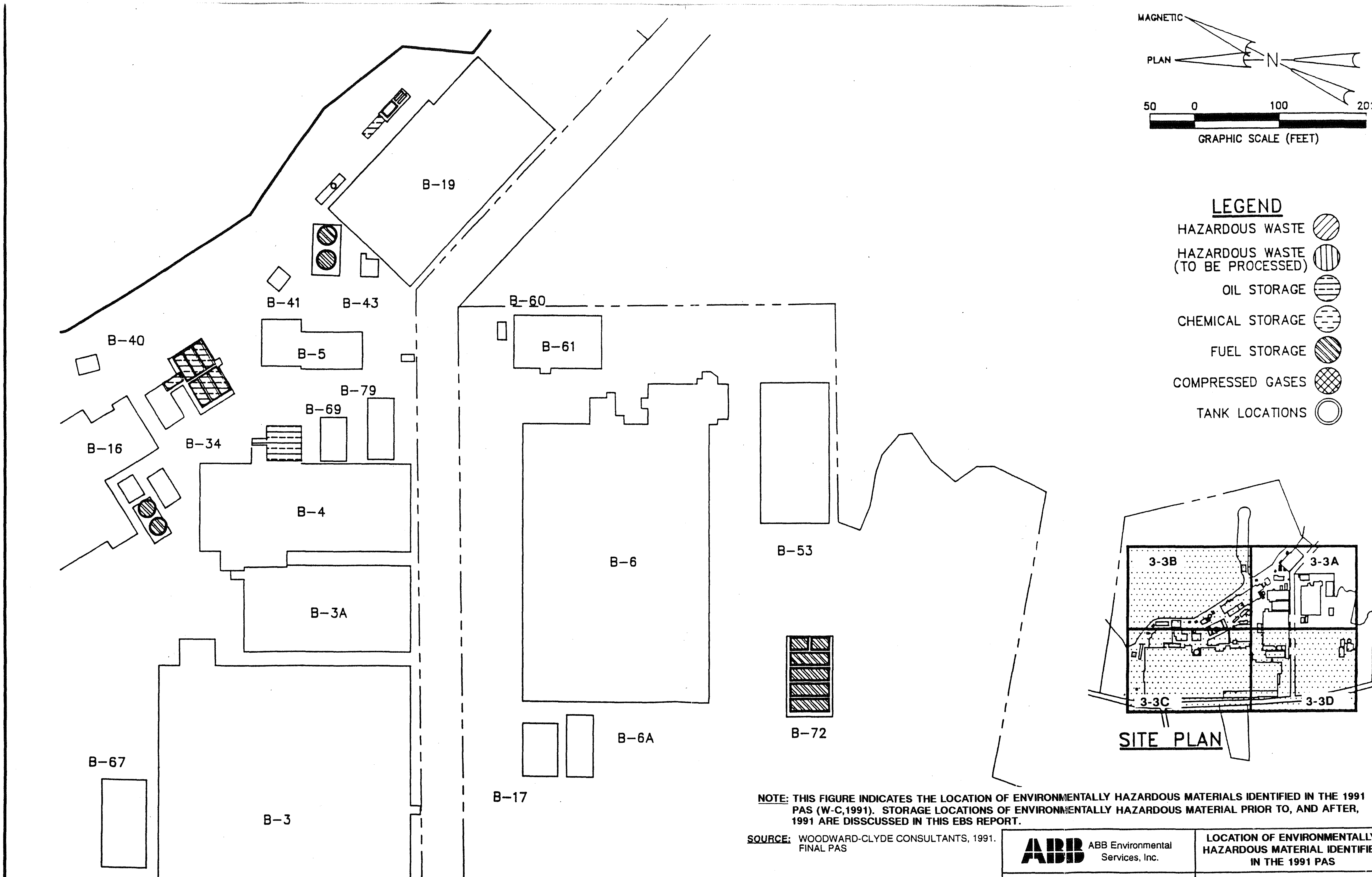
STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

SAEP BUILDINGS

ENVIRONMENTAL BASELINE SURVEY

9336-10

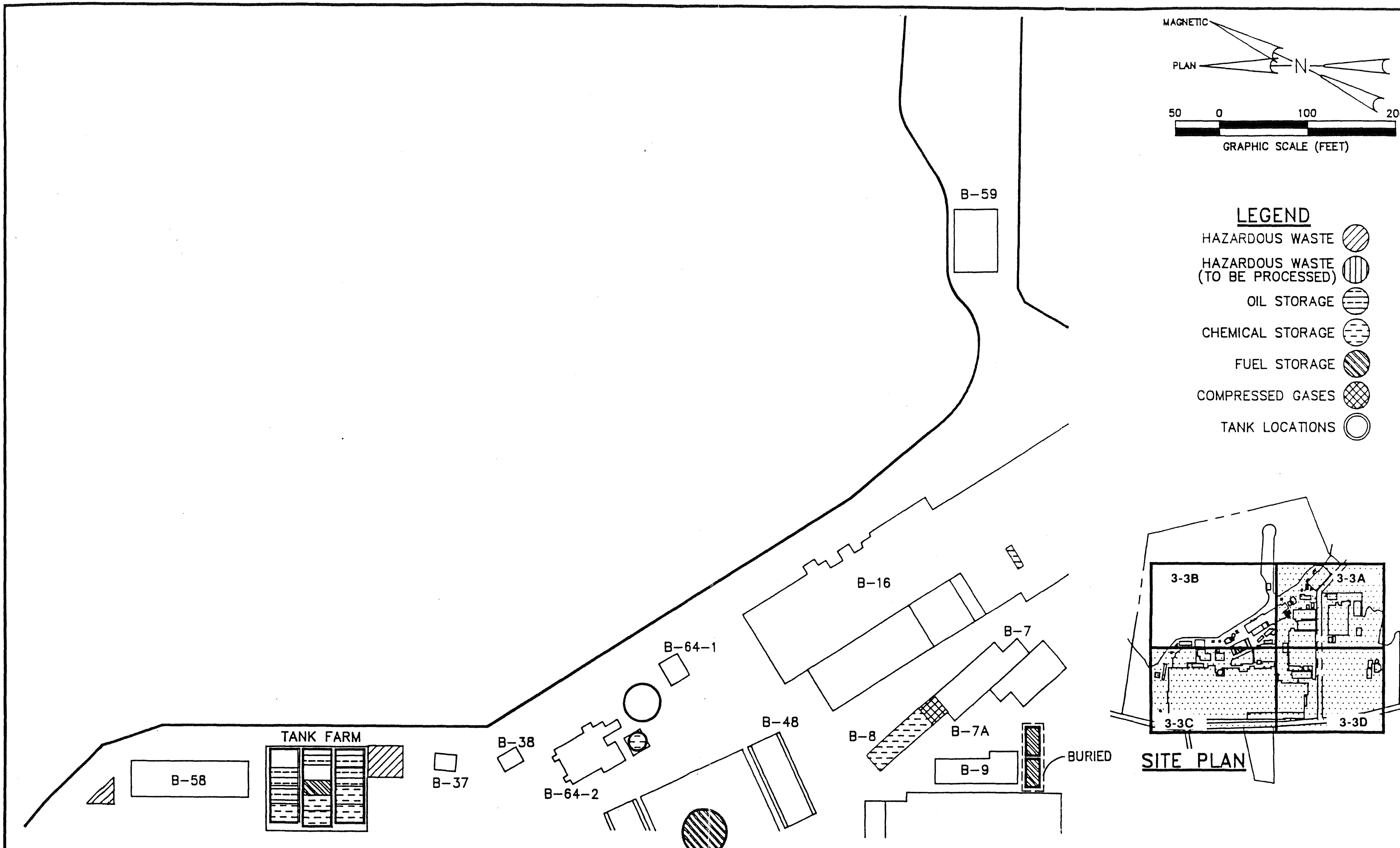
FIGURE 3-2



NOTE: THIS FIGURE INDICATES THE LOCATION OF ENVIRONMENTALLY HAZARDOUS MATERIALS IDENTIFIED IN THE 1991 PAS (W-C,1991). STORAGE LOCATIONS OF ENVIRONMENTALLY HAZARDOUS MATERIAL PRIOR TO, AND AFTER, 1991 ARE DISSCUSSED IN THIS EBS REPORT.

SOURCE: WOODWARD-CLYDE CONSULTANTS, 1991. FINAL PAS

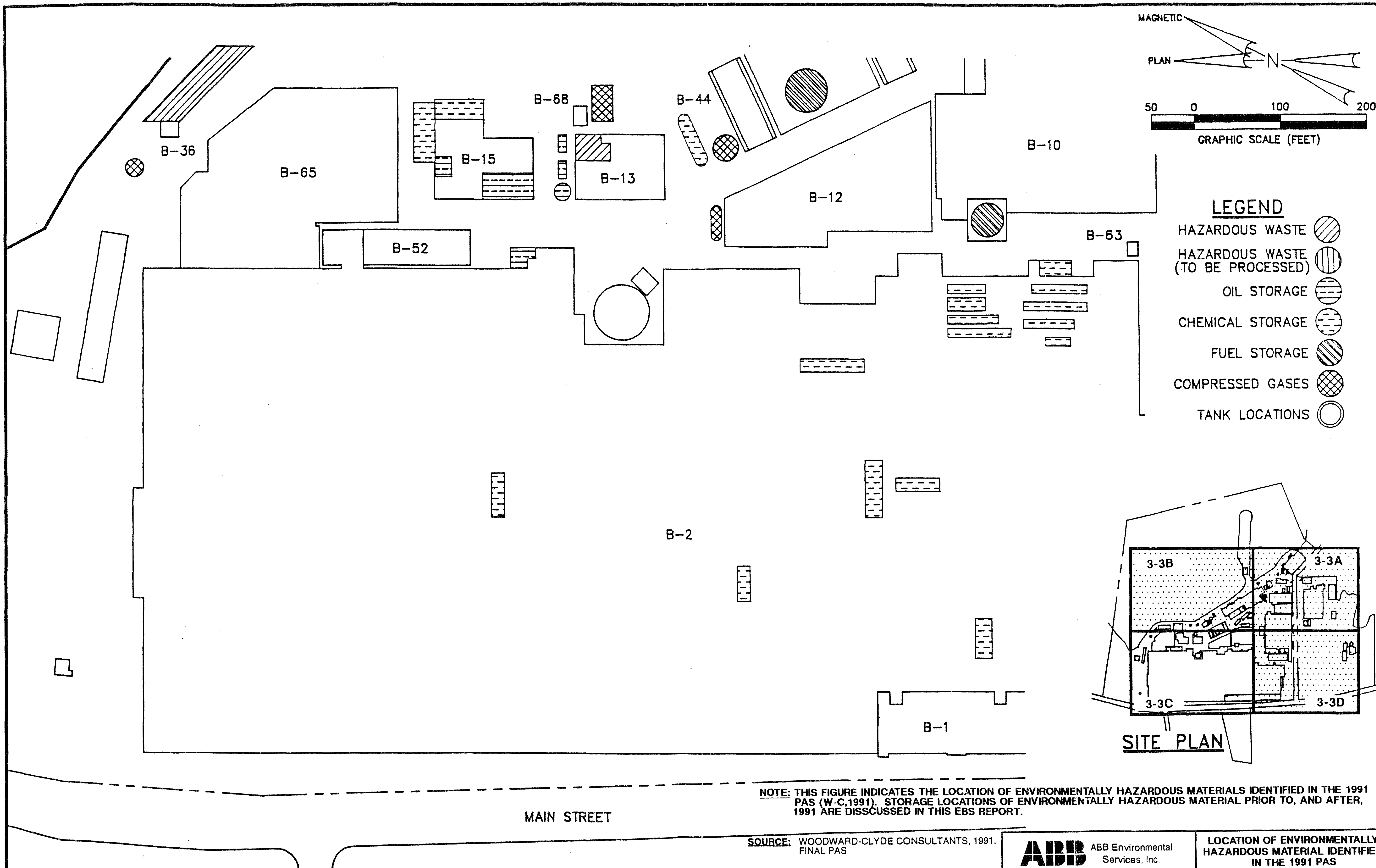
ABB Environmental Services, Inc.	LOCATION OF ENVIRONMENTALLY HAZARDOUS MATERIAL IDENTIFIED IN THE 1991 PAS
STRATFORD ARMY ENGINE PLANT STRATFORD, CONNECTICUT	ENVIRONMENTAL BASELINE SURVEY
	9336-10 FIGURE 3-3A



SOURCE: WOODWARD-CLYDE CONSULTANTS, 1991. FINAL PAS

NOTE: THIS FIGURE INDICATES THE LOCATION OF ENVIRONMENTALLY HAZARDOUS MATERIALS IDENTIFIED IN THE 1991 PAS (W-C,1991). STORAGE LOCATIONS OF ENVIRONMENTALLY HAZARDOUS MATERIAL PRIOR TO, AND AFTER, 1991 ARE DISSCUSSED IN THIS EBS REPORT.

ABB Environmental Services, Inc.	LOCATION OF ENVIRONMENTALLY HAZARDOUS MATERIAL IDENTIFIED IN THE 1991 PAS
STRATFORD ARMY ENGINE PLANT STRATFORD, CONNECTICUT	ENVIRONMENTAL BASELINE SURVEY
	9336-10 FIGURE 3-3B



NOTE: THIS FIGURE INDICATES THE LOCATION OF ENVIRONMENTALLY HAZARDOUS MATERIALS IDENTIFIED IN THE 1991 PAS (W-C,1991). STORAGE LOCATIONS OF ENVIRONMENTALLY HAZARDOUS MATERIAL PRIOR TO, AND AFTER, 1991 ARE DISSCUSSED IN THIS EBS REPORT.

SOURCE: WOODWARD-CLYDE CONSULTANTS, 1991. FINAL PAS

ABB Environmental Services, Inc.

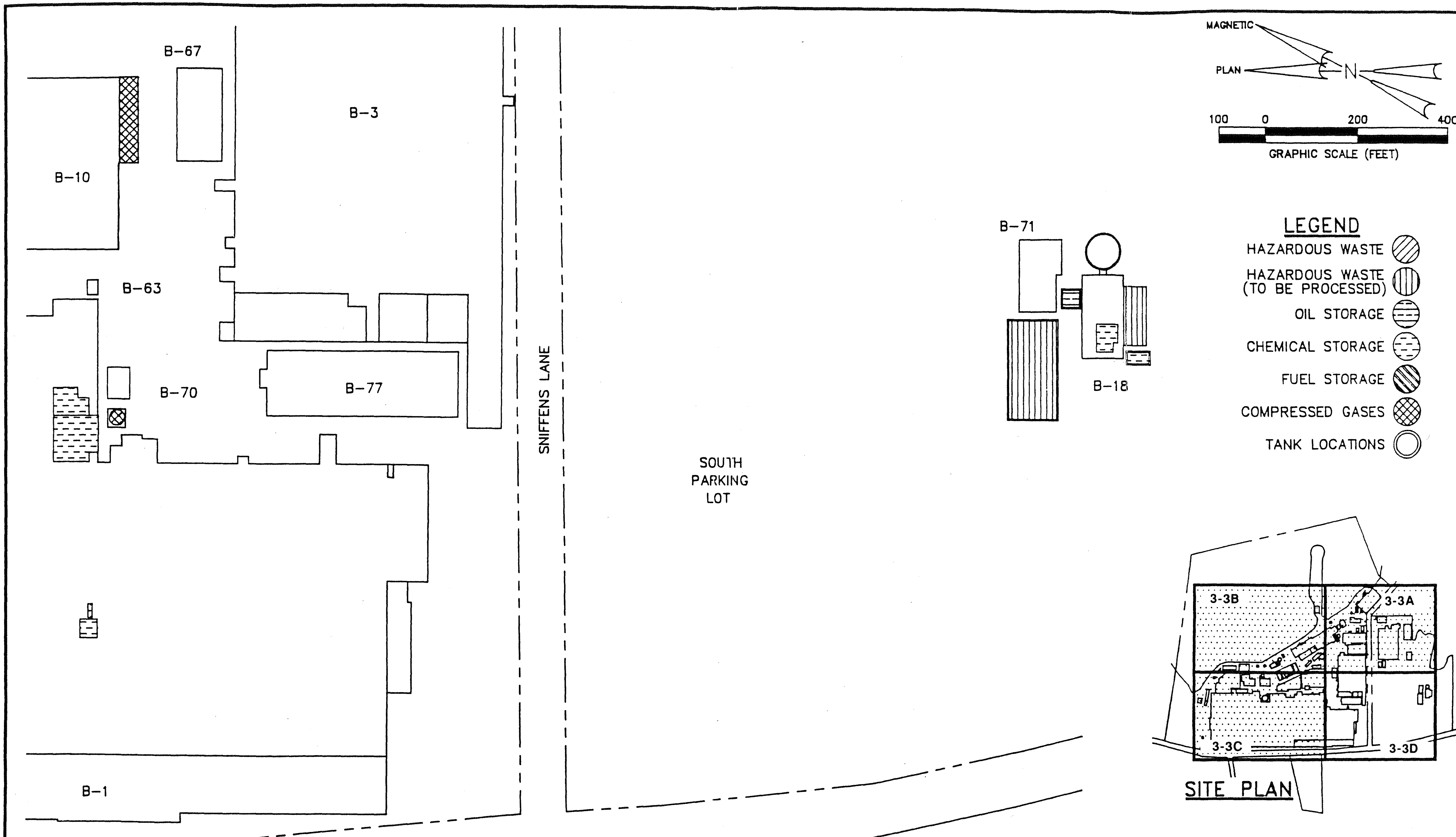
STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

LOCATION OF ENVIRONMENTALLY HAZARDOUS MATERIAL IDENTIFIED IN THE 1991 PAS

ENVIRONMENTAL BASELINE SURVEY

9336-10

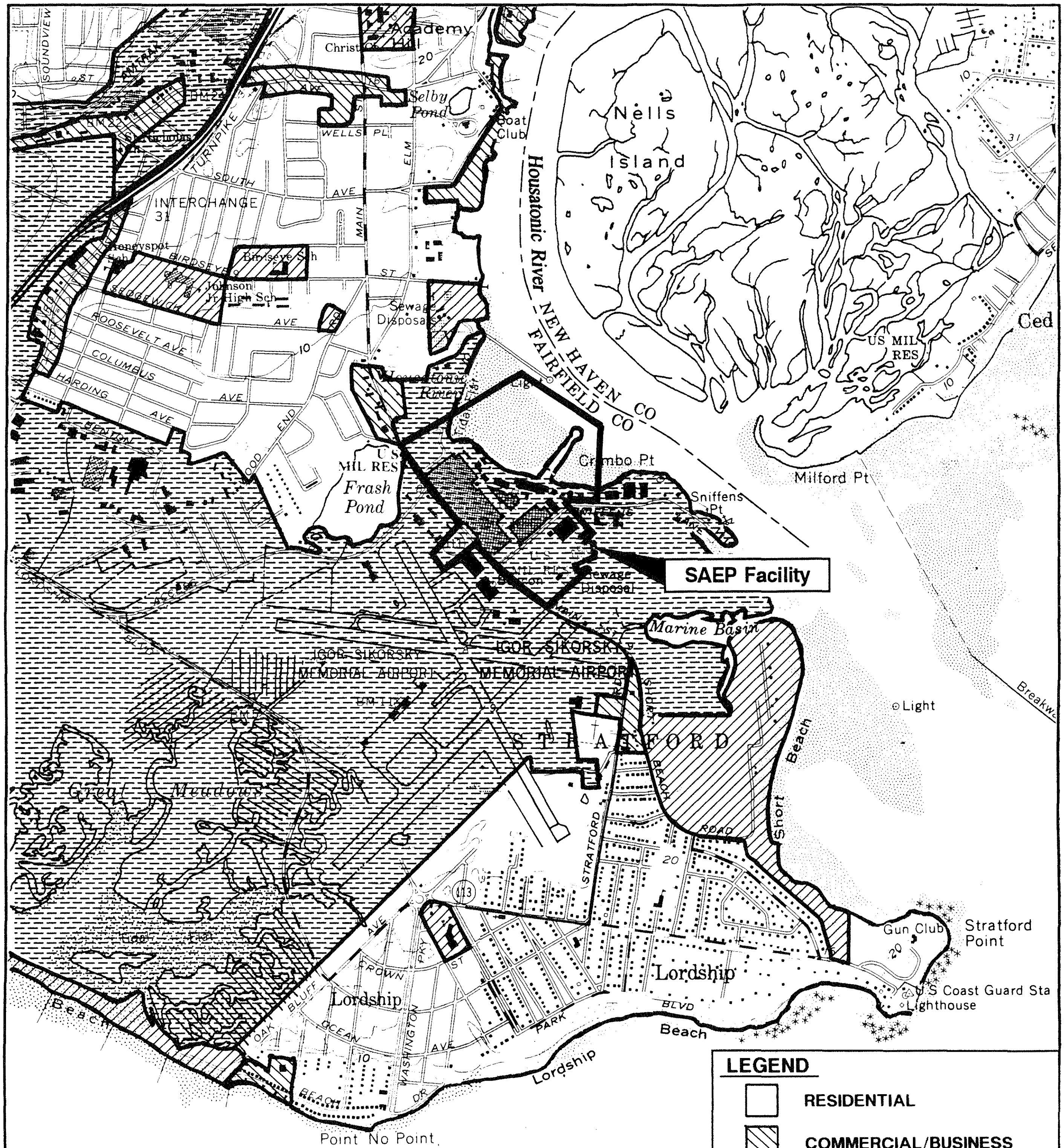
FIGURE 3-3C



NOTE: THIS FIGURE INDICATES THE LOCATION OF ENVIRONMENTALLY HAZARDOUS MATERIALS IDENTIFIED IN THE 1991 PAS (W-C,1991). STORAGE LOCATIONS OF ENVIRONMENTALLY HAZARDOUS MATERIAL PRIOR TO, AND AFTER, 1991 ARE DISSCUSSED IN THIS EBS REPORT.

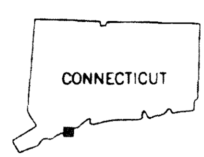
SOURCE: WOODWARD-CLYDE CONSULTANTS, 1991. FINAL PAS

ABB Environmental Services, Inc.	LOCATION OF ENVIRONMENTALLY HAZARDOUS MATERIAL IDENTIFIED IN THE 1991 PAS
STRATFORD ARMY ENGINE PLANT STRATFORD, CONNECTICUT	ENVIRONMENTAL BASELINE SURVEY
	9336-10 FIGURE 3-3D



FROM: Bridgeport and Milford CT. USGS Quadrangle Maps. 1970 and 1960, Photorevised 1984.

Source: Woodward-Clyde Consultants, 1991. Final PAS.



QUADRANGLE LOCATION

SCALE IN FEET

0 2,000 4,000

ABB Environmental Services, Inc.

PLANNING ZONES IN THE VICINITY OF SAEP

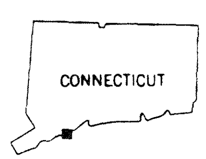
STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

ENVIRONMENTAL BASELINE SURVEY

9336-10

FIGURE 3-4

W9607010D c&p



QUADRANGLE LOCATION

FROM: Bridgeport and Milford CT. USGS Quadrangle Maps. 1970 and 1960, Photorevised 1984.
Source: Woodward-Clyde Consultants, 1991. Final PAS.

N

LEGEND

SURFACE WATER BODY

SCALE IN FEET

0 2,000 4,000

ABB Environmental Services, Inc.

SURFACE WATER BODIES IN THE VICINITY OF SAEP

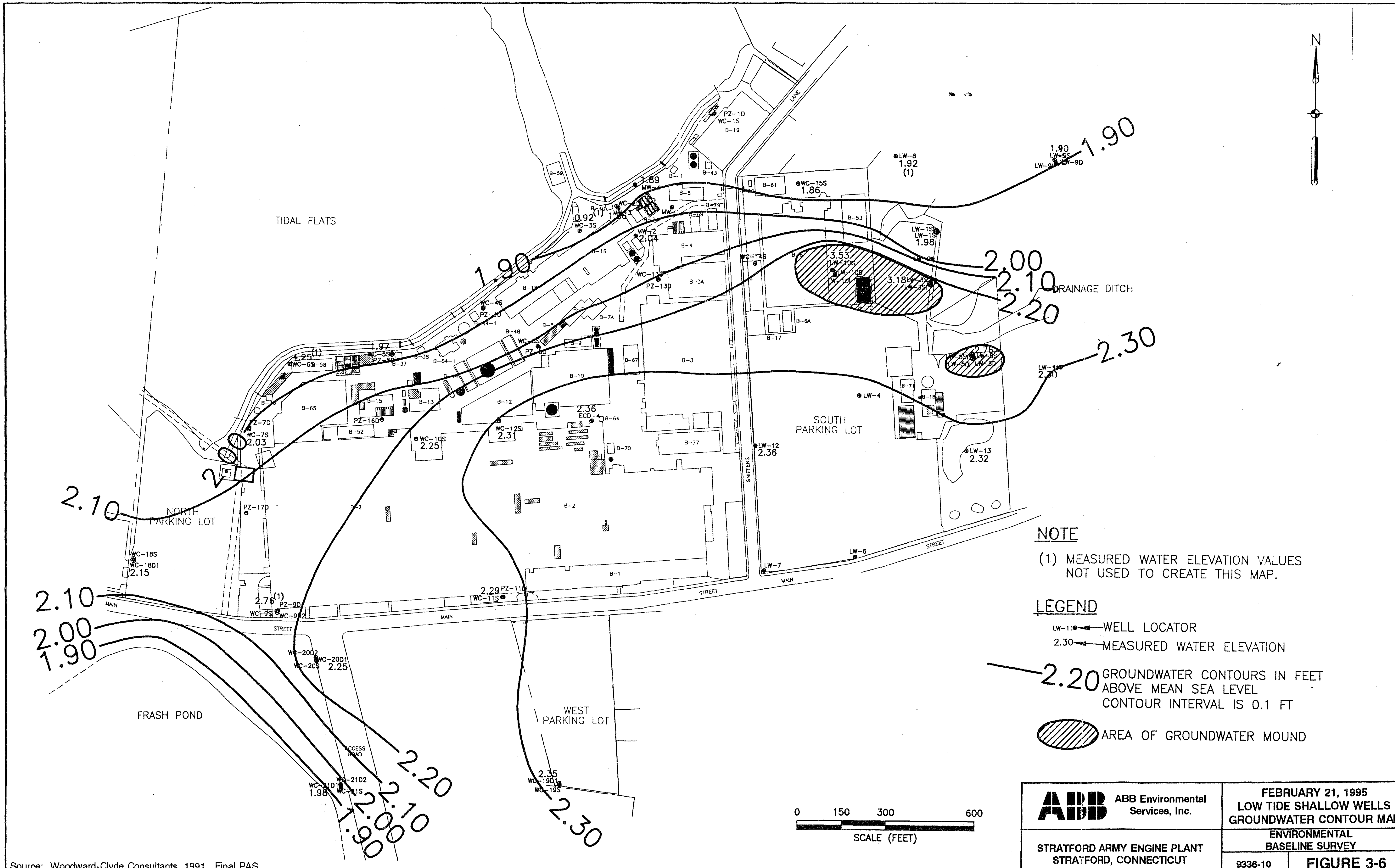
STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

ENVIRONMENTAL BASELINE SURVEY

9336-10

FIGURE 3-5

W9607010D c&p



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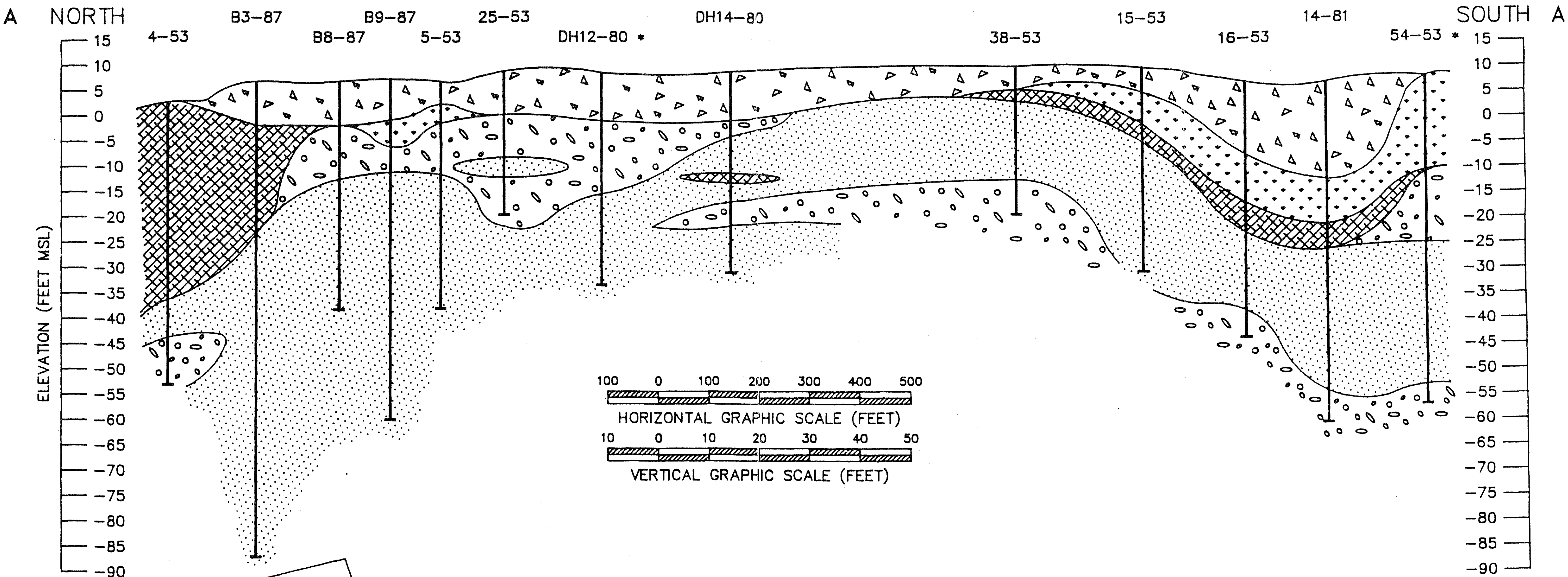
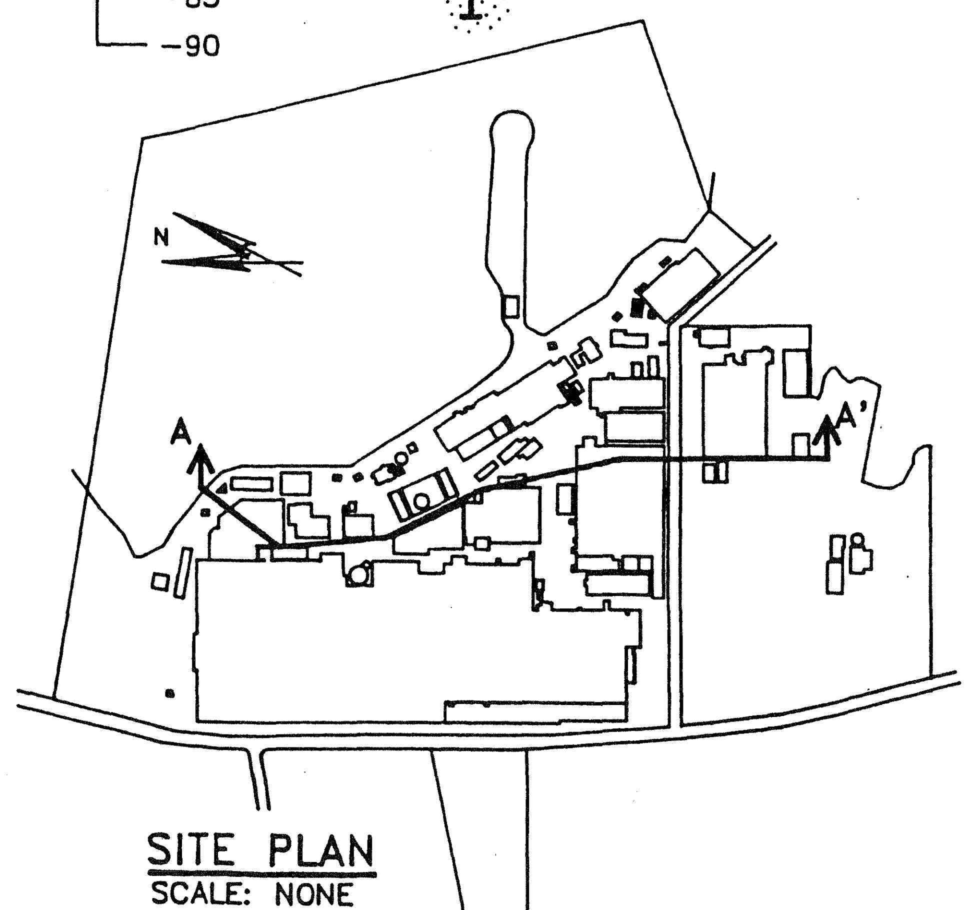




SITE PLAN
SCALE: NONE

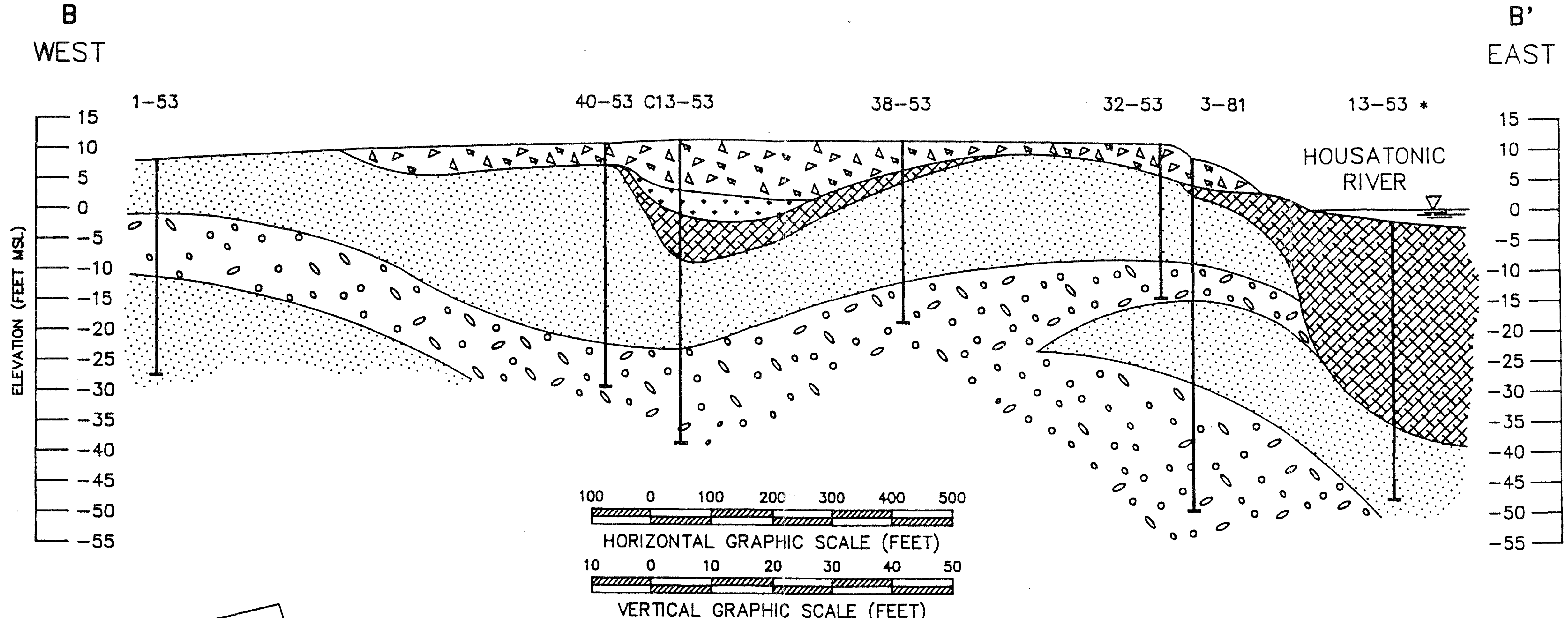
LEGEND

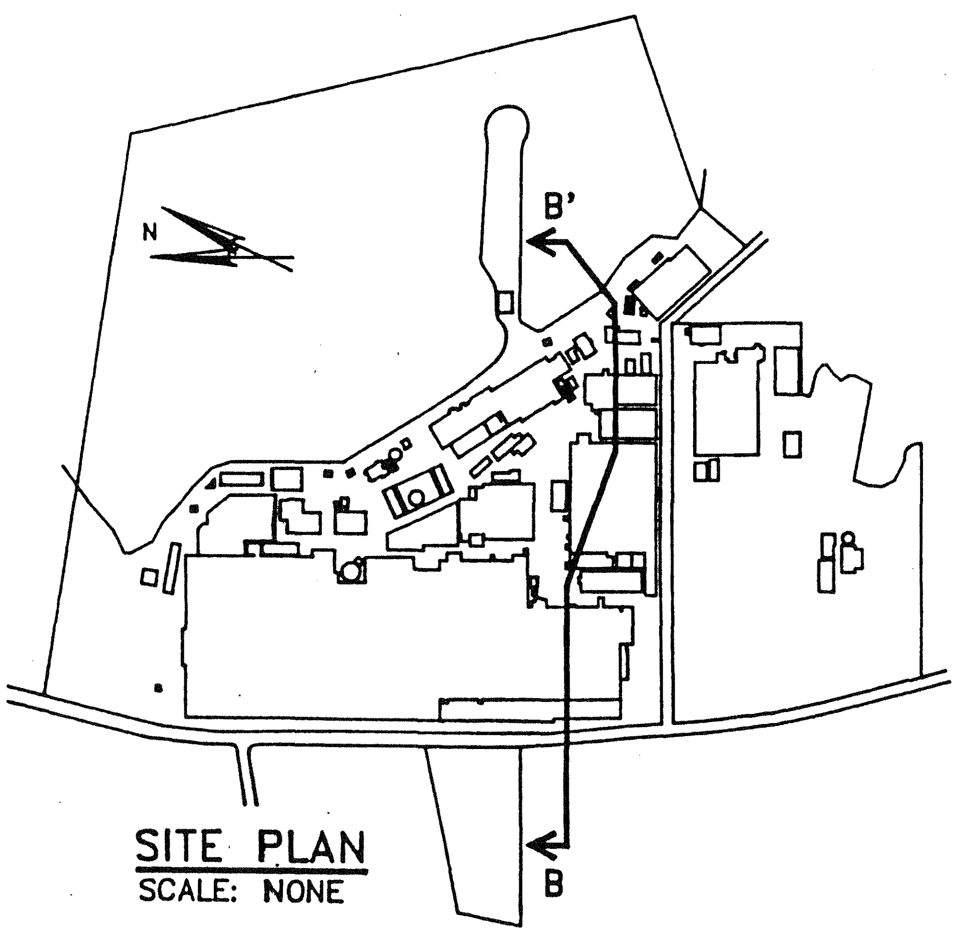
- FILL
- PEAT
- SILT
- SAND
- SAND AND GRAVEL
- 1–53 BORING IDENTIFICATION
- BORING BOTTOM
- * ESTIMATED SURFACE ELEVATION

NOTE:
THE GENERALIZED SOIL PROFILE REPRESENTS A WOODWARD–CLYDE CONSULTANTS INTERPRETATION OF BORINGS DONE BY OTHERS. ACTUAL SUB–SURFACE CONDITIONS MAY VARY.

SOURCE: WOODWARD-CLYDE CONSULTANTS, 1991. FINAL PAS

ABB Environmental Services, Inc.	GEOLOGIC CROSS-SECTION A-A'
STRATFORD ARMY ENGINE PLANT STRATFORD, CONNECTICUT	ENVIRONMENTAL BASELINE SURVEY
	9336-10 FIGURE 3-7





SITE PLAN
SCALE: NONE

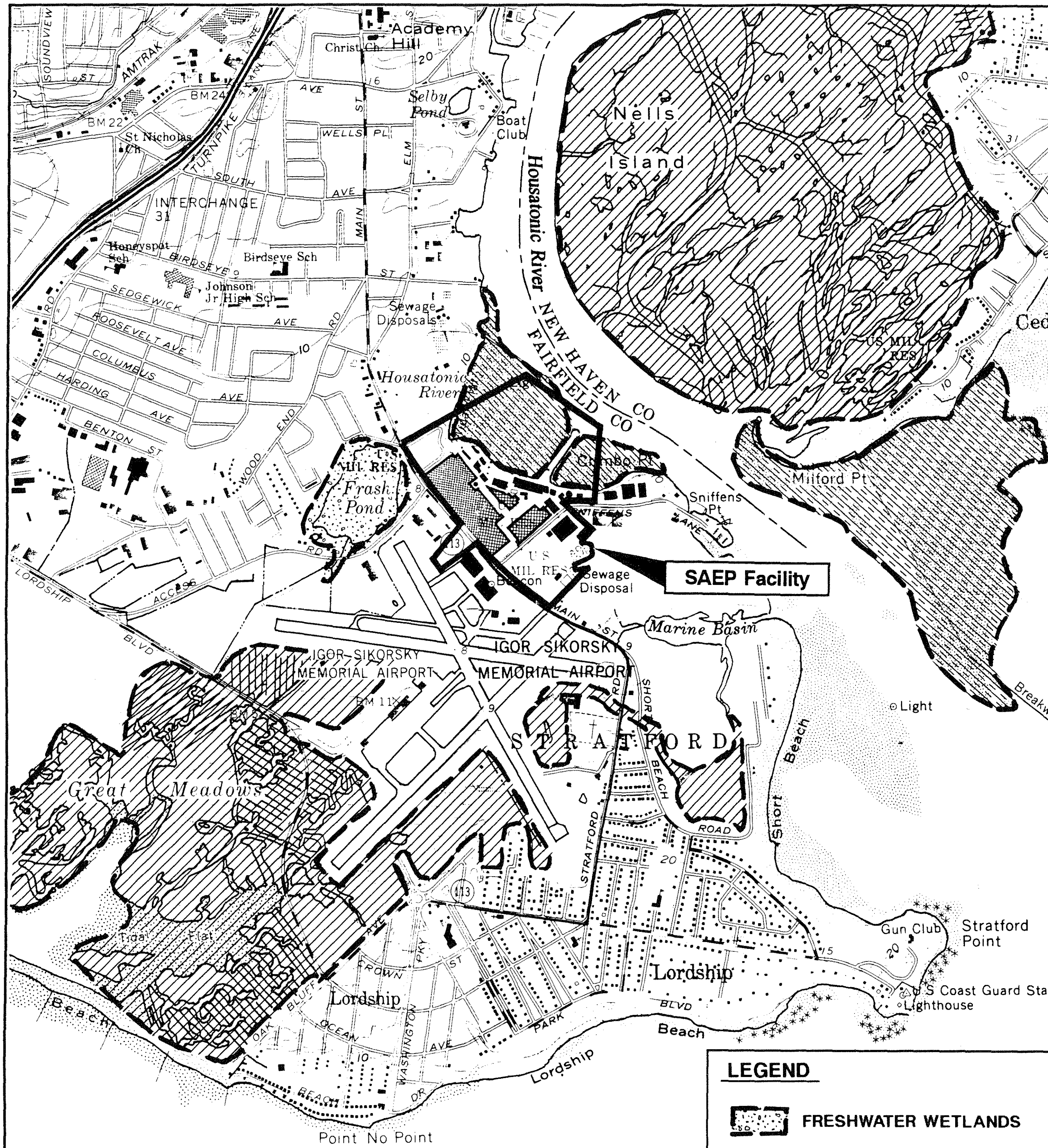
LEGEND

- FILL
- PEAT
- SILT
- SAND
- SAND AND GRAVEL
- 1-53 BORING IDENTIFICATION
- BORING BOTTOM
- * ESTIMATED SURFACE ELEVATION

NOTE:
THE GENERALIZED SOIL PROFILE REPRESENTS A WOODWARD-CLYDE CONSULTANTS INTERPRETATION OF BORINGS DONE BY OTHERS. ACTUAL SUB-SURFACE CONDITIONS MAY VARY.

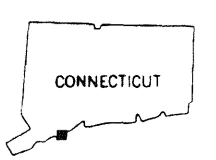
SOURCE: WOODWARD-CLYDE CONSULTANTS, 1991. FINAL PAS

ABB Environmental Services, Inc.	GEOLOGIC CROSS-SECTION B-B'
STRATFORD ARMY ENGINE PLANT STRATFORD, CONNECTICUT	ENVIRONMENTAL BASELINE SURVEY
	9336-10 FIGURE 3-8



LEGEND

- FRESHWATER WETLANDS
- SALT MARSH
- INTERTIDAL FLATS



QUADRANGLE LOCATION

FROM: Bridgeport and Milford CT. USGS Quadrangle Maps. 1970 and 1960, Photorevised 1984.
Source: Woodward-Clyde Consultants, 1991. Final PAS.

N

SCALE IN FEET
0 2,000 4,000

ABB ABB Environmental Services, Inc.

WETLANDS IN THE VICINITY OF SAEP

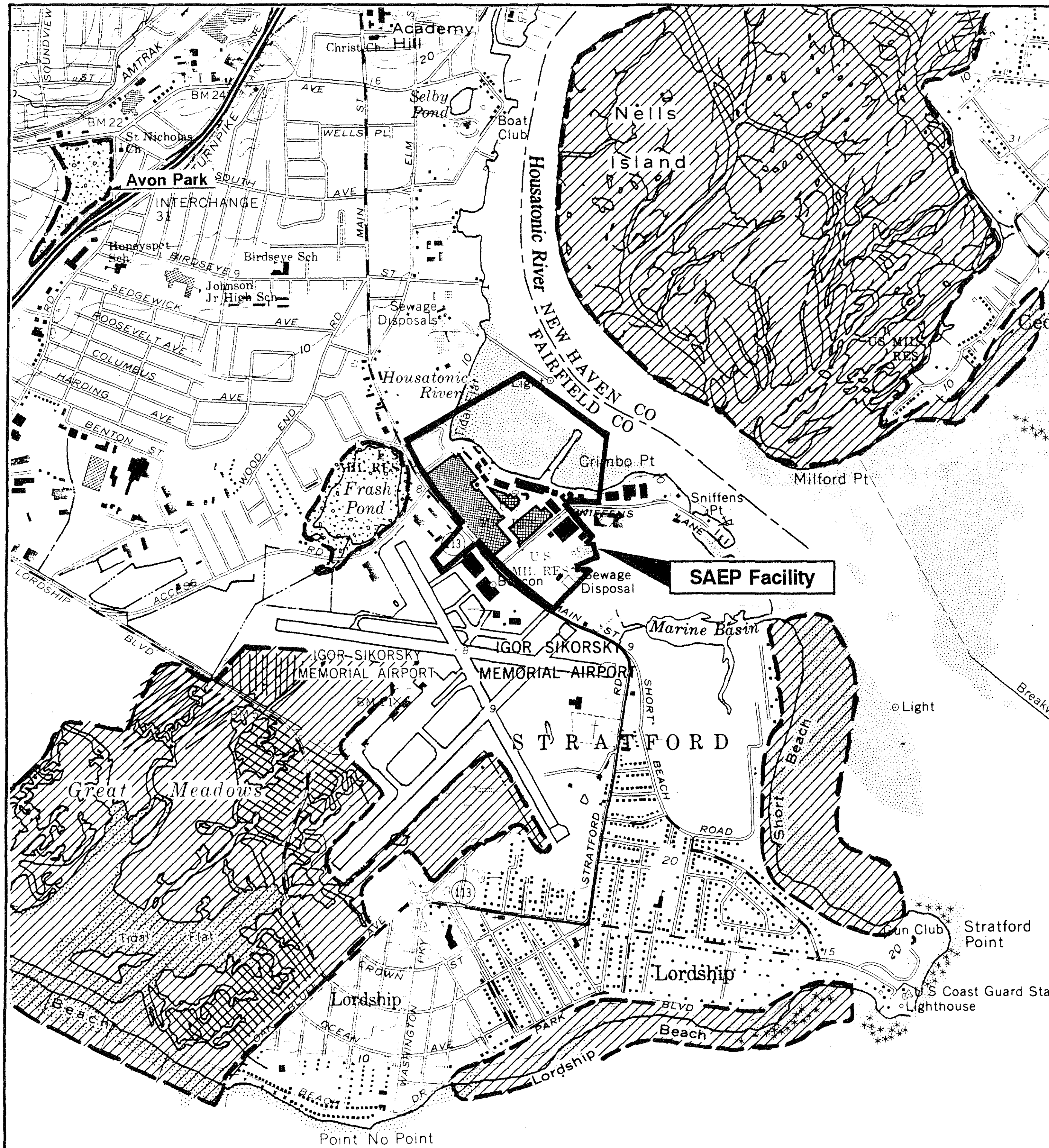
STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

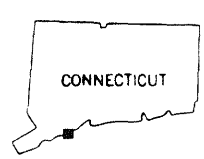
ENVIRONMENTAL BASELINE SURVEY

9336-10

FIGURE 3-9

W9607010D c&p





QUADRANGLE LOCATION

SCALE IN FEET

0 2,000 4,000

FROM: Bridgeport and Milford CT. USGS Quadrangle Maps. 1970 and 1960, Photorevised 1984.

Source: Woodward-Clyde Consultants, 1991. Final PAS.

N

LEGEND

HISTORIC AREAS OF CONCERN

IMPORTANT EXISTING HABITAT AREAS

ABB Environmental Services, Inc.

HABITATS IN THE VICINITY OF SAEP

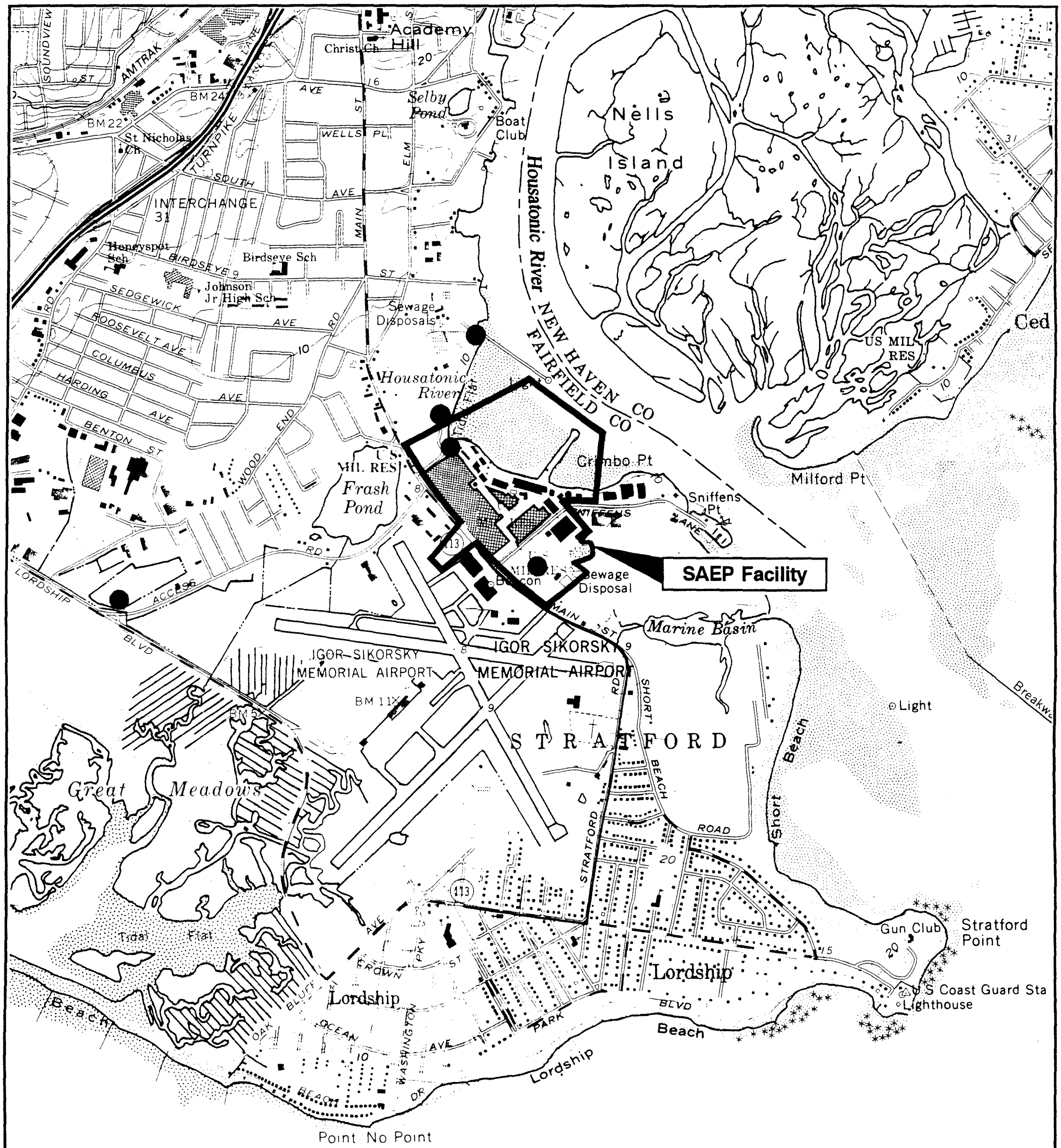
STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

ENVIRONMENTAL BASELINE SURVEY

9336-10

FIGURE 3-10

W9607010D c&p



FROM: Bridgeport and Milford CT. USGS Quadrangle Maps. 1970 and 1960, Photorevised 1984.
Source: Woodward-Clyde Consultants, 1991. Final PAS.

LEGEND
● ARCHEOLOGICAL SITES

CONNECTICUT
QUADRANGLE LOCATION

SCALE IN FEET
0 2,000 4,000

ABB Environmental Services, Inc.

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

KNOWN ARCHEOLOGICAL SITES IN THE VICINITY OF SAEP

ENVIRONMENTAL BASELINE SURVEY

9336-10

FIGURE 3-11

W9607010D c&p

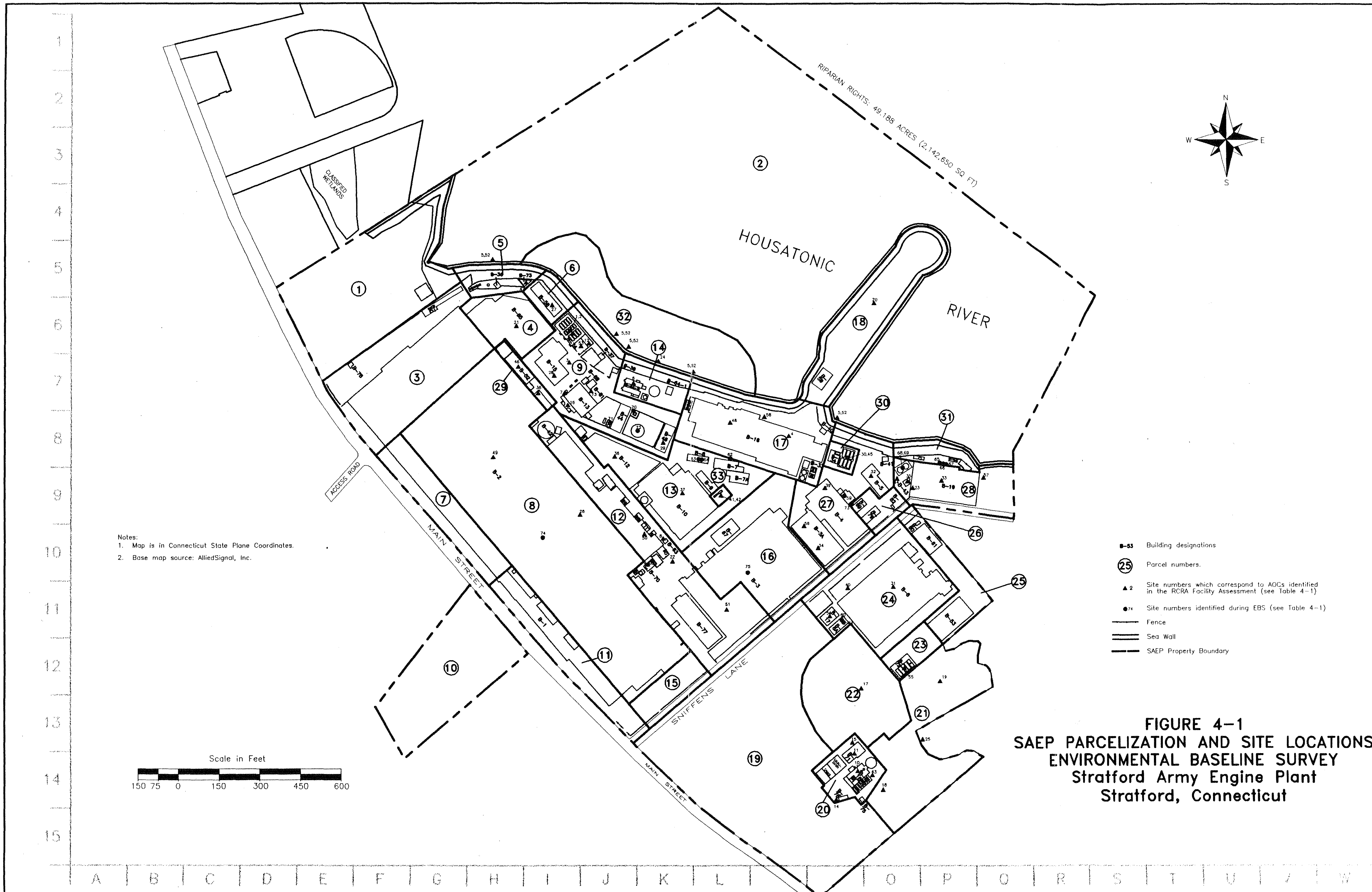


FIGURE 4-1
SAEP PARCELIZATION AND SITE LOCATIONS
ENVIRONMENTAL BASELINE SURVEY
Stratford Army Engine Plant
Stratford, Connecticut

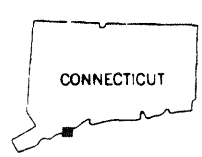
LEGEND

3 ● Location of site No. 3

(Site numbers are given on Table 4-1.)

FROM: Bridgeport and Milford CT. USGS Quadrangle Maps. 1970 and 1960, Photorevised 1984.

Source: Woodward-Clyde Consultants, 1991. Final PAS.



QUADRANGLE LOCATION

N

SCALE IN FEET

0 2,000 4,000

ABB Environmental Services, Inc.

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

ADJACENT SITES WITH ENVIRONMENTAL RECORDS

ENVIRONMENTAL BASELINE SURVEY

9336-10

FIGURE 4-2

W9607010D c&p

Notes:
1. Map is in Connecticut State Plane Coordinates.
2. Base map source: AlliedSignal, Inc.

LEGEND

- Category 1–Areas where no storage, release or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent area).
- Category 2–Areas where only storage of hazardous substances or petroleum products has occurred (but no release, disposal, or migration from adjacent areas has occurred).
- Category 3–Areas where storage, release, and/or migration of hazardous substances or petroleum products has occurred but at concentrations that do not require a removal or a remedial action.
- Category 4–Areas where storage, release, and/or migration of hazardous substances or petroleum products has occurred, and all remedial actions necessary to protect human health and the environment have been taken.
- Category 5–Areas where storage, release, and/or migration of hazardous substances or petroleum products has occurred, removal and/or remedial actions are under way, but all required remedial actions have not yet been taken.
- Category 6–Areas where storage, release, disposal and/or migration of hazardous substances or petroleum products has occurred, but required response actions have not yet been implemented.
- Category 7–Areas that have not been evaluated or require additional evaluation.
- B–53 Building designations
- 25 CERFA parcel numbers. See Table 5–1 of CERFA Letter Report for parcel description.
- ▲2 Site numbers which correspond to AOCs identified in the RCRA Facility Assessment (see Table 4–1)
- ●74 Site numbers identified during EBS (see Table 4–1)
- Fence
- Sea Wall
- SAEP Property Boundary

FIGURE 5–1
CERFA PARCELIZATION
(Color Version)
Stratford Army Engine Plant
Stratford, Connecticut

TABLE 3-1
SUMMARY OF BUILDING CONSTRUCTION AT SAEP
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

BUILDING NUMBER	USE	CONSTRUCTION DATE[1]	DEMOLITION DATE
1929-1939			
B-1	Administration	1929 (1943, 1965)	
B-2	Manufacturing	1929 (1942-1944)	
B-10	Service/Recuperator Manufacturing	1929 (1981, 1989)	
B-3	Engineering and Development	1930 (1943-1944)	
B-8	Paints, Solvents Storage	1939 (1981)	
1940-1943			
B-11/10	General Stores/Recuperator	1940 (1985)	
	Manufacturing	1941	
B-12	Tool and Maintenance	1942	
B-7	Engine Fuel System Test	1942	
B-9	Garage	1943 (1980)	
B-3A	Engineering Laboratory		
1944-1949			
B-3T	Cafeteria	1944	1976
B-5	Fire Headquarters/Components Test	1944	
	Facility	1944 (1990)	
B-6	Experimental Hangar/R & D	1944	
B-13	Scrap Metal & Reclamation	1944	
B-14	Incinerator	1944 (1988)	1970
B-19	Component Test Facility	1944 (1988	
B-19A/19	Vacuum System/Testway 7	1944 (1988)	
B-19B/19	Control Room For Testways 19-7, 8,9,10,12 & B56 1,2	1944 (1988)	
B-19C/19	Testways 8 & 9	1944 (1988)	
B-19E/19	Fuel Room	1944	
B-42	Sprinkler Pump Station	1944	
B-43	Pump Station	1944	
B-50	Transformer House	1944	1972
B-64	Storage Building	1944	1970
B-4	Recuperator Repair Facility and S.S.E. Mfg.- Machine and Equipment Storage	1945	
B-15	Oil, Lubrication, Acid, and Alkali Storage	1945 (1981)	

continued

TABLE 3-1
SUMMARY OF BUILDING CONSTRUCTION AT SAEP
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

BUILDING NUMBER	USE	CONSTRUCTION DATE[1]	DEMOLITION DATE
1950-1960			
B-17	Steam Generating Plant	1952	
B-16	Production and Development Test Cells	1953	
B-33	Cooling Tower Pump Station	1953	
B-34	Fuel Pumping Station	1953	
B-35	Storm Drain Pumping Station	1953	1980
B-36	Storm Drain Pumping Station	1953	
B-37	Storm Drain Pumping Station	1953	
B-38	Storm Drain Pumping Station	1953	
B-39	Storm Drain Pumping Station	1953	
B-40	Storm Drain Pumping Station	1953	
B-41	Storm Drain Pumping Station	1953	
B-18	Chemical Waste Treatment Plant (CWTP)	1958	
B-51/19	V404 Compressor Exhauster	1958 (1988)	
B-63	CWTP Pumping Station	1958	
1961-1970			
B-44	Quonset Hut - Stores, Tooling, and Equipment Warehousing	1961	
B-45	Quonset Hut - Stores, Tooling, and Equipment Warehousing	1961	1980
B-46	Quonset Hut - Stores, Tooling, and Equipment Warehousing	1961	1980
B-47	Quonset Hut - Stores, Tooling, and Equipment Warehousing	1961	1980
B-48	Quonset Hut - Stores, Tooling, and Equipment Warehousing	1961	
B-49	Quonset Hut - Stores, Tooling, and Equipment Warehousing	1961	1968
B-53	Surplus Equipment Storage	1961	
B-7A	Engine Fuel System Test	1962	
B-52	Plasma Spray Facility and Production Material Warehousing	1962 (1981)	
B-19F/19	Hi-Temp, Rig Testways 10 & 12	1963 (1988)	
B-54	Production Material Warehousing	1963	1990
B-55	Production Material Warehousing	1963	1990
B-57/19	Transformer Room	1964 (1988)	
B-56/19	Tri-Engine Drive Testways 56-1 & 2	1965 (1988)	
B-6A	Engine Mechanical Component Test	1966	
B-58	Missile Assembly/Standards Laboratory	1967	
B-59	Missile Storage Magazine	1968	
B-60	High-Pressure Natural Gas Pumping Station	1968	
B-61	Refrigeration Plant	1969	

continued

TABLE 3-1
SUMMARY OF BUILDING CONSTRUCTION AT SAEP
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

BUILDING NUMBER	USE	CONSTRUCTION DATE[1]	DEMOLITION DATE
1971-1980			
B-62/19	Joy Compressor, I.R. & V306 Compressor	1971 (1988)	
B-64-1	Oil Abatement Treatment Plant Pump	1975	
	House	1975	
B-64-2	Oil Abatement Treatment Plant (OATP)	1978	
B-77	IREP/ISD Office	1979	
B-79	SSE Office		
1981-1995			
B-67	General Stores	1985	
B-69	Resident Engineer	1985	
B-68	Emergency Generator	1986	
B-70	Cyanide Destruction Facility (CDF)	1987	
B-71	CWTP Solids Handling	1987	
B-73	Hazardous Waste Storage Area	1987	
B-74	Hazardous Waste Storage Area	1987	
B-75	Hazardous Waste Storage Area	1987	
B-76	Hazardous Waste Storage Area	1987	
B-72	Fuel Pumping Station	1989	
B-78	Guard House and Scale	1989	
B-65	Storage Facility (under construction)	1991	

1 Dates in parentheses indicate construction of major additions to a building.

Source: Final PAS Report, Woodward-Clyde Consultants, 1991.

Table 3-2
Historical Summary of Raw Materials and Waste at SAEP
Environmental Baseline Survey Report

Stratford Army Engine Plant
Stratford, Connecticut

Process	Chemical Type	Use	Entrance to SAEP Waste Stream	Waste Code[1]	Fate Code[2]
Machining	Water soluble oil	Cutting oil/coolant	Vacuum cart to recycling unit	CR03	R, T
Machining	Dye	Penetrant	Formerly to OATP Currently recycled on site through GAC	None M099	T D
Machining	Hydraulic fluid	Transfer energy	Container to waste oil tank	CR02	B
Machining	Oil	Lubricant	Container to waste oil tank	CR02	B
ECM	Brine	Electrolyte	Formerly to OATP; Process not used since 1987	None	T
Electro-plating	Hydroxides, Rochelle salts, copper cyanide, and sodium cyanide	Copper plating bath	Wastewater to cyanide destruction, then to CWTP	None	T
Electro-plating	Chromic and sulfuric acids	Chrome plating bath	Wastewater to CWTP	None	T
Electro-plating	Nickel sulfamate	Nickel plating bath	Wastewater to CWTP	None	T
Electro-plating	Nickel chloride and hydrochloric acid	Nickel striking bath	Wastewater to CWTP	None	T
Electro-plating	Cadmium cyanide	Cadmium plating bath	Wastewater to CWTP Process no longer used	None	T
Corrosion Resistance	Chromic acid	Anodize or chemically coat aluminum	Wastewater to CWTP	None	T
Corrosion Resistance	Sodium dichromate and magnesium fluoride	Dichromate finish on magnesium	Wastewater to CWTP	None	T
Corrosion Resistance	Proprietary	HAE anodic finish on magnesium	Wastewater to CWTP	None	T

continued

TABLE 3-2
HISTORICAL SUMMARY OF RAW MATERIALS AND WASTE AT SAEP
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

PROCESS	CHEMICAL TYPE	USE	ENTRANCE TO SAEP WASTE STREAM	WASTE CODE[1]	FATE CODE[2]
Corrosion Resistance	Sodium hydroxide and sodium nitrate	Black oxidation	Wastewater to CWTP	None	T
Corrosion Resistance	Phosphoric acid and zinc or magnesium phosphate	Phosphate finish	Wastewater to CWTP	None	T
Cleaning	Nitric acid	Passivation of hardened steel	Wastewater to CWTP	None	T
Cleaning	Epoxides, enamels, silicones, thinners, zinc chromate primers	Painting	Container to hazardous waste storage	D001	I/B
Cleaning	Oil	Oil slush	Vacuum cart to waste oil tank	CR02	I/B
Cleaning	Aluminum and magnesium	Plasma spray	Overspray to container to solid waste	None	D
Cleaning	Chlorinated solvent	Vapor degreasing Spray and wipe degreasing	Vacuum cart to degreasing solvent tank	F001	G/D
Cleaning	Solvent	Paint removal	Container to hazardous waste storage	F003	I/B
Cleaning	Solvent	Touch and wipe cleaning	Container to hazardous waste storage	F005	I/B
Cleaning	Freon	Flux removal and touch-up cleaning	None	None	None
Cleaning	Detergents	Emulsion cleaning of soils/grease/oil	Vacuum cart to waste oil tank for oil/water separation: • Wastewater to OATP • Oil to waste oil storage	 None CR02	 T B

continued

TABLE 3-2
HISTORICAL SUMMARY OF RAW MATERIALS AND WASTE AT SAEP
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

PROCESS	CHEMICAL TYPE	USE	ENTRANCE TO SAEP WASTE STREAM	WASTE CODE[1]	FATE CODE[2]
Cleaning	Potassium or sodium hydroxide	Alkaline degreasing	Wastewater to CWTP	None	T
Cleaning	Sodium hydroxide	Anodic cleaning	Wastewater to CWTP	None	T
Cleaning	Hydroxides and sodium cyanide	Periodic reverse cleaning	Wastewater to cyanide destruction, then to CWTP	None	T
Cleaning	Hydrofluoric acid, hydrochloric acid, nitric acid, chromic acid, sulfuric acid	Acid cleaning and pickling	Wastewater to CWTP	None	T
Cleaning	Hydrochloric acid, nitric acid, and hydrated ferric chloride	Etching	Wastewater to CWTP	None	T
Cleaning	Sulfuric acid and hydrofluoric acid	Etching	Wastewater to CWTP	None	T
Cleaning	Grit and glass beads	Abrasive blasting	Container to nonhazardous solid waste	None	D
Cleaning	Abrasives	Abrasive slurry	Container to nonhazardous solid waste	None	D
Miscellaneous Other	Organic compounds	Electrofilming	Container to hazardous waste storage	D001	I
Miscellaneous Other	Wax, lacquer, plastic	Masking	Container to hazardous waste storage	None	D
Miscellaneous Other	Glass beads	Peening	Container to hazardous waste storage	None	D

continued

TABLE 3-2
HISTORICAL SUMMARY OF RAW MATERIALS AND WASTE AT SAEP
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

PROCESS	CHEMICAL TYPE	USE	ENTRANCE TO SAEP WASTE STREAM	WASTE CODE[1]	FATE CODE[2]
Miscellaneous Other	None	Heat treatment	None	None	None

Source: Final PAS Report, Woodward-Clyde Consultants, 1991.

Notes:

CWTP = Chemical Waste Treatment Plant
GAC = Granual Activated Carbon
OATP = Oil Abatement Treatment Plant

(1)

CR02 - Waste oil.
CR03 - Water soluble waste oil.
M099 - Massachusetts regulated.
F001 - Spent halogenated degreasing solvents. Federally regulated. 40CFR261.31.
F003 - Spent nonhalogenated solvents. Federally regulated. 40CFR261.31.
F005 - Spent nonhalogenated solvents. Federally regulated. 40CFR261.31.
D001 - Ignitable waste. Federally regulated. 40CFR261.21.

(2)

R Recycled/reclaimed and put back into the original process or a different. The rendering/reclaiming is performed external to the generating industrial process but on/by the installation. In-process recycling as defined by EPA should not be included as in-process recycling that directly reduces source generations since the recycled wastestream never leaves the process. Example: degreasing solvents distilled and reused back in the degreasing operation. Note: any distilling bottom sludges must be reported as HW generation.
G Recycled/reclaimed/sold to an off-post contractor or organization, not through DRMO, and a like product not returned to the installation. Example: redwater given/sold to a paper mill directly by the installation.
T Treated at an industrial treatment plant or pretreatment plant where the treatment-resultant wastestream is discharged to the environment via NPDES permit or to the sanitary sewer system. A HW product may also be produced as part of the treatment process.
I Incinerated or thermally treated. Example: OB/OD, thermally-treated granular activated carbon for pinkwater and treated activated carbon disposed (if activated carbon is reused, then use a fate code "R" or "O").
B Burned as a fuel supplement. A form of reuse but indicated as a separate category. Example: used oil and/or solvent used as fuel supplement.
D Disposal. Ultimate disposal off site, not through DRMO.

The fate of all materials cannot be accounted for, as accurate records were not maintained at SAEP regarding quantities of raw chemicals entering the process and exiting through the waste stream.

TABLE 3-3
SUMMARY OF STORAGE TANKS AT SAEP
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

GENERAL LOCATION	TANK NO.	TANK TYPE[1]	YEAR INSTALLED[2]	DATE ABANDONED/ REMOVED	VOLUME (GALLONS)	TANK CONTENT
Tank Farm	H101M	A	1980-1982		10,000	TCA-New
	H102M	A	1980-1982		10,000	33-18
	H103W	A	1980-1982		10,000	31-30
	H104W	A	1980-1982		10,000	Empty
	H055M	A	1980-1982		5,000	TCA-For Recycle
	H056M	A	1980-1982		5,000	TCA-Recycled
	H057W	A	1980-1982		5,000	Waste Oil-Chlorinated
	H058W	A	1980-1982		5,000	31-32-Dirty
	H059W	A	1980-1982		5,000	Waste Fuel
	H1010M	A	1980-1982		10,000	Varsol
	H1011W	A	1980-1982		10,000	Coolant
	H1012W	A	1980-1982		10,000	Waste Oil
	H1013W	A	1980-1982		10,000	Waste Oil
B-2		U		Abandoned 04-01-69	1,500	Sanitary
B-2		U		Abandoned 10-01-55	2,500	Oil
B-2		U		Abandoned 10-01-55	2,500	Oil
B-4		U		Removed 03-25-89	20,000	Brine
B-6		U		Removed 04-17-89	550	Fuel
B-6		U		Removed 04-17-89	550	Fuel
B-6		U		Abandoned 05-01-79	5,000	Oil
B-6		U		Abandoned 05-01-79	5,000	Fuel
B-9		U		Removed 09-01-89	2,500	Gasoline-Leaded
B-9		U		Removed 09-01-89	2,500	Gasoline-Unleaded
B-9		U		Removed 09-30-89	3,000	Gasoline
B-9		U		Removed 09-30-89	3,000	Gasoline
B-9		U		Removed 12-95	3,000	Gasoline-Unleaded
B-9		U		Removed 12-95	3,000	Gasoline-Unleaded

continued

TABLE 3-3
SUMMARY OF STORAGE TANKS AT SAEP
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

GENERAL LOCATION	TANK NO.	TANK TYPE[1]	YEAR INSTALLED[2]	DATE ABANDONED/ REMOVED	VOLUME (GALLONS)	TANK CONTENT
B-10	C802A	A	1947-1952		80,000	Fuel Oil #6
B-12	G034M	A	1953-1966		3,000	Ammonia
B-13	C107F	A	1953-1966		10,000	Oil-Alum
B-13		U		Removed 1993	500	Waste Oil
B-13		U		Removed 1993	500	Waste Fuel
B-13		U		Removed 1993	400	Waste Oil
B-13		U		Removed 1993	400	Waste Oil
B-16	C401G	A	1980-1984		40,000	Diesel #2
	C402G	A	1980-1984		40,000	Diesel #2
B-18	W3	A	1980-1988		20,000	Water-Plating
	W4	A	1980-1988		20,000	Water-Plating
	W5	A	1980-1988		20,000	Water-Plating
	W6	A	1980-1988		30,000	Water-Plating
	C0111G	A	1989		1,000	Fuel Oil #6
	H3014M	A	1953-1960		5,000	Sulfuric Acid
B-18		U		Removed 09-01-89	1,000	Oil-#2
B-19	C029G	A	1953		2,000	Diesel #2
	C018G	A	1953		1,000	Diesel #2
	C0110G	A	1953		1,000	JP-5
	F601G	A	1986		60,000	JP-4
	C602G	A	1986		60,000	Jet-A
B-19		U		Removed 08-28-87	550	Fuel
B-19		U		Removed 08-28-87	550	Fuel
B-19		U		Removed 08-28-87	1,000	Fuel

continued

TABLE 3-3
SUMMARY OF STORAGE TANKS AT SAEP
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

GENERAL LOCATION	TANK NO.	TANK TYPE[1]	YEAR INSTALLED[2]	DATE ABANDONED/ REMOVED	VOLUME (GALLONS)	TANK CONTENT
B-19		U		Removed 08-28-87	2,000	Fuel
B-34	F204M	A	1989		20,000	JP-4
	C2012M	A	1989		20,000	Diesel #2
	C2013M	A	1989		20,000	Jet-A
	F205M	A	1989		20,000	JP-4
	C2014M	A	1989		20,000	JP-5
	C2015M	A	1989		20,000	Jet-A
	C316M	A	1989		3,000	Empty
B-34		U		Removed 09-01-89	20,000	JP-4
B-34		U		Removed 09-01-89	20,000	JP-4
B-34		U		Removed 09-01-89	20,000	Jet-A
B-34		U		Removed 09-01-89	20,000	JP-5
B-34		U		Removed 09-01-89	20,000	Jet-A
B-34		U		Removed 09-01-89	20,000	Diesel
B-34		U		Removed 09-01-89	4,000	Fuel 1% S
B-34		U		Removed 09-01-89	5,000	Varsol
B-34		U		Removed 09-01-89	1,000	Fuel
B-34		U		Removed 09-01-89	5,000	Empty
B-34		U		Removed 04-01-89	300	Fuel
B-34		U		Removed 04-01-89	300	Fuel
B-34		U		Removed 04-01-89	300	Fuel
B-34		U		Removed 04-01-89	300	Fuel

continued

TABLE 3-3
SUMMARY OF STORAGE TANKS AT SAEP
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

GENERAL LOCATION	TANK NO.	TANK TYPE[1]	YEAR INSTALLED[2]	DATE ABANDONED/ REMOVED	VOLUME (GALLONS)	TANK CONTENT
B-34		U		Removed 04-01-89	300	Fuel
B-34		U		Removed 04-01-89	300	Fuel
B-34		U		Removed 04-01-89	300	Fuel
B-34		U		Removed 04-01-89	300	Fuel
B-34		U		Removed 04-01-89	300	Fuel
B-36	G101M	A	1980-1984		10,000	Argon
	F013M	A	1980-1984		750x22[3]	Hydrogen
B-43	W1	A	1938-1939		400,000	Water-Fire
B-44	F503M	A	1979-1984		5,000	Methanol
	G182M	A	1979-1984		18,000	Nitrogen
B-44/48	C4001A	A	1979-1984		400,000	Fuel Oil #6
B-52		U		Removed 04-01-69	1,000	Oil
B-64	W2	A	1973		200,000	Water-Storm
B-64-2	H1016M	A	1973		10,000	Alum Sulfate
B-70	T051W	A	1979-1984		5,000	Cyanide
	T052W	A	1979-1984		5,000	Cyanide
	H0516M	A	1979-1984		500	Sulfuric Acid
	H0517M	A	1979-1984		500	Sodium Hydroxide
	H0518M	A	1979-1984		500	Sodium Hypochlorite
	G103M	A	1979-1984		10,000	Argon
	H0515M	A	1979-1984		500	Sulfuric Acid
	H0519M	A	1979-1984		500	Sodium Hydroxide
B-72	C201G	A	1965-1966		20,000	Diesel #2
	F202G	A	1965-1966		20,000	JP-4
	C203G	A	1980-1986		20,000	Diesel #2
	C204J	A	1980-1986		20,000	Jet-A
	C101G	A	1980-1986		10,000	Diesel #2
	C102J	A	1980-1986		10,000	Diesel #1

(1) A = Aboveground tank
U = Underground tank
(2) Range given based on photo interpretation if records do not indicate year.
(3) Twenty-two 750m^3 tanks.

Source: Final PAS Report, Woodward-Clyde Consultants, 1991.

Table 3-4
Wastes Generated at SAEP From 1985 to 1990
Environmental Baseline Survey Report

Stratford Army Engine Plant
Stratford, Connecticut

Waste Stream Description	Waste Type[1]	Waste Quantity, in Kilograms[2]					
		1985 (Baseline)	1986	1987	1988	1989	1990
Electroplating Rinsewater	None	$2.2x10^8$	$2.2x10^8$	$2.2x10^8$	$2.2x10^8$	$2.2x10^8$	$2.18x10^8$
Electroplating Bath Solids	F006	12,450	6,645	6,290	6,049	425	12,795
CWTP Sludge	F006	$18.2x10^4$	$18.2x10^4$	$18.2x10^4$	$18.2x10^4$	$13.3x10^4$	$7.29x10^4$
Chlorinated Degreasing Solvents	F001	66,175	59,940	86,943	64,225	46,170	54,866
Paint Solvents	D001 F003 F005	2,700	8,375	4,611	5,209	4,710	4,376
Flammables (Aviation Fuel)	D001	8,790	8,809	51,685	55,540	62,277	39,655
Waste Oil	CR02	323,814	212,136	236,814	224,191	259,358	247,300
Coolant	CR03	6,709	47,336	143,363	45,845	202,825	1,009,927
Electroplating Bath Solids	F006	12,450	6,645	6,290	6,049	425	12,795
Oil-Alum Sludge	CR02	250,500	243,636	76,409	125,572	72,252	67,159
ECM Sludge	F006	50,000	Not Known	Not Known	0	0	0
Activated Charcoal	M099	0	0	0	0	0	2,100

Source: Final PAS Report, Woodward-Clyde Consultants, 1991.

Notes:

CWTP = Chemical Waste Treatment Plant
ECM = Electrochemical Machining

[1] See Table 3-2 footnote[1] for identification of waste type.
[2] Information compiled by SAEP's Environmental Department
1 Kilogram = 2.2046 lbs

TABLE 3-5
SAEP MANIFESTED WASTES FROM 1992 TO 1994
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

WASTE STREAM	EPA CODE	1992	1993	1994
1,1,1-Trichloroethane	F001	148,070	91,267	63,470
Contaminated Oil	F001	710,770	733,982	674,977
Contaminated Soil and Concrete	F001	6,000	629,630	603,500
Oil and Water	NA	180,512	64,400	129,750
Oily Absorbents and Rags	NA	53,850	69,550	83,500
Metal Hydroxide Sludge	F006	350,724	94,107	63,680
Oil Sludges	NA	48,240	132,637	63,300
PCB Articles	NA	0	82,036	51,225
Aviation Fuel	D001	44,039	56,213	44,407
Machine Grinding Sludge	NA	18,500	29,800	17,400
Ammoniacal Strip Solution	NA	0	2,200	12,800
Plating Wax	NA	0	0	12,200
Trichloroethane and Solids	F001	350	1,720	10,292
Chrome Contaminated Solids	D007	23,390	15,400	9,600
Emulsifier	NA	5,280	4,840	9,500
Wood Flooring Blocks	NA	0	52,250	6,680
Paints and Solvents	D001, F003	6,205	4,985	5,880
Metal Powders	NA	2,675	0	4,221
Filters	NA	8,150	3,600	4,080
Carbon and Ardrox	NA	1,000	1,400	4,000
TCP Solvent	D001	0	0	3,850
Aluminum Deoxidizer Solution	D002	0	0	3,150
Corrosive Liquids	D002	6,240	2,200	2,640
Chromic Acid Liquids	D007	6,370	26,542	2,640
Paint Related Solids	D007, F003	150	400	2,050
Boiler Sludge	NA	6,800	0	1,700
Lab Pack Chemicals	MANY	796	0	1,050
Dessicant	NA	0	0	1,050
Polyol	NA	1,800	0	1,000
Acid/Alcohol Etch	DOO1,DOO2	0	360	880
Ardrox Penetrant	NA	450	1,650	850
Roofing Tar	NA	0	0	800

continued

TABLE 3-5
SAEP MANIFESTED WASTES FROM 1992 TO 1994
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

WASTE STREAM	EPA CODE	1992	1993	1994
Sodium Metasilicate	NA	0	0	800
Alcohol	D001	0	0	750
NiCd Batteries	D002,D006	45	0	500
Resins	NA	0	0	500
Potassium Permanganate	NA	0	0	500
Rags & Solvents	F003	1,700	100	426
Corrosive Solids	NA	6,150	3,000	400
Cyanide Wastes	F008	1,000	1,050	388
Medical Wastes	NA	545	380	280
Hydrogen Peroxide	D001	0	0	240
Dynaflo Compound	NA	0	80	200
Perchloric Acid	D001	0	0	130
PCB Fluid	NA	0	31,092	59
Bromine Solution	D002	0	0	8
Activated Charcoal	U19,U80	17,250	0	0
Contaminated Coolant	F001	5,440	0	0
Freon	F002	2,430	6,300	0
Aerosol Cans	D001	300	200	0
Ferric Chloride	NA	0	900	0
PCB Debris	NA	0	660	0
Ethylene Glycol	NA	40	1,540	0
Acetone	D001,F003	1,120	0	0
Gasoline	D001	4,500	0	0
Dioctyl Phthalate	NA	450	0	0
Cobalt Oxide	NA	1,000	0	0
Sodium Bicarbonate	NA	1,900	1,000	0
Nickel Sulfamate	NA	1,230	0	0
Naphthionic Acid	NA	0	200	0

Source: AlliedSignal Environmental Department, 1995

TABLE 3-6
NRC LICENSED MATERIALS USED AT SAEP
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

Nuclear Byproduct Material	Source Material	Use
Cobalt 60	Sealed source	Instrument calibration
Silver 110	Silver potassium cyanide	Installation and checkout of missile ablation sensors
Cadmium 109	Plated bearings	Development of bearing failure warning systems
Cesium 134	Plated bearings	Development of bearing failure warning systems
Cesium 137	Plated bearings	Development of bearing failure warning systems
Iridium 192	Sealed source	Installation and checkout of missile ablation sensors
Phosphorous 32	Tricresyl phosphate	Testing of oil lubricant system
Krypton 85	Perfuesd metallic surfaces	Evaluation of temperature, corrosion, and ablation effects after engine operation
Strontium 90	Sealed source	Thickness and density gauges
Hydrogen 3	Titanium tritide foils	Detector cells for gas chromatography

TABLE 3-7
AREAS OF CONCERN IDENTIFIED IN RCRA FACILITY ASSESSMENT
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

AOC (#)	CERFA PARCEL	APPROXIMATE SIZE OR CAPACITY	NAME AND LOCATION
1	9	(3) 10,000-gallon	Waste Oil Accumulation Tanks, located in the Oil House Tank Farm. [SWMU #1]
2	9	(see below)	Hazardous Waste Accumulation Tanks, located in the Oil House Tank Farm. [SWMU #2]
2A	9	(1) 5,000-gallon	TCA for Recycle Tank
2B	9	(1) 5,000-gallon	TCA Recycled Tank
2C	9	(1) 5,000-gallon	Waste Oil-Chlorinated Tank
2D	9	(1) 5,000-gallon	Waste Oil Tank
2E	9	(1) 5,000-gallon	Waste Fuel Tank
3	9	(see below)	Hazardous Waste and Waste Oil Transfer Systems (also known as waste pits), located between Building 15 and Building 13. [SWMU #3]
3A	9	(1) 500-gallon	Waste Fuel Pit
3B	9	(1) 500-gallon	Waste Solvent/Oil Pit
3C	9	(2) 400-gallon	Waste Oil Pit
3D	9	(3) 2-inch wide x 250-ft. long	Transfer Lines
4	17	52 drains	Building 16 Floor Drains and Sumps and all associated piping. [SWMU #4]
5	2,32	unknown	Stormwater and Wastewater Collection System for the OATP. [SWMU #5]
6	14	(see below)	OATP in Building 64.
6A	14	200,000-gallon	OATP: Surge Tank, located at Building 64. [SWMU #6]
6B	14	10,000-gallon	OATP: NaOH/Alum Addition System, located at Building 64. [SWMU #6]
6C	14	15 ft wide × 60 ft long × 15 ft deep	OATP: Skimming Basin, located at Building 64. [SWMU #6]
7	9	10,000-gallon	Oil/Alum tank, located near the northeast corner of Building 13 (56). [SWMU #7]
8	12	unknown	Chemical Wastewater Collection System, pump stations and associated piping located in and adjacent to Building 63. [SWMU #8]
9	12	(2) 5,000-gallon	Chemical Wastewater Treatment System: Cyanide Destruction Facility located inside Building 70. [SWMU #9]
10	20	(see below)	CWTP in Building 18.
10A	20	(6) 4 ft × 25 ft × 13 ft tanks	CWTP: Chrome Reduction Unit located in Building 18. [SWMU #9]
10B	20	(1) 240,000-gallon equalization (2) 120,000-gallon equalization	CWTP: Metals Removal Unit, located in Building 18. [SWMU #9]

continued

Table 3-7
Areas of Concern Identified in RCRA Facility Assessment
Environmental Baseline Survey Report

Stratford Army Engine Plant
Stratford, Connecticut

AOC (#)	CERFA Parcel	Approximate Size or Capacity	Name and Location
10C	20	60,000-gallon clarifier	CWTP: Metals Removal Unit (Clarifier), located outside and adjacent to Building 18. [SWMU #9]
11	20	8,000-gallon FRP thickening tank, (2) 1 cubic yard (yd^3) filter presses	CWTP: Solids Handling Area, located in Building 71. [SWMU #9]
12	9	3 areas, each 14 ft × 20 ft	Container Accumulation Area and associated drains, located west of Building 15. [SWMU #10]
13	9	6,050-gallon capacity	Original Container Storage Area, located east of Building 13 (as notified in original Part A Permit Application). [SWMU #11]
14	20	2750-gallon capacity (554 ft^2)	Container Storage Areas A & B, located west of Building 18. [SWMU #12]
15	20	20 yd^3	Sludge Roll-Off Container Area, located outdoors, just north of Building 71. [SWMU #13]
16	9	30 ft × 10 ft × 15 ft	Metal Chips Oily Sump, located beneath the metal chips bins near the northwest corner of Building 13. [SWMU #14]
17	22	11,000 yd^3	Soil Pile, located at the south parking lot. [SWMU #15]
18	21	480,000-gallon (25,600 ft^2)	Equalizing Impoundment (Lagoon #1), located outdoors adjacent and east of Building 18. [SWMU #16]
19	21	(see below)	Sludge Drying Beds
19A	21	9,140 ft^2 depth = 8 ft.	Sludge Drying Bed (Lagoon #2), located south and east of Building 6. [SWMU #16]
19B	21	7,920 ft^2 depth = 6.5 ft.	Sludge Drying Bed (Lagoon #3), located east of Building 6. [SWMU #16]
19C	21	12,600 ft^2 depth = 8 ft.	Sludge Drying Bed (Lagoon #4), located east of Building 6. [SWMU #16]
20	18	2.1 acres 1,000 ft × 30 ft	Causeway, located on the Housatonic River. [SWMU #17, previous location of Area 2]
21	4	9,000 yd^3	Building 65 Area, previous location of Buildings 52 and 55. [SWMU #18, Area 3]
22	12	unknown	Waste Paint Tank, located between Buildings 2 and 3. [SWMU #19]
23	28	unknown	Dry Well, located in Building 19. [SWMU #20]
24	32	1.2 million gpd (currently)	Discharge to the Housatonic River at OF #007.
25	off property	123,840 gpd (currently) (0.2 acres)	Discharge to the Housatonic River at OF #008 and Drainage Ditch.

continued

TABLE 3-7
AREAS OF CONCERN IDENTIFIED IN RCRA FACILITY ASSESSMENT
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

AOC (#)	CERFA PARCEL	APPROXIMATE SIZE OR CAPACITY	NAME AND LOCATION
26	8	unknown	Former Septic Systems, located beneath Building 2 and potentially all over the facility (6, 8).
27	6	55-gallon drum	Building 58 and associated satellite accumulation areas.
28	9	55-gallon drums	Building 15 and associated satellite accumulation areas.
29	9	55-gallon drums	Building 48 and associated satellite accumulation areas.
30	30	55-gallon drums	Building 34 and associated satellite accumulation areas.
31	24	55-gallon drums	Building 6 and associated satellite accumulation areas.
32	27	55-gallon drums	Building 5 and associated satellite accumulation areas.
33	28	55-gallon drums	Building 19 and associated satellite accumulation areas.
34	27	55-gallon drums	Building 3A and associated satellite accumulation areas.
35	28	55-gallon drums	Building 43 and associated satellite accumulation areas.
36	13	55-gallon drums	Building 12 and associated satellite accumulation areas.
37	13	(2) 55-gallon drums	Building 10 and associated satellite accumulation areas.
38	29	(see below)	Building 2 former USTs
38A	29	(1) 1,500 gallons	Sanitary UST
38B	29	(2) 2,500 gallons	Oil USTs
39	27	(1) 20,000 gallons	Building 4 former Brine UST
40	24	(see below)	Building 6 former USTs
40A	24	(2) 550 gallons	Fuel USTs
40B	24	(1) 5,000 gallons	Oil UST
40C	24	(1) 5,000 gallons	Fuel UST
41	33	(see below)	Building 9 Former USTs
41A	33	(1) 2,500 gallons	Leaded Gasoline UST
41B	33	(1) 5,000 gallons	Unleaded Gasoline UST
41C	33	(2) 3,000 gallons	Gasoline USTs
42	33	(2) 3,000 gallons	Building 9 Current Unleaded Gasoline USTs
43	20	(1) 1,000 gallons	Building 18 Former #2 Oil UST
44	28	(see below)	Building 19 Former USTs
44A	28	(2) 550 gallons	Fuel USTs
44B	28	(1) 1,000 gallons	Fuel UST
44C	28	(1) 2,000 gallons	Fuel UST
45	30	(see below)	Jet Fuel Tank Farm Former USTs, located at Building 34
45A	30	(2) 20,000 gallons	JP-4 USTs
45B	30	(2) 20,000 gallons	Jet A USTs
45C	30	(1) 20,000 gallons	JP-5 UST
45D	30	(1) 20,000 gallons	Diesel UST
45E	30	(1) 4,000 gallons	Fuel, 1% solvent UST
45F	30	(1) 5,000 gallons	Varsol UST

continued

TABLE 3-7
AREAS OF CONCERN IDENTIFIED IN RCRA FACILITY ASSESSMENT
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

AOC (#)	CERFA PARCEL	APPROXIMATE SIZE OR CAPACITY	NAME AND LOCATION
45G	30	(1) 1,000 gallons	Fuel UST
45H	30	(9) 300 gallons	Fuel USTs
46	29	1,000 gallons	Building 52 former UST
47	6	unknown	Building 58, Radioactive Waste Storage Area
48	17	55-gallon drum	Building 16 and associated satellite accumulation areas
49	8	18.8 acres	Building 2 Manufacturing Areas.
50	12	8.7 acres	Building 2 Plating Area.
51	12	unknown	Building 3 Plating Area.
52	2,32	48.5 acres of intertidal flats	OFs #001-#006, and intertidal flats, located along and adjacent to the Housatonic River.
53	9	6 to 12 drums	Staging Area, located between the Tank Farm and Building 37.
54	24	unknown	Building 17.
55	23	unknown	Building 72.
56	16,27	3.9 acres	Research and Development Area, including Building 3A, Building 4, and the northern portion of Building 3.
57	28	unknown	Drum Storage Area, located east of Building 19.
58	16	unknown	Scrap Metal Yard, located north of Building 16.

Notes:

CWTP = Chemical Waste Treatment Plant
FRP = fiberglass-reinforced plastic
NaOH = sodium hydroxide
OATP = Oil Abatement Treatment Plant
OF = outfall
SWMU = Solid Waste Management Unit
TCA = trichloroethane
UST = underground storage tank

TABLE 3-8
METEOROLOGICAL DATA FOR SAEP VICINITY
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

METEOROLOGICAL DATA FOR 1994
BRIDGEPORT, CONNECTICUT

LATITUDE: 41° 10' N LONGITUDE: 73° 08' W ELEVATION: FT. GRND 7 BARO 28 TIME ZONE: EASTERN WBAN: 94702

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F													
Averages													
-Daily Maximum	31.5	34.0	44.5	59.7	68.6	81.1	86.5	80.2	74.0	64.4	57.3	46.1	60.7
-Daily Minimum	15.3	18.3	30.5	41.5	48.5	62.4	70.4	63.7	56.8	45.4	40.5	31.2	43.7
-Monthly	23.4	26.2	37.5	50.6	58.6	71.8	78.5	72.0	65.4	54.9	48.9	38.7	52.2
-Monthly Dewpt.													
Extremes													
-Highest	52	53	59	72	86	96	95	89	85	73	71	58	96
-Date	28	20	23	30	23	19	7	4	13	9	4	6	JUN 19
-Lowest	-2	4	17	31	41	49	64	54	49	35	23	15	-2
-Date	19	10	1	8	21	3	12	24	20	16	24	30	JAN 19
DEGREE DAYS BASE 65 °F													
Heating	1283	1080	843	425	208	7	0	1	39	306	473	807	5472
Cooling	0	0	0	0	17	215	423	225	57	0	0	0	937
% OF POSSIBLE SUNSHINE													
AVG. SKY COVER (tenths)													
Sunrise - Sunset	6.5	5.9	6.9	6.1	6.2	6.1		6.6	5.7	4.7	6.0	6.4	
Midnight - Midnight													
NUMBER OF DAYS:													
Sunrise to Sunset													
-Clear	7	10	5	9	7	7		8	11	14	9	9	
-Partly Cloudy	8	6	10	7	9	12		7	8	6	7	6	
-Cloudy	16	12	16	14	15	11		15	11	11	14	16	
Precipitation													
.01 inches or more	13	9	13	14	13	11	8	13	10	6	9	11	130
Snow,Ice Pellets,Hail													
1.0 inches or more	6	5	4	0	0	0	0	0	0	0	0	0	15
Thunderstorms	0	0	0	3	6	3	3	4	3	0	1	0	23
Heavy Fog, visibility													
1/4 mile or less	1	3	5	4	1	4	2	1	0	1	0	1	23
Temperature F °													
-Maximum													
90° and above	0	0	0	0	0	2	9	0	0	0	0	0	11
32° and below	18	14	2	0	0	0	0	0	0	0	0	3	37
-Minimum													
32° and below	31	27	18	2	0	0	0	0	0	0	5	17	100
0 ° and below	3	0	0	0	0	0	0	0	0	0	0	0	3
AVG. STATION PRESS. (mb)													
RELATIVE HUMIDITY (%)													
Hour 01													
Hour 07 (Local Time)	68	71	76	74	74	80		82	79	79	68	70	
Hour 13	59	60	59	54	57	61	63	60	57	53	50	55	57
Hour 19	61	61	69	65	65	68	74	72	68	66	58	63	66
PRECIPITATION (inches):													
Water Equivalent													
-Total	5.12	3.17	5.74	2.85	3.42	1.51	1.82	4.95	4.46	1.06	3.13	3.73	40.96
-Greatest (24 hrs)	1.52	1.05	1.35	0.71	1.10	0.61	0.42	1.71	1.96	0.54	1.26	1.27	1.96
-Date	27-28	11	9-10	6- 7	7- 8	12-13	27-28	21-22	22-23	23	27-28	5	SEP 22-23
Snow,Ice pellets,Hail													
-Total	17.3	27.9	7.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	T	53.1
-Greatest (24 hrs)	4.8	12.6	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T	T	12.6
-Date	7	11	2- 3								27	17	FEB 11
WIND:													
Resultant													
-Direction (!!)													
-Speed (mph)													
Average Speed (mph)													
Fastest Obs. 1 Min.													
-Direction (!!)	21	09	09	32	34	22	24	04	14	26	30	03	03
-Speed (mph)	29	30	31	29	30	24	21	28	24	18	29	39	39
-Date	28	23	2	17	13	27	23	22	23	29	7	24	DEC 24
Peak Gust													
-Direction (!!)	NE	N	E	NW	N	NW	NW	NE		NE	NW		
-Speed (mph)	41	43	43	48	38	38	33	38	41	30	48	64	64
-Date	4	14	3	17	13	2	26	22	23	11	7	24	DEC 24

TABLE 3-9
THREATENED, ENDANGERED, AND SPECIAL CONCERN SPECIES THAT POTENTIALLY OCCUR IN THE SAEP VICINITY
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

COMMON NAME	SCIENTIFIC NAME	FEDERAL STATUS[a]	PROPOSED STATE STATUS[b]
Plants			
Beach needlegrass	*Aristida tuberculosa*	NL	T
Sickle-leaved golden aster	*Chrysopsis falcata*	NL	E
Pygmyweed	*Crassula aquatica*	NL	SC
Saltpond grass	*Diplachne maritima*	NL	E
Seabeach sandwort	*Honkenya peploides*	NL	SC
Mudwort	*Limosella subulata*	NL	SC
Eastern prickly pear	*Opunta humifusa*	NL	SC
Panic grass	*Panicum amarum*	NL	T
Yellow-fringed orchid	*Platanthera ciliaris*	NL	T
Cursed crowfoot	*Ranunculus sceleratus*	NL	SC
Salt marsh bulrush	*Scirpus cylindricus*	NL	SC
Bayonet grass	*Scirpus paludosus var. atlanticus*	NL	SC
Coast violet	*Viola brittoniana*	NL	E
Birds			
Seaside sparrow	*Ammodramus maritimus*	NL	SC
Upland sandpiper	*Bartramia longicauda*	NL	E
Piping plover	*Charadrius melodus*	T	T
Horned lark	*Eremophila alpestris*	NL	T
Common moorhen	*Gallinula chloropus*	NL	T
Least bittern	*Ixobrychus exilis*	NL	T
Savannah sparrow	*Passerculus sandwichensis*	NL	SC
Ipswich sparrow	*Passerculus sandwichensis princeps*	NL	SC
Pied-billed grebe	*Podilymbus podiceps*	NL	E
Purple martin	*Progne subis*	NL	SC
Least tern	*Sterna antillarum*	NL	T
Roseate tern	*Sterna dougallii*	E	E
Fish			
Atlantic sturgeon	Acipenser oxythynchus	NL	T
Reptiles			
Diamondback terrapin	*Malaclemys terrapin terrapin*	CS	NL

[a] T = Threatened
E = Endangered
CS = Candidate Species
NL = Not Listed

[b] T = Threatened
E = Endangered
SC = Special Concern
NL = Not Listed

Source: Final PAS, Woodward-Clyde Consultants, 1991.

TABLE 3-10
SUMMARY OF THE CULTURAL CHRONOLOGY OF THE SAEP AREA
(SOURCE: ENVIROSPHERE COMPANY, 1984)
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

CULTURAL UNIT					
TRADITION	PERIOD OR PHASE	DATE	GENERAL SETTLEMENT PATTERNS	GENERAL SUBSISTENCE SYSTEMS	KINDS OF ARCHEOLOGICAL REMAINS REPRESENTATIVE OF PERIOD
American	Installation Activity Begins	AD 1920 to Present	Industrial and residential. Building of dikes; cut and fill construction activities in what had been swampy and meadow land; filling-in of old shoreline.	Commercial, manufacturing and technology industries, urban market economy.	Subsurface utility lines, metal, glass, concrete, and brick construction materials; pavement; automobile, helicopter, airplane parts; shipping docks; American domestic material culture, high-technology-related items.
	Euro-American	AD 1639 to 1920	Plantation agriculture and livestock raising until early nineteenth century. Early nineteenth century until 1920 there is increasing population density in town center, but town is still rural in character.	Cultivation of grains - wheat, rye, corn, oats, flax, grass. Domestic production of cider, cider brandy, cheese, beef, pork, lard. Fishing and cattle-raising. Minimal mechanical and manufacturing employments.	Agricultural tools and implements; roads, fences, dwellings, barns; glass, metal, brick, and wood building materials; textiles.
	European-Native American Contact	AD 1550 to 1639	Cupheags spend spring and summer fishing and clamming on the shores of the Sound; settlements also practiced horticulture near the coast. Following 1639, the native communities remaining are moved to one of two reservations, outside of the present town of Stratford.	Continuation of hunting, fishing, gathering, horticulture, shellfish collecting, with changes due to direct and indirect contact with Europeans.	Hoes, shell middens, triangular points (both lithic and from imported metals), items of European manufacture made for trade with New England native peoples, such as glass beads, bells, cloth.

continued

TABLE 3-10
SUMMARY OF THE CULTURAL CHRONOLOGY OF THE SAEP AREA
(SOURCE: ENVIROSPHERE COMPANY, 1984)
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

Cultural Unit			General Settlement Patterns	General Subsistence Systems	Kinds of Archeological Remains Representative of Period
Tradition	Period or Phase	Date			
Native American	Late Woodland	AD 1100 to 1550	Seasonal mobility with base camps; increased sedentism; higher population density. Coastal zone intensively occupied.	Introduction of cultigens; horticulture; hunting, fishing, gathering; shellfish collecting.	East River Tradition pottery: East River cord marked, Bowmans Brook incised, Shantok incised wares, shell middens, triangular projectile points, bone points or awls, isolated burials, hoes, ornaments, dog burials, gorgets, Levanna points.
	Middle Woodland	1000 BC to AD 1100	Seasonal mobility with base camps.	Hunting, shellfish collecting, wild vegetable food gathering, fishing.	Windsor Tradition pottery: Vinette interior cord-marked, Windsor fabric marked, Clearview stamped, Sebonac stamped, Niantic stamped wares. Shell middens, side-notched points, Meadowood points, knives, scrapers, ornaments.
Native American	Transi-tional	1300 to 1000 BC	Seasonal mobility with base camps.	Shellfish collecting; small-game hunting; gathering; fishing.	Mortar, pestles, gouges, adzes, knives, steatite bowls, narrow "fishtail" points, shell middens, dugouts, ornaments.
	Late Archaic	2500 to 1300 BC	River-basin territoriality; decreased mobility; central-based foraging strategy with base camps. Seasonal aggregation and dispersal. Higher population density.	Shellfish collecting; collection of seeds and nuts; small-game hunting.	Sylvan Lake points, Braveston points, Squibnocket points, Narrow point tradition, Snook Kill points, Atlantic points, knives, scrapers, ground-stone gouges and adzes, steatite bowls, shell middens, mortars, pestle-grooved oxes, celts, netsinkers, hammerstones.

continued

Table 3-10
Summary of the Cultural Chronology of the SAEP Area
(Source: Envirosphere Company, 1984)
Environmental Baseline Survey Report

Stratford Army Engine Plant
Stratford, Connecticut

Cultural Unit					
Tradition	Period or Phase	Date	General Settlement Patterns	General Subsistence Systems	Kinds of Archeological Remains Representative of Period
	Middle Archaic	5000 to 2500 BC	Restricted foraging pattern; some larger sites. Sites have more varied locations and there are more sites than in the past, where sites are known.	Hunting of small and medium-mammals, size on a seasonal basis. Seasonal shellfish collecting. Seasonal hunting of migratory birds. Seasonal gathering of vegetable foods.	Merrimack, Early Laurentian, Late Laurentian, few Neville or Stark points, scrapers, perforators, fishhooks. Evidence of long-distance trade or transport.
	Early Archaic	7000 to 5000 BC	Small, mobile bands, using seasonal base camps; where sites are known, occur preferentially in the lowlands.	Foraging for large and small mammals; gathering of wild vegetable foods.	Bifurcate-base tradition. No known sites from SAEP.
	Late Paleo-Indian	9000 to 7000 BC	Small, mobile bands of hunters and gatherers.	Foraging for large and small mammals; gathering of wild vegetable foods.	Assemblages with late fluted point forms. Possible traces of Kirk traditions. No known sites from SAEP.
	Early Paleo-Indian	10,000 to 9000 BC	Small, mobile bands of hunters and gatherers. In areas with known sites, these occur on well-drained soil, such as on terraces, drumlins, knolls.	Hunting of large and small mammals; gathering of wild vegetable foods.	No known sites in area of SAEP. Kinds of artifacts expected: "Clovis" fluted point tradition, utilized flakes, gravers, bifacial knives, drills, small end-scrapers.

Source: Final PAS Report, Woodward-Clyde Consultants, 1991.

TABLE 4-1
SITE DESCRIPTION AND NUMBERING SYSTEM
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

SITE NO.	ASSOCIATED RFA AOCs	DESCRIPTION	ASSOCIATED PARCEL
1	1	Waste Oil Tanks in the Oil Tank Farm	9
1 a		Aboveground Tank No. H102M: 33-18 Oil; 10,000 gallons	
1 b		Aboveground Tank No. H103W: 31-30 Oil; 10,000 gallons	
1 c		Aboveground Tank No. H104W: Waste Oil (high sulfur); 10,000 gallons	
1 d		Aboveground Tank No. H058W: Waste 31-32 Oil; 5,000 gallons	
1 e		Aboveground Tank No. H1013W: Waste Oil; 5,000 gallons	
1 f		General vicinity of B-13, B-15: numerous small spills	
1 g		Aboveground storage tank overfills	
2	2	Hazardous Waste Accumulation Aboveground Tanks: Oil Tank Farm	9
2 a		Aboveground Tank No. H056M: Recycled 1,1,1-TCA; 5,000 gallons	
2 b		Aboveground Tank No. H055M: Recycled 1,1,1-TCA; 5,000 gallons	
2 c		Aboveground Tank No. H057W: Waste Oil (chlorinated); 5,000 gallons	
2 d		Aboveground Tank No. H1012W: Waste Oil; 5,000 gallons	
2 e		Aboveground Tank No. H059W: Waste Fuel; 5,000 gallons	
2 f		Aboveground Tank No. H101M: New 1,1,1-TCA; 10,000 gallons	
2 g		Aboveground Tank No. H1010M: Varsol; 10,000 gallons	
2 h		Aboveground Tank No. H1010M: TPC (reused tank); 10,000 gallons	
2 i		Aboveground Tank No. H1011W: Coolant; 10,000 gallons	
3	3	Hazardous Waste and Waste Oil Transfer Systems between B-13 and B-15	9
3 a		Former Waste Fuel UST (F001); 500 gallons	
3 b		Former Waste Solvent and Oil UST (F001); 500 gallons	
3 c		(2) Former Waste Oil USTs (F001); 400 gallons	
4	4	B-16 floor drains, sumps and associated piping	17
4 a		(52) Drains corroded by chlorinated solvents	
4 b		Waste solvents/oils/fuels dumped into drains.	
5	5	Storm and wastewater collection system for the OATP	2, 32
5 a		Grease from wastewater in storm drainage system discharged to intertidal flats	
6	6	OATP in B-64	14
6 a		Surge Tank No. W2; 200,000 gallons	
6 b		NaOH/Alum Tank No. H1016M; 10,000 gallons	
6 c		Aboveground Tank No. C013G: Oil-Polymer; 10,000 gallons	
6 d		Aboveground Tank No. C014G: Oil Polymer; 10,000 gallons	14
7	7	Oil/Alum tank at NE corner of B-13	9
7 a		Aboveground Tank No. C107F: Oil-Alum; 10,000 gallons	
8	8	CWTP collection system, pump stations, assoc. piping in B-63	12

TABLE 4-1
SITE DESCRIPTION AND NUMBERING SYSTEM
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

SITE NO.	ASSOCIATED RFA AOCs	DESCRIPTION	ASSOCIATED PARCEL
9	9	CWTP cyanide destruction facility in B-70	12
9 a		Aboveground Tank No. T051W: Cyanide; 5,000 gallons	
9 b		Aboveground Tank No. T052W: Cyanide; 5,000 gallons	
9 c		Aboveground Tank No. H0516M: Sulfuric Acid; 500 gallons	
9 d		Aboveground Tank No. H0517M: Sodium Hydroxide; 500 gallons	
9 e		Aboveground Tank No. H0518M: Sodium Hypochlorite; 500 gallons	
9 f		Aboveground Tank No. H0515M: Sulfuric Acid; 500 gallons	
9 g		Aboveground Tank No. H0519M: Sodium Hydroxide; 500 gallons	
9 h		Aboveground Tank: #2 Fuel Oil; 275 gallons	
10	10	CWTP in B-18	20
10 a		(6) Chrome Reduction Tanks (W3 through W7, W10) in B-18; 4 ft.x 25 ft. x 13 ft.	
10 b		Metals Removal Unit in B-18; (1) 240,000 gallon and (2) 120,000 gallon equalization tanks	
10 c		Metals Removal Unit Clarifier; 60,000 gallons	
10 d		Aboveground Tank No. H0315: NaOH; 3,500 gallons	
10 e		Aboveground Tank No. H0316: NaOH; 3,500 gallons	
10 f		Aboveground Tank No. C0111G: Fuel Oil #6 (previous 275 gallons)	
10 g		Aboveground Tank No. H3014M: Sulfuric Acid; 5,000 gallons	
10 h		Aboveground Tank No. C0111G: Fuel Oil #6 (existing 1,000 gallons)	
11	11	CWTP solids area in B-71	20
11 a		Metal Hydroxide sludge; 40,000 pounds	
12	12	Container accumulation area and associated drains, west of B15	9
12 a		Hazardous material storage (solvents, acids, fuels, caustics), B-74	
13	13	Original Container Storage Area, east of B-13	9
14	14	Container Storage Areas A & B, west of B-18	20
15	15	Sludge Roll-off Container area north, of B-71	20
16	16	Metal chips oily sump, near northwest corner B-13	9
17	17	Soil pile at the south parking lot	22
17 a		Petroleum-contaminated soil from B-65 excavation as fill	
18	18	Equalizing Impoundment (Lagoon #1)	21
18 a		Lagoon overflow of Cr VI plating wastewater	

TABLE 4-1
SITE DESCRIPTION AND NUMBERING SYSTEM
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

SITE NO.	ASSOCIATED RFA AOCs	DESCRIPTION	ASSOCIATED PARCEL
19	19	Sludge Drying Beds (Lagoons #2, #3, and #4)	21
19 a		Sludge Drying Bed #2; 9,140 sq. ft.	
19 b		Sludge Drying Bed #3; 7,920 sq. ft.	
19 c		Sludge Drying Bed #4; 12,600 sq. ft.	
19 d		Petroleum stained soils reported in sludge lagoon excavation	
19 e		Sludge Lagoons #2, #3, and #4 closed under RCRA	
20	20	Causeway on the Housatonic River	18
20 a		Paint solvents and wastes reported to have been burned	
21	21	B-65 area; previous location of B-52 and B-55	4
21 a		Paint-contaminated soils excavated to low tide water level	
21 b		Petroleum-contaminated soils excavated and moved to south parking lot	
22	22	Waste paint tank/vault between B-2 and B-3, near B-70	12
23	23	Dry well inside B-19	28
23 a		Waste fuels, oils, and solvents discharged to dry well	
24	24	Discharge to Housatonic River at OF-007	32
24 a		Chromic acid discharged to OF-007	
24 b		Oil sludge from OATP discharged from OF-007	
24 c		Hexavalent chromium plume extending 200 yds from OF-007	
25	25	Discharge to Housatonic River at OF-008 and drainage channel	21/off-site
25 a		Treated effluent from CWTP with occasional contaminants	
25 b		Equalization lagoon overflow into drainage channel	
25 c		EPA observed white foam from lime-green liquids from clarifier discharging into drainage channel	
26	26	Former septic system beneath B-2	8
27	27	B-58 and associated satellite accumulation areas	6
27 a		Jet Fuel (Satellite Accumulation Area); 55 gallons	
27 b		1,1,1-TCA; >300 gallons	
27 c		Oil found in subsurface soil during construction of B-58	
28	28	B-15 and associated satellite accumulation areas	9
28 a		1,1,1-TCA sludge (Satellite Accumulation Area); 55 gallons	
28 b		Waste Oil (Satellite Accumulation Area); 55 gallons	
28 c		Oils; >3,000 gallons	
28 d		Solvents (1,1,1-TCA, TPC); 20,000 gallons	
29	29	B-48 and associated satellite accumulation areas	9
30	30	B-34 and associated satellite accumulation areas	30
30 a		Waste Oil and Filters (Satellite Accumulation Area); 55 gallons	
30 b		Jet Fuel (Satellite Accumulation Area); 55 gallons	
30 c		Aboveground Tank No. F204M: JP-4; 20,000 gallons	
30 d		Aboveground Tank No. C2012M: Diesel fuel #2; 20,000 gallons	30
30 e		Aboveground Tank No. C2013M: Jet-A; 20,000 gallons	
30 f		Aboveground Tank No. F205M: JP-4; 20,000 gallons	
30 g		Aboveground Tank No. C2014M: JP-5; 20,000 gallons	
30 h		Aboveground Tank No. C2015M: Jet-A; 20,000 gallons	
30 i		Aboveground Tank No. C316M: Empty; 3,000 gallons	

TABLE 4-1
SITE DESCRIPTION AND NUMBERING SYSTEM
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

SITE NO.	ASSOCIATED RFA AOCs	DESCRIPTION	ASSOCIATED PARCEL
31	31	B-6 and associated satellite accumulation areas	24
31 a		Waste 1,1,1-TCA (Satellite Accumulation Area); 55 gallons	
31 b		Jet Fuel (Satellite Accumulation Area); 55 gallons	
31 c		Fuel (Satellite Accumulation Area); 55 gallons	
31 d		Waste TPC (Satellite Accumulation Area); 110 gallons	
31 e		Waste Oil (Satellite Accumulation Area); 110 gallons	
31 f		Waste Oil and Freon (Satellite Accumulation Area); 55 gallons	
32	32	B-5 and associated satellite accumulation areas	27
32 a		Jet Fuel (Satellite Accumulation Area); 55 gallons	
32 b		Waste Oil (Satellite Accumulation Area); 55 gallons	
32 c		Waste Oil/TPC (Satellite Accumulation Area); 55 gallons	
32 d		Waste Oil/Calibration Fluids (Satellite Accumulation Area); 330 gallons	
32 e		Fuel, Lubricating, and Hydraulic Oils; 2,750 gallons	
33	33	B-19 and associated satellite accumulation areas	28
33 a		Waste Oil and Filters (Satellite Accumulation Area); 55 gallons	
33 b		Jet Fuel (Satellite Accumulation Area); 55 gallons	
33 c		Waste Oil (Satellite Accumulation Area); 55 gallons	
33 d		PCB transformers inside B-19	
34	34	B-3A and associated accumulation areas	27
34 a		Waste 1,1,1-TCA (Satellite Accumulation Area); 30 gallons	
34 b		Waste Oil (Satellite Accumulation Area); 30 gallons	
34 c		Jet Fuel (Satellite Accumulation Area); 30 gallons	
34 d		Spill of cleaning solvents north of B-3A	
34 e		PCB transformers inside B-3A	
35	35	B-43 and associated satellite accumulation areas	28
36	36	B-12 and associated satellite accumulation areas	13
36 a		Waste Oil (Satellite Accumulation Area); 55 gallons	
36 b		Waste Oil and Filters (Satellite Accumulation Area); 55 gallons	
36 c		Aboveground Tank No. G034M: Ammonia; 3,000 gallons	
37	37	B-10 and associated satellite accumulation areas	13
37 a		Aboveground Tank No. C801G: #6 Fuel Oil; 80,000 gallons	
38	38	B-2 former USTs	29
38 a		Sanitary UST (beneath building); 1,500 gallons	
38 b		(2) Oil USTs (beneath building); 2,500 gallons	
39	39	B-4 former brine UST; 20,000 gallons	27
40	40	B-6 former USTs	24
40 a		(2) Fuel USTs; 550 gallons	
40 b		Oil UST (sand filled); 5,000 gallons	
40 c		Fuel UST (sand filled); 5,000 gallons	

TABLE 4-1
SITE DESCRIPTION AND NUMBERING SYSTEM
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

SITE NO.	ASSOCIATED RFA AOCs	DESCRIPTION	ASSOCIATED PARCEL
41	41	B-9 former USTs	33
41 a		Leaded Gasoline UST; 2,500 gallons	
41 b		Unleaded Gasoline UST; 2,500 gallons	
41 c		(2) Gasoline USTs; 3,000 gallons	
42	42	B-9 former USTs (were existing when RFA was written)	33
42 a		Unleaded Gasoline UST; 3,000 gallons	
42 b		Unleaded Gasoline UST; 3,000 gallons	
43	43	B-18 former UST (Fuel Oil #2; 1,000 gallons)	20
44	44	B-19 former USTs	28
44 a		(2) Fuel USTs; 550 gallons	
44 b		Fuel UST; 1,000 gallons	
44 c		Fuel UST; 2,000 gallons	
45	45	Jet Fuel Tank Farm former USTs at B-34	30
45 a		(2) JP-4 USTs; 20,000 gallons	
45 b		(2) Jet-A UST; 20,000 gallons	
45 c		JP-5 UST; 20,000 gallons	
45 d		Diesel Fuel UST; 20,000 gallons	
45 e		Fuel (1% solvent) UST; 4,000 gallons	
45 f		Varsol UST; 5,000 gallons	
45 g		Fuel UST; 1,000 gallons	
45 h		(9) Fuel USTs; 300 gallons	
45 i		Unknown/Empty UST; 5,000 gallons	
45 j		Fuel storage tanks occasionally overfilled	
46	46	B-52 former UST	29
46 a		Oil UST (sand filled, beneath building); 1,000 gallons	
47	47	B-58 Radioactive Waste Storage Area (located in B-73)	5
48	48	B-16 and associated satellite accumulation areas	17
48 a		Waste Oil (Satellite Accumulation Area); 55 gallons	
48 b		Jet Fuel (Satellite Accumulation Area); 55 gallons	
48 c		Oil and Filters (Satellite Accumulation Area); 55 gallons	
48 d		Jet Fuel (Satellite Accumulation Area) at B-16-north; 55 gallons	
48 e		Oil and Rags (Satellite Accumulation Area) at B-16-north; 55 gallons	
48 f		Waste Oil (Satellite Accumulation Area) at B-16-west; 55 gallons	
48 g		Oil and Rags (Satellite Accumulation Area) at B-16-west; 55 gallons	17
48 h		Jet Fuel (Satellite Accumulation Area) at B-16-west; 55 gallons	
48 i		Aboveground Tank No. C401G: Jet-A/Diesel; 40,000 gallons	
48 j		Aboveground Tank No. C402G: Diesel Fuel #2; 40,000 gallons	
48 k		Broken manometers released mercury to floors and drains	
48 l		Spills of waste solvents stored on small docks on east side of building	

TABLE 4-1
SITE DESCRIPTION AND NUMBERING SYSTEM
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

SITE NO.	ASSOCIATED RFA AOCs	DESCRIPTION	ASSOCIATED PARCEL
49	49	B-2 Manufacturing Areas	8
49 a		Paints and solvents	
49 b		Acid/Acetone (Satellite Accumulation Area); 55 gallons	
49 c		Acid/Isopropanol (Satellite Accumulation Area); 55 gallons	
50	50	B-2 Plating Area	12
50 a		Hydrochloric Acid (Plating Chemical Storage Area); > 4,700 kilograms	
50 b		Nickel Sulfamate (Plating Chemical Storage Area); 600 kilograms	
50 c		Hydroflouric Acid (Plating Chemical Storage Area); 200-300 gallons	
50 d		Nitric Acid (Plating Chemical Storage Area); > 450 kilograms	
50 e		Sulfuric Acid (Plating Chemical Storage Area); > 450 kilograms	
50 f		Chromic Acid (Plating Chemical Storage Area); 5,440 kilograms	
50 g		Sodium Cyanide (Plating Chemical Storage Area); > 1180 kilograms	
50 h		Waste Cyanide (Satellite Accumulation Area); 55 gallons	
50 i		Waste Oil (Satellite Accumulation Area); 55 gallons	
50 j		Waste TPC (Satellite Accumulation Area); 30 gallons	
50 k		Waste 1,1,1-TCA (Satellite Accumulation Area); 30 gallons	
50 l		Waste Sodium Hydroxide Sludge (Satellite Accumulation Area); 55 gallons	
51	51	B-3 Plating Areas	12
52	52	Outfall Nos. OF-001, OF-005, and OF-006	2, 32
52 a		Waste solvents through drains of B-16 to intertidal flats	
52 b		Plating wastes and other chemical operations discharged to intertidal flats	
53	53	Drum staging area between tank farm and B-37	9
54	54	B-17	24
54 a		1,1,1-TCA (Raw); 55 gallons	
55	55	B-72	23
55 a		Aboveground Tank No. C201G: Diesel #2; 20,000 gallons	
55 b		Aboveground Tank No. F202G: JP-4; 20,000 gallons	
55 c		Aboveground Tank No. C203G: Diesel #2; 20,000 gallons	
55 d		Aboveground Tank No. C204J: Jet-A; 20,000 gallons	23
55 e		Aboveground Tank No. C101G: Diesel #2; 10,000 gallons	
55 f		Aboveground Tank No. C102J: Diesel #1; 10,000 gallons	
55 g		Jet Fuel (Satellite Accumulation Area); 55 gallons	
55 h		Oil and Filters (Satellite Accumulation Area); 55 gallons	
56	56	Research and Development area in northern B-3, B-3A and B-4	16, 27
57	57	Drum storage area east of B-19	31
57 a		B-19 Drum Storage Rack (1,1,1-TCA and Oils)	
57 b		Former drainage system of grating over gravel trench	
57 c		1,1,1-TCA leak. Contaminated soils have been excavated	
58	58	Scrap metal yard north of B-16	17

TABLE 4-1
SITE DESCRIPTION AND NUMBERING SYSTEM
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

SITE NO.	ASSOCIATED RFA AOCs	DESCRIPTION	ASSOCIATED PARCEL
59		B-4 Drum storage area	27
60		B-6A Waste Oil and Rags (Satellite Accumulation Area)	24
61		B-6A Waste TPC and Oil (Satellite Accumulation Area)	24
62		B-7 Waste Oil (Satellite Accumulation Area)	13
63		B-8 Flammable Storage (Paints and Solvents)	13
64		B-8 Waste Paint (Satellite Accumulation Area)	13
65		Aboveground Tank No. C029G: Diesel Fuel #2; 2,000 gallons	31
66		Aboveground Tank No. C018G: Diesel Fuel #2; 1,000 gallons	31
67		Aboveground Tank No. C0110G: JP-5;1,000 gallons	31
68 68 a		Aboveground Tank No. F601G: JP-4; 60,000 gallons Fuel storage tanks occasionally overfilled	28
69		Aboveground Tank No. C602G: Jet-A; 60,000 gallons	28
70		Aboveground Tank No. C107F: Oil; 10,000 gallons	9
71		Aboveground Tank No. F503M: Methanol; 5,000 gallons	9
72		Aboveground Tank No. C4001A: Fuel Oil #6; 400,000 gallons	9
73		Fuel, Lubricating, and Hydraulic Oils near B-69	26
74		B-2. PCBs in transformers, Magnesium and Nickel Thorium Machining	3, 7, 8, 12
75		B-3. PCBs in transformers	12, 16

Notes: RFA - RCRA Facility Assessment performed in 1992 (CDM, 1992)

TABLE 4-2
ADJACENT SITES WITH ENVIRONMENTAL RECORDS
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

NAME AND ADDRESS	AGENCY WITH RECORD	COMMENTS/OBSERVATIONS	SITE NUMBER[1]
AVCO Lycoming Textron FLGT SVC Hangar 1, Sikorsky Airport Stratford, CT	EPA Responsible Office: Hazardous Waste Data Management System, Office of Solid Waste (RCRA)	FINDS list only. No additional information.	1
Beacon Point Landfill Beacon Point Road Stratford, CT	EPA Responsible Office: Superfund - Hazardous Waste - Superfund. CTDEP: Hazardous Materials Management Unit, Hazardous Waste Section.	Asbestos on-site burial. Groundwater not suitable for drinking water without treatment. In CERCLIS, Screening Site Inspection completed 3/22/90, no further remedial action planned. Area is possibly a parking lot now.	2
Breezy Point Auto Body Inc.[2] 75 Access Road Stratford, CT	EPA Responsible Office: Hazardous Waste Data Management System, Office of Solid Waste (RCRA)	Generates at least 100 kg/mo but less than 1000 kg/mo non-acutely hazardous waste. No permit status information.	3
Breezy Point Garage Inc. 609 Main St.[2] Stratford, CT	EPA Responsible Office: Hazardous Waste Data Management System, Office of Solid Waste (RCRA)	FINDS list only. No additional information.	4
CEMO AVCO Lycoming Textron[2] 125 Access Rd. Stratford, CT	EPA Responsible Offices: Hazardous Waste Data Management System, Office of Solid Waste (RCRA); Permit Compliance System, Office of Water Enforcement and Permits; Compliance Data System, Office of Air and Radiation	FINDS list only (PAS, 1991). No additional information.	5

continued

TABLE 4-2
ADJACENT SITES WITH ENVIRONMENTAL RECORDS
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

NAME AND ADDRESS	AGENCY WITH RECORD	COMMENTS/OBSERVATIONS	SITE NUMBER[1]
Charter Arms Corp. 430 Sniffens Ln. Stratford, CT	EPA Responsible Offices: Hazardous Waste Data Management System, Office of Solid Waste (RCRA); Permit Compliance System, Office of Water Enforcement and Permits	Facility is now closed (ASE, 1995). Formerly generated at least 1000 kg/mo non-acutely hazardous waste or 1 kg/mo acutely hazardous waste. No permit status information.	6
Great Meadows Landfill Stratford, CT	CTDEP Responsible Department: Hazardous Materials Management Unit, Hazardous Waste Section	Landfilling of metal hydroxide sludge. State Superfund List, discovery date 6/7/87.	7
Housatonic Boat Club Shore Rd. Stratford, CT	EPA Responsible Office: Superfund - Hazardous Waste - Superfund. CTDEP: Hazardous Materials Management Unit, Hazardous Waste Section	Asbestos/sludge on-site burial. Groundwater not suitable for drinking water without treatment. In CERCLIS, Screening Site Inspection performed 3/22/90, site is part of an NPL site. Disposal area is now a parking lot.	8
Response Graphics Div Moore Co. Sniffens Ln. Stratford, CT	EPA Responsible Office: Hazardous Waste Data Management System, Office of Solid Waste (RCRA)	Generates at least 100 kg/mo but less than 1000 kg/mo non-acutely hazardous waste. No permit status information.	9
Rudkin Wiley Corp 360 Sniffens Ln. Stratford, CT	EPA Responsible Office: Hazardous Waste Data Management System, Office of Solid Waste (RCRA)	Generated at least 1000 kg/mo non-acutely hazardous waste or 1 kg/mo acutely hazardous waste. No permit status information.	10

continued

TABLE 4-2
ADJACENT SITES WITH ENVIRONMENTAL RECORDS
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

NAME AND ADDRESS	AGENCY WITH RECORD	COMMENTS/OBSERVATIONS	SITE NUMBER[1]
Short Beach Park Area Dorne Dr. Stratford, CT	EPA Responsible Office: Superfund - Hazardous Waste - Superfund. CTDEP: Hazardous Materials Management Unit, Hazardous Waste Section	Asbestos/sludge on-site burial. Groundwater not suitable for drinking water without treatment. In CERCLIS, Screening Site Inspection completed 1/24/91, no further remedial action planned.	11
Sikorsky Aircraft 465 Main Street Stratford, CT	EPA Responsible Office: Hazardous Waste Data Management System, Office of Solid Waste (RCRA)	Generates at least 1000 kg/mo non-acutely hazardous waste or 1 kg/mo acutely hazardous waste. No permit status information.	12
Sikorsky Aircraft 3 North Main Street Stratford, CT	CTDEP: Hazardous Waste Management Unit, Hazardous Waste Section	Metal hydroxide sludge disposed of on-site in lagoons. State Superfund List, discovery date 7/6/87.	13
Sikorksy Memorial Airport Main Street Stratford, CT	EPA Responsible Office: Superfund - Hazardous Waste - Superfund. CTDEP: Hazardous Materials Management Unit, Hazardous Waste Section	Asbestos on-site burial. Groundwater not suitable for drinking water without treatment. In CERCLIS, Screening Site Inspection completed 3/22/90, no further remedial action planned.	14
Stratford Landfill Area Short Beach Rd Stratford, CT	EPA Responsible Office: Superfund - Hazardous Waste - Superfund. CTDEP: Hazardous Materials Management Unit, Hazardous Waste Section	Asbestos on-site burial. Groundwater not suitable for drinking water without treatment. Closed about 1973. In CERCLIS, Screening Site Inspection completed 5/22/90. No further remedial action planned.	15
Stratford SS Incinerator[2] Birdseye St Stratford, CT	EPA Responsible Office: Compliance Data System, Office of Air and Radiation	FINDS list only (PAS, 1991). No additional information.	16

continued

TABLE 4-2
ADJACENT SITES WITH ENVIRONMENTAL RECORDS
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

NAME AND ADDRESS	AGENCY WITH RECORD	COMMENTS/OBSERVATIONS	SITE NUMBER[1]
Stratford STP[2] Birdseye St. Ext. Stratford, CT	EPA Responsible Office: Permit Compliance System, Office of Water Enforcement and Permits	FINDS list only (PAS, 1991). No additional information.	17
Stratford Water Pollution Control[2] 105 Beacon Point Rd Stratford, CT	EPA Responsible Office: Hazardous Waste Data Management System, Office of Solid Waste (RCRA)	Same location as Stratford STP, listed above (PAS, 1991). Non-handler of hazardous waste. No RCRA permit status information.	18
Textron Lycoming CSC 125 Access Rd. Stratford, CT	EPA Responsible Office: None listed	Generates at least 100 kg/mo but less than 1000 kg/mo non-acutely hazardous waste. No permit status information.	19
Textron Lycoming Flight Service Hangar No.1 Sikorsky Airport Stratford, CT	EPA Responsible Office: None listed	Generates at least 100 kg/mo but less than 1000 kg/mo non-acutely hazardous waste. No permit status information.	20

Notes:

[1] See Figure 4-1 for site location.
[2] Source of information for these sites/facilities is the Final PAS Report (W-C, 1991).
kg/mo = kilograms per month

Table 4-3
Potential for Asbestos-Containing Materials (ACM) in Buildings at SAEP[1]
Environmental Baseline Survey Report

Stratford Army Engine Plant
Stratford, Connecticut

Building Number	Floor Tile	Transite Board	Pipe Wrap	Comment
B-1	High	Low	High	
B-2	High	High	High	Transite likely in barrel roof ends, boiler room, and east elevation facia
B-3 (3A)	High	High	High	Some ACM removed
B-4	High	High	High	
B-5	Medium	Low	High	Some ACM removed
B-6 (6A)	High	High	High	Estimated 70% ACM removed
B-7 (7A)	Medium	Low	High	Some ACM removed
B-8	Low	Low	Low	
B-9	Low	Low	Low	
B-10	Low	Low	Low	
B-12	Low	Low	High	
B-13	Low	Low	High	Estimated 90% ACM removed
B-15	Low	Low	High	Some ACM removed, but not from firehouse and storage area
B-16	Low	Medium	High	
B-17	Medium	Low	High	Some ACM removed
B-18	Low	Low	Low	Estimated 100% ACM removed
B-19	Medium	High	High	Some ACM removed; transite likely in exhaust housing
B-33	Low	Low	Low	
B-34	Low	Low	Low	
B-36	Low	Low	Low	
B-37	Low	Low	Low	
B-38	Low	Low	Low	
B-40	Low	Low	Low	
B-41	Low	Low	Low	
B-42	Low	Low	Low	
B-43	Low	Low	Low	
B-44	Low	Low	Low	
B-48	Low	Low	Low	
B-52	Low	Medium	Medium	
B-53	Low	Medium	Medium	
B-58	High	Low	Medium	
B-59	Low	Low	Medium	

continued

TABLE 4-3
POTENTIAL FOR ASBESTOS-CONTAINING MATERIALS (ACM) IN BUILDINGS AT SAEP[1]
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

BUILDING NUMBER	FLOOR TILE	TRANSITE BOARD	PIPE WRAP	COMMENT
B-60	Low	Low	High	Some ACM removed
B-61	Low	Medium	High	
B-63	Low	Low	High	
B-64-1	Low	Low	High	
B-64-2	Low	Low	High	
B-65	Low	Low	Low	
B-67	Low	Low	Low	
B-68	Low	Low	Low	
B-69	Low	Low	Low	
B-70	Low	Low	Low	
B-71	Low	Low	Low	
B-72	Low	Low	Low	
B-79	Low	Low	Low	

(1) Information in this table is based on interview information provided by SAEP personnel and has been supplemented by records review. A detailed asbestos survey was not conducted.

Source: Final PAS Report, Woodward-Clyde Consultants, 1991.

Table 4-4
List of Transformers at SAEP that Contain PCBs[1]
Environmental Baseline Survey Report

Stratford Army Engine Plant
Stratford, Connecticut

Location	Fluid[2]	Amount Liquid[3] Gal.	Amount Liquid[3] Lbs.	Manufacturer/ Serial Number	KVA Size
Existing Transformers					
B-2 Roof Vault	Pyranol	520	6,800	G.E./B528621	1500
B-2 Roof Vault	Pyranol	520	6,800	G.E./B528619	1500
B-2 Roof Vault	Pyranol	520	6,800	G.E./B582620	1500
B-2 Roof Vault	Pyranol	520	6,800	G.E./B528629	1500
B-2 Roof Vault	Pyranol	520	6,800	G.E./B528623	1500
B-2 Roof Vault	Pyranol	520	6,800	G.E./B528624	1500
B-2 Roof Vault	Pyranol	520	6,800	G.E./B528628	1500
B-2 Roof Vault	Pyranol	520	6,800	G.E./B528627	1500
B-2 Roof Vault	Pyranol	520	6,800	G.E./B528625	1500
B-2 Roof Vault	Pyranol	520	6,800	G.E./B528618	1500
B-2 Roof Vault	Pyranol	520	6,800	G.E./B528626	1500
B-3	Pyranol	520	6,800	G.E./B528630	1500
B-3	Pyranol	520	6,800	G.E./B28632	300
B-3A	Pyranol	520	6,800	G.E./B528633	500
B-3A	Pyranol	520	6,800	G.E./B528631	1500
B-19	Pyranol	520	6,800	G.E./C173607	1500
B-19	Pyranol	250	3,300	G.E./C173650	300
Former Transformers (Removed between 1991 and 1995)					
B-16 Roof Vault		520	10,750	Larkin/L-1312-11	1500
B-16 Roof Vault		520	10,750	Larkin/L-1312-1	1500
B-6 E. Center	> 50 ppm, < 500 ppm	1,430	18,700	AL.CH./3048340	5000
B-6 E. Center	> 50 ppm, < 500 ppm	1,430	18,700	AL.CH./3156991	1000

[1] Information in this table was extracted from SAEP file records.
[2] Pyranol oil contains PCBs >500 pp
[3] --- Not listed.

Source: Final PAS Report, Woodward-Clyde Consultants, 1991.

TABLE 5-1
PARCEL DATA FOR CERFA ASSESSMENT AND CATEGORIZATION
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

PARCEL NUMBER AND AREA	LOCATION	CATEGORY	BASIS	REMEDIAL ACTIVITY
1-HR(P)/PR(P)/A/L (5.34 acres)	North Parking Lot	7-gray	• Possible lagoons or pits located at pumphouse in 1943, unknown disposal history, area has not been investigated • Groundwater contamination based on results from adjacent monitoring wells (PZ-9D and PZ-9S); contaminant concentrations exceed CTDEP remediation standards (SWPC RSRs). • Probable lead-based paint and asbestos in pumphouse (pre-1949) located on easement granted to City of Stratford	
2-HR/PR (43.52 acres)	Outlying Tidal Flats	3-light green	• Known contamination in sediments in tidal flats • Risk Assessment (RA) indicates acceptable risk to benthic macro-invertebrates and some species of birds • No CTDEP sediment remediation standards exist	
3-HR/PR/A/L (4.17 acres)	Northern portion of B-2 (shipping/receiving, manufacturing, and offices)	7-gray	• Soil and groundwater contamination; contaminant concentrations in soil exceed CTDEP remediation standards (soil PMC RSRs) • Probable lead-based paint and asbestos in B-2 (1929)	

continued

TABLE 5-1
PARCEL DATA FOR CERFA ASSESSMENT AND CATEGORIZATION
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

PARCEL NUMBER AND AREA	LOCATION	CATEGORY	BASIS	REMEDIAL ACTIVITY
4-HR (1.14 acres)	B-65 (storage facility)	7-gray	• Known soil and groundwater contamination. • Post-remediation sampling data not available, further study required.	Contaminated subsurface soils above low tide level were removed from this parcel during the construction of B-65
5-RD/A/L (0.69 acres)	B-36 (pumphouse) B-73 (storage shed)	7-gray	• Area used for radiological waste storage (B-73); no radiological survey performed, further investigation required • Probable soil and groundwater contamination based on adjacent parcel data • Probable lead-based paint and asbestos in B-36 (1953)	
6-HR/PR/HS/ PS/A/L (0.48 acres)	B-58 (missile assembly/standards lab)	7-gray	• Hazardous substances and fuel stored in B-58 • Known soil and groundwater contamination; contaminant concentrations in groundwater exceed CTDEP remediation standards (SWPC RSRs) • Probable lead-based paint and asbestos in B-58 (1967)	

continued

TABLE 5-1
PARCEL DATA FOR CERFA ASSESSMENT AND CATEGORIZATION
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

PARCEL NUMBER AND AREA	LOCATION	CATEGORY	BASIS	REMEDIAL ACTIVITY
7-HR/PR/A/L (1.67 acres)	Western portion of B-2 (cafeteria, mailroom, medical, and guard headquarters)	7-gray	• Known soil and groundwater contamination; contaminant concentrations in soil exceed CTDEP remediation standards (soil PMC RSRs). • Probable lead-based paint and asbestos in B-2 (1929)	
8-HS/HR(P)/ PR(P)/A/L (11.35 acres)	Central portion of B-2 (manufacturing area)	7-gray	• Hazardous substances stored in B-2 • Probable soil and groundwater contamination • Area requiring investigation includes subsurface soils beneath punch presses, milling machines, degreasers, and former septic system • Probable lead based paint and asbestos in B-2 (1929)	

continued

TABLE 5-1
PARCEL DATA FOR CERFA ASSESSMENT AND CATEGORIZATION
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

PARCEL NUMBER AND AREA	LOCATION	CATEGORY	BASIS	REMEDIAL ACTIVITY
9-HR/PR/HS/ PS/A/L (3.32 acres)	B-13 (scrap metal) B-15 (oil/acid/alkali stores) B-37 (pumphouse) B-38 (pumphouse) B-44 (stores) B-48 (stores) B-68 (emergency generator) B-74 (hazardous waste stores) B-81	7-gray	• Hazardous substances and fuel stored in B-13, B-15, and B-74 • Known soil and groundwater contamination; contaminant concentrations exceed CTDEP remediation standards • Areas requiring investigation include edge of dike between B-64 and B-37, scrap yard, B-13 and surrounding area, and former chip pit. • Probable lead-based paint and asbestos in B-13 (1944), B-15 (1945), B-37 (1953), B-38 (1953), B-44 (1961), and B-48 (1961)	
10-HR/PR (3.56 acres)	West Parking Lot	7-gray	• Known subsurface soil and groundwater contamination; contaminant concentrations exceed CTDEP remediation standards (soil PMC and SWPC RSRs)	
11-HR/PR/A/L (1.86 acres)	B-1 (administrative and government offices)	7-gray	• Known subsurface soil and groundwater contamination; contaminant concentrations exceed CTDEP remediation standards (soil PMC and SWPC RSRs) • Probable lead-based paint and asbestos in B-1 (1929)	

continued

TABLE 5-1
PARCEL DATA FOR CERFA ASSESSMENT AND CATEGORIZATION
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

PARCEL NUMBER AND AREA	LOCATION	CATEGORY	BASIS	REMEDIAL ACTIVITY
12-HR/PR/HS/ PS/A/L (4.53 acres)	B-2 (plating area) B-3 (former plating area) B-63 (CWTP Pumping Station) B-70 (CDF) B-77 (offices)	6-red	• Hazardous substance and fuel stored in B-2 and B-70 • Known soil and groundwater contamination • Areas requiring investigation include plating area, heat treat and oil wrap areas of B-2, as well as B-63, B-70, chemical waste lines and former plating area in B-3 • Area requiring remediation includes elevated floor of B-2 with chromic acid contamination • Probable lead-based paint and asbestos in B-2 (1929), B-3 (1930), B-63 (1958)	
13-HR/PR/HS/PS/A/L (3.28 acres)	B-7 (engine fuel system testing) B-7A (engine fuel system testing) B-8 (paint/solvent storage) B-9 (garage) B-10 (stores/recuperator manufacture) B-11 (stores/recuperator manufacture)	7-gray	• Hazardous substance and fuel stored in B-7, B-8, B-10, and B-12 • Known soil and groundwater contamination • Areas requiring investigation include B-7 and B-7A with surrounding area, B-9 in ground cylinder lift, and B-10 IDOD pits. • Probable lead-based paint and asbestos in B-7 (1942), B-8 (1939), B-9 (1942), B-10 (1929), and B-12 (1941)	

continued

TABLE 5-1
PARCEL DATA FOR CERFA ASSESSMENT AND CATEGORIZATION
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

PARCEL NUMBER AND AREA	LOCATION	CATEGORY	BASIS	REMEDIAL ACTIVITY
14-PS/HR/PR/A/L (0.87 acres)	B-46-2 (oil abatement treatment) B-64-1 (pumphouse)	7-gray	• Hazardous substance and fuel stored in B-64-2 • Known soil and groundwater contamination; extent of contamination not identified • Probable lead-based paint and asbestos in B-64-1 (1975) and B-64-2 (1975)	
15-HR(P)/PR(P) (0.82 acres)	Parking lot south of B-2	7-gray	• Probable soil and groundwater contamination; adjacent parcels have contaminant concentrations that exceed CTDEP remediation standards	
16-HS/HR(P)/A/L (3.39 acres)	B-3 (engineering and development) B-67 (general stores)	7-gray	• Probable soil and groundwater contamination from ECM line; adjacent parcels have groundwater contaminant concentrations that exceed CTDEP remediation standards • Probable lead-based paint and asbestos in B-3 (1930)	

continued

TABLE 5-1
PARCEL DATA FOR CERFA ASSESSMENT AND CATEGORIZATION
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

PARCEL NUMBER AND AREA	LOCATION	CATEGORY	BASIS	REMEDIAL ACTIVITY
17-HS/PS/HR/PR/A/L (3.27 acres)	B-16 (prod. and develop. test cells) B-33 (cooling tower pump station) B-40 (pumphouse)	7-gray	• Hazardous substance and fuel stored in B-16 and B-33 (61,62) • Known soil and groundwater contamination • Area requiring investigation includes area outside B-16 and dike surface soils • Probable lead-based paint and asbestos in B-16 (1953), B-33 (1953), and B-40 (1953)	
18-HR(P)/PR(P)/A (2.74 acres)	B-59 (engineering/missile storage) Causeway	7-gray	• Potential disposal of asbestos on site • Area requiring investigation includes north side of Causeway where unknown burning and/or disposal occurred • Probable lead-based paint and asbestos in B-59 (1968)	
19-HR (10.37 acres)	Southern Parking Lot	7-gray	• Known groundwater contamination; contaminant concentrations exceed CTDEP remediation standards (SWPC RSRs)	

continued

TABLE 5-1
PARCEL DATA FOR CERFA ASSESSMENT AND CATEGORIZATION
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

PARCEL NUMBER AND AREA	LOCATION	CATEGORY	BASIS	REMEDIAL ACTIVITY
20-HS/PS/A/L (0.93 acres)	B-18 (CWTP) B-71 (CWTP solids handling) B-75 (hazardous waste storage) B-76 (hazardous waste storage)	7-gray	• Hazardous substance and fuel stored in B-18, B-71, and equalization tanks • Known groundwater contamination; contaminant concentrations in groundwater on adjacent Parcel 19 exceed CTDEP remediation standards (SWPC RSRs) • Probable lead-based paint and asbestos in B-18 (1958)	
21-HR/HS (3.35 acres)	CWTP lagoons	5-yellow	• Lagoons closed in accordance with RCRA Subtitle C Closure • Known sediment contamination at OF-008 • Known groundwater contamination	Lagoons have been closed under RCRA Subtitle C, although groundwater contamination remains
22-PR (2.76 acres)	Southern Parking Lot (TPH-contaminated soil fill)	4-dark green	• Known TPH contamination in fill soil from B-65 excavations. However, fill was placed in accordance with CTDEP requirements. • Adjacent parcels 19, 21, and 24 have known groundwater contamination.	TPH-contaminated soils placed in parking lot with CTDEP approval
23-PS/PR (0.52 acres)	B-72 (fuel pumping station)	7-gray	• Fuel stored in B-72 • Known soil contamination and probable groundwater contamination; adjacent Parcel 24 data has contaminant concentrations that exceed CTDEP remediation standards (SWPC RSRs)	

continued

TABLE 5-1
PARCEL DATA FOR CERFA ASSESSMENT AND CATEGORIZATION
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

PARCEL NUMBER AND AREA	LOCATION	CATEGORY	BASIS	REMEDIAL ACTIVITY
24-HS/PS/HR/A/L (3.47 acres)	B-6 (experimental hangar, R&D)	7-gray	• Hazardous substance and fuels stored in B-6 • Known groundwater contamination; contaminant concentrations exceed CTDEP remediation standards (SWPC RSRs) • Probable lead-based paint and asbestos in B-6 (1944)	
25-HR/A/L (1.19 acres)	B-53 (surplus equipment stores) B-60 (natural gas pump station) B-61 (refrigeration plant)	7-gray	• Known groundwater contamination; contaminant concentrations exceed CTDEP remediation standards (SWPC RSRs) • Probable lead-based paint and asbestos in B-53 (1961), B-60 (1968), and B-61 (1969)	
26-HR/PS/PR(P)/A (0.48 acres)	B-69 (USACE resident engineer) B-79 (SSE building) B-82 (guard shack)	7-gray	• Fuel stored in up to 250 55-gallon drums near B-69 • Adjacent parcels 27 and 28 have known groundwater contamination • Area requiring investigation includes fuel storage area near B-69 • Probable asbestos in B-79 (1979)	

continued

TABLE 5-1
PARCEL DATA FOR CERFA ASSESSMENT AND CATEGORIZATION
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

PARCEL NUMBER AND AREA	LOCATION	CATEGORY	BASIS	REMEDIAL ACTIVITY
27-HS/PS/HR/ PR/A/L (2.51 acres)	B-3A (engineering lab) B-4 (recuperator repair and stores) B-5 (fire hdq. and component test) B-41 (pump station)	7-gray	• Hazardous substance and fuel stored in B-3A, B-4, and B-5 • Known groundwater contamination and probable soil contamination from fueling operations • Areas requiring investigation include roadway west and south of B-34, B-5 and adjacent area, pilot plating line and laboratory in B-3A, alley between B-3A and B-4, and clean line (including adjacent ECM line) in B-4 • Probable lead-based paint and asbestos in B-3A (1943), B-4 (1945), B-5 (1944), and B-41 (1953)	
28-HS/PS/HR/A/L (1.67 acres)	B-19 (component test) B-43 (pump station)	7-gray	• Fuels stored in and adjacent to B-19 • Dry wells in northwest corner of B-19 • Known groundwater contamination • Area requiring investigation includes dry well in B-19 • Probable lead-based paint and asbestos in B-19 (1944) and B-43 (1944)	

continued

TABLE 5-1
PARCEL DATA FOR CERFA ASSESSMENT AND CATEGORIZATION
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

PARCEL NUMBER AND AREA	LOCATION	CATEGORY	BASIS	REMEDIAL ACTIVITY
29-PS/HR(P)/ PR(P)/A/L (0.32 acres)	Northeast corner of B-2 B-52 (plasma spray and stores)	7-gray	• Fuel and sanitary storage in USTs below B-2 and B-52 • Probable soil and groundwater contamination based on data from adjacent Parcels 4 and 9 • Area requiring investigation includes USTs abandoned in 1969 • Probable lead-based paint and asbestos in B-2 (1929) and B-53 (1962)	
30-PS/HS/A/L (0.24 acres)	Building B-34 Tank Farm	7-gray	• Fuel stored in USTs below B-34 • Hazardous substances stored in USTs below B-34 • Post-remediation sampling data not available; further study required • Probable lead-based paint and asbestos in B-34 (1953)	UST removed in 1989 and slurry wall installed
31-HS/PS/HR (0.54 acres)	East of Building B-19	7-gray	• Fuel stored in aboveground tanks • 1,1,1-TCA stored in drums • Release of 1,1,1-TCA to soils was remediated; however, no post-remediation sampling was conducted	1,1,1-TCA-contaminated soil excavated
32-HR/PR (3.73 acres)	Near Shore Intertidal Flats	6-red	• Known contamination in tidal flat sediments • RA indicates unacceptable ecological risk	

TABLE 5-1
PARCEL DATA FOR CERFA ASSESSMENT AND CATEGORIZATION
ENVIRONMENTAL BASELINE SURVEY REPORT

STRATFORD ARMY ENGINE PLANT
STRATFORD, CONNECTICUT

PARCEL NUMBER AND AREA	LOCATION	CATEGORY	BASIS	REMEDIAL ACTIVITY
33-PS (0.2 acres)	South of Building B-9	7-gray	• Leaded and unleaded gasoline stored in USTs south of B-9 • Post-remediation/removal sampling data not available; may require further evaluation.	Last two USTs removed in 1995

Notes:

1,1,1-TCA = 1,1,1-Trichloroethane
A = Asbestos-Containing Building Materials
CDF = Cyanide destruction facility
CTDEP = Connectictut Department of Environmental Protection
CWTP = Chemical Wastewater Treatment Plant
ECM = Electrochemical Machining
HR = Release or Disposal of Hazardous Substances
HS = Storage of Hazardous Substances
L = Lead-Based Paint
PMC = Soil Pollutant Mobility Criteria as defined in CTDEP RSRs
PR = Release or Disposal of Petroleum Products or Derivatives
PS = Storage of Petroleum Products or Derivatives
RA = Risk Assessment
RD = Radionuclides
RSR = CTDEP Remediation Standard Regulations
SWPC = Surface Water Protection Criteria defined in CTDEP RSRs
TPH = Total Petroleum Hydrocarbon
UST = Underground Storage Tank

(1929) to (1975) = refer to building construction dates
(P) = Probable

ENVIRONMENTAL DATABASE SEARCH RESULTS

The best source for your information!

Environmental Database, Inc. 1-800-982-4627 (303) 794-8389 1-800-615-0049 Fax

Property Location:

Stratford Army Engine Plant
550 Main Street
Stratford, CT 06479
Fairfield County

Report Prepared for:

Jim Buss
ABB Environmental Services, Inc.
110 Free Street
Portland, ME 04112

ASTM Plus report

Prepared By:
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Littleton, Colorado 80122
(800) 982-4627

DISCLAIMER

This report is in no way to be taken as a declaration of the legal status of any property herein mentioned. The information contained in this report has been gathered from government sources and every effort was made to search the latest data available to us at compilation time. While every reasonable attempt has been made to ensure the accuracy of the information contained herein; it is understood that we cannot guarantee the accuracy of the information from the original sources, nor can we guarantee that no transcription or plotting errors have occurred. For reports that contain maps, it is understood that the purpose of these maps is to give the user a "working approximation" of the positions of reported site locations. In no event will EDI be liable to anyone for damages of any kind.

Environmental Database, Inc.

EDI JOB #: 10241
Report Date: 10/21/95

DATABASE SUMMARY SHEET

DATABASE SEARCHED	RADIUS	ON SITE	IN AREA	ADVISE	LOC UNK	TOTAL	AGENCY UPDATE	LAST CONTACT
FEDERAL								
NPL	1 MILE					0	06/30/95	08/15/95
CERCLIS	½ MILE	1	5	1	2	9	06/30/95	08/15/95
SARA/TRIS	¼ MILE	1	1			2	12/31/92	05/09/95
ERNS	SITE	1				1	12/31/94	07/07/95
RCRA CORR. ACTION	1 MILE	1		1		2	05/31/95	09/12/95
RCRA TSD	1 MILE	1		1		2	05/31/95	09/12/95
RCRA LG/SM/GEN	600'	1	5		1	7	05/31/95	09/12/95
FINDS	SITE	3			1	4	03/31/95	08/25/95
FEDERAL/PLUS								
SETS/PRP	NAME	2		1		3	04/30/95	09/27/95
DOCKET	SITE	1				1	07/24/95	10/06/95
TSCA	SITE					0	05/14/86	03/23/94
PCB	SITE					0	10/02/93	01/20/94
FIFRA/SSTS	SITE					0	02/01/93	03/23/94
STATE								
SUPERFUND	1 MILE	1	7	1	3	12	04/04/94	07/31/95
CERCLIS	1 MILE					–		09/08/95
LANDFILLS	½ MILE	1	4	1	1	7	02/22/95	10/03/95
LEAKING USTs	½ MILE	19	4		2	25	06/30/95	08/21/95
REGISTERED USTs	600'	1	5		2	8	04/20/95	07/31/95

– See Comments Following Pa

MAP STATUS EXPLANATIONS AND COMMENTS

IN SEARCH AREA - SITE MAPPED
This represents a site which was mapped upon your request.

IN SEARCH AREA - SITE NOT MAPPED
This represents a site which was within your search area, but was not mapped upon your request.

LOCATION UNKNOWN - SITE NOT MAPPED
This represents a site which we were unable to exclude from your search area because of insufficient address/location information. We include these reports for your reference.

SITE SEARCH ONLY - SITE NOT MAPPED
This represents a site search, as per your request.

ZIP CODE SEARCH - SITE NOT MAPPED
This represents a zip code search, with no mapping of occurrences.

ADVISORY ONLY - SITE NOT MAPPED
This represents a site address which was found to be outside your search area, but which may encroach on your project area. We have included these reports for your reference.

COMMENTS:

-- State Cerclis Equivalent does not exist for this state.

-- Some locations are unclear in the databases; please advise if a corrected map/report is required.

MAP LEGEND

ENVIRONMENTAL SITE SYMBOLS

SITE FOR ENVIRONMENTAL DATA SEARCH

RCRA NOTIFIER FACILITY

FIFRA SECTION 7 SITE

NPL/SUPERFUND SITE

FINDS FACILITY

TSCA SITE

CERCLA SITE

AIR FACILITY

US COMMERCIAL NUCLEAR POWER REACTORS

SARA III/TRIS SITE (TOXIC RELEASE INVENTORY FACILITY)

PCS FACILITY

STATE SUPERFUND SITE

ERNS SITE (REPORTED HAZARDOUS MATERIAL SPILL)

AIR MONITORING FACILITY

STATE CERCLIS/CORTESE SITE

RCRA CORRECTIVE ACTION SITE

PCB/PADS FACILITY

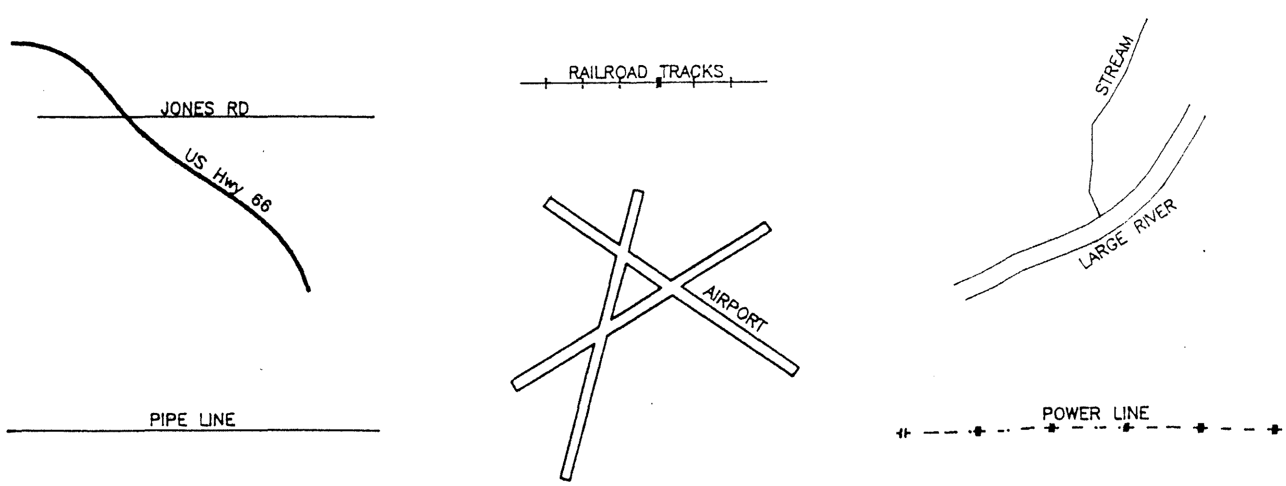
REPORTED LEAKING UNDERGROUND STORAGE TANK

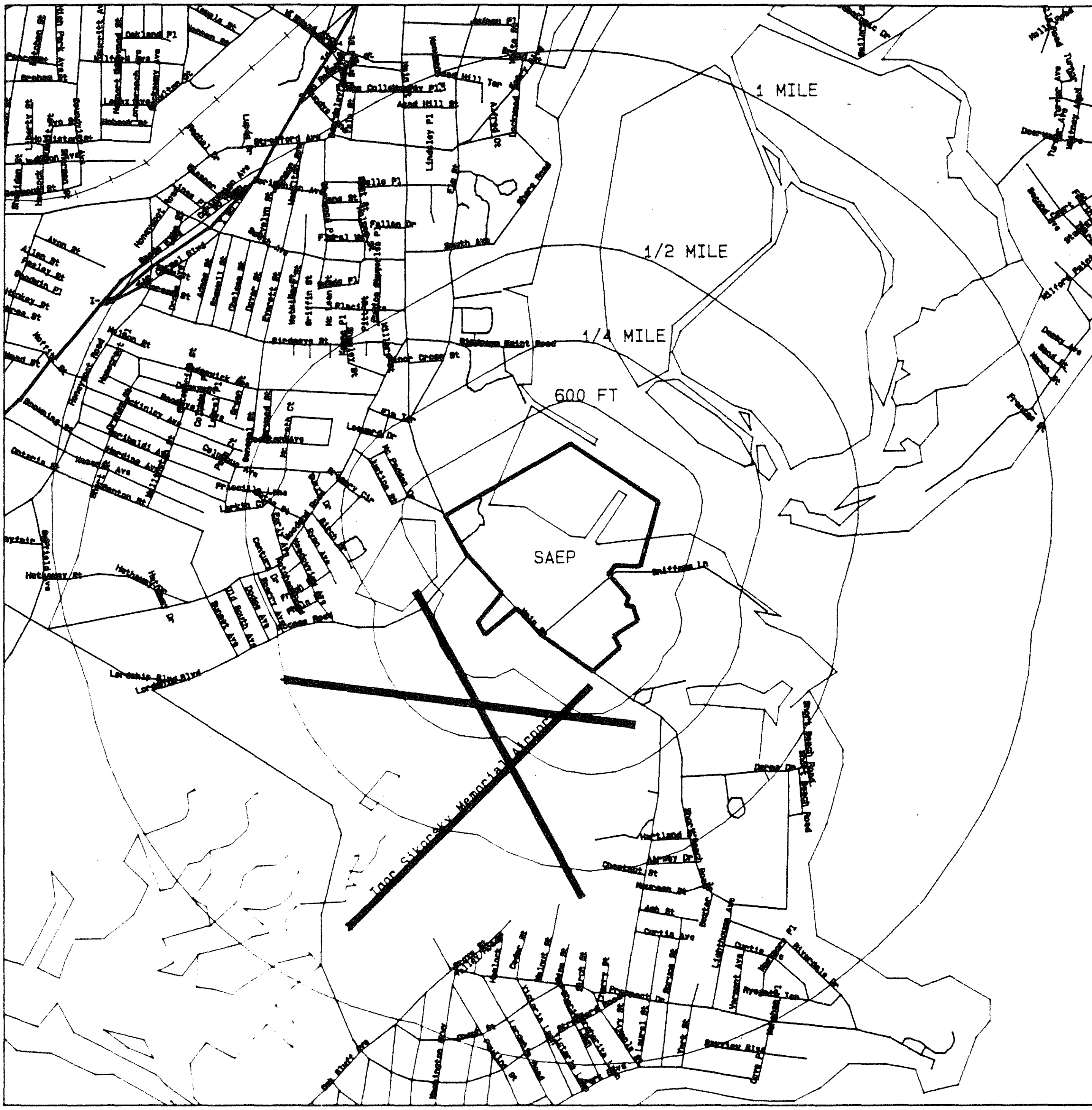
LANDFILL OR RCRA SUBTITLE D WASTE LANDFILL

FRDS SITE (PUBLIC DRINKING WATER FACILITY)

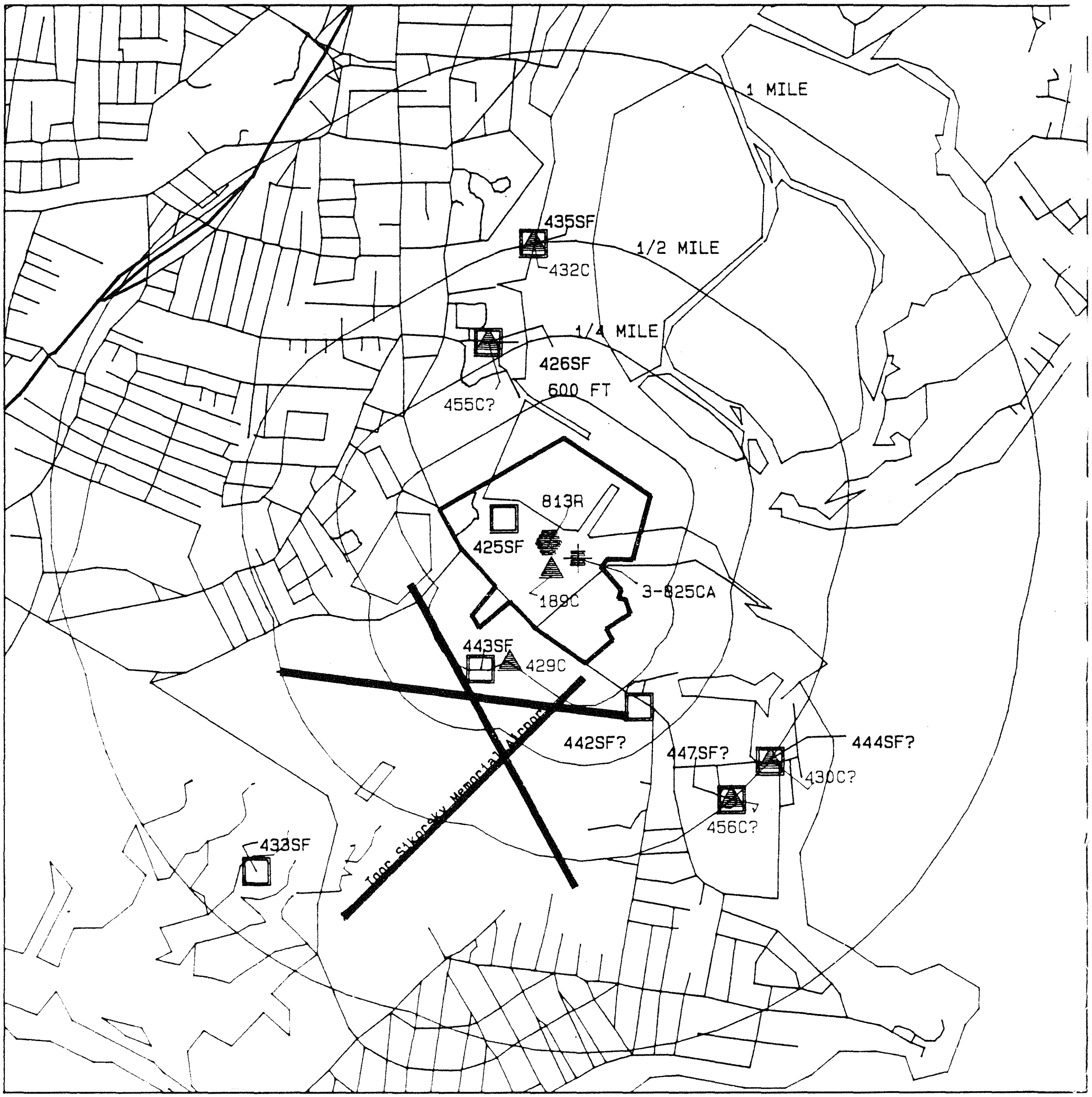
REGISTERED UNDERGROUND STORAGE TANK

CULTURAL FEATURES



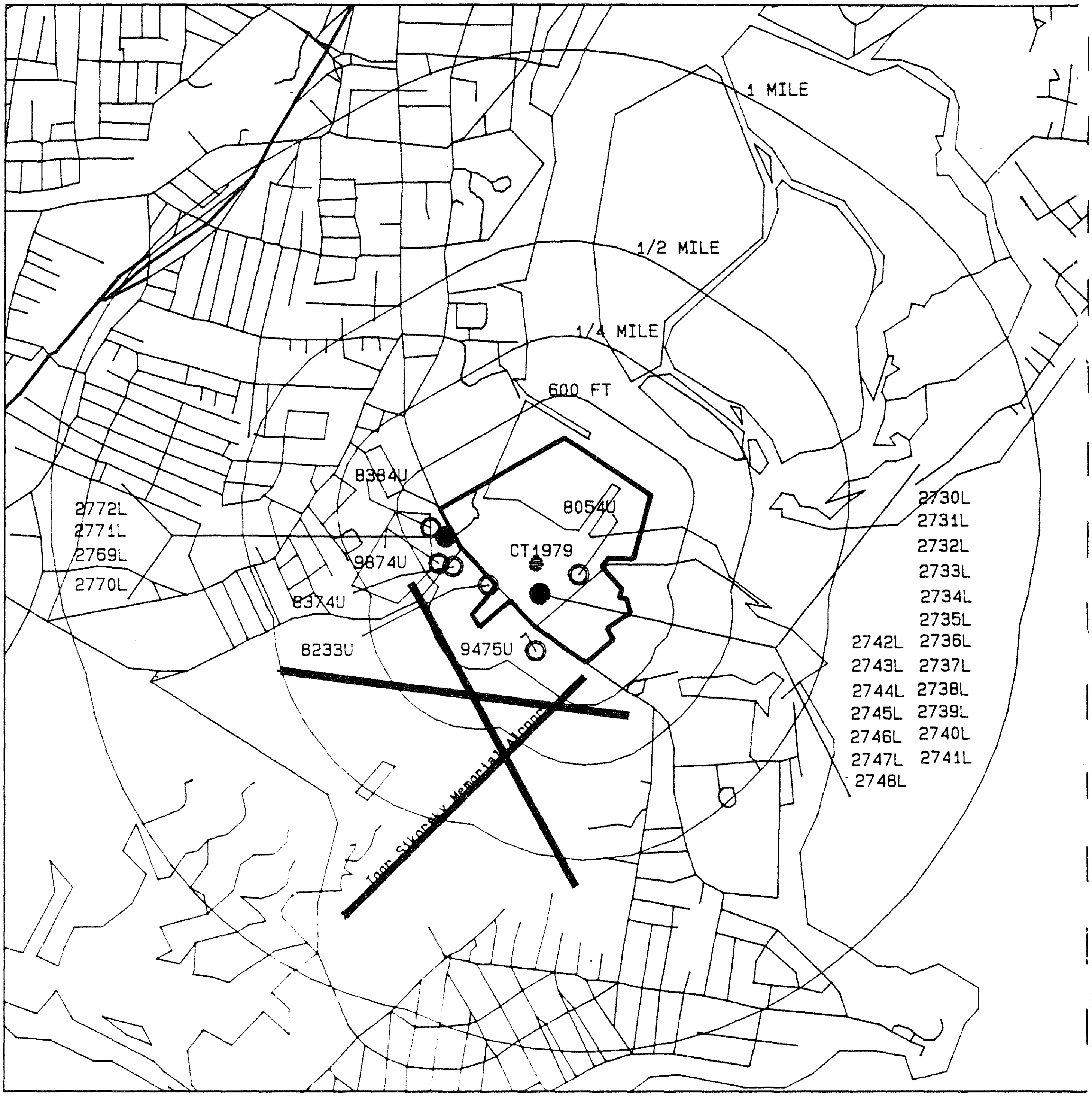


Stratford Army Engine Plant-Stratford, CT
Scale: 1"=2000'-Search Area Street Map



Stratford Army Engine Plant-Stratford, CT
Scale: 1"=2000'-ASTM Map 1 of 3

Stratford Army Engine Plant-Stratford, CT
Scale: 1"=2000'-ASTM Map 2 of 3



Stratford Army Engine Plant-Stratford, CT
Scale: 1"=2000'-ASTM Map 3 of 3

ENVIRONMENTAL DATABASE, INC.
FEDERAL & STATE DATABASE REFERENCE SHEET

FEDERAL INFORMATION SYSTEMS:

National Priorities List (NPL)
This is a record of CERCLA sites which are considered to pose an immediate threat to human health and the environment. This conclusion is reached by the EPA based on the Hazards Ranking Scoring System (HRS), which have scored a 28.5 or higher, and for which a remedial investigation and feasibility study will be performed.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
CERCLIS is the Superfund database which contains information on all aspects of hazardous waste sites from initial discovery to listing on the National Priorities List. Information includes an inventory of sites, planned and actual site activities and financial information.

Superfund Amendments and Reauthorization Act (SARA/TRIS)
The Toxic Release Inventory contains information from facilities on the amounts of over 300 listed toxic chemicals that the facilities release directly to air, water or land, or that are transported off-site. Included are facility data, substance identification, environmental chemical release, off-site waste transfer, and waste treatment/minimization information.

Emergency Response Notification System (ERNS)
ERNS tracks the initial notification of reported oil and hazardous waste spills. The database contains many types of information regarding releases of oil and hazardous substances, including the following: discharger information, date of release, material and amount released, incident location, response action taken, etc.

Resource Conservation and Recovery Act (RCRA)
RCRIS is the national system for tracking of events and activities related to facilities which generate, transport, and treat, store, or dispose of hazardous waste. This data set includes handler identification, permit application status, compliance monitoring and enforcement sensitive information.

RCRA "Corrective Action" (RACT) - Permitted facilities with corrective action case files
RCRA RAATS - Administrative Action Tracking Systems.

Facility Index System (FINDS)
FINDS is an inventory of information on facilities regulated/tracked by EPA programs. It was developed to support cross-media analyses as well as regulatory and enforcement actions by pointing to other EPA databases that regulate or track a facility. All facilities that have received an EPA ID number should be in the FINDS database.

National Compliance Data Base (TSCA/FIFRA)
Formerly FIFRA and TSCA Enforcement System (FATES), now information is housed on a regional level as the FIFRA TSCA Tracking System (FTTS), and Section Seven Tracking System (SSTS), described below. The NCDB tracks facility information, inspections, actions, cases, etc... This information is a compliance tracking database supporting the Toxic Substances Control Act.

Permit Compliance System (PCS)
PCS supports the National Pollution Discharge Elimination System under the Clean Water Act. Each permit record contains information which identifies and describes the facility, specifies the pollutant discharges limits, records the actual amounts of pollutants measured in wastewater discharges, and tracks compliance schedules and violations.

Federal Reporting Data System (FRDS)
This includes information on the Public Water Systems (PWS), including identification information, noncompliance related events, violations of the Safe Drinking Water Act (SDWA), enforcement actions, identification of significant non-compilers, and information on variances, exemptions, and waivers.

CIVIL ENFORCEMENT DOCKET

Case #: 01-89-0023 Case: AVCO CORPORATION, ET AL; EPA ID#: CT3213822924

Court #: N-90-174 WWE

Date Filed: 04/10/90
Date Concluded: 02/03/92

Facility: USARMY STRATFORD ARMY ENGINE P
550 S MAIN ST
STRATFORD, CT 06497

Result: **Consent instrument with penalty** $120,000 Penalty $0

Corresponding Laws: Clean Air Act Section 112

Violation: National Emisison Std-Hazardou

Pollutant: ASBESTOS

Defendant(s):

ASBESTOS ABATEMENT & INSULATION SERVICE
AVCO CORPORATION, TEXRON LYCOMING DIV.
DOLAN, THOMAS TRUSTEE
GILLON, SALLY TRUSTEE
LANG, STEPHEN TRUSTEE
LOGANO TRUCKING, INC
MATTES, LORENE TRUSTEE
TSIARAS, NANCY TRUSTEE
WILLIAM B MEYER RIGGING, INC.

The Civil Enforcement Docket tracks information on civil judicial enforcement cases for all environmental statutes.

POTENTIALLY RESPONSIBLE PARTY REPORT

PRP: AVCO LYCOMING DIVISION
Facility: SOLVENTS RECOVERY SERVICE OF NEW ENGLAND
550 SOUTH MAIN STREET
STRATFORD, CT 06497

Date: 61292
EPA ID Number: CTD009717604

Status: CURRENTLY ON THE FINAL NPL
Contact: JOHN MYERS
PRESIDENT

PRP: TEXTRON LYCOMING
Facility: SPECTRON, INC
550 S. MAIN STREET
STRATFORD, CT

Date: 71489
EPA ID Number: MDD000218008

Status: CURRENTLY ON THE FINAL NPL

PRP: AVCO LYCOMING DIVISION
Facility: KEEFE ENVIRONMENTAL SERVICES
1275 KING STREET
GREENWICH, CT 06830

Date: 82482
EPA ID Number: NHD092059112

Status: CURRENTLY ON THE FINAL NPL
Contact: ROBERT A. MACE
SENIOR COUNSEL

The Site Enforcement Tracking System (SETS) tracks individuals, businesses, municipalities, and other entities that have been identified as being potentially liable to fund or repay environmental cleanup costs.

CONNECTICUT
CERCLIS SITE REPORT

Map Status: AT SITE, MAPPED
Map Number: 189C

Facility:	STRATFORD ARMY ENGINE PLANT	EPA ID Number:	CTD001181502
Address:	550 SOUTH MAIN STREET	EPA Region:	01
	STRATFORD CT 06497	Longitude:	073°08' 00
County:	FAIRFIELD	Latitude:	41°12' 00
Federal Docket:	**SITE IS ON THE DOCKET**	Last Update:	010694

USGS Hydrological Unit:	01100005
Federal Facility Flag:	FEDERAL FACILITY
Ownership Indicator:	FEDERALLY OWNED
Facility Incident Category:	UNKNOWN - NOT GIVEN
Facility Classification:	UNDETERMINED
CERCLIS Status:	REMOVED BY EPA ON 2/95 NFRAP SITE
RCRA Flag:	RCRA FACILITY

Facility Description:
EDI STATUS: REMOVED BY EPA ON 2/95 NFRAP SITE
NPL Status: **THE SITE IS NOT AND NEVER HAS BEEN ON THE PROPOSED AND/OR FINAL NPL**

EPA Events That Have Taken Place At The Facility

EVENT	**LEAD**	**DATE**	**FURTHER ACTION**
DISCOVERY	EPA FUND-FINANCED	101188	
PRELIMINARY ASSESSMENT	EPA FUND-FINANCED	030990	
SCREENING SITE INSPECTION	EPA FUND-FINANCED	030990	NO FURTHER REMEDIAL ACTION PLANNED

CONNECTICUT
CERCLIS SITE REPORT

Map Status: IN SEARCH AREA - SITE MAPPED
Map Number: **429C**

Facility: SIKORSKY MEMORIAL ARPT
Address: MAIN ST
STRATFORD CT 06497
County: FAIRFIELD

EPA ID Number: CTD980520332
EPA Region: 01
Longitude: 073°08' 00
Latitude: 41°12' 00

Federal Docket: **SITE IS NOT ON THE DOCKET**
Last Update:

USGS Hydrological Unit:	1100005
Federal Facility Flag:	IS NOT A FEDERAL FACILITY
Ownership Indicator:	OTHER
Facility Incident Category:	UNKNOWN - NOT GIVEN
Facility Classification:	UNKNOWN - NOT GIVEN
CERCLIS Status:	
RCRA Flag:	UNKNOWN - NOT GIVEN

Facility Description:
NPL Status: **THE SITE IS NOT AND NEVER HAS BEEN ON THE PROPOSED AND/OR FINAL NPL**

EPA Events That Have Taken Place At The Facility

EVENT	**LEAD**	**DATE**	**FURTHER ACTION**
DISCOVERY	EPA FUND-FINANCED	06011981	
PRELIMINARY ASSESSMENT	STATE FUND FINANCED	05241985	LOWER PRIORITY
SCREENING SITE INSPECTION	EPA FUND-FINANCED	03221990	NO FURTHER REMEDIAL ACTION PLANNED

CONNECTICUT
CERCLIS SITE REPORT

Map Status: IN SEARCH AREA - SITE MAPPED
Map Number: **430C**

Facility:	SHORT BEACH PARK AREA	EPA ID Number:	CTD980520340
Address:	DORNE DR	EPA Region:	01
	STRATFORD CT 06497	Longitude:	073°06' 45
County:	FAIRFIELD	Latitude:	41°09' 42
Federal Docket:	**SITE IS NOT ON THE DOCKET**	Last Update:	

USGS Hydrological Unit:	1100005
Federal Facility Flag:	IS NOT A FEDERAL FACILITY
Ownership Indicator:	OTHER
Facility Incident Category:	UNKNOWN - NOT GIVEN
Facility Classification:	UNKNOWN - NOT GIVEN
CERCLIS Status:	
RCRA Flag:	UNKNOWN - NOT GIVEN

Facility Description:
NPL Status: **THE SITE IS NOT AND NEVER HAS BEEN ON THE PROPOSED AND/OR FINAL NPL**

EPA Events That Have Taken Place At The Facility

EVENT	**LEAD**	**DATE**	**FURTHER ACTION**
DISCOVERY	EPA FUND-FINANCED	06011981	
PRELIMINARY ASSESSMENT	STATE FUND FINANCED	04011983	LOWER PRIORITY
SCREENING SITE INSPECTION	EPA FUND-FINANCED	01241991	NO FURTHER REMEDIAL ACTION PLANNED

CONNECTICUT
CERCLIS SITE REPORT

Map Status: IN SEARCH AREA - SITE MAPPED
Map Number: **432C**

Facility:	HOUSATONIC BOAT CLUB	EPA ID Number:	CTD980520365
Address:	SHORE RD	EPA Region:	01
	STRATFORD CT 06497	Longitude:	073°07' 25
County:	FAIRFIELD	Latitude:	41°11' 40
Federal Docket:	**SITE IS NOT ON THE DOCKET**	Last Update:	

USGS Hydrological Unit:	1100005
Federal Facility Flag:	IS NOT A FEDERAL FACILITY
Ownership Indicator:	OTHER
Facility Incident Category:	UNKNOWN - NOT GIVEN
Facility Classification:	UNKNOWN - NOT GIVEN
CERCLIS Status:	
RCRA Flag:	UNKNOWN - NOT GIVEN

Facility Description:
NPL Status: **THE SITE IS NOT AND NEVER HAS BEEN ON THE PROPOSED AND/OR FINAL NPL**

EPA Events That Have Taken Place At The Facility

EVENT	**LEAD**	**DATE**	**FURTHER ACTION**
DISCOVERY	EPA FUND-FINANCED	06011981	
PRELIMINARY ASSESSMENT	EPA FUND-FINANCED	04011983	LOWER PRIORITY
SCREENING SITE INSPECTION	EPA FUND-FINANCED	03221990	SITE IS PART OF NPL SITE

CONNECTICUT
CERCLIS SITE REPORT

Map Status: IN SEARCH AREA - SITE MAPPED
Map Number: **455C**

Facility:	BEACON PT LANDFILL	EPA ID Number:	CTD980523104
Address:	BEACON PT RD	EPA Region:	01
	STRATFORD CT 06497	Longitude:	073°08' 00
County:	FAIRFIELD	Latitude:	41°12' 00
Federal Docket:	**SITE IS NOT ON THE DOCKET**	Last Update:	

USGS Hydrological Unit:	1100005
Federal Facility Flag:	IS NOT A FEDERAL FACILITY
Ownership Indicator:	OTHER
Facility Incident Category:	UNKNOWN - NOT GIVEN
Facility Classification:	UNKNOWN - NOT GIVEN
CERCLIS Status:	
RCRA Flag:	UNKNOWN - NOT GIVEN

Facility Description:
NPL Status: **THE SITE IS NOT AND NEVER HAS BEEN ON THE PROPOSED AND/OR FINAL NPL**

EPA Events That Have Taken Place At The Facility

EVENT	**LEAD**	**DATE**	**FURTHER ACTION**
DISCOVERY	EPA FUND-FINANCED	06011981	
PRELIMINARY ASSESSMENT	STATE FUND FINANCED	08071985	LOWER PRIORITY
SCREENING SITE INSPECTION	EPA FUND-FINANCED	03221990	NO FURTHER REMEDIAL ACTION PLANNED

CONNECTICUT
CERCLIS SITE REPORT

Map Status: IN SEARCH AREA - SITE MAPPED
Map Number: **456C**

Facility:	STRATFORD LANDFILL AREA	EPA ID Number:	CTD980523112
Address:	SHORT BEACH RD	EPA Region:	01
	STRATFORD CT 06497	Longitude:	073°08' 00
County:	FAIRFIELD	Latitude:	41°12' 00
Federal Docket:	**SITE IS NOT ON THE DOCKET**	Last Update:	

USGS Hydrological Unit:	1100005
Federal Facility Flag:	IS NOT A FEDERAL FACILITY
Ownership Indicator:	OTHER
Facility Incident Category:	UNKNOWN - NOT GIVEN
Facility Classification:	UNKNOWN - NOT GIVEN
CERCLIS Status:	
RCRA Flag:	UNKNOWN - NOT GIVEN

Facility Description:
NPL Status: **THE SITE IS NOT AND NEVER HAS BEEN ON THE PROPOSED AND/OR FINAL NPL**

EPA Events That Have Taken Place At The Facility

EVENT	**LEAD**	**DATE**	**FURTHER ACTION**
DISCOVERY	EPA FUND-FINANCED	01011981	
PRELIMINARY ASSESSMENT	STATE FUND FINANCED	05241985	LOWER PRIORITY
SCREENING SITE INSPECTION	EPA FUND-FINANCED	05221990	NO FURTHER REMEDIAL ACTION PLANNED

CONNECTICUT
CERCLIS SITE REPORT

Map Status: LOCATION UNKNOWN - SITE NOT MAPPED
Map Number: 503C

Facility:	RYKAR CORP	EPA ID Number:	CTD981069271
Address:	GUAT MEADOWS	EPA Region:	01
	STRATFORD CT 06497	Longitude:	073°08' 00
County:	FAIRFIELD	Latitude:	41°12' 00
Federal Docket:	**SITE IS NOT ON THE DOCKET**	Last Update:	111092

USGS Hydrological Unit:	01100005
Federal Facility Flag:	IS NOT A FEDERAL FACILITY
Ownership Indicator:	OTHER
Facility Incident Category:	UNKNOWN - NOT GIVEN
Facility Classification:	UNDETERMINED
CERCLIS Status:	REMOVED BY EPA ON 2/95 NFRAP SITE
RCRA Flag:	UNKNOWN - NOT GIVEN

Facility Description:
EDI STATUS: REMOVED BY EPA ON 2/95 NFRAP SITE
NPL Status: **THE SITE IS NOT AND NEVER HAS BEEN ON THE PROPOSED AND/OR FINAL NPL**

EPA Events That Have Taken Place At The Facility

EVENT	**LEAD**	**DATE**	**FURTHER ACTION**
DISCOVERY	STATE FUND FINANCED	071285	
PRELIMINARY ASSESSMENT	STATE FUND FINANCED	082286	
SCREENING SITE INSPECTION	EPA FUND-FINANCED	032290	NO FURTHER REMEDIAL ACTION PLANNED

CONNECTICUT
CERCLIS SITE REPORT

Map Status: ADVISORY ONLY - SITE NOT MAPPED
Map Number: 505C

Facility:	STRATFORD INDUSTRIAL PARK	EPA ID Number:	CTD981069297
Address:	LORDSHIP BLVD	EPA Region:	01
	STRATFORD CT 06497	Longitude:	073°08' 00
County:	FAIRFIELD	Latitude:	41°12' 00
Federal Docket:	**SITE IS NOT ON THE DOCKET**	Last Update:	

USGS Hydrological Unit:	1100005
Federal Facility Flag:	IS NOT A FEDERAL FACILITY
Ownership Indicator:	OTHER
Facility Incident Category:	UNKNOWN - NOT GIVEN
Facility Classification:	UNKNOWN - NOT GIVEN
CERCLIS Status:	
RCRA Flag:	UNKNOWN - NOT GIVEN

Facility Description:
NPL Status: **THE SITE IS NOT AND NEVER HAS BEEN ON THE PROPOSED AND/OR FINAL NPL**

EPA Events That Have Taken Place At The Facility

EVENT	**LEAD**	**DATE**	**FURTHER ACTION**
DISCOVERY	STATE FUND FINANCED	07121985	
PRELIMINARY ASSESSMENT	STATE FUND FINANCED	08221986	LOWER PRIORITY
SCREENING SITE INSPECTION	EPA FUND-FINANCED	03221990	SITE IS PART OF NPL SITE

CONNECTICUT
CERCLIS SITE REPORT

Map Status: LOCATION UNKNOWN - SITE NOT MAPPED
Map Number: **724C**

Facility:	STRATFORD ASBESTOS SITE	EPA ID Number:	CTD983903717
Address:	TOWN OF STRATFORD	EPA Region:	01
	STRATFORD CT 06497	Longitude:	073°08' 00
County:	FAIRFIELD	Latitude:	41°12' 00
Federal Docket:	**SITE IS NOT ON THE DOCKET**	Last Update:	

USGS Hydrological Unit:	1100005
Federal Facility Flag:	IS NOT A FEDERAL FACILITY
Ownership Indicator:	MIXED OWNERSHIP
Facility Incident Category:	CITY CONTAMINATION
Facility Classification:	UNKNOWN - NOT GIVEN
CERCLIS Status:	
RCRA Flag:	UNKNOWN - NOT GIVEN

Facility Description: LEAD, PCB AND ASBESTOS CONTAMINATED SLUDGE FROM RAYMARK WAS DEPOSITED AROUND THE CITY OF STRATFORD.

NPL Status: **THE SITE IS NOT AND NEVER HAS BEEN ON THE PROPOSED AND/OR FINAL NPL**

EPA Events That Have Taken Place At The Facility

EVENT	**LEAD**	**DATE**	**FURTHER ACTION**
ADMINISTRATIVE RECORD	EPA FUND-FINANCED		ADMIM RECORD COMPILATION/REMOVA L EV
REMOVAL ACTION	EPA FUND-FINANCED		STABILIZATION

CONNECTICUT
SARA III TOXIC RELEASE INVENTORY - FACILITY REPORT

Map Status: AT SITE, MAPPED
Map Number: **444T**

Facility:	TEXTRON LYCOMING STRATFORD ARMY ENG	EPA ID:	CTD001181502
Address:	550 MAIN ST.	TRIS ID Number:	06497TXTRN550MA
	STRATFORD CT 064977554	NPDES ID Number:	CT0002984
County:	FAIRFIELD	DUNS ID Number:	001338979
		SIC Code:	3724
Latitude:	04° 11' 01 Longitude: 073° 07' 0	INJECTION CODE:	

Parent Company: TEXTRON INC.
Contact: WILLIAM MCDANIEL (203)385-1581

Chemical Release Summary From Facility

1987 1,1,1-TRICHLOROETHANE

Release Amounts:	Sum Air:	561000	Sum Land:	0
(In Pounds/Year)	Sum Water:	0	Sum POTW:	0
	Off-Site:	7800		

1987 AMMONIA

Release Amounts:	Sum Air:	500	Sum Land:	0
(In Pounds/Year)	Sum Water:	0	Sum POTW:	0
	Off-Site:	0		

1987 CHROMIUM

Release Amounts:	Sum Air:	0	Sum Land:	0
(In Pounds/Year)	Sum Water:	0	Sum POTW:	0
	Off-Site:	0		

1987 CHROMIUM COMPOUNDS

Release Amounts:	Sum Air:	250	Sum Land:	750
(In Pounds/Year)	Sum Water:	250	Sum POTW:	0
	Off-Site:	600000		

1987 COBALT

Release Amounts:	Sum Air:	0	Sum Land:	0
(In Pounds/Year)	Sum Water:	0	Sum POTW:	0
	Off-Site:	0		

1987 FREON 113

Release Amounts:	Sum Air:	15000	Sum Land:	0
(In Pounds/Year)	Sum Water:	0	Sum POTW:	0
	Off-Site:	250		

1987 HYDROCHLORIC ACID

Release Amounts:	Sum Air:	500	Sum Land:	0
(In Pounds/Year)	Sum Water:	0	Sum POTW:	0
	Off-Site:	0		

1987 METHANOL

Release Amounts:	Sum Air:	250	Sum Land:	0
(In Pounds/Year)	Sum Water:	0	Sum POTW:	0
	Off-Site:	0		

1987 NICKEL

Release Amounts:	Sum Air:	0	Sum Land:	0
(In Pounds/Year)	Sum Water:	0	Sum POTW:	0
	Off-Site:	0		

1987 NITRIC ACID

Release Amounts:	Sum Air:	500	Sum Land:	0
(In Pounds/Year)	Sum Water:	0	Sum POTW:	0
	Off-Site:	0		

1987 SULFURIC ACID

Release Amounts:	Sum Air:	0	Sum Land:	0
(In Pounds/Year)	Sum Water:	0	Sum POTW:	0
	Off-Site:	0		

DCN: 1388025654512CT
1988 1,1,1-TRICHLOROETHANE

Release Amounts:	Sum Air:	961767	Sum Land:	0
(In Pounds/Year)	Sum Water:	250	Sum POTW:	0
	Off-Site:	250		

DCN: 1388025654548CT
1988 ACETONE

Release Amounts:	Sum Air:	250	Sum Land:	0
(In Pounds/Year)	Sum Water:	0	Sum POTW:	0
	Off-Site:	750		

DCN: 1388025654601CT
1988 AMMONIA

Release Amounts:	Sum Air:	500	Sum Land:	0
(In Pounds/Year)	Sum Water:	0	Sum POTW:	0
	Off-Site:	0		

DCN: 1388025654524CT
1988 CHROMIUM COMPOUNDS

Release Amounts:	Sum Air:	250	Sum Land:	0
(In Pounds/Year)	Sum Water:	250	Sum POTW:	0
	Off-Site:	15250		

DCN: 1388025654613CT
1988 FREON 113

Release Amounts:	Sum Air:	12000	Sum Land:	0
(In Pounds/Year)	Sum Water:	0	Sum POTW:	0
	Off-Site:	250		

CONNECTICUT
SARA III TOXIC RELEASE INVENTORY - FACILITY REPORT

DCN: 1388025654575CT
1988 METHANOL

Release Amounts:	Sum Air:	250	Sum Land:	0
(In Pounds/Year)	Sum Water:	0	Sum POTW:	0
	Off-Site:	0		

DCN: 1388025654563CT
1988 NITRIC ACID

Release Amounts:	Sum Air:	500	Sum Land:	0
(In Pounds/Year)	Sum Water:	0	Sum POTW:	0
	Off-Site:	0		

DCN: 1388025654551CT
1988 SODIUM HYDROXIDE (SOLUTI

Release Amounts:	Sum Air:	0	Sum Land:	0
(In Pounds/Year)	Sum Water:	0	Sum POTW:	0
	Off-Site:	0		

DCN: 1389035472935CT
1989 1,1,1-TRICHLOROETHANE

Release Amounts:	Sum Air:	529733	Sum Land:	0
(In Pounds/Year)	Sum Water:	250	Sum POTW:	0
	Off-Site:	1250		

DCN: 1389035472923CT
1989 AMMONIA

Release Amounts:	Sum Air:	500	Sum Land:	0
(In Pounds/Year)	Sum Water:	0	Sum POTW:	0
	Off-Site:	0		

DCN: 1389035472962CT
1989 CHROMIUM COMPOUNDS

Release Amounts:	Sum Air:	250	Sum Land:	0
(In Pounds/Year)	Sum Water:	250	Sum POTW:	0
	Off-Site:	7600		

DCN: 1389035472986CT
1989 FREON 113

Release Amounts:	Sum Air:	7400	Sum Land:	0
(In Pounds/Year)	Sum Water:	0	Sum POTW:	0
	Off-Site:	3577		

DCN: 1389035472911CT
1989 HYDROCHLORIC ACID

Release Amounts:	Sum Air:	500	Sum Land:	0
(In Pounds/Year)	Sum Water:	0	Sum POTW:	0
	Off-Site:	0		

DCN: 1389035472947CT
1989 METHANOL

Release Amounts:	Sum Air:	250	Sum Land:	0
(In Pounds/Year)	Sum Water:	0	Sum POTW:	0
	Off-Site:	0		

DCN: 1389035472950CT
1989 NITRIC ACID

Release Amounts:	Sum Air:	500	Sum Land:	0
(In Pounds/Year)	Sum Water:	0	Sum POTW:	0
	Off-Site:	0		

DCN: 1390045429154CT
1990 1,1,1-TRICHLOROETHANE 000071556

Release Amounts:	Sum Air:	390000	Sum Land:	0
(In Pounds/Year)	Sum Water:	790	Sum POTW:	0
	Off-Site:	42760		

MAXIMUM AMOUNT ON-SITE: 10,000 TO 99,999

DCN: 1390045429115CT
1990 AMMONIA 007664417

Release Amounts:	Sum Air:	1	Sum Land:	0
(In Pounds/Year)	Sum Water:	0	Sum POTW:	0
	Off-Site:	0		

MAXIMUM AMOUNT ON-SITE: 10,000 TO 99,999

DCN: 1390045429139CT
1990 CHROMIUM 007440473

Release Amounts:	Sum Air:	0	Sum Land:	0
(In Pounds/Year)	Sum Water:	0	Sum POTW:	0
	Off-Site:	0		

MAXIMUM AMOUNT ON-SITE: 1,000,000 TO 9,999,999

DCN: 1390045429103CT
1990 COBALT 007440484

Release Amounts:	Sum Air:	0	Sum Land:	0
(In Pounds/Year)	Sum Water:	0	Sum POTW:	0
	Off-Site:	0		

MAXIMUM AMOUNT ON-SITE: 10,000 TO 99,999

DCN: 1390045429089CT
1990 HYDROCHLORIC ACID 007647010

Release Amounts:	Sum Air:	1	Sum Land:	0
(In Pounds/Year)	Sum Water:	0	Sum POTW:	0
	Off-Site:	0		

MAXIMUM AMOUNT ON-SITE: 1,000 TO 9,999

DCN: 1390045429141CT
1990 METHANOL 000067561

Release Amounts:	Sum Air:	1	Sum Land:	0
(In Pounds/Year)	Sum Water:	0	Sum POTW:	0
	Off-Site:	0		

MAXIMUM AMOUNT ON-SITE: 10,000 TO 99,999

CONNECTICUT
SARA III TOXIC RELEASE INVENTORY - FACILITY REPORT

DCN: 1390045429127CT
1990 NICKEL 007440020

Release Amounts:	Sum Air:	0	Sum Land:	0
(In Pounds/Year)	Sum Water:	0	Sum POTW:	0
	Off-Site:	0		

MAXIMUM AMOUNT ON-SITE: 1,000,000 TO 9,999,999

DCN: 1390045429091CT
1990 SULFURIC ACID 007664939

Release Amounts:	Sum Air:	0	Sum Land:	0
(In Pounds/Year)	Sum Water:	0	Sum POTW:	0
	Off-Site:	0		

MAXIMUM AMOUNT ON-SITE: 1,000 TO 9,999

DCN: 1391055307615CT
1991 1,1,1-TRICHLOROETHANE 000071556

Release Amounts:	Sum Air:		Sum Land:	
(In Pounds/Year)	Sum Water:	340	Sum POTW:	
	Off-Site:	500		

MAXIMUM AMOUNT ON-SITE: 10,000 TO 99,999

DCN: 1391055307666CT
1991 CHROMIUM 007440473

Release Amounts:	Sum Air:		Sum Land:	
(In Pounds/Year)	Sum Water:		Sum POTW:	
	Off-Site:	90000		

MAXIMUM AMOUNT ON-SITE: 100,000 TO 999,999

DCN: 1391055307627CT
1991 COBALT 007440484

Release Amounts:	Sum Air:		Sum Land:	
(In Pounds/Year)	Sum Water:		Sum POTW:	
	Off-Site:	1300		

MAXIMUM AMOUNT ON-SITE: 10,000 TO 99,999

DCN: 1391055307639CT
1991 HYDROCHLORIC ACID 007647010

Release Amounts:	Sum Air:		Sum Land:	
(In Pounds/Year)	Sum Water:	0	Sum POTW:	
	Off-Site:			

MAXIMUM AMOUNT ON-SITE: 1,000 TO 9,999

DCN: 1391055307641CT
1991 METHANOL 000067561

Release Amounts:	Sum Air:		Sum Land:	
(In Pounds/Year)	Sum Water:		Sum POTW:	
	Off-Site:			

MAXIMUM AMOUNT ON-SITE: 1,000 TO 9,999

DCN: 1391055307678CT
1991 NICKEL 007440020

Release Amounts:	Sum Air:		Sum Land:	
(In Pounds/Year)	Sum Water:		Sum POTW:	
	Off-Site:	270000		
MAXIMUM AMOUNT ON-SITE:		100,000 TO 999,999		

DCN: 1391055307654CT
1991 SULFURIC ACID 007664939

Release Amounts:	Sum Air:		Sum Land:	
(In Pounds/Year)	Sum Water:	0	Sum POTW:	
	Off-Site:			
MAXIMUM AMOUNT ON-SITE:		10,000 TO 99,999		

DCN: 1392065225359CT
1992 1,1,1-TRICHLOROETHANE 000071556

Release Amounts:	Sum Air:		Sum Land:	
(In Pounds/Year)	Sum Water:	5	Sum POTW:	
	Off-Site:	65000		
MAXIMUM AMOUNT ON-SITE:		10,000 TO 99,999		

DCN: 1392065225361CT
1992 AMMONIA 007664417

Release Amounts:	Sum Air:	1	Sum Land:	
(In Pounds/Year)	Sum Water:		Sum POTW:	
	Off-Site:			
MAXIMUM AMOUNT ON-SITE:		10,000 TO 99,999		

DCN: 1392065225409CT
1992 CHROMIUM 007440473

Release Amounts:	Sum Air:		Sum Land:	
(In Pounds/Year)	Sum Water:		Sum POTW:	
	Off-Site:	160000		
MAXIMUM AMOUNT ON-SITE:		100,000 TO 999,999		

DCN: 1392065225435CT
1992 COBALT 007440484

Release Amounts:	Sum Air:		Sum Land:	
(In Pounds/Year)	Sum Water:		Sum POTW:	
	Off-Site:	400		
MAXIMUM AMOUNT ON-SITE:		0 TO 99		

DCN: 1392065225385CT
1992 HYDROCHLORIC ACID 007647010

Release Amounts:	Sum Air:		Sum Land:	
(In Pounds/Year)	Sum Water:		Sum POTW:	
	Off-Site:	160		
MAXIMUM AMOUNT ON-SITE:		100 TO 999		

CONNECTICUT
SARA III TOXIC RELEASE INVENTORY - FACILITY REPORT

DCN: 1392065225411CT
1992 METHANOL 000067561

Release Amounts:	Sum Air:		Sum Land:	
(In Pounds/Year)	Sum Water:		Sum POTW:	
	Off-Site:			

MAXIMUM AMOUNT ON-SITE: 1,000 TO 9,999

DCN: 1392065225423CT
1992 NICKEL 007440020

Release Amounts:	Sum Air:		Sum Land:	
(In Pounds/Year)	Sum Water:		Sum POTW:	
	Off-Site:	460000		

MAXIMUM AMOUNT ON-SITE: 10,000 TO 99,999

DCN: 1392065225397CT
1992 NITRIC ACID 007697372

Release Amounts:	Sum Air:		Sum Land:	
(In Pounds/Year)	Sum Water:		Sum POTW:	
	Off-Site:	91		

MAXIMUM AMOUNT ON-SITE: 1,000 TO 9,999

DCN: 1392065225373CT
1992 SULFURIC ACID 007664939

Release Amounts:	Sum Air:	0	Sum Land:	
(In Pounds/Year)	Sum Water:		Sum POTW:	
	Off-Site:	740		

MAXIMUM AMOUNT ON-SITE: 10,000 TO 99,999

CONNECTICUT
SARA III TOXIC RELEASE INVENTORY - FACILITY REPORT

Map Status: IN SEARCH AREA - SITE MAPPED
Map Number: 593T

Facility:	CHARTER ARMS CORP.	EPA ID:	
Address:	430 SNIFFENS LN	TRIS ID Number:	06497CHRTR430SN
	STRATFORD 06497	NPDES ID Number:	
County:	FAIRFIELD	DUNS ID Number:	
		SIC Code:	3484
Latitude: ° '	Longitude: ° '	INJECTION CODE:	

Parent Company:
Contact: ( ) -

Chemical Release Summary From Facility

1987 1,1,1-TRICHLOROETHANE

Release Amounts:	Sum Air:	750	Sum Land:	0
(In Pounds/Year)	Sum Water:	0	Sum POTW:	0
	Off-Site:	0		

CONNECTICUT
EMERGENCY RESPONSE NOTIFICATION SYSTEM

Map Status: AT SITE, MAPPED
Map Number: **CT1979**

ID Number:	000345961	**Spill Date:**	11/02/1993
Case Number:	206041	**Report Date:**	11/02/1993

Discharger: TEXTRON LYCOMING
550 MAIN ST
STRATFORD, CT 06497
Phone: 203-385-2000

Waterway Affected by Release	**Threats**	**Medium Impacted**
ATMOSPHERE		AIR

Spill City: STRATFORD 06497
Spill County: FAIRFIELD

Spill Location
550 MAIN ST

Material Spilled	**Quantity Spilled**	**Qty Spilled in Water**
CHROMIC ACID	00000000.00 UNK	0000000.00 NON

Spill Description
HOLDING TANK / TANK RUPTURED WHEN A SEAM FAILED ON THE TANK

Action
FLUSHING MAT'L TO WASTE WATER FACILITY

CONNECTICUT
RCRA CORRECTIVE ACTION REPORT

Map Status: AT SITE, MAPPED Map Number: **3-825CA**	
Facility: TEXTRON LYCOMING Address: 550 S MAIN ST STRATFORD, 06497 County: FAIRFIELD Contact: AVZO LYCOMING TEXTRON 2033853964	EPA ID Number: CTD001181502
Facility Type: LARGE QUANTITY UNVERIFIED TREATMENT/STORAGE/DISPOSAL	

Corrective Action and Dates

CONNECTICUT
RCRA CORRECTIVE ACTION REPORT

Map Status: ADVISORY ONLY - SITE NOT MAPPED
Map Number: **791CA5**

Facility: SYNTHETIC PROD CO DIV OF COOKS — EPA ID Number: CTD001179688
Address: 1525 STRATFORD AVE
STRATFORD, 06497
County: FAIRFIELD

Contact: DR. IRVING MARSH 2033775550

Facility Type: LARGE QUANTITY
UNVERIFIED
TREATMENT/STORAGE/DISPOSAL

Corrective Action and Dates

CONNECTICUT
RCRA NOTIFIER FACILITY REPORT

Map Status: IN SEARCH AREA - SITE MAPPED
Map Number: 1041R

Facility:	CHARTER ARMS CHARCO	EPA ID Number:	CTD001839794
Address:	430 SNIFFENS LN	EPA Region:	01
	STRATFORD CT 06497	Longitude:	° '
County:	FAIRFIELD	Latitude:	° '
Owner:	ECKER DAVID N (203)555-1212		
Contact:	ROBERT-J MAILLOUX (203)377-8080		

RCRA Facility Designations

Generator Type: LARGE QUANTITY
Transporter Type: UNVERIFIED

RCRA ADMINISTRATIVE ACTION TRACKING SYSTEM

ENF ID	Date	Agency	Enforcement Type
850219002	02191985	STATE	3008(a) COMPLIANCE ORDER (FORMAL ACTION)

ID Number	Date	Compliance Evaluation Type
841017001	101784	COMPLIANCE EVALUATION INSPECTION

ID Number	Violation Area
841017001	GENERATOR-ALL REQUIREMENTS

Compliance Evaluation Area	Violation Class	Date In Cor
GENERATOR-ALL REQUIREMENTS	1	091694

CONNECTICUT
RCRA NOTIFIER FACILITY REPORT

Map Status: LOCATION UNKNOWN - SITE NOT MAPPED
Map Number: **1655R**

Facility:	RESPONSE GRAPHICS DIV MOORE CORP	EPA ID Number:	CTD042282244
Address:	SNIFFEN LN	EPA Region:	01
	STRATFORD CT 06497	Longitude:	° '
County:	FAIRFIELD	Latitude:	° '
Owner:	OPERNAME (203)555-1212		
Contact:	ENVR ENGINEER (203)555-1212		

RCRA Facility Designations

Generator Type: SMALL QUANTITY
Transporter Type: UNVERIFIED

CONNECTICUT
RCRA NOTIFIER FACILITY REPORT

Map Status: AT SITE, MAPPED
Map Number: **2962R**

Facility:	TEXTRON LYCOMING	EPA ID Number:	CTD980524037
Address:	550 MAIN ST	EPA Region:	01
	STRATFORD CT 06497	Longitude:	° '
County:	FAIRFIELD	Latitude:	° '
Owner:	OPERNAME (203)555-1212		
Contact:	THOMAS-A ELIJICH (203)877-4295		

RCRA Facility Designations

Generator Type: LARGE QUANTITY
Transporter Type: UNVERIFIED

Generator Status: NEVER GENERATED HAZARDOUS WAST **Unregulated RCRA Status**

CONNECTICUT
RCRA NOTIFIER FACILITY REPORT

Map Status: IN SEARCH AREA - SITE MAPPED
Map Number: 3528R

Facility: TEXTRON LYCOMING CSC
Address: 125 ACCESS RD
STRATFORD CT 06497
County: **FAIRFIELD**

EPA ID Number: CTD981890114
EPA Region: 01
Longitude: ° '
Latitude: ° '

Owner: ALLIED SIGNAL INC - CSC (203)555-1212
Contact: SCOTT JACOBS (203)385-1683

RCRA Facility Designations

Generator Type: SMALL QUANTITY
Transporter Type: UNVERIFIED

Map Status: IN SEARCH AREA - SITE MAPPED
Map Number: 3693R

Facility: TEXTRON LYCOMING FLIGHT SERVICE
Address: SIKORSKY ARPT HANGAR NO 1
STRATFORD CT 06497
County: FAIRFIELD

EPA ID Number: CTD982196909
EPA Region: 01
Longitude: ° '
Latitude: ° '

Owner: CITY OF BRIDGEPORT (203)555-1212
Contact: JOHN FLEMING (203)385-3964

RCRA Facility Designations

Generator Type: SMALL QUANTITY
Transporter Type: UNVERIFIED

Map Status: IN SEARCH AREA - SITE MAPPED
Map Number: **44R**

Facility:	SIKORSKY AIRCRAFT	EPA ID Number:	CTD000635953
Address:	465 MAIN ST	EPA Region:	01
	STRATFORD CT 06497	Longitude:	° '
County:	FAIRFIELD	Latitude:	° '

Owner: OPERNAME (203)555-1212
Contact: SUSAN CAREY (203)386-6718

RCRA Facility Designations

Generator Type: LARGE QUANTITY
Transporter Type: UNVERIFIED

Map Status: IN SEARCH AREA - SITE MAPPED
Map Number: **4633R**

Facility:	RUDKIN WILEY CORP	EPA ID Number:	CTD991304445
Address:	360 SNIFFENS LN	EPA Region:	01
	STRATFORD CT 06497	Longitude:	° '
County:	FAIRFIELD	Latitude:	° '

Owner: HENRY RUDKIN NATHANIEL WILEY (203)555-1212
Contact: DONALD HEBERT (203)377-6333

RCRA Facility Designations

Generator Type: LARGE QUANTITY
Transporter Type: UNVERIFIED

CONNECTICUT
RCRA NOTIFIER FACILITY REPORT

Map Status: ADVISORY ONLY - SITE NOT MAPPED
Map Number: **791R**

Facility:	SYNTHETIC PROD CO DIV OF COOKSON	EPA ID Number:	CTD001179688
Address:	1525 STRATFORD AVE	EPA Region:	01
	STRATFORD CT 06497	Longitude:	073° 08' 00
County:	FAIRFIELD	Latitude:	41° 11' 10

Owner: DART INDUSTRIES INC (203)377-2232
Contact: JAMES KALANTA (203)377-5550

RCRA Facility Designations

Generator Type: LARGE QUANTITY
TSD Notation: TREATMENT/STORAGE/DISPOSAL
Transporter Type: UNVERIFIED

TSD Closure/Post Closure Actions:	**YES**	**RCRA Violation Flag**
TSD Financial Requirements:	**YES**	**RCRA Violation Flag**
TSD Other Voilations:	**YES**	**RCRA Violation Flag**

RCRA ADMINISTRATIVE ACTION TRACKING SYSTEM

ENF ID	**Date**	**Agency**	**Enforcement Type**
860912008	09121986	STATE	WRITTEN INFORMAL

ID Number	**Date**	**Compliance Evaluation Type**
860910006	091086	FINANCIAL RECORD REVIEW

ID Number	**Violation Area**
860910006	TSD-FINANCIAL RESPONSIBILITY

Compliance Evaluation Area	**Violation Class**	**Date In Co**
TSD-FINANCIAL RESPONSIBILITY	1	052887

CONNECTICUT
RCRA NOTIFIER FACILITY REPORT

Map Status: AT SITE, MAPPED
Map Number: 813R

Facility:	STRATFORD ARMY ENGINE PLANT	EPA ID Number:	CTD001181502
Address:	550 S MAIN ST	EPA Region:	01
	STRATFORD CT 06497	Longitude:	073° 07' 30
County:	FAIRFIELD	Latitude:	41° 10' 03

Owner: AVZO LYCOMING TEXTRON (203)552-1800
Contact: SCOTT JACOBS (203)385-1683

RCRA Facility Designations

Generator Type: LARGE QUANTITY
TSD Notation: TREATMENT/STORAGE/DISPOSAL
Transporter Type: UNVERIFIED

TSD Groundwater Requirements: **YES RCRA Violation Flag**

RCRA ADMINISTRATIVE ACTION TRACKING SYSTEM

ENF ID	Date	Agency	Enforcement Type
841019014	10191984	STATE	WRITTEN INFORMAL
841022004	10221984	STATE	3008(a) COMPLIANCE ORDER (FORMAL ACTION)
860808033	08081986	OVERSIGHT	EPA TO STATE
860925035	09251986	STATE	3008(a) COMPLIANCE ORDER (FORMAL ACTION)
861204039	12041986	STATE	WRITTEN INFORMAL
870730057	07301987	OVERSIGHT	EPA TO STATE
880922044	09221988	OVERSIGHT	EPA TO STATE
881020046	10201988	EPA	WRITTEN INFORMAL
890123047	01231989	STATE	3008(a) COMPLIANCE ORDER (FORMAL ACTION)
900330066	03301990	EPA	3008(a) COMPLIANCE ORDER
900628	06281990	STATE	STATE TO EPA
910401067	04011991	EPA	3008(a) COMPLIANCE ORDER (FORMAL ACTION)
910628	06281991	EPA	3008(a) COMPLIANCE ORDER
930819	08191993	EPA	3008(a) COMPLIANCE ORDER (FORMAL ACTION)
950303	03031995	EPA	WRITTEN INFORMAL

ID Number	Date	Compliance Evaluation Type
840724002	072484	SAMPLING INSPECTION
840726003	072684	COMPLIANCE SCHEDULE EVALUATION
840815004	081584	COMPLIANCE GROUNDWATER MONITORING EVALUATION
840815005	081584	COMPLIANCE SCHEDULE EVALUATION
840815007	081584	COMPLIANCE EVALUATION INSPECTION
850702008	070285	COMPLIANCE SCHEDULE EVALUATION
860610011	061086	COMPLIANCE EVALUATION INSPECTION
860610012	061086	COMPLIANCE GROUNDWATER MONITORING EVALUATION
870609017	060987	COMPLIANCE EVALUATION INSPECTION
880823014	082388	COMPLIANCE EVALUATION INSPECTION

891223019	122389	NON-FINANCIAL RECORD REVIEW
900605020	060590	COMPLIANCE EVALUATION INSPECTION
900608021	060890	COMPLIANCE EVALUATION INSPECTION
920715	071592	OPERATION & MAINTENANCE INSPECTION
920922	092292	COMPLIANCE EVALUATION INSPECTION
940914	091494	COMPLIANCE EVALUATION INSPECTION

ID Number	**Violation Area**
840724002	TSD-OTHER OVERSIGHT REQUIREMENTS
840726003	TSD-OTHER OVERSIGHT REQUIREMENTS
840815004	TSD-GROUNDWATER MONITORING REQUIREMENTS
840815005	TSD-CLOSURE & POST CLOSURE REQUIREMENTS
840815005	TSD-OTHER OVERSIGHT REQUIREMENTS
840815007	TSD-CLOSURE & POST CLOSURE REQUIREMENTS
840815007	TSD-OTHER OVERSIGHT REQUIREMENTS
850702008	FORMAL ENFORCEMENT AGREEMENTS
850702008	TSD-CORRECTIVE ACTION COMPLIANCE SCHEDUL
860610011	TSD-CLOSURE & POST CLOSURE REQUIREMENTS
860610011	TSD-FINANCIAL RESPONSIBILITY
860610011	TSD-GROUNDWATER MONITORING REQUIREMENTS
860610011	TSD-OTHER OVERSIGHT REQUIREMENTS
860610012	TSD-CLOSURE & POST CLOSURE REQUIREMENTS
860610012	TSD-FINANCIAL RESPONSIBILITY
860610012	TSD-GROUNDWATER MONITORING REQUIREMENTS
860610012	TSD-OTHER OVERSIGHT REQUIREMENTS
870609017	TSD-CLOSURE & POST CLOSURE REQUIREMENTS
870609017	TSD-FINANCIAL RESPONSIBILITY
870609017	TSD-GROUNDWATER MONITORING REQUIREMENTS
870609017	TSD-OTHER OVERSIGHT REQUIREMENTS
880823014	GENERATOR-LAND BAN
880823014	TSD-CLOSURE & POST CLOSURE REQUIREMENTS
880823014	TSD-FINANCIAL RESPONSIBILITY
880823014	TSD-GROUNDWATER MONITORING REQUIREMENTS
880823014	TSD-LAND BAN REQUIREMENTS
880823014	TSD-OTHER OVERSIGHT REQUIREMENTS
891223019	TSD-OTHER OVERSIGHT REQUIREMENTS
900605020	GENERATOR-LAND BAN
900605020	TSD-CLOSURE & POST CLOSURE REQUIREMENTS
900605020	TSD-FINANCIAL RESPONSIBILITY
900605020	TSD-GROUNDWATER MONITORING REQUIREMENTS
900605020	TSD-LAND BAN REQUIREMENTS
900605020	TSD-OTHER OVERSIGHT REQUIREMENTS
900608021	GENERATOR-LAND BAN
900608021	TSD-CLOSURE & POST CLOSURE REQUIREMENTS
900608021	TSD-FINANCIAL RESPONSIBILITY
900608021	TSD-GROUNDWATER MONITORING REQUIREMENTS
900608021	TSD-LAND BAN REQUIREMENTS
900608021	TSD-OTHER OVERSIGHT REQUIREMENTS
920715	TSD-GROUNDWATER MONITORING REQUIREMENTS
920922	
940914	

Compliance Evaluation Area	**Violation Class**	**Date In Co**
FORMAL ENFORCEMENT AGREEMENTS	1	091991
GENERATOR-ALL REQUIREMENTS	1	091991
GENERATOR-ALL REQUIREMENTS	1	032095

CONNECTICUT
RCRA NOTIFIER FACILITY REPORT

GENERATOR-ALL REQUIREMENTS	1	081993
GENERATOR-LAND BAN	1	091991
GENERATOR-LAND BAN	1	060890
GENERATOR-LAND BAN	1	091991
TSD-CLOSURE & POST CLOSURE REQUIREMENTS	1	060890
TSD-CLOSURE & POST CLOSURE REQUIREMENTS	1	091991
TSD-GROUNDWATER MONITORING REQUIREMENTS	1	071592
TSD-GROUNDWATER MONITORING REQUIREMENTS	1	111792
TSD-GROUNDWATER MONITORING REQUIREMENTS	1	091985
TSD-LAND BAN REQUIREMENTS	1	091991
TSD-OTHER OVERSIGHT REQUIREMENTS	1	091991
TSD-OTHER OVERSIGHT REQUIREMENTS	1	060890
TSD-OTHER OVERSIGHT REQUIREMENTS	1	091991
TSD-OTHER OVERSIGHT REQUIREMENTS	1	091991
TSD-OTHER OVERSIGHT REQUIREMENTS	1	091991
TSD-OTHER OVERSIGHT REQUIREMENTS	1	021886
TSD-OTHER OVERSIGHT REQUIREMENTS	1	021886
TSD-OTHER OVERSIGHT REQUIREMENTS	1	021886
TSD-OTHER OVERSIGHT REQUIREMENTS	1	091991
TSD-OTHER OVERSIGHT REQUIREMENTS	1	051091

CONNECTICUT
FINDS FACILITY REPORT

Map Status: LOCATION UNKNOWN - SITE NOT MAPPED
Map Number: **39F5**

Facility: AVCO CORP   EPA #: CT0000165522

Address: *
STRATFORD CT 06000
Region: 01
County:
Facility Update Date: Facility Create Date: 940320

Federal Facility: U   Indian Land: U

EPA PROGRAM OFFICE LISTING FOR FACILITY

FED SYSTEM	FEDERAL ID	UPDATE	CREATE	DUNS ID	SIC CODES
ACTIVE INDEX RECO			940320		
FTTS NCDB	I01#19900612CT011 1		940321		
FTTS NCDB	I01#19900613CT011 1		940321		
FTTS NCDB	I01#19900615CT011 1		940321		

CONNECTICUT
FINDS FACILITY REPORT

Map Status: AT SITE, MAPPED
Map Number: **6924F**

Facility: TEXTRON LYCOMING STRATFORD ARMY ENGINE PLANT EPA #: CT3210022924

Address: 550 MAIN ST.
STRATFORD CT 064977554
Region: 01
County: FAIRFIELD
Facility Update Date: 941019 Facility Create Date: 921006

Federal Facility: U Indian Land: U

EPA PROGRAM OFFICE LISTING FOR FACILITY

FED SYSTEM	FEDERAL ID	UPDATE	CREATE	DUNS ID	SIC CODES
ACTIVE INDEX RECO		940103	920417		
RCRIS	CTD001181502	950208	921006		37243519
RCRIS	CTD980524037	950208	921006		
FTTS NCDB	I01#19900606CT011 1	941031	920417		
DOCKET	01-89-0023	930916	920417		
TRIS	06497TXTRN550MA	941019	921006		3724

CONNECTICUT
FINDS FACILITY REPORT

Map Status: AT SITE, MAPPED
Map Number: **6926F**

Facility: USARMY STRATFORD ARMY ENGINE PLANT EPA #: CT3213822924

Address: 550 S MAIN ST
STRATFORD CT 064977554
Region: 01
County: FAIRFIELD
Facility Update Date: 930916 Facility Create Date: 921006

Federal Facility: Y Indian Land: U

EPA PROGRAM OFFICE LISTING FOR FACILITY

FED SYSTEM	FEDERAL ID	UPDATE	CREATE	DUNS ID	SIC CODES
ACTIVE INDEX RECO		930916	921006		
AFS AIRS	0900100158	930916	921006		37243519
CERCLIS	CTD001181502	940107	921006		37243519
DOCKET	01-89-0023	930916	921006		37243519
FFIS	CT-213822924	950202	921006		

CONNECTICUT
FINDS FACILITY REPORT

Map Status: AT SITE, MAPPED
Map Number: 704F5

Facility: AVCO CORP EPA #: CT0000946962

Address: 550 S MAIN ST
STRATFORD CT 06497
Region: 01
County: FAIRFIELD
Facility Update Date: Facility Create Date: 941130

Federal Facility: U Indian Land: U

EPA PROGRAM OFFICE LISTING FOR FACILITY

FED SYSTEM	FEDERAL ID	UPDATE	CREATE	DUNS ID	SIC CODES
ACTIVE INDEX RECO			941130		
PCS	CT0002984	941130	921006		3724
FTTS NCDB	D01#I-91-1080	941130	921006		

CONNECTICUT
STATE SUPERFUND SITE REPORT

Map Status:	**AT SITE, MAPPED**	
Map Number:	**425SF**	
Facility:	AVCO LYCOMING DIVISION. 550 S. MAIN ST. STRATFORD	Discovery: 07/06/87
Alias:		
	FAIRFIELD County	
Waste Type:	MOH SLUDGE, METALS,*	
Disposal:	LAGOONS	

CONNECTICUT
STATE SUPERFUND SITE REPORT

Map Status:	**IN SEARCH AREA - SITE MAPPED**	
Map Number:	**426SF**	
Facility:	BEACON POINT LANDFILL BEACON POINT RD. STRATFORD	Discovery: 07/06/87
Alias:		
	FAIRFIELD County	
Waste Type:	ASBESTOS	
Disposal:	BURIAL	

Map Status:	**IN SEARCH AREA - SITE MAPPED**	
Map Number:	**433SF**	
Facility:	GREAT MEADOWS * STRATFORD	Discovery: 07/06/87
Alias:		
	FAIRFIELD County	
Waste Type:	MOH SLUDGE	
Disposal:	LANDFILL	

Map Status:	**IN SEARCH AREA - SITE MAPPED**	
Map Number:	**435SF**	
Facility:	HOUSATONIC BOAT CLUB, * SHORE RD. STRATFORD	Discovery: 07/06/87
Alias:		
	FAIRFIELD County	
Waste Type:	ASBESTOS, SLUDGE	
Disposal:	BURIAL	

CONNECTICUT
STATE SUPERFUND SITE REPORT

Map Status:	**LOCATION UNKNOWN - SITE NOT MAPPED**	
Map Number:	**440SF**	
Facility:	REMINGTON ARMS LORDSHIP POINT STRATFORD	Discovery: 07/06/87
Alias:		
	FAIRFIELD County	
Waste Type:	LEAD	
Disposal:	TO GROUND&TIDE WATER	

CONNECTICUT
STATE SUPERFUND SITE REPORT

Map Status:	**IN SEARCH AREA - SITE MAPPED**	
Map Number:	**442SF**	
Facility:	SIKORSKY AIRCRAFT * 3 N. MAIN ST. STRATFORD	Discovery: 07/06/87
Alias:		
	FAIRFIELD County	
Waste Type:	MOH SLUDGE	
Disposal:	LAGOONS	

Map Status:	**IN SEARCH AREA - SITE MAPPED**	
Map Number:	**443SF**	
Facility:	SIKORSKY MEM. AIRPORT * OFF MAIN ST. STRATFORD	Discovery: 07/06/87
Alias:		
	FAIRFIELD County	
Waste Type:	ASBESTOS	
Disposal:	BURIAL	

Map Status:	**IN SEARCH AREA - SITE MAPPED**	
Map Number:	**444SF**	
Facility:	SHORT BEACH PARK AREA DORNE DR. STRATFORD	Discovery: 07/06/87
Alias:		
	FAIRFIELD County	
Waste Type:	ASBESTOS, SLUDGE	
Disposal:	BURIAL	

CONNECTICUT
STATE SUPERFUND SITE REPORT

Map Status:	**LOCATION UNKNOWN - SITE NOT MAPPED**	
Map Number:	**445SF**	
Facility:	SPADA'S ROTARY SPORT SHOP FERRY BLVD. STRATFORD	Discovery: 07/06/87
Alias:		
	FAIRFIELD County	
Waste Type:	ASBESTOS, SLUDGE	
Disposal:	BURIAL	

CONNECTICUT
STATE SUPERFUND SITE REPORT

Map Status:	**ADVISORY ONLY - SITE NOT MAPPED**	
Map Number:	**446SF**	
Facility:	STRATFORD INDUSTRIAL PARK SOUTH OF LORDSHIP AVE. STRATFORD	Discovery: 07/06/87
Alias:		
	FAIRFIELD County	
Waste Type:	ASBESTOS	
Disposal:	BURIAL	

CONNECTICUT
STATE SUPERFUND SITE REPORT

Map Status:	**IN SEARCH AREA - SITE MAPPED**	
Map Number:	**447SF**	
Facility:	STRATFORD LANDFILL SHORT BEACH RD. STRATFORD	Discovery: 07/06/87
Alias:		
	FAIRFIELD County	
Waste Type:	ASBESTOS, SLUDGE	
Disposal:	LANDFILL	

CONNECTICUT
STATE SUPERFUND SITE REPORT

Map Status:	**LOCATION UNKNOWN - SITE NOT MAPPED**	
Map Number:	**449SF**	
Facility:	FREEMAN PROPERTY STRATFORD AVE. STRATFORD	Discovery: 07/06/87
Alias:		
	FAIRFIELD County	
Waste Type:	SOLVENTS, PCB	
Disposal:	TO PIT	

CONNECTICUT
STATE LANDFILL REPORT

Map Status:	**AT SITE, MAPPED**
Map Number:	**427LF**
Facility:	AVCO LYCOMING DIV 550 SOUTH MAIN STREET STRATFORD CT
Waste:	MOH SLUDGE/CORROSIVES/METALS
Onsite:	LAGOONS — GW Class: GB
Amount:	UNAVAIL

Comments: LAND DISPOSAL FACILITY REGULATED UNDER RCRA. LAGOON CLOSURE ONGOING. WASTES AND CONTAIMINATED SOIL TO BE REMOVED. GROUNDWATER MONITORING WELLS IN PLACE.

CONNECTICUT
STATE LANDFILL REPORT

Map Status:	**IN SEARCH AREA - SITE MAPPED**
Map Number:	**428LF**
Facility:	BEACON POINT LANDFILL BEACON POINT ROAD STRATFORD CT
Waste:	ASBESTOS
Onsite:	ON-SITE BURIAL — GW Class: GB
Amount:	UNAVAIL

Comments: AREA IS POSSIBLY A PARKING LOT NOW. IN CERCLIS PA DONE

CONNECTICUT
STATE LANDFILL REPORT

Map Status:	**ADVISORY ONLY - SITE NOT MAPPED**
Map Number:	**435LF**
Facility:	GREAT MEADOWS STRATFORD CT
Waste:	MOH SLUDGE
Onsite:	LANDFILL — GW Class: GA
Amount:	UNAVAIL

Comments:

CONNECTICUT
STATE LANDFILL REPORT

Map Status: IN SEARCH AREA - SITE MAPPED
Map Number: **437LF**

Facility:	HOUSATONIC BOAT CLUB SHORE ROAD YACHT CLUB SHORE ROAD STRATFORD CT
Waste:	ASBESTOS/SLUDGE
Onsite:	ON-SITE-BURIAL — GW Class:
Amount:	UNAVAIL

Comments: DISPOSAL AREA IS NOW A PARKING LOT. IN CERCLIS PA DONE

CONNECTICUT
STATE LANDFILL REPORT

Map Status:	**LOCATION UNKNOWN - SITE NOT MAPPED**
Map Number:	**442LF**
Facility:	REMINGTON ARMS LORDSHIP POINT STRATFORD CT
Waste:	LEAD SHOT
Onsite:	TO GROUND-AND TIDAL-WATERS GW Class: GA
Amount:	60TONS/YR

Comments: SHOOTING RANGE FOR 60 YEARS, SITE CLEAN-UP ORDER ISSUED IN OCTOBER 1986 BY W.C.U.

Map Status:	**IN SEARCH AREA - SITE MAPPED**
Map Number:	**444LF**
Facility:	SIKORSKY AIRCRAFT DIV OF UTC 3 NORTH MAIN STREET STRATFORD CT
Waste:	MOH SLUDGE
Onsite:	LAGOONS — GW Class: GB
Amount:	135000 FT3

Comments: LAND DISPOSAL FACILITY REGULATED UNDER RCRA. MOH SLUDGE LAGOONS UNDERGOING CLOSURE. IN CERCLIS PA DONE.

Map Status:	**IN SEARCH AREA - SITE MAPPED**
Map Number:	**449LF**
Facility:	STRATFORD LANDFILL SHORT BEACH ROAD STRATFORD CT
Waste:	ASBESTOS/SLUDGE
Onsite:	LANDFILL — GW Class: GB
Amount:	UNAVAIL

Comments: CLOSED ABOUT 1973. NOTIFIED UNDER CERCLA BY RAYBESTOS MANHATTON. IN CERCLIS PA DONE

Map Status: LOCATION UNKNOWN - SITE NOT MAPPED
Map Number: **2702L**

Facility:	SHAKESPEARE THEATER - STRATFORD CT	Federally Regulated:	YES
		Removal:	UNK
UST Type:	STEEL/2000	Leak:	YES
Product:	GAS	Emergency:	
Remediation:	SOIL REMOVAL	Tank:	YES
		Piping:	
		Overfill:	

Map Status: LOCATION UNKNOWN - SITE NOT MAPPED
Map Number: **2714L**

Facility:	MOBIL CORP - STRATFORD CT	Federally Regulated:	YES
		Removal:	UNK
UST Type:	STEEL/10000	Leak:	YES
Product:	DIESEL FUEL	Emergency:	
Remediation:	SOIL REMOVAL	Tank:	YES
		Piping:	
		Overfill:	

Map Status: AT SITE, MAPPED
Map Number: **2730L**

Facility:	TEXTRON 550 MAIN ST STRATFORD CT	Federally Regulated:	YES
		Removal:	YES
UST Type:	4000/STEEL	Leak:	YES
Product:	MIXED FUEL	Emergency:	
Remediation:	SOIL REMOVAL	Tank:	
		Piping:	YES
		Overfill:	YES

Map Status: AT SITE, MAPPED
Map Number: **2731L**

Facility:	TEXTRON 550 MAIN ST STRATFORD CT	Federally Regulated:	YES
		Removal:	YES
UST Type:	4000/STEEL	Leak:	YES
Product:	MIXED FUEL	Emergency:	
Remediation:	SOIL REMOVAL	Tank:	
		Piping:	YES
		Overfill:	YES

Map Status: AT SITE, MAPPED
Map Number: **2732L**

Facility:	TEXTRON 550 MAIN ST STRATFORD CT	Federally Regulated:	YES
		Removal:	YES
UST Type:	4000/STEEL	Leak:	YES
Product:	MIXED FUEL	Emergency:	
Remediation:	SOIL REMOVAL	Tank:	
		Piping:	YES
		Overfill:	YES

Map Status: AT SITE, MAPPED
Map Number: 2733L

Facility:	TEXTRON 550 MAIN ST STRATFORD CT	Federally Regulated:	YES
		Removal:	YES
UST Type:	4000/STEEL	Leak:	YES
Product:	MIXED FUEL	Emergency:	
Remediation:	SOIL REMOVAL	Tank:	
		Piping:	YES
		Overfill:	YES

Map Status: AT SITE, MAPPED
Map Number: 2734L

Facility:	TEXTRON 550 MAIN ST STRATFORD CT	Federally Regulated:	YES
		Removal:	YES
UST Type:	4000/STEEL	Leak:	YES
Product:	MIXED FUEL	Emergency:	
Remediation:	SOIL REMOVAL	Tank:	
		Piping:	YES
		Overfill:	YES

Map Status: AT SITE, MAPPED
Map Number: 2735L

Facility:	TEXTRON 550 MAIN ST STRATFORD CT	Federally Regulated:	YES
		Removal:	YES
UST Type:	4000/STEEL	Leak:	YES
Product:	MIXED FUEL	Emergency:	
Remediation:	SOIL REMOVAL	Tank:	
		Piping:	YES
		Overfill:	YES

CONNECTICUT
LEAKING UNDERGROUND STORAGE TANK REPORT

Map Status: AT SITE, MAPPED
Map Number: 2736L

Facility:	TEXTRON 550 MAIN ST STRATFORD CT	Federally Regulated:	YES
		Removal:	YES
UST Type:	4000/STEEL	Leak:	YES
Product:	MIXED FUEL	Emergency:	
Remediation:	SOIL REMOVAL	Tank:	
		Piping:	YES
		Overfill:	YES

Map Status: AT SITE, MAPPED
Map Number: 2737L

Facility:	TEXTRON 550 MAIN ST STRATFORD CT	Federally Regulated:	YES
		Removal:	YES
UST Type:	4000/STEEL	Leak:	YES
Product:	MIXED FUEL	Emergency:	
Remediation:	SOIL REMOVAL	Tank:	
		Piping:	YES
		Overfill:	YES

Map Status: AT SITE, MAPPED
Map Number: 2738L

Facility:	TEXTRON 550 MAIN ST STRATFORD CT	Federally Regulated:	YES
		Removal:	YES
UST Type:	4000/STEEL	Leak:	YES
Product:	MIXED FUEL	Emergency:	
Remediation:	SOIL REMOVAL	Tank:	
		Piping:	YES
		Overfill:	YES

CONNECTICUT
LEAKING UNDERGROUND STORAGE TANK REPORT

Map Status: AT SITE, MAPPED
Map Number: **2739L**

Facility:	TEXTRON 550 MAIN ST STRATFORD CT	Federally Regulated:	YES
		Removal:	YES
UST Type:	4000/STEEL	Leak:	YES
Product:	MIXED FUEL	Emergency:	
Remediation:	SOIL REMOVAL	Tank:	
		Piping:	YES
		Overfill:	YES

Map Status: AT SITE, MAPPED
Map Number: **2740L**

Facility:	TEXTRON 550 MAIN ST STRATFORD CT	Federally Regulated:	YES
		Removal:	YES
UST Type:	4000/STEEL	Leak:	YES
Product:	MIXED FUEL	Emergency:	
Remediation:	SOIL REMOVAL	Tank:	
		Piping:	YES
		Overfill:	YES

Map Status: AT SITE, MAPPED
Map Number: **2741L**

Facility:	TEXTRON 550 MAIN ST STRATFORD CT	Federally Regulated:	YES
		Removal:	YES
UST Type:	4000/STEEL	Leak:	YES
Product:	MIXED FUEL	Emergency:	
Remediation:	SOIL REMOVAL	Tank:	
		Piping:	YES
		Overfill:	YES

CONNECTICUT
LEAKING UNDERGROUND STORAGE TANK REPORT

Map Status: AT SITE, MAPPED
Map Number: **2742L**

Facility:	TEXTRON 550 MAIN ST STRATFORD CT		
		Federally Regulated:	YES
		Removal:	YES
UST Type:	4000/STEEL	Leak:	YES
Product:	MIXED FUEL	Emergency:	
Remediation:	SOIL REMOVAL	Tank:	
		Piping:	YES
		Overfill:	YES

Map Status: AT SITE, MAPPED
Map Number: **2743L**

Facility:	TEXTRON 550 MAIN ST STRATFORD CT		
		Federally Regulated:	YES
		Removal:	YES
UST Type:	4000/STEEL	Leak:	YES
Product:	MIXED FUEL	Emergency:	
Remediation:	SOIL REMOVAL	Tank:	
		Piping:	YES
		Overfill:	YES

Map Status: AT SITE, MAPPED
Map Number: **2744L**

Facility:	TEXTRON 550 MAIN ST STRATFORD CT		
		Federally Regulated:	YES
		Removal:	YES
UST Type:	4000/STEEL	Leak:	YES
Product:	MIXED FUEL	Emergency:	
Remediation:	SOIL REMOVAL	Tank:	
		Piping:	YES
		Overfill:	YES

CONNECTICUT
LEAKING UNDERGROUND STORAGE TANK REPORT

Map Status: AT SITE, MAPPED
Map Number: **2745L**

Facility:	TEXTRON 550 MAIN ST STRATFORD CT	Federally Regulated:	YES
		Removal:	YES
UST Type:	4000/STEEL	Leak:	YES
Product:	MIXED FUEL	Emergency:	
Remediation:	SOIL REMOVAL	Tank:	
		Piping:	YES
		Overfill:	YES

Map Status: AT SITE, MAPPED
Map Number: **2746L**

Facility:	TEXTRON 550 MAIN ST STRATFORD CT	Federally Regulated:	YES
		Removal:	YES
UST Type:	4000/STEEL	Leak:	YES
Product:	MIXED FUEL	Emergency:	
Remediation:	SOIL REMOVAL	Tank:	
		Piping:	YES
		Overfill:	YES

Map Status: AT SITE, MAPPED
Map Number: **2747L**

Facility:	TEXTRON 550 MAIN ST STRATFORD CT	Federally Regulated:	YES
		Removal:	YES
UST Type:	4000/STEEL	Leak:	YES
Product:	MIXED FUEL	Emergency:	
Remediation:	SOIL REMOVAL	Tank:	
		Piping:	YES
		Overfill:	YES

CONNECTICUT
LEAKING UNDERGROUND STORAGE TANK REPORT

Map Status: AT SITE, MAPPED
Map Number: **2748L**

Facility:	TEXTRON 550 MAIN ST STRATFORD CT	Federally Regulated:	YES
		Removal:	YES
UST Type:	4000/STEEL	Leak:	YES
Product:	MIXED FUEL	Emergency:	
Remediation:	SOIL REMOVAL	Tank:	
		Piping:	YES
		Overfill:	YES

CONNECTICUT
LEAKING UNDERGROUND STORAGE TANK REPORT

Map Status: IN SEARCH AREA - SITE MAPPED
Map Number: **2769L**

Facility:	SUNOCO STATION 805 MAIN ST STRATFORD CT	Federally Regulated:	YES
		Removal:	YES
UST Type:	10000/STEEL	Leak:	YES
Product:	GAS	Emergency:	
Remediation:	SOIL REMOVAL/HYDRO	Tank:	YES
		Piping:	YES
		Overfill:	YES

Map Status: IN SEARCH AREA - SITE MAPPED
Map Number: **2770L**

Facility:	SUNOCO STATION 805 MAIN ST STRATFORD CT	Federally Regulated:	YES
		Removal:	YES
UST Type:	10000/STEEL	Leak:	YES
Product:	GAS	Emergency:	
Remediation:	SOIL REMOVAL/HYDRO	Tank:	YES
		Piping:	YES
		Overfill:	YES

Map Status: IN SEARCH AREA - SITE MAPPED
Map Number: **2771L**

Facility:	SUNOCO STATION 805 MAIN ST STRATFORD CT	Federally Regulated:	YES
		Removal:	YES
UST Type:	10000/STEEL	Leak:	YES
Product:	GAS	Emergency:	
Remediation:	SOIL REMOVAL/HYDRO	Tank:	YES
		Piping:	YES
		Overfill:	YES

CONNECTICUT
LEAKING UNDERGROUND STORAGE TANK REPORT

Map Status: IN SEARCH AREA - SITE MAPPED
Map Number: 2772L

Facility:	**SUNOCO STATION** **805 MAIN ST** **STRATFORD CT**		
		Federally Regulated:	**YES**
		Removal:	**YES**
UST Type:	**10000/STEEL**	**Leak:**	**YES**
Product:	**GAS**	**Emergency:**	
Remediation:	**SOIL REMOVAL/HYDRO**	**Tank:**	**YES**
		Piping:	**YES**
		Overfill:	**YES**

Map Status: LOCATION UNKNOWN - SITE NOT MAPPED **Map Number: 10595U**		
Facility:	BRIDGEPORT VOR SIKORSKY AIRPORT STRATFORD	Facility ID: 10595

STATUS: TANK IN USE

CONNECTICUT
REGISTERED UNDERGROUND STORAGE TANKS

Map Status:	**AT SITE, MAPPED**
Map Number:	**8054U**

Facility:	AVCO LYCOMING TEXTRON STRATFORD A 550 SOUTH MAIN STREET STRATFORD	**Facility ID:** 8054

STATUS: TANK ABANDONED IN PLACE
STATUS: TANK IN USE

CONNECTICUT
REGISTERED UNDERGROUND STORAGE TANKS

Map Status:	**IN SEARCH AREA - SITE MAPPED**	
Map Number:	**8233U**	
Facility:	BREEZY POINT CHEVRON 609 MAIN STREET STRATFORD	Facility ID: 8233

STATUS: TANK IN USE

Map Status:	**LOCATION UNKNOWN - SITE NOT MAPPED**	
Map Number:	**8253U**	
Facility:	THREE WING AVIATION SIKORSKY AIRPORT STRATFORD	Facility ID: 8253

STATUS: TANK IN USE

CONNECTICUT
REGISTERED UNDERGROUND STORAGE TANKS

Map Status: IN SEARCH AREA - SITE MAPPED		
Map Number: **8374U**		
Facility:	OLD COACH AUTO & TRUCK REPAIR, IN 55 ACCESS ROAD STRATFORD	Facility ID: 8374

STATUS: TANK REMOVED

Map Status: IN SEARCH AREA - SITE MAPPED		
Map Number: **8384U**		
Facility:	GETTY STATION #06862 805 SOUTH MAIN STREET STRATFORD	Facility ID: 8384

STATUS: TANK IN USE
STATUS: TANK REMOVED

Map Status: IN SEARCH AREA - SITE MAPPED		
Map Number: **9475U**		
Facility:	SIKORSKY MEMORIAL AIRPORT 495 MAIN STREET STRATFORD	Facility ID: 9475

STATUS: TANK IN USE

Map Status: IN SEARCH AREA - SITE MAPPED		
Map Number: **9874U**		
Facility:	A & B ENTERPRISES 60 ACCESS ROAD STRATFORD	Facility ID: 9874

STATUS: TANK IN USE

ABB-ES SITE VISIT NOTES

AUGUST 1995
OCTOBER 1995
DECEMBER 1995
FEBRUARY 1996

Site Visit/Meeting Report
Stratford Army Engine Plant (SAEP)
Environmental Baseline Study/CERFA Report
Contract DACA31-94-D-0061
Delivery Order 0006

Dates of Site Visit:	August 28, 1995 to August 30, 1995
Place of Meeting:	Stratford Army Engine Plant (SAEP) Stratford, CT

Persons Attending	**Affiliation**
Mark Mahoney	U.S. Army Environmental Center (USAEC)
Nelson Walter (Project Manager)	ABB Environmental Services (ABB-ES)
Jim Buss (Senior Scientist)	ABB Environmental Services (ABB-ES
Rod Pendleton (Senior Scientist)	ABB Environmental Services (ABB-ES)
Tim Russell (Environmental Team Leader)	Allied Signal
Michael Flach (Facilities Engineer)	Allied Signal
Alan Monelli (Facilities Engineer)	Allied Signal
Scott Jacobs (Environmental Dept.)	Allied Signal
Jim Morrell (Environmental Dept.)	Allied Signal
Henry Greer (Photographer)	Allied Signal
Jim Kuehnle	U.S. Army (ATCOM)

The objectives of the site visit to Stratford Army Engine Plant (SAEP) between August 28 and 30, 1995 were to obtain:

1) information describing hazardous waste sources, migration pathways, and human and environmental receptors,

2) data relating to the varieties and quantities of any hazardous materials/wastes which may have been stored, released, or disposed of on site,

3) records of disposal practices and operating procedures at the site in order to identify locations of waste materials on site, waste haulers, and waste generators,

4) historic aerial photography for each site to determine past practices which may have caused environmental releases, and

5) information which will allow the Army to identify parcels in accordance with CERFA.

Site Visit Notes

August 28, 1995:

Time	Activity
1115 hrs	N. Walter, J. Buss, R. Pendleton (ABB-ES) arrive SAEP and meet with T. Russell (Allied Signal) in the Allied Signal Environmental Dept.
1130 hrs	M. Mahoney (USAEC) arrives SAEP. M. Flach (Allied Signal) joins the group for preliminary introductions and discussions of general environmental issues at SAEP.
1215 hrs	Lunch meeting at SAEP with Allied Signal Site Manager Michael Meshay and Director of Human Resources Brian McMenamin (M. Mahoney, N. Walter, J. Buss, R. Pendleton, M. Flach, and T. Russell in attendance). Discussions focus on the sensitivity of BRAC and SAEP closure to the current Allied Signal employees. ABB-ES personnel are advised of the potential negative attitude of plant employees due to closure of the facility.
1315 hrs	Meeting with Lt. Colonel Mihoc (Commander SAEP) and Marion Rodinski (assistant to Mihoc) to discuss USAEC's scope of work at SAEP, including the EBS, CERFA, and BCP. Lt. Colonel Mihoc (USAF) asks to be kept informed as the process moves along, and also indicates that command of SAEP may change hands in the near future, possibly to the U.S. Army Tank Command (TACOM).
1345 hrs	Meeting with M. Mahoney, T. Russell, M. Flach, N. Walter, J. Buss, and R. Pendleton in attendance. M. Mahoney and ABB-ES personnel are provided additional background information regarding environmental conditions and past waste management practices at SAEP. Several points of interest presented by T. Russell and M. Flach: • No sitewide asbestos study has ever been performed for SAEP. • There are remaining legal issues between Allied Signal and Textron regarding chromium groundwater contamination at SAEP. As a result, Allied Signal personnel must review all information supplied to ABB-ES. • All areas of potential groundwater contamination have not been identified by the investigations performed to date. • Woodward-Clyde (tasked with performing the Remedial Investigation at SAEP) personnel have verbally stated that oysters in the Housatonic River are contaminated with heavy metals and PCBs. • The RI has focused on upgradient and downgradient issues with little assessment of sources. • Production activities at SAEP are scheduled to be terminated in the Summer of 1997.
1500 hrs	Conference call with John Fleming (Allied Signal Environmental Dept.) to discuss his knowledge of radiation and air quality issues associated with activities at SAEP: • NRC "wall-to-wall" radiation survey results available from Christina Dina (Allied Signal). • Monthly reports regarding radioactive material usage at SAEP are also submitted to the NRC. • No historic records for the types and quantities of radioactive materials used in the early days at SAEP, possibly silver and cobalt use in wing-tip design process and radium used on dials and gauges. • Air permits and associated information are available in J. Fleming files. • A radon survey report will also be made available to ABB-ES. The report indicates that radon is not a concern at SAEP.

Time	Activity
1550 hrs	Jim Kuehnle (ATCOM Environmental Compliance Division) arrives SAEP. J. Kuehnle has been involved in environmental investigation at SAEP since 1991. M. Mahoney and ABB-ES personnel are provided further background information regarding environmental conditions and past waste management practices at SAEP. Several points of interest presented by J. Kuehnle: • Asbestos (in the form of tiles, pipe, etc.) is present in all SAEP structures except Bldg. 65. • The shoreline fill area (Area 3) appears from construction activities to be widely contaminated with petroleum hydrocarbons. • An air emissions inventory was performed by the USAEHA (currently CHPPM) in 1993. • J. Kuehnle will provide ABB-ES with the RCRA Facility Assessment Report and documentation on Real Property Transactions. • The Oil Abatement Treatment Plant (OATP) has been effective in resolving many outstanding oil-related stormwater discharge concerns.
1700 hrs	Depart SAEP for the day.

August 29, 1995:

Time	Activity
0740 hrs	M. Mahoney, N. Walter, J. Buss, R. Pendleton arrive SAEP and meet with T. Russell, S. Jacobs, and J. Kuehnle in the Allied Signal Environmental Dept. Discussion focuses on the facility tour that is planned for this morning. J. Kuehnle distributes a portion of the RCRA Facility Assessment, which indicates 59 Areas of Concern (AOCs). The tour will focus on these AOCs. Henry Greer (Allied Signal) will accompany us on a tour of the facility to take photographs as required.
0850 hrs	Begin tour of SAEP: M. Mahoney, N. Walter, J. Buss, R. Pendleton, T. Russell, S. Jacobs, H. Greer, and J. Kuehnle. Begin in Area 3 (shoreline fill area) near Building 65 and proceed southeast to Buildings 16 and 19 before turning west to Buildings 3 and 10. Tour stops at various AOCs along the route, ending at the chrome plating facility in the southern end of Building 2.
1120 hrs	Lunch break. J. Kuehnle departs SAEP.
1215 hrs	Return SAEP. M. Mahoney, N. Walter, J. Buss, and R. Pendleton spend the remainder of the afternoon in the Allied Signal Environmental Dept. discussing the approach to the EBS, and searching Allied Signal files for information pertinent to the EBS. Documents procured by ABB-ES include the RCRA Part B Permit and radiological inventory information.
1630 hrs	Depart SAEP.

August 30, 1995:

Time	Activity
0745 hrs	M. Mahoney, N. Walter, J. Buss, R. Pendleton arrive SAEP and meet with T. Russell and M. Flach in the Allied Signal Environmental Dept. Discussion focuses on another facility tour that is planned for this morning. This tour will be led by M. Flach and A. Monelli who have been involved with facility engineering and maintenance at SAEP for over 20 combined years.
0900 hrs	R. Pendleton meets with H. Greer to review historical aerial photographs of SAEP. H. Greer will reproduce requested photos and send to ABB-ES.

<table>
<tr><th><u>Time</u></th><th><u>Activity</u></th></tr>
<tr><td>0900 hrs</td><td>N. Walter meets with Alan Monelli of Plant Engineering.
• All stormwater drains go to OATP, including those from Sniffens Lane.
• Many buildings are constructed on pilings due to unstable subsurface soil conditions. Some buildings without pilings have needed repair to floors to correct settlement problems.
• Floodwater pumping system protects facility from flooding at very high tide conditions.
• Former septic tank is located beneath the northwest corner of Building 2.</td></tr>
<tr><td>1030 hrs</td><td>Arrive Plant Engineering and Maintenance (Building B-12), meet A. Monelli. N. Walter is procuring CAD drawings of SAEP from Gary Hamann (Allied Signal Design Engineer).</td></tr>
<tr><td>1120 hrs</td><td>Start walking tour of facility, led by A. Monelli and M. Flach; M. Mahoney, N. Walter, J. Buss, R. Pendleton attending. Notes on some of the Buildings/AOCs follow.
• Chip pit near Building 13 was used to contain metal filings with cutting oils. The unlined pit has been partially excavated and filled with concrete. Soil beneath remains contaminated.
• Many of the original buildings had their own septic tanks. A septic tank beneath Building 2 was removed in the late 1960s.
• Building 3 has transite siding.
• Building 70 was constructed for cyanide waste destruction.
• Building 16: TCE was used to clean engines; oils/fuels now removed from engines with an alkaline cleaner; mercury from broken manometers spilled on floors and into drains; old corroded drains were replaced with new drains, the runoff from which is now pumped to a collection system on the roof of the building.
• Mag-thorium stored in drums between Buildings 36 and 73.
• Explosives for AVCO re-entry vehicle nose cones were formerly mixed in Building 59. The building is currently used for storage of paper files on engine tests.
• TCE found in soil samples beneath tank farm behind Building 19 during tank berm construction.
• High TPH in soils around Building 34 tank farm.
• Building 15 is used for chemical and oil storage, as well as storage of firefighting supplies.
• Building 2: Current "heat-treat" area was likely a plating facility during production of the Corsair in the 1940s. North of the intersection of Aisle 21 and Aisle H, any excavation below grade has revealed clean fill. Visit to current plating room reveals corroded steel frames in sub-floor due to chemical liquid and vapor. Vents and drains have been replaced at least once.</td></tr>
<tr><td>1200 hrs</td><td>M. Mahoney departs SAEP for Aberdeen, MD.</td></tr>
<tr><td>1310 hrs</td><td>Lunch break.</td></tr>
<tr><td>1350 hrs</td><td>Return from lunch. N. Walter and J. Buss return to the Allied Signal Environmental Dept. to gather more documents being supplied by Allied Signal. R. Pendleton resumes tour of the facility with M. Flach:
• Building 3 contained a former plating room, which has been converted to office space for the IS Department. 2 PCB transformers and an X-ray processing lab are also contained in Building 3.
• M. Flach recalls former chemical operations in one section of Building 4, now known as the Regenerator Repair Room. A. Monelli may remember more details.
• Circuit board production was performed in Building 6, which included the use of chlorinated solvents and molten solder. Several engine test cells are also located in the building The floor in the building has settled as much as 3 feet in places due to subgrade compaction.
• Building 7 contains flow stands used to test engines. A. Monelli should know where drains in this building lead.</td></tr>
</table>

Time	Activity
1525 hrs	R. Pendleton returns to Allied Signal Environmental Dept. N. Walter, J. Buss, and R. Pendleton pack up documents collected from Allied Signal during the site visit. After reviewing the collected information, ABB-ES will make another site visit in October 1995 to fill in any information gaps.
1600 hrs	N. Walter, J. Buss, and R. Pendleton depart SAEP and make a driving tour through the area surrounding SAEP to look at other industries. One observed industry not noted in the Preliminary Alternatives Screening document is Olson Steel.
1645 hrs	N. Walter, J. Buss, and R. Pendleton depart Stratford, CT for Portland, ME.

ASEA BROWN BOVERI

February 9, 1996

Commander, U.S. Army Environmental Center
Attn: ENAEC-BC-A/Mr. Glen Boldt
Building E-4480, Edgewood Area
Aberdeen Proving Ground, Maryland 21010-5401

SUBJECT: Contract No. DACA31-94-D-0061 Delivery Order No.6
Site Visit Notes for October 24 to 25, 1995
Stratford Army Engine Plant, Stratford, Connecticut

Dear Mr. Boldt,

Enclosed are the site visit notes for the site visit conducted at the Stratford Army Engine Plant by ABB-ES from October 24 to 25, 1995.

Please feel free to call me at (207) 775-5401 to discuss any issues you would like to discuss regarding the subject.

Sincerely,

ABB ENVIRONMENTAL SERVICES, INC.

Nelson Walter

Nelson Walter, P.E.
Project Manager

Enclosure

cc. Jim Buss
Rod Pendleton
File 2.51

ABB Environmental Services, Inc.

110 Free Street
P.O. Box 7050
Portland, Maine 04112-7050

Telephone (207) 775-5400

Fax (207) 772-4762

Site Visit/Meeting Report
Stratford Army Engine Plant (SAEP)
Environmental Baseline Study/CERFA Report
Contract DACA31-94-D-0061
Delivery Order 0006

Dates of Site Visit:	October 24, 1995 to October 25, 1995
Place of Meeting:	Stratford Army Engine Plant (SAEP) Stratford, CT

Persons Attending	Affiliation
Richard Moore	U.S. Army (TACOM)
Peter Szymanski	U.S. Army (TACOM)
Vincent A. Crifasi	COE
Gerald P. Byrne	COE
Toby Halliday	OSD (ES) OEA
Tim Russell (Environmental Team Leader)	AlliedSignal
John Fleming (Environmental Department)	AlliedSignal
Michael Flach (Facilities Engineer)	AlliedSignal
Scott Jacobs (Environmental Department)	AlliedSignal
Jim Morrell (Environmental Department)	AlliedSignal
Jayesh Patel (Environmental Department)	AlliedSignal
Lou Savenelli	AlliedSignal
Nelson Walter (Project Manager)	ABB Environmental Services (ABB-ES)
Jim Buss (Senior Scientist)	ABB Environmental Services (ABB-ES)
Rod Pendleton (Senior Scientist)	ABB Environmental Services (ABB-ES)

The objectives of the visit to Stratford Army Engine Plant (SAEP) between October 24 and 25, 1995 were:

1) to meet with TACOM representatives to discuss their newly acquired command of SAEP,

2) to present the current status of the EBS/CERFA reports being prepared by ABB-ES, and

3) to collect further information from AlliedSignal employees for incorporation into the Draft EBS Report.

Meeting/Visit Notes

October 24, 1995:

Time	Activity
0800 hrs	N. Walter, J. Buss, R. Pendleton (ABB-ES) arrive SAEP and meet with T. Russell (AlliedSignal) in the AlliedSignal Environmental Dept.
0900 hrs	P. Szymanski (TACOM) and R. Moore (TACOM) arrive SAEP.
0915 hrs	Meeting begins with all personnel listed on the previous page. R. Moore (TACOM) presents TACOM's BRAC environmental vision and expectations for SAEP. P. Szymanski (TACOM) suggests input from local environmental groups come through the RAB, not through membership on the BCT. Discussions of who should be on the RAB follow.
0940 hrs	N. Walter (ABB-ES) presents ABB-ES' role in the EBS/CERFA process and Base Closure Plan (BCP). TACOM requests that a cost estimate accompany the recommended sampling and analysis memorandum following issuance of the Draft Final EBS Report. TACOM stresses the need to involve TACOM and AlliedSignal in the EBS/CERFA review process. A tentative meeting date to review the Draft EBS Report is set for 11/16/95 in Portland, ME. M. Flach (AlliedSignal) presents to TACOM the SAEP environmentally-related funding needs for the coming year.
1040 hrs	Meeting adjourns.
1045 hrs	Meeting to discuss CERFA parcelization begins. Personnel present are R. Moore and P. Szymanski of TACOM, J. Fleming of AlliedSignal, and N. Walter, J. Buss and R. Pendleton of ABB-ES. ABB-ES is directed to use best professional judgement in drawing parcels, and subdivide buildings as needed (i.e., let contaminant distribution determine CERFA parcel boundaries).
1135 hrs	Break for lunch.
1300 hrs	ABB-ES personnel return SAEP to meet with AlliedSignal personnel in the Environmental Dept. N. Walter (ABB-ES) departs for Stratford Town Hall to procure information on SAEP and adjacent property. J. Buss (ABB-ES) and R. Pendleton (ABB-ES) review EBS worksheets with AlliedSignal personnel. Facility drawings (including utility and radioactive material handling and storage area maps) are also procured from the Facilities Engineering Dept.
1630 hrs	N. Walter (ABB-ES) returns from Stratford Town Hall.
1730 hrs	Depart SAEP for the day.

October 25, 1995

Time	Activity
0815 hrs	N. Walter, J. Buss and R. Pendleton of ABB-ES arrive SAEP. Continue discussions with AlliedSignal Environmental Dept. regarding issues surrounding the EBS.
0900 hrs	N. Walter (ABB-ES) phones Glen Boldt of the USAEC to discuss yesterday's meeting regarding the RAB and EBS/CERFA.
1000 hrs	R. Pendleton (ABB-ES) calls G. Boldt (USAEC) to discuss EBS worksheets prepared by ABB-ES.
1330 hrs	Lunch break.
1415 hrs	N. Walter performs windshield survey of adjacent properties. R. Pendleton and J. Buss continue with information research in AlliedSignal's Environmental Dept.
1630 hrs	N. Walter, J. Buss, and R. Pendleton of ABB-ES depart SAEP for Portland, ME.

ASEA BROWN BOVERI

9336-10

February 9, 1996

Commander, U.S. Army Environmental Center
Attn: ENAEC-BC-A/Mr. Glen Boldt
Building E-4480, Edgewood Area
Aberdeen Proving Ground, Maryland 21010-5401

Subject: **Contract No. DACA31-94-D-0061 Delivery Order No. 6**
Draft EBS Report Review Meeting Notes for December 19, 1995
Stratford Army Engine Plant, Stratford, Connecticut

Dear Mr. Boldt,

Enclosed are the meeting notes for the Draft EBS Report review conducted at ABB-ES' Portland, ME office on December 19, 1995.

Please feel free to call me at (207) 775-5401 to discuss any issues you may have regarding the subject.

Sincerely,

ABB Environmental Services, Inc.

Nelson Walter

Nelson Walter, P.E.
Project Manager

Enclosure

cc: J. Buss
R. Pendleton
File 2.51

ABB Environmental Services, Inc.

110 Free Street
P.O. Box 7050
Portland, Maine 04112-7050
Telephone (207) 775-5400
Fax (207) 772-4762

Draft EBS Report Review Meeting
Stratford Army Engine Plant (SAEP)
Environmental Baseline Study/CERFA Report
Contract DACA31-94-D-0061
Delivery Order 0006

Dates of Meeting:	December 19, 1995
Place of Meeting:	ABB Environmental Services, Inc. Portland, ME

Persons Attending	Affiliation
Glen Boldt	U.S. Army Environmental Center (USAEC)
Richard Moore	U.S Army (TACOM)
Peter Szymanski	U.S Army (TACOM)
Vincent A. Crifasi	COE
Tim Russell (Environmental Dept. Team Leader)	AlliedSignal
John Fleming (Environmental Dept.)	AlliedSignal
Nelson Walter (Project Manager)	ABB Environmental Services
Jim Buss (Senior Scientist)	ABB Environmental Services
Rod Pendleton (Senior Scientist)	ABB Environmental Services
Joe Cuccaro (USAEC Program Manager)	ABB Environmental Services

The objectives of the meeting was to review the Draft EBS Report, which had been prepared by ABB-ES, for the Stratford Army Engine Plant (SAEP).

Draft EBS Review Meeting Notes

December 19, 1995:

Time	Activity
0745 hrs	Introductions by N. Walter (ABB-ES) and welcome by J. Cuccaro (ABB-ES), Program Manager for ABB-ES' USAEC program.
0800 hrs	Begin review of the Draft EBS Report, beginning with the Executive Summary. G. Boldt (USAEC) is the only reviewer who has had a chance to review the entire document prior to the meeting. Corrections to be made to the Executive Summary are primarily editorial in content. A note will be added to the Executive Summary regarding the current status of the Phase II Remedial Investigation (RI) Report being prepared by Woodward Clyde Consultants, Inc. (WCC) for th Omaha COE. It is agreed that only the portion of the drainage ditch (southeast of the Chemical Waste Treatment Plant) on the SAEP property which leads to Marine Basin shall be addressed in the EBS Report.
0915 hrs	Begin review of Sections 1.0 through 4.0. AlliedSignal will review tables and figures more thoroughly following the meeting and provide comments. It is apparent from AlliedSignal comments during the review of Section 3.0 of the Draft EBS Report that descriptions of the historical processes and chemicals used at SAEP are somewhat inaccurate. ABB-ES had prepared the Draft EBS by relying on the accuracy of the Final Preliminary Assessment Screening Report(PAS) which was published by WCC in 1991. Evidently, the PAS had not been thoroughly reviewed by former SAEP employees before it was finalized. Following the meeting, AlliedSignal will review Section 3.0 in detail to clarify any inaccuracies. In light of this,

review and discussion of Section 3.0 was stopped at page 3-24 in order to review Sections 4.0 and 5.0.

1040 hrs Begin review of Sections 4.0 and 5.0 which deal with known and probable environmental contamination, and the delineation of CERFA parcels. Discussion focuses on categorization/color of parcels, and size of parcels. It is agreed that the size of parcels and categorization/color are likely to change in some areas as a result of findings presented in the Draft Phase II RI report to be issued by WCC in early 1996.

1200 hrs Break for lunch.

1300 hrs Meeting resumes to discuss schedule for the EBS/CERFA process. It is agreed that AlliedSignal shall provide detailed comments on the Draft EBS within the next several weeks, and that the Draft Final EBS/CERFA Report shall be issued 10 days after a meeting in early 1996 to discuss the Draft Phase II RI Report findings. ABB-ES sampling and analysis recommendations shall be submitted to the USAEC following issuance of the Draft Final EBS Report.

1400 hrs Meeting adjourns.

Site Visit/Meeting Report
Stratford Army Engine Plant (SAEP)
Environmental Baseline Survey/CERFA Report
Contract DACA31-94-D-0061
Delivery Order 0006

Dates of Site Visit: February 13 to February 15, 1996

Place of Meeting: Stratford Army Engine Plant Stratford, CT

The objectives of this site visit were to review the Phase II Remedial Investigation (RI), review the Environmental Baseline Survey (EBS)/CERFA reports, and conduct the initial BRAC Cleanup Team (BCT) meeting.

February 13, 1996:
On February 13, 1996 the RI review meeting was conducted with attendance by the following representatives:

Persons Attending	Affiliation
Peter Szymanski	U.S. Army (TACOM)
Bob Kaspari	U.S. Army (TACOM)
Fred Hyatt	U.S. Army (SAEP)
Tim Russell	AlliedSignal Engines
John Fleming	AlliedSignal Engines
Glen Boldt	U.S. Army (AEC)
Nelson Walter	ABB Environmental Services
Jim Buss	ABB Environmental Services
John Barrett	U.S. Army (COE-Omaha)
Mike Akerbergs	Woodward-Clyde
Marion Craig	Woodward-Clyde

The meeting began with introductions followed by specific comments and questions to the Phase II RI. The following dates were noted during the meeting, these will be incorporated into the draft Phase II RI and EBS/CERFA reports:

October 28, 1994 - AlliedSignal replaced Textron-Lycoming
September 9, 1995 - TACOM replaced ATCOM
October 1995 - SAEP was officially BRAC listed

It was noted that the RI was originally developed prior to the listing of SAEP on the BRAC 95 list. As a result it will be necessary to reference the BRAC process and SAEP's listing in the draft Phase II RI report introduction.

The application of the Connecticut Department of Environmental Protection (CTDEP) Industrial Commercial Direct Exposure (ICDE) soil standards, GB groundwater standards, and surface water criteria were discussed. It was noted that these regulations and standards were recently promulgated and their application in the Phase II RI was based on interpretations by Woodward-Clyde personnel. Ken Feathers of the CTDEP was scheduled to be in attendance at the BCT meeting on February 15. He could be questioned regarding the appropriate application of these regulations.

The regulatory framework under which SAEP was to be cleaned up was then discussed (i.e. CERCLA, RCRA, or CTDEP regulations). The issue of how SAEP is to be regulated would be brought up at the BCT meeting.

The Phase II RI report identifies exceedance of the CTDEP standards. However, it was agreed that the human health and ecological risk assessments would serve as the guiding documents to assess the need for remediation at SAEP. In this context, it appears that the only area requiring remediation would be the near shore tidal flats at outfalls 002, 003, 004, and 005.

In discussing the RI report, relative to the EBS, it was noted that the RI did a good job of assessing the movement of contamination on and off SAEP but that some of the potential source areas were adequately characterized for the purpose of property transfer. This will be addressed in the Sampling and Analysis Recommendation letter to be prepared by ABB-ES in conjunction with the EBS/CERFA reports.

The nature of the hydrogeologic regime and tidal influences at SAEP and Frash Pond were discussed. Although hydraulic gradients are substantially affected by the tides at SAEP, there is no reversal in groundwater flow directions. Further, the Phase II RI showed that Frash Pond serves as a groundwater discharge area, relative to SAEP. As a result a groundwater divide transects the area roughly parallel to Main Street with higher groundwater levels to the west of SAEP.

Woodward-Clyde was given a number of changes to be made to the RI report to clarify and improve accuracy of the text as well as eliminate misleading adverbs. Woodward-Clyde will revise the report and prepare a draft final document for distribution to the BCT in approximately one month.

ABB-ES was given the following items to be addressed as part of the RI review:

1. ABB-ES will identify a new parcel in the near shore intertidal flats where the Woodward-Clyde risk assessment indicated a need for remediation. Woodward-Clyde will provide the boundary for the contaminated area.

2. ABB-ES will include additional sediment sampling in the near shore area to be remediated as part of the Sampling and Analysis Recommendation letter.

3. ABB-ES will revise the EBS/CERFA report to indicate that the draft Phase II RI findings have been incorporated into the report.

AlliedSignal was given the following items to be addressed as part of the RI review:

1. Field notes from the installation of the new chemical waste treatment lines will be reviewed to assess areas of chemical contamination associated with the old chemical waste treatment lines which were not removed during the system upgrade.

2. An existing report, documenting the subsurface investigations at building B-6, would be located and given to ABB-ES to show that this area (CERFA Parcel 24) does not need additional investigations.

February 14, 1996:

On February 14, 1996 the EBS review meeting was conducted with attendance by the following representatives:

Persons Attending	Affiliation
Peter Szymanski	U.S. Army (TACOM)
Bob Kaspari	U.S. Army (TACOM)
Fred Hyatt	U.S. Army (SAEP)
Tim Russell	AlliedSignal Engines
John Fleming	AlliedSignal Engines
Glen Boldt	U.S. Army (AEC)
Nelson Walter	ABB Environmental Services
Jim Buss	ABB Environmental Services
John Barrett	U.S. Army (COE-Omaha)

The meeting began with a review of the EBS and changes to be made to the document based on the RI review meeting of the previous day. Subsequently, it was decided that the meeting would be most productive if the time were used to review those CERFA parcels which will have recommendations for additional explorations and investigations.

The need to assess indoor building surfaces for chemical contamination was discussed. The following building were selected as areas most likely to contain unacceptable levels of contamination and as such are the areas which should be focused on for the indoor assessment:

Building	Area to be Assessed
B-2	Plating Shop
B-3	Former Plating Shop
B-6	Engine Test Cell
B-8	Paint Storage Area
B-15	Chemical Storage Area
B-16	Engine Test Cell

During the course of discussions it was decided that borings would generally be recommended to extend 15 feet below ground surface (bgs) with one analytical sample per boring. Laboratory analyses would generally include VOCs, SVOCs, and metals.

The following is a parcel by parcel summary of the results of this review.

Parcel 8

- Three borings are needed beneath the punch press sumps (near aisles G-5 to G-7)
- Four borings are needed beneath the degreasers.
- Three borings are needed near the K & T milling machines.
- Two borings are needed near the former USTs/leachfields.
- Records form the maintenance and machine repair and oilers could be used to identify machines where leaks are more likely.

Parcel 9

- Additional borings are needed near W-C boring BR-2 where SVOCs were detected.
- Borings are also needed near the former chip pit northwest of B-13
- Borings are also needed in the scrap yard.

Parcel 12

- A pressure test of the existing chemical waste lines is needed to assess their integrity.
- Two borings are needed in the existing plating shop located in building B-2.
- Two borings are needed in the former plating shop in building B-2 (currently heat treat area).
- Two borings are needed in the former plating shop located in building B-3.
- One boring is needed near building B-70 (cyanide destruction facility).
- One monitoring well is needed in the area between existing monitoring wells ECD-4 and WC-12S.
- An interim remedial action will be recommended to remove concrete contaminated with chromic acid in the existing plating shop area of building B-2.

Parcel 13

- Borings are needed near building B-7 to assess leakage of calibration fluids
- Two borings are needed near north side of building B-8 to delineate cadmium contamination detected in W-C boring WC-8S.
- A boring is needed between building B-7 and B-8 where drums were formerly stored.
- Three additional borings are needed on other sides of building B-7 for a perimeter evaluation.
- A boring is needed east of B-9 to assess contamination associated with the hydraulic cylinder lift.
- Three to four borings are needed inside building B-10 to assess metals and petroleum contamination associated with the IDOD trench.

Parcel 15

- It was agreed that the eastern portion of this parcel would be more appropriately classified with parcel 12 due to the presence of the chemical waste lines.

- By reconfiguring this parcel, its classification was reassigned to category 3 (light green).

Parcel 16

- It was agreed that the northwestern portion of this parcel would be more appropriately classified with parcel 12 due to the former plating shop located in building B-3.
- By reconfiguring this parcel, its classification was reassigned to category 3 (light green).

Parcel 17

- John Fleming of AlliedSignal has additional data on 1,1,1-TCA and mercury contamination, he will make this data available to ABB-ES prior to the preparation of the Sampling and Recommendation Letter.
- Approximately four additional borings, located on the eastern and northern sides of building B-16 (the production end of the building will be needed. The borings will be located approximately 10 to 20 feet outside the doors to the building to complement the existing data.
- Approximately three shallow surface soil samples will also be collected along the base of the dike to assess the potential for disposal in this area.

Parcel 18

- A number of surface soil samples have been collected from this parcel. However, the only analyses conducted was asbestos. To address the potential for deep soil contamination, approximately two soil borings are needed near areas of fire training and waste disposal.

Parcel 23

- Following a review of the available data from the RI report and an assessment of this area it was determined that additional explorations on this parcel are not needed. As a result the parcel will be reassigned to category 3 (light green).

Parcel 27

- Single borings are needed on the south and west sides of the B-34 tank farm (parcel 30) to assess residual contamination left in-place following the remediation of B-34.
- One soil boring is needed in the alley way between buildings B-3 and B-3A.
- One boring is needed in the east side of building B-4 where the electrochemical machining process was conducted.

Parcel 28

- One boring is needed in the northeastern corner of building B-19 where a former dry well was reportedly used for waste disposal in the past.

Parcel 29

- One soil boring is needed near the location of the former underground storage tank located in building B-52.

Parcel 32

- Approximately 12 additional sediment samples are needed in the near shore intertidal flats to better characterize the extent and distribution of PCB and metals contamination in this area where remediation will be needed.

February 15, 1996:

On February 15, 1996 the BRAC Cleanup Team (BCT) met with the following in attendance:

Persons Attending	**Affiliation**
Peter Szymanski	U.S. Army (TACOM)
Bob Kaspari	U.S. Army (TACOM)
Fred Hyatt	U.S. Army (SAEP)
Tim Russell	AlliedSignal Engines
John Fleming	AlliedSignal Engines
Pam Cissik	AlliedSignal
Glen Boldt	U.S. Army (AEC)
Nelson Walter	ABB Environmental Services
John Barrett	U.S. Army (COE-Omaha)
Carol Keating	USEPA New England - FFSS
Kenneth Feathers	CTDEP Site Remediation
Vincent Crifasi	U.S. Army (COE-NY)
William McCann	Town of Stratford

The meeting began with the introduction of the attendees with each explaining their role in the BRAC process.

Bob Kaspari conducted a presentation about the BCT, explaining its' goals and operation. Bob emphasized the team structure and the need for open communication. The BCT will manage the cleanup process at SAEP and, as such, include representatives from the Army (TACOM), USEPA, and CTDEP. In addition, the US Army Corps of Engineers, who will execute cleanup work, will be in attendance.

Nelson Walter explained ABB-ES's role in the cleanup process. ABB-ES is producing the Environmental Baseline Survey, CERFA map, sampling and analysis recommendations, and the BRAC Cleanup Plan (BCP). The BCP will be compiled with input from the BCT and will serve as the management plan for environmental cleanup at SAEP. Version 1 of the BCP will be produced over the next 6 months. A second version of the plan will be started approximately 1 year after the first version is complete.

Carol Keating and Ken Feathers discussed their agencies' role in regulating the facility cleanup. Cleanup will be accomplished under RCRA and the new CTDEP cleanup standards will apply. USEPA and CTDEP have not decided who will be the lead agency, but they expect resolution of this issue by the next meeting.

Bill McCann discussed the community involvement in the project. He stated that the community was well informed about hazardous waste issues due to the other hazardous waste sites in the area.

The next BCT meeting was scheduled for March 20, 1996.

EBS WORKSHEETS

Worksheet A: Review of Storage of Hazardous Substances and Petroleum Products

Site [1] Number	CERFA Parcel No.	Storage Site or Area	Substances Stored	Largest Quantity Stored	Length of Time of Storage	Refs.	Is Notification of Storage Required Under CERCLA Section 120 (h)		Category of Environmental Condition of Property [2]		Has a Release Occurred? (If Yes, See Worksheet B)
							yes	no	1	2	
1 a	9	Oil Tank Farm	Aboveground Tank No. H102M: 33-18 Oil	10,000 gallons	1982 - Present	1,3		✓		✓	✓
1 b	9	Oil Tank Farm	Aboveground Tank No. H103W: 31-30 Oil	10,000 gallons	1982 - Present	1,3		✓		✓	
1 c	9	Oil Tank Farm	Aboveground Tank No. H104W: Waste Oil (High Sulfur)	10,000 gallons	1981 - Present	1,2,3		✓		✓	
1 d	9	Oil Tank Farm	Aboveground Tank No. H058W: Waste 31-32 Oil	5,000 gallons	1981 - Present	1,2,3		✓		✓	
1 e	9	Oil Tank Farm	Aboveground Tank No. H1013W: Waste Oil	10,000 gallons	1982 - Present	1,3	✓			✓	
2 a	9	Oil Tank Farm	Aboveground Tank No. H056M: Recycled 1,1,1-TCA	5,000 gallons	1987 - 1995	1,2,3	✓			✓	
2 b	9	Oil Tank Farm	Aboveground Tank No. H055M: Recycled 1,1,1-TCA	5,000 gallons	1982 - 1993	1,2,3	✓			✓	
2 c	9	Oil Tank Farm	Aboveground Tank No. H057W: Waste Oil-Chlorinated	5,000 gallons	1982 - 1994	1,2,3	✓			✓	
2 d	9	Oil Tank Farm	Aboveground Tank No. H1012W: Waste Oil	10,000 gallons	1982 - Present	1,3	✓			✓	
2 e	9	Oil Tank Farm	Aboveground Tank No. H059W: Waste Fuel	5,000 gallons	1982 - 1995	1,2,3		✓		✓	
2 f	9	Oil Tank Farm	Aboveground Tank No. H101M: 1,1,1-TCA - New	10,000 gallons	1982 - Present	1,3	✓			✓	✓
2 g	9	Oil Tank Farm	Aboveground Tank No. H1010M: Varsol	10,000 gallons	1982 - 1985	1,2,3		✓		✓	
2 h	9	Oil Tank Farm	Aboveground Tank No. H1010M: TPC	10,000 gallons	1985 - Present	1,2,3		✓		✓	
2 i	9	Oil Tank Farm	Aboveground Tank No. H1011W: Coolant	10,000 gallons	1981 - Present	1,2,3		✓		✓	
3 a	9	Building B-13	Former Waste Fuel UST (D001)	500 gallons	Unknown - 1992	1,2	✓			✓	✓
3 b	9	Building B-13	Former Waste Solvent and Oil UST (F001)	500 gallons	Unknown - 1992	1,2	✓			✓	
3 c	9	Building B-13	(2) Former Waste Oil USTs (F001)	400 gallons	Unknown - 1992	1,2	✓			✓	
6 a	14	Building B-64	OATP Surge Tank at B-64	200,000 gallons	1976-present	4		✓		✓	
6 b	14	Building B-64	OATP NaOH/Alum addition system at B-64	10,000 gallons	1976-present	4		✓		✓	
6 c	14	Building B-64-2	Aboveground Tank No. C013G: Oil-Polymer	10,000 gallons	1975 - Present	3		✓		✓	
6 d	14	Building B-64-2	Aboveground Tank No. C014G: Oil-Polymer	10,000 gallons	1975 - Present	3		✓		✓	
7 a	14	Building B-13	Aboveground Tank No. C107F: Oil-Alum	10,000 gallons	1949-53 - 1972	2,7		✓		✓	
9 a	12	Building B-70	Aboveground Tank No. T051W: Cyanide	5,000 gallons	1979-84 - Present	1,3	✓			✓	✓
9 b	12	Building B-70	Aboveground Tank No. T052W: Cyanide	5,000 gallons	1979-84 - Present	1,3	✓			✓	
9 c	12	Building B-70	Aboveground Tank No. H0516M: Sulfuric Acid	500 gallons	1979-84 - Present	1,3	✓			✓	
9 d	12	Building B-70	Aboveground Tank No. H0517M: Sodium Hydroxide	500 gallons	1979-84 - Present	1,3	✓			✓	
9 e	12	Building B-70	Aboveground Tank No. H0518M: Sodium Hypochlorite	500 gallons	1979-84 - Present	1,3	✓			✓	
9 f	12	Building B-70	Aboveground Tank No. H0515M: Sulfuric Acid	500 gallons	1979-84 - Present	1,3	✓			✓	
9 g	12	Building B-70	Aboveground Tank No. H0519M: Sodium Hydroxide	500 gallons	1979-84 - Present	1,3	✓			✓	
9 h	12	Building B-70	Aboveground Tank: Fuel Oil #2	275 gallons	1979-84 - Present	3		✓		✓	
10 a	20	Building B-18	(6) Chrome Reduction Tanks	4ft.x 25ft.x13ft.	1958 - Present	4	✓				
10 b	20	Building B-18	Metals Removal Unit equalization tanks	(1) 240,000 gallons and (2) 120,000 gallons	1987 - Present	1,2,3	✓			✓	
10 c	20	Building B-18	Metals Removal Unit Clarifier	60,000 gallons	1957 - Present	1,2,3	✓			✓	
10 d	20	Building B-18	Aboveground Tank No. H0315: NaOH	3,500 gallons	1982 - Present	2,3	✓			✓	
10 e	20	Building B-18	Aboveground Tank No. H0316: NaOH	3,500 gallons	1982 - Present	2,3	✓			✓	
10 f	20	Building B-18	Aboveground Tank No. C0111G: Fuel Oil #6	275 gallons	1989 - Present	1,3		✓		✓	
10 g	20	Building B-18	Aboveground Tank No. H3014M: Sulfuric Acid	5,000 gallons	1957 - Present	1,2,3	✓			✓	
10 h	20	Building B-18	Aboveground Tank No. C0111G: Fuel Oil #6	1,000 gallons	1989 - Present	1		✓		✓	
11 a	20	Building B-71	Metal Hydroxide Sludge	40,000 pounds	1988 - Present	2	✓			✓	
12 a	9	Building B-74	Hazardous Materials Storage (Solvents, Acids, Fuels, Caustics)	< 55 gallons	1980-85 - Present	2	✓			✓	
19 a	21	Sludge Drying Beds/B-72	Sludge Drying Bed #2	9,140 sq. ft.	1958-86	4		✓		✓	
19 b	21	Sludge Drying Beds/B-72	Sludge Drying Bed #2	7,920 sq. ft.	1958-86	4		✓		✓	
19 c	21	Sludge Drying Beds/B-72	Sludge Drying Bed #2	12,600 sq. ft.	1958-86	4		✓		✓	
27 a	6	Building B-58	Jet Fuel (Satellite Accumulation Area)	55 gallons	Pre-1991 - Present	1,4	✓			✓	✓
27 b	6	Building B-58	1,1,1-TCA	> 300 gallons	pre-1991 - Present	2	✓			✓	
28 a	9	Building B-15	1,1,1- TCA Sludge (Satellite Accumulation Area)	55 gallons	1992 - Present	2	✓			✓	
28 b	9	Building B-15	Waste Oil (Satellite Accumulation Area)	55 gallons	1994 - Present	2		✓		✓	
28 c	9	Building B-15	Oils	> 3,000 gallons	1945 - Present	1,2		✓		✓	
28 d	9	Building B-15	Solvents (1,1,1-TCA, TPC)	20,000 gallons	1945 - Present	1,2	✓			✓	
30 a	30	Building B-34	Waste Oil and Filters (Satellite Accumulation Area)	55 gallons	1990 - Present	1,2		✓		✓	
30 b	30	Building B-34	Jet Fuel (Satellite Accumulation Area)	55 gallons	1990 - Present	1,2		✓		✓	
30 c	30	Building B-34	Aboveground Tank No. F204M: JP-4	20,000 gallons	1989 - Present	1,3		✓		✓	
30 d	30	Building B-34	Aboveground Tank No. C2012M: Diesel Fuel #2	20,000 gallons	1989 - Present	1,3		✓		✓	
30 e	30	Building B-34	Aboveground Tank No. C2013M: Jet-A	20,000 gallons	1989 - Present	1,3		✓		✓	

Worksheet A: Review of Storage of Hazardous Substances and Petroleum Products

Site [1] Number	CERFA Parcel No.	Storage Site or Area	Substances Stored	Largest Quantity Stored	Length of Time of Storage	Refs.	Is Notification of Storage Required Under CERCLA Section 120 (h)		Category of Environmental Condition of Property [2]		Has a Release Occurred? (If Yes, See Worksheet B)
							yes	no	1	2	
30 f	30	Building B-34	Aboveground Tank No. F205M: JP-4	20,000 gallons	1989 - Present	1,3		✓		✓	
30 g	30	Building B-34	Aboveground Tank No. C2014M: JP-5	20,000 gallons	1989 - Present	1,3		✓		✓	
30 h	30	Building B-34	Aboveground Tank No. C2015M: Jet-A	20,000 gallons	1989 - Present	1,3		✓		✓	
30 i	30	Building B-34	Aboveground Tank No. C316M: Empty	3,000 gallons	1989 - Present	1,3		✓		✓	
31 a	24	Building B-6	Waste 1,1,1-TCA (Satellite Accumulation Area)	55 gallons	Pre-1991 - Present	2	✓			✓	
31 b	24	Building B-6	Jet Fuel (Satellite Accumulation Area)	55 gallons	Pre-1991 - Present	1,2		✓		✓	
31 c	24	Building B-6	Fuel (Satellite Accumulation Area)	55 gallons	Pre-1991 - Present	2		✓		✓	
31 d	24	Building B-6	Waste TPC (Satellite Accumulation Area)	110 gallons	Pre-1991 - 1992	1,2		✓		✓	
31 e	24	Building B-6	Waste Oil (Satellite Accumulation Area)	110 gallons	Pre-1991 - 1992	1,2		✓		✓	
31 f	24	Building B-6	Waste Oil and Freon (Satellite Accumulation Area) (F001)	55 gallons	1993 - 1994	2	✓			✓	
32 a	27	Building B-5	Jet Fuel (Satellite Accumulation Area)	55 gallons	1991 - Present	1,2		✓		✓	
32 b	27	Building B-5	Waste Oil (Satellite Accumulation Area) (F001)	55 gallons	1991 - Present	1,2	✓			✓	
32 c	27	Building B-5	Waste Oil/TPC (Satellite Accumulation Area)	55 gallons	1991 - Present	1,2		✓		✓	
32 d	27	Building B-5	Waste Oil/Calibration Fluids (Satellite Accumulation Area)	330 gallons	1991 - Present	2		✓		✓	
32 e	27	Building B-5	Fuel, Lubricating, and Hydraulic Oils (55 gal drums, near B-5)	<2,750 gallons	1980-1991	2		✓		✓	
33 a	28	Building B-19	Waste Oil and Filters (Satellite Accumulation Area)	55 gallons	1990 - Present	1,2	✓			✓	
33 b	28	Building B-19	Jet Fuel (Satellite Accumulation Area)	55 gallons	1990 - Present	2	✓			✓	
33 c	28	Building B-19	Waste Oil (Satellite Accumulation Area)	55 gallons	1990 - Present	2	✓			✓	
34 a	27	Building B-3A	Waste 1,1,1-TCA (Satellite Accumulation Area)	30 gallons	1991 - Present	1,2	✓			✓	✓
34 b	27	Building B-3A	Waste Oil (Satellite Accumulation Area) (F001)	30 gallons	1991 - Present	1,2	✓			✓	
34 c	27	Building B-3A	Jet Fuel (Satellite Accumulation Area)	30 gallons	1991 - Present	1,2		✓		✓	
36 a	13	Building B-12	Waste Oil (Satellite Accumulation Area) (F001)	55 gallons	1991 - Present	2	✓			✓	
36 b	13	Building B-12	Waste Oil and Filters (Satellite Accumulation Area) (F001)	55 gallon	1991 - Present	1,2	✓			✓	
36 c	13	Building B-12	Aboveground Tank No. G034M: Ammonia	3,000 gallons	1960-66 - Present	3,7	✓			✓	
37 a	13	Building B-10	Aboveground Tank No. C801G: Fuel Oil #6	80,000 gallons	1947-52 - Present	1,3		✓		✓	
38 a	29	Building B-2	Sanitary UST (beneath building)	1,500 gallons	Unknown - 1955	1,4		✓		✓	
38 b	29	Building B-2	(2) Oil USTs (beneath building)	2,500 gallons	Unknown - 1955	1,4		✓		✓	
40 a	24	Building B-6	(2) Fuel USTs	550 gallons	Unknown - 1989	1		✓		✓	
40 b	24	Building B-6	Oil UST (sand filled)	5,000 gallons	Unknown - 1979	1		✓		✓	
40 d	24	Building B-6	Fuel UST (sand filled)	5,000 gallons	Unknown - 1979	1		✓		✓	
41 a	33	Building B-9	Leaded Gasoline UST	2,500 gallons	1951-Aug. 1989	1		✓		✓	
41 b	33	Building B-9	Unleaded Gasoline UST	5,000 gallons	1951-Aug. 1989	1		✓		✓	
41 c	33	Building B-9	(2) Gasoline UST	3,000 gallons	Unknown to 1989	4		✓		✓	
42 a	33	Building B-9	Unleaded Gasoline UST	3,000 gallons	1990 - Present	1,2		✓		✓	
42 b	33	Building B-9	Unleaded Gasoline UST	3,000 gallons	1990 - Present	1,2		✓		✓	
44 a	28	Building B-19	Fuel UST	550 gallons	Unknown - 1987	1		✓		✓	
44 b	28	Building B-19	Fuel UST	1,000 gallons	Unknown - 1987	1		✓		✓	
44 c	28	Building B-19	Fuel UST	2,000 gallons	Unknown - 1987	1		✓		✓	
45 a	30	Building B-34	(2) JP-4 USTs	20,000 gallons	Pre-1945 - 1989	1,2		✓		✓	✓
45 b	30	Building B-34	(2) Jet-A UST	20,000 gallons	Pre-1945 - 1989	1,2		✓		✓	
45 c	30	Building B-34	JP-5 UST	20,000 gallons	Pre-1945 - 1989	1,2		✓		✓	
45 d	30	Building B-34	Diesel Fuel UST	20,000 gallons	Pre-1945 - 1989	1,2		✓		✓	
45 e	30	Building B-34	Fuel (1% Solvent) UST	4,000 gallons	Pre-1945 - 1989	1,2		✓		✓	
45 f	30	Building B-34	Varsol UST	5,000 gallons	Pre-1945 - 1986	1,2		✓		✓	
45 g	30	Building B-34	Fuel UST	1,000 gallons	Pre-1945 - 1989	1,2		✓		✓	
45 h	30	Building B-34	(9) Fuel USTs	300 gallons	Pre-1945 - 1989	1,2		✓		✓	
45 i	30	Building B-34	Unknown/Empty UST	5,000 gallons	Pre-1945 - 1989	1,2		✓		✓	
46 a	29	Building B-52	Oil UST (sand filled, beneath building)	1,000 gallons	Unknown - 1969	1,4		✓		✓	
48 a	17	Building B-16	Waste Oil (Satellite Accumulation Area) (F001)	55 gallons	1990 - Present	2	✓			✓	✓
48 b	17	Building B-16	Jet Fuel (Satellite Accumulation Area)	55 gallons	1990 - Present	2		✓		✓	
48 c	17	Building B-16	Oil and Filters (Satellite Accumulation Area)	55 gallons	1990 - Present	2		✓		✓	
48 d	17	Building B-16 - North	Jet Fuel (Satellite Accumulation Area)	55 gallons	1990 - Present	2	✓			✓	
48 e	17	Building B-16 - North	Fuel & Rags (Satellite Accumulation Area)	55 gallons	1990 - Present	2	✓			✓	
48 f	17	Building B-16 - West	Waste Oil (Satellite Accumulation Area)	55 gallons	Unknown - 1995	2	✓			✓	
48 g	17	Building B-16 - West	Oil and Rags (Satellite Accumulation Area)	55 gallons	Unknown - 1995	2	✓			✓	

Worksheet A: Review of Storage of Hazardous Substances and Petroleum Products

Site [1] Number	CERFA Parcel No.	Storage Site or Area	Substances Stored	Largest Quantity Stored	Length of Time of Storage	Refs.	Is Notification of Storage Required Under CERCLA Section 120 (h)		Category of Environmental Condition of Property [2]		Has a Release Occurred? (If Yes, See Worksheet B)
							yes	no	1	2	
48 h	17	Building B-16 - West	Jet Fuel (Satellite Accumulation Area)	55 gallons	Unknown - 1995	2	✓			✓	
48 i	17	Building B-16	Aboveground Tank No. C401G: Jet-A/Diesel	40,000 gallons	1980-84 - Present	1,3		✓		✓	
48 j	17	Building B-16	Aboveground Tank No. C402G: Diesel Fuel #2	40,000 gallons	1980-84 - Present	1,3		✓		✓	
49 a	8	Building B-2	Paints and Solvents	Unknown	pre-1991 - Present	2	✓			✓	
49 b	8	Building B-2	Acid/Acetone (Satellite Accumulation Area)	55 gallons	pre-1960 - 1993	4	✓			✓	
49 c	8	Building B-2	Acid/Isopropanol (Satellite Accumulation Area)	55 gallons	1993 - Present	2	✓			✓	
50 a	12	Building B-2	Hydrochloric Acid (Plating Chemical Storage Area)	> 4,700 kg	pre-1980 - Present	2,5	✓			✓	
50 b	12	Building B-2	Nickel Sulfamate (Plating Chemical Storage Area)	600 gallons	1958 - Present	2	✓			✓	
50 c	12	Building B-2	Hydrofluoric Acid (Plating Chemical Storage Area)	200-300 gallons	1958 - Present	2	✓			✓	
50 d	12	Building B-2	Nitric Acid (Plating Chemical Storage Area)	> 450 kg	1958 - Present	2,5	✓			✓	
50 e	12	Building B-2	Sulfuric Acid (Plating Chemical Storage Area)	> 450 kg	1958 - Present	2,5	✓			✓	
50 f	12	Building B-2	Chromic Acid (Plating Chemical Storage Area)	> 5,440 kg	1958 - Present	2,5	✓			✓	
50 g	12	Building B-2	Sodium Cyanide (Plating Chemical Storage Area)	> 1,180 kg	1958 - Present	2,5	✓			✓	
50 h	12	Building B-2	Waste Cyanide (Satellite Accumulation Area)	55 gallons	pre-1991 - Present	2,5	✓			✓	
50 i	12	Building B-2	Waste Oil (Satellite Accumulation Area) (F001)	55 gallons	pre-1991 - Present	2	✓			✓	
50 j	12	Building B-2	Waste TPC (Satellite Accumulation Area)	30 gallons	pre-1991 - Present	2				✓	
50 k	12	Building B-2	Waste 1,1,1-TCA (Satellite Accumulation Area)	30 gallons	pre-1991 - Present	2	✓			✓	
50 l	12	Building B-2	Waste Sodium Hydroxide Sludge (Satellite Accumulation Area)	55 gallons	pre-1991 - 1994	2	✓			✓	
54 a	24	Building B-17	1,1,1-TCA (Raw)	55 gallons	Unknown - 1993	2	✓			✓	
55 a	23	Building B-72	Aboveground Tank No. C201G: Diesel #2	20,000 gallons	1965 - Present	1,3		✓		✓	
55 b	23	Building B-72	Aboveground Tank No. F202G: JP-4	20,000 gallons	1965 - Present	1,3		✓		✓	
55 c	23	Building B-72	Aboveground Tank No C203G: Diesel #2	20,000 gallons	1980-86 - Present	1,3		✓		✓	
55 d	23	Building B-72	Aboveground Tank No. C204J: Jet-A	20,000 gallons	1980-86 - Present	1,3		✓		✓	
55 e	23	Building B-72	Aboveground Tank No. C101G: Diesel #2	10,000 gallons	1980-86 - Present	1,3		✓		✓	
55 f	23	Building B-72	Aboveground Tank No C102J. Diesel #1	10,000 gallons	1980-86 - Present	1,3		✓		✓	
55 g	23	Building B-72	Jet Fuel (Satellite Accumulation Area)	55 gallons	1991 - Present	2		✓		✓	
55 h	23	Building B-72	Oil and Filters (Satellite Accumulation Area)	55 gallons	1991 - Present	2		✓		✓	
59	27	Building B-4	Drum Storage Area	Unknown	1981 - Present	2,3		✓		✓	
60	24	Building B-6A	Waste Oil and Rags (Satellite Accumulation Area)	55 gallons	1991 - Present	1,2		✓		✓	
61	24	Building B-6A	Waste TPC and Oil (Satellite Accumulation Area)	55 gallons	1991 - Present	1,2		✓		✓	
62	13	Building B-7	Waste Oil (Satellite Accumulation Area)	1 gallon	1991 - Present	1		✓		✓	
63	13	Building B-8	Flammable Storage (Paints and Solvents)	50 - 70 gallons	1943 - Present	2,3	✓			✓	
64	13	Building B-8	Waste Paint (Satellite Accumulation Area) (D001)	55 gallons	1990 - Present	2	✓			✓	
65	31	Building B-19	Aboveground Tank No. C029G: Diesel Fuel #2	2,000 gallons	1953 - Present	1,3		✓		✓	
66	31	Building B-19	Aboveground Tank No. C018G: Diesel Fuel #2	1,000 gallons	1953 - Present	1,3		✓		✓	
67	31	Building B-19	Aboveground Tank No. C0110G: JP-5	1,000 gallons	1953 - Present	1,3		✓		✓	
68	28	Building B-19	Aboveground Tank No. F601G: JP-4	60,000 gallons	1953 - Present	1,3		✓		✓	✓
69	28	Building B-19	Aboveground Tank No. C602G: Jet-A	60,000 gallons	1953 - Present	1,3		✓		✓	
70	9	Building B-19	Drum Storage Rack (1,1,1-TCA and Oils)	> 55 gallons	Pre-1991 - Present	2	✓			✓	✓
71	9	Building B-44	Aboveground Tank No. C107F: Oil	10,000 gallons	>1980 - Present	1,3		✓		✓	
72	9	Building B-44	Aboveground Tank No. F503M: Methanol	5,000 gallons	1979-84 - Present	1,2	✓			✓	
73	26	Building B-44	Aboveground Tank No. C4001A: Fuel Oil #6	400,000 gallons	1979-84 - Present	1,2,3		✓		✓	
74	3,7,8,12	Building B-69	Fuel, Lubricating, and Hydraulic Oils (55 gal drums, near B-69)	<13,750 gallons	1980-1991	2		✓		✓	

Notes: 1) The Site Number corresponds with the location given on Figures 4-1 and 5-1.
2) Category of Environmental Condition of Property:
1 - Areas where no storage, release,or disposal of hazardous substances or petroleum products has occurred.
2 - Areas where only storage of hazardous substances or petroleum products has occurred.

Sources of Information:
1) Woodward-Clyde, Final PAS, 1991 - Tables 4-3, 4-4, 4-5 and Text Section 4.0
2) Allied Signal, Dr. John Fleming and Scott Jacobs, August and October 1995, and February 1996 - Personal Communication & Table of Hazardous Waste Satellite Accumulation Areas
3) Allied Signal, Gary Hamann, September 1995 - CAD Map of SAEP entitled: Locations of Environmentally Hazardous Materials
4) CDM Federal Programs Corporation, Final Draft RCRA Facility Assessment, June 1992
5) ESE, 1981, Installation Assessment of Stratford Army Engine Plant.
6) Allied Signal, Alan Monelli, August, 1995 - Personal communication during site tour.
7) USEPA, July 1990 - Installation Assessment , SAEP (Historical Aerial Photographs).

Worksheet B: Review of CERCLA, IRP, or Cleanup Sites									
Site[1] I.D.	CERFA Parcel No.	Site or Area Where Release or Disposal of Petroleum or CERCLA Hazardous Substances Occurred	Category of Environmental Condition of Property[2]					Comments	Refs.
			3	4	5	6	7		
52 a	2,32	Intertidal Flats of the Housatonic River bordering SAEP				✓		Waste solvents, including Varsol and 1,1,1-TCA were reportedly dumped into floor drains of Building B-16 which led to plant outfalls and the intertidal flats prior to 1976.	1
5 a	2,32					✓		Prior to construction of the Oil Abatement Treatment Plant in 1976, oil and grease from wastewater in the plant's storm drainage system was discharged to the intertidal flats through several outfalls.	1
52 b	2,32					✓		Prior to 1957, wastes from plating and other chemical operations at SAEP were dumped directly into the Housatonic River.	3
24 a	32					✓		25 to 30 pounds of chromic acid was discharged to Outfall #007 on May 8, 1978 when a tank containing residual chromic acid was accidentally overturned.	2
24 b	32					✓		On July 29, 1979, approximately 75 gallons of oil sludge from the OATP bypassed clogged skimmers and discharged from Outfall #007.	1
24 c	32					✓		In August 1987, CTDEP was advised that a yellow plume with a pH of 2.9 and 64 ppm of hexavalent chromium was extending approximately 200 yards from Outfall #007 into the harbor.	2
20 a	18	Causeway into Housatonic River					✓	Paint solvents and wastes were reportedly burned on this peninsula as part of fire training operations.	3
1 f	9	Oil Tank Farm - General Vicinity of Buildings B-13, B-15, B-37, and B-58					✓	This general area has historically been used for oil blending, waste reclamation, and chemical waste storage, and numerous small spills have reportedly occured.	1
27 c	6						✓	Oil was reportedly observed in the ground during pile driving for the construction of Building B-58.	1
1 g	9						✓	Minor overfills at the tank farm have reportedly occurred in the past.	1
34 d	27	Building B-3A					✓	Spill of cleaning solvents north of B-3A on April 20, 1989.	4,5

Worksheet B: Review of CERCLA, IRP, or Cleanup Sites									
Site [1] I.D.	CERFA Parcel No.	Site or Area Where Release or Disposal of Petroleum or CERCLA Hazardous Substances Occurred	Category of Environmental Condition of Property [2]					Comments	Refs.
			3	4	5	6	7		
48 k	17	Building B-16					✓	Broken manometers formerly used for pressure measurements occasionally released mercury to engine test cells, and subsurface drains.	1
4 b	17						✓	1,1,1-TCA used for engine cleaning was used in large amounts, and at one time waste solvents/oils/fuels were dumped into drains.	1
4 a	17						✓	Drains beneath B-16 have been corroded by chlorinated solvents.	1
48 l	17						✓	Waste solvents were also contained in drums or carts which were collected on small docks located on the east side of B-16; some spills have reportedly occurred in this area.	1
18 a	21	Equalization Lagoon#1 / Building B-18			✓			Equilization Lagoon overflow resulting in approximately 4000 gallons of Cr VI plating wastewater discharged to parking lot and running off the edges to bare ground.	4,5
57 b	31	Building B-19 - Drum Storage Rack		✓				A drum storage area, located east of B-19, formerly had a drainage system comprised of a grate underlain by a gravel trench.	1
57 c	31			✓				In 1991 a drum containing 1,1,1-TCA leaked resulting in release to the ground surface. 1,1,1-TCA was reportedly detected in subsurface soil samples collected during construction of berms from the tank farm east of Building 19. Contaminated soils have been excavated from this area, and a slurry wall installed.	4
23 a	28	Building B-19 - Dry Well					✓	Waste fuels, oils, and solvents were reportedly discharged to a dry well constructed of concrete with a gravel bottom. Disposal occurred from sometime after 1944 until 1987.	1
68 a	28	Building B-19 - Fuel Storage Tanks		✓				Fuel storage tanks in this area (see Worksheet A) were occasionally overfilled.	1,4

Worksheet B: Review of CERCLA, IRP, or Cleanup Sites

Site[1] I.D.	CERFA Parcel No.	Site or Area Where Release or Disposal of Petroleum or CERCLA Hazardous Substances Occurred	Category of Environmental Condition of Property[2]					Comments	Refs.
			3	4	5	6	7		
45 j	30	Building B-34 - Fuel Storage Tanks		✓				Fuel storage tanks in this area (see Worksheet A) have been overfilled, based on subsurface investigations (Metcalf and Eddy, 1990). At least some of the contaminated soil has been removed, a slurry wall installed, and clean backfill inserted.	1,4
21 a	4	Building B-65		✓				Paint-contaminated soils (believed to be from zinc-chromate undercoating for Corsairs in the 1940s) were discovered and excavated to the low tide water level during the construction of Building B-65.	1
21 b	4			✓				Petroleum-contaminated soils were also discoverd during the B-65 excavation. At least some of this contaminated soil (with avg. concs. <300 mg/kg) has been moved to the south parking lot and used as sub-grade fill beneath the asphalt. Excavated soil was likely industrial fill and debris, including battery cases.	1 4
19 d	21	Sludge Drying Beds/Building B-72			✓			Stained soils (apparently caused by petroleum) were reportedly observed in the sludge lagoon excavation near B-72, but no removal action was taken at the time (1989).	1
25 a	21/offsite	Drainage Channel leading from CWTP to Marine Basin	✓					The tidally influenced drainage channel has received treated effluent from the chemical waste treatment plant since 1958. Monitoring indicates occasional presence of chlorinated hydrocarbons and heavy metals in effluent discharged to the drainage ditch.	1
25 b	21/offsite		✓					December 30, 1974 and January 2, 1975: CTDEP notes that the equalization lagoon at the CWTP has overflowed into the drainage channel and to the Housatonic River.	2
25 c	21/offsite		✓					During an EPA inspection in 1984, EPA observed a pile of white foam where lime-green colored liquids from the clarifier were discharging into the tidal basin; the precipitate in the equalizing lagoon was also a lime-green color.	2

Worksheet B: Review of CERCLA, IRP, or Cleanup Sites									
Site [1] I.D.	CERFA Parcel No.	Site or Area Where Release or Disposal of Petroleum or CERCLA Hazardous Substances Occurred	Category of Environmental Condition of Property [2]					Comments	Refs.
			3	4	5	6	7		
19 e	21	Closed Lagoons - Southern End of SAEP Property			✓			Three unlined lagoons were used to contain sludges generated by the CWTP. These lagoons likely intercepted the water table/tidal level, allowing for potential migration of chromium and cyanide wastes.	1
17 a	22	South Parking Lot	✓					Petroleum-contaminated soil from B-65 excavation used as fill under SE corner of lot. TPH concentrations in the fill were less than 300 ppm.	4
22	12	Building B-70				✓		From pre-1945 to 1950, Chance-Vought dumped paint into a concrete vault on the east side of the current cyanide destruction facility (B-70).	4

Notes:
1) The Site number with the location given on Figures 4-1 and 5-1.
2) Category of Environmental Condition of Property:
1 - Areas where no storage, release,or disposal of hazardous substances or petroleum products has occurred.
2 - Areas where only storage of hazardous substances or petroleum products has occurred.
3 - Areas where storage, release, disposal, and/or migration of hazardous substances has occurred, but at concentrations that do not require remediation.
4 - Areas where storage, release, disposal, and/or migration of hazardous substances has occurred, and all necessary remedial actions have been taken.
5 - Areas where storage, release, disposal, and/or migration of hazardous substances has occurred, removal and/or remedial actions are underway, but all required remedial actions have not been taken.
6 - Areas where storage, release, disposal, and/or migration of hazardous substances has occurred, but required remedial actions have not yet been implemented.
7 - Areas that are unevalueated or require additional evaluation.

Sources of Information:

1) Woodward-Clyde, Final PAS, 1991 - Tables 4-3, 4-4, 4-5 and Text Section 4.3
2) CDM Federal Programs Corporation, Final Draft RCRA Facility Assessment, June 1992
3) ESE, 1981, Installation Assessment of Stratford Army Engine Plant.
4) Personal communication with SAEP employees, August 28 through 30 and October 23 thtough 25, 1995
5) Spill record obtained from Allied Signal files (Scott Jacobs and Dr. John Fleming)

Worksheet C: Review of Other Known or Potential Hazards

Site or Area	Status and Description of Hazards			Disclosure of Hazard Required in Deed?		Restrictions on Use Required in Deed?		List of Restrictions, If Any	Refs.
	Known	Potential	Description	yes	no	yes	no		
Buildings B-1, B-2, B-3, B-3A, B-4, B-5, B-6, B-6A, B-12, B-15, B-16, and B-19	✓		Asbestos Containing Materials (Floor Tile, Transite Board, Pipe Wrap)						1,2
Buildings B-7, B-7A, B-17, B-52, B-53, B-58, B-59, B-60, B-61, B-63, and B-64-1		✓	Asbestos Containing Materials (Floor Tile, Transite Board, Pipe Wrap)						1,2,6
Sitewide			No Radon						3
Buildings B-2, B-3, B-3A, and B-19	✓		PCBs contained in electrical transformers						1
Building B-73	✓		Magnesium and Nickel Thorium Storage Area						4
Building B-2	✓		Magnesium and Nickel Thorium machining and processing.						2
Building B-59	✓		Explosives (used to open nose cones of missiles for warhead deployment) were stored as part of the missile assemblies in this building.						2
Buildings B-1, through B-19, B-33 through B-61 through B-64, B-64-1, B-64-2, and B-77.		✓	Lead Paint in Buildings constructed between 1930 and 1978.						5

Sources of Information:

1) Woodward-Clyde, Final PAS, 1991.
2) Personal communication with SAEP employees, August 28 through 30 and October 23 through 25, 1995.
3) Communication from U.S. Aviation Systems Command, St. Louis to Commander U.S. Army Materiel Command, Alexandria, VA, September 6, 1991
4) USAEHA, Radiation Protection Study No. 27-43-7113-89, January 1989.
5) USAEC Base Closure Division, Environmental Baseline Survey/CERFA Guidelines, Topic: Lead-Based Paint.
6) Woodward-Clyde, Final PAS, 1991, Table 4-7. Status of asbestos classified as "Potential" on this Table if Table 4-7 of the PAS has Medium or High potential.

SITE CHRONOLOGY OF STRATFORD ARMY ENGINE PLANT

APPENDIX D
SITE CHRONOLOGY OF
STRATFORD ARMY ENGINE PLANT

1928 Sikorsky Aviation Corporation (subsidiary of United Aircraft and Transport) purchases approximately 26 acres in Stratford, Connecticut; A. C. Dickinson, President; Igor Sikorsky, Vice President of Engineering.

1929 Construction starts on Bldgs. 1, 2, and 10; Sikorsky Aviation Corporation becomes subsidiary of United Aircraft and Transport Corporation (now United Technologies); purchase of approximately 11 acres of land.

1930 Construction of Bldg. 3 and a "vertical-type" wind tunnel for models.

1931 Production of the S-40 "Flying Clipper" amphibian aircraft begins.

1933 Production of S-42 "Pan-American Clipper" flying boat begins.

1935 Production of S-44.

1938 First flight of X052U-2, "The King Fisher".

1939 Production of S-43 begins; Sikorsky Aviation Corporation becomes Vought-Sikorsky Aircraft Division; extensive plant refurbishment begins; first flight of VS-300 helicopter; construction of Bldg. 8.

1940 Production of the OS2U-2, "The King Fisher" begins; first flight of XF4U-2 "Corsair".

1941 Construction of additions to Bldgs. 1, 2, 3, and 10/11. Construction of Bldg. 12; purchase of approximately 15 acres of land including riparian rights.

1942 Production of VS-300/R-4 helicopter, F4U-1 "Corsair"; construction of addition to Bldg. 2; construction of Bldgs. 7 and 9; purchase of approximately 39 acres of land including riparian rights.

1943 Sikorsky Aircraft Division leaves plant and Chance Vought stays; Construction of additions to Bldgs. 1 and 2; construction of Bldg. 3A; purchase of approximately 3 acres of land and riparian rights.

APPENDIX D
SITE CHRONOLOGY OF
STRATFORD ARMY ENGINE PLANT

1944 Construction of additions to Bldg. 2; construction of Bldgs. 5, 6, 13, 19, 42, and 43; purchase of approximately 6 acres of land and riparian rights; shoreline extension.

1945 Construction of Bldgs. 4 and 15.

1948 Production of XF6U-1, "The Pirate" - Chance Vought's first jet aircraft; Chance Vought moves company to Dallas, Texas.

1948-51 Plant site abandoned.

1949 A major flood of the Housatonic River renders plant's 1,580,000 sq. ft. of manufacturing space unusable; plant site put up for sale.

1951 U.S. Air Force procures plant and names it USAF Plant No. 43; Bridgeport-Lycoming Division of Avco takes over plant through U.S. Air Force contract to produce T-53 jet engines; becomes Avco-Lycoming; dike construction begins.

1952 Production begins on Curtis-Wright 9-cylinder R1820 radial engine; production begins on major components for J-47 jet aircraft; construction of B-17; purchase of approximately 15 acres of land.

1953 Construction of Bldgs. 16, 33, 34, 36, 37, 38, 40, 41; first flight of T-53 helicopter engine.

1958 Construction of Bldgs. 18 and 63 (chemical waste treatment plant); production of T-53 helicopter engine.

1961 Production of T-55 helicopter engine; production of ALF502 turbofan engine; construction of Bldgs. 44, 48, and 53.

1962 Construction of Bldgs. 7A and 52.

1963 Production of T-55 helicopter engines for cargo helicopters.

1964 Production of engines for amphibious hydrofoils.

1965 Development of AGT1500 vehicular turbine engines.

1966 Construction of Bldg. 6A.

1967 Construction of Bldg. 58.

1968 Construction of Bldgs. 59 and 60.

1969 Construction of Bldg. 61.

1972 Production of gas turbine engines for the first commercially powered hovercraft in U.S.; manufacturing of re-entry vehicles for the Titan and Minuteman ICBM programs.

1975 Construction of Bldgs. 64-1 and 64-2 (oil abatement plant).

1976 USAF Plant No. 43 transferred to U.S. Army and plant renamed Stratford Army Engine Plant; operated by Avco-Lycoming; production of "Super TF" marine and industrial engine begins.

1977 U.S. Aviation Systems Command (AVSCOM) becomes responsible for SAEP.

1978 Avco wins M-1 Abrams tank engine contract.

1982 Beginning of Industrial Productivity Improvement/Industrial Resource Enhancement Program (IREP) easement granted to Town of Stratford for sewer line running across SAEP.

1984 Construction of Bldg. 72.

1985 Textron merges with Avco to become Textron-Lycoming Stratford Division; continues production of turbine engines for military and commercial aircraft and land vehicles; construction of Bldgs. 67 and 69.

1986 Construction of Bldgs. 68, 70, and 71; modification to chemical waste. treatment plant

1988 Encapsulation of B-19.

1991 Construction of Bldg. B-65 is completed.

1994 AlliedSignal assumes operation of SAEP.

1995 SAEP is placed on the Base Realignment and Closure List.

1995 (October) U.S. Army Tank-Automotive and Armament Command (TACOM) assumes command of SAEP.

STATE OF CONNECTICUT
REMEDIATION STANDARD REGULATIONS

STATE OF CONNECTICUT

REGULATION

OF

DEPARTMENT OF ENVIRONMENTAL PROTECTION

concerning

REMEDIATION STANDARD

Section 1. The Regulations of Connecticut State Agencies are amended by adding a new section 22a-133k-1 as follows:

Section 22a-133k-1

(a) Definitions.

For the purposes of sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies, the following definitions apply:

(1) "Analytical detection limit" means the minimum concentration of a substance that can be quantified consistently and reliably using methods approved by EPA and which concentration shall be (A) for a substance in ground water, equal to or less than the ground-water protection criterion for such substance determined (i) for a sample of ground water in a GA area using analytical methods specified in subpart C of 40 CFR part 141 or (ii) for a sample of ground water in a GB area using methods established pursuant to "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", SW-846, U.S. Environmental Protection Agency, Office of Solid Waste, Washington D.C. 20460; or (B) for a substance in soil, equal to or less than the residential direct exposure criteria or the applicable pollutant mobility criteria, whichever is lower using methods established pursuant to "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", SW-846, U.S. Environmental Protection Agency, Office of Solid Waste, Washington D.C. 20460.

(2) "Aquifer protection area" means an aquifer protection area as defined in section 22a-354h of the General Statutes.

(3) "Area of influence" means as "area of influence" as defined in section 22a-354b-1(a) of the Regulations of Connecticut State Agencies.

(4) "Areal extent of a ground-water plume" means the surface area beneath which ground water has been or may be polluted by a release and in which ground water one or more substances from such release is or may be present at a concentration above the analytical detection limit.

(5) "Background concentration for ground water" with respect to a particular release means the concentration of a substance in ground water (A) at the nearest location upgradient of and unaffected by the release; or (B) if such release occurred at or created a ground-water divide, at the nearest location representative of ground water quality unaffected by any release.

(6) "Background concentration for soil" means the representative concentration of a substance in soil of similar texture and composition outside the subject release area and in the general geographic vicinity of such release area, but not within any other release area.

(7) "Carcinogenic substance" means a substance defined as a "carcinogen" by federal or state agencies and for which a quantitative health risk extrapolation is available.

(8) "CFR" means the Code of Federal Regulations.

(9) "Commissioner" means the Commissioner of Environmental Protection or his designee.

(10) "Dense non-aqueous phase liquid" means a non-aqueous phase liquid that has a density greater than water at 20 degrees Celsius.

(11) "Direct Exposure Criteria" means the concentrations identified in Appendix A to sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies or any alternative direct exposure criteria approved by the Commissioner pursuant to section 22a-133k-2(d) of the Regulations of Connecticut State Agencies.

(12) "Downgradient" means in the direction of the maximum rate of decrease of hydraulic head.

(13) "Downgradient area" with respect to a release of a substance means the area bounded by (A) the width of the release area of such substance perpendicular to the direction of ground-water flow, (B) two side boundary lines parallel to the downgradient direction of ground water flow extending from the two endpoints of said width to the downgradient parcel boundary, and (C) the downgradient parcel boundary extending between the two side boundary lines; excluding any portion of such downgradient area that is (i) affected by any other release of such substance or (ii) beneath an existing permanent structure.

(14) "Environmental land use restriction" means an environmental land use restriction as defined in section 22a-133q-1 of the Regulations of Connecticut State Agencies.

(15) "Environmentally isolated soil" means polluted soil which is: (A)(i) beneath an existing building or (ii) beneath another existing and permanent structure which the Commissioner has determined in writing would prevent the migration of pollutants; (B) not a continuing source of pollution; (C) not polluted with volatile organic substances or, if it is polluted with such substances, the concentration of such substances has been reduced in concentration to the maximum extent prudent; and (D) above the seasonal high water table.

(16) "EPA" means the United States Environmental Protection Agency.

(17) "Excess lifetime cancer risk" means the estimated probability that an individual's exposure to a substance could result in cancer.

(18) "GA area" means an area where the ground-water classification is GA or GAA, respectively.

(19) "GB area" means an area where the ground-water classification is GB.

(20) "Ground water" means that portion of waters as defined in section 22a-423 of the General Statutes which portion is at or below the water table.

(21) "Ground-water classification" means the ground-water classification goal or the ground-water classification, whichever is more stringent, established in the Water Quality Standards.

(22) "Ground-water divide" means a line on the water table from which the water table slopes downward in both directions away from such line.

(23) "Ground-water protection criteria" means the concentrations identified in Appendix C to sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies.

(24) "Ground-water plume" means ground water which has been polluted by a release and in which ground water one or more substances from such release is present at a concentration above the analytical detection limit.

(25) "Hazard index" means the calculation of the potential for non-cancer health effects as a result of exposure to one or more substances with the same or similar modes of toxic action or toxic endpoints.

(26) "Hydraulic gradient" means the change in hydraulic head per unit distance.

(27) "Hydraulic head" means the elevation to which water rises in a piezometer or a well.

(28) "Inaccessible soil" means polluted soil which is: (A) more than four feet below the ground surface; (B) more than two feet below a paved surface comprised of a minimum of three inches of bituminous concrete or concrete, which two feet may include the depth of any material used as sub-base for the pavement; or (C)(i) beneath an existing building or (ii) beneath another existing permanent structure provided written notice that such structure will be used to prevent human contact with such soil has been provided to the Commissioner.

(29) "Industrial or commercial activity" means any activity related to the commercial production, distribution, manufacture or sale of goods or services, or any other activity which is not a residential activity as defined in subdivision (53) of this subsection.

(30) "Industrial/commercial direct exposure criteria" means the concentrations identified as industrial/commercial direct exposure criteria in Appendix A to sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies.

(31) "Industrial/commercial volatilization criteria" means the concentrations identified as industrial/commercial volatilization criteria in Appendices E and F to sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies.

(32) "Intermittent watercourse" means "intermittent watercourse" as defined in section 22a-38 of the General Statutes.

(33) "Light non-aqueous phase liquid" means a non-aqueous phase liquid that has a density equal to or less than water at 20 degrees Celsius.

(34) "Matrix interference effect" means the inability to measure the concentration of a substance in a sample at the analytical detection limit due to chemical interferences within the sample which interferences cannot be compensated for using methods approved by EPA.

(35) "Natural attenuation" means a decrease in concentration of a substance in ground water through operation of natural physical or chemical processes, including but not limited to adsorption, absorption, dilution, phase transfer, oxidation, organic complexation, biodegradation, dispersion and diffusion.

(36) "Non-aqueous phase liquid" means a liquid that is not dissolved in water.

(37) "Organoleptic" means the capability to produce a detectable sensory stimulus such as odor or taste.

(38) "Parcel" means a piece, tract or lot of land, together with the buildings and other improvements situated thereon, a legal description of which piece, parcel, tract or lot is contained in a deed or other instrument of conveyance.

(39) "PCB" means polychlorinated biphenyls.

(40) "PPB" means parts per billion.

(41) "PPM" means parts per million.

(42) "Person" means person as defined in section 22a-2(c) of the General Statutes.

(43) "Pollutant mobility criteria" means the concentrations identified in Appendix B to sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies or any alternative pollutant mobility criteria approved by the Commissioner pursuant to subsection 22a-133k-2(d) of the Regulations of Connecticut State Agencies.

(44) "Polluted fill" means soil or sediment which contained polluting substances at the time such soil or sediment was deposited as fill material.

(45) "Polluted soil" means soil affected by a release of a substance at a concentration above the analytical detection limit for such substance.

(46) "Pollution" means pollution as defined in section 22a-423 of the General Statutes.

(47) "Potable water" means potable water as defined in section 22a-423 of the General Statutes.

(48) "Potential public water supply resource" means (A) any "potential well field" as defined in section 22a-354a of the General Statutes, or (B) any area identified by the Commissioner pursuant to section 22a-354c(b) of the General Statutes.

(49) "Prudent" means reasonable, after taking into consideration cost, in light of the social and environmental benefits.

(50) "Release" means any discharge, spillage, uncontrolled loss, seepage, filtration, leakage, injection, escape, dumping, pumping, pouring, emitting, emptying, or disposal of a substance.

(51) "Release area" means the land area at and beneath which polluted soil is located as a result of a release.

(52) "Remediation" means the containment, removal, mitigation, or abatement of pollution, a potential source of pollution, or a substance which poses a risk to human health or the environment, and includes but is not limited to the reduction of pollution by natural attenuation.

(53) "Residential activity" means any activity related to a (A) residence or dwelling, including but not limited to a house, apartment, or condominium, or (B) school, hospital, day care center, playground, or outdoor recreational area.

(54) "Residential direct exposure criteria" means the concentrations identified as residential direct exposure criteria in Appendix A to sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies.

(55) "Residential volatilization criteria" means the concentrations identified as residential volatilization criteria in Appendices E and F to sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies.

(56) "Seasonal high water table" means, on an annual basis, the highest plane in the ground at which plane all pore spaces are filled with water atmospheric pressure.

(57) "Seasonal low water table" means, on an annual basis, the lowest plane in the ground at which plane all pore spaces are filled with water atmospheric pressure.

(58) "Sediment" means unconsolidated material occurring in a stream channel, estuarine waters, or marine waters.

(59) "Seven day, ten year low flow" or "7Q10" means the lowest seven consecutive day mean stream discharge rate with a recurrence interval of ten (10) years.

(60) "Soil" means unconsolidated geologic material overlying bedrock, but not including sediment.

(61) "Soil water" means that portion of waters as defined in section 22a-423 of the General Statutes which portion is above the water table.

(62) "SPLP" means Synthetic Precipitation Leaching Procedure EPA Method 1312 as set forth in "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", SW-846, U.S. Environmental Protection Agency, Office of Solid Waste, Washington D.C. 20460.

(63) "Substance" means an element, compound or material which, when added to air, water, soil or sediment, may alter the physical, chemical, biological or other characteristic of such air, water, soil or sediment.

(64) "Surface-water protection criteria" means the concentrations identified in Appendix D to sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies or any alternative surface-water protection criteria calculated or approved by the Commissioner in accordance with subdivision 22a-133k-3(b)(3) of the Regulations of Connecticut State Agencies.

(65) "TCLP" means Toxicity Characteristic Leaching Procedure EPA Method 1311 as set forth in "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods", SW-846, U.S. Environmental Protection Agency, Office of Solid Waste, Washington D.C. 20460.

(66) "Technically practicable" means, with respect to remediation, the greatest degree of remediation that can be achieved using sound engineering and hydrogeologic practices.

(67) "Upgradient" means in the direction of maximum rate of increase of hydraulic head.

(68) "Upgradient area" with respect to a release area of a substance means the area bounded by (A) the width of the release area of such substance perpendicular to the direction of ground-water flow, (B) two side boundary lines parallel to the upgradient direction of ground-water flow extending from the two endpoints of said width to the upgradient parcel boundary, and (C) the upgradient parcel boundary extending between the two side boundary lines; excluding any portion of such upgradient area that is (i) affected by any other release of such substance or (ii) beneath an existing permanent structure.

(69) "Volatilization criteria" means the concentrations identified in Appendix E and Appendix F to sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies or alternative criteria approved by the Commissioner pursuant to subdivision 22a-133k-3(c)(4) of the Regulations of Connecticut State Agencies.

(70) "Volatilization criteria for ground water" means the concentrations identified in Appendix E to sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies.

(71) "Volatilization criteria for soil vapor" means the concentrations identified in Appendix F to sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies.

(72) "Water table" means the plane in the ground at which plane all pore spaces are filled with water at atmospheric pressure.

(73) "Water Quality Standards" means the latest adopted Connecticut Water Quality Standards and Criteria adopted by the Commissioner pursuant to section 22a-426 of the General Statutes.

(74) "Wetland" means 'wetlands' as defined in sections 22a-38(15) and section 22a-29(2) of the General Statutes.

(75) "Zone of influence" means zone of influence as defined in section 22a-430-3(a) of the Regulations of Connecticut State Agencies.

(b) Applicability.

Sections 22a-133k-1 through 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies apply to any action taken to remediate polluted soil, surface water or a ground-water plume at or emanating from a release area which action is:

(1) required pursuant to Chapter 445 or 446k of the General Statutes, or

(2) taken pursuant to Public Act 95-183 or Public Act 95-190 including but not limited to any such action required to be taken or verified by a licensed environmental professional pursuant to such Public Acts.

Sections 22a-133k-1 through 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies do not apply within the zone of influence of a ground-water discharge permitted by the Commissioner under section 22a-430 of the General Statutes. Any person conducting a remediation in accordance with said sections 22a-133k-1 through 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies shall obtain all permits and other authorizations required by state, federal and local law and shall comply with all applicable state, federal and local laws, including without limitation the requirements of 40 CFR Part 761. In the event that any provision of sections 22a-133k-1 through 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies conflicts with any provision of any other statute or regulation, the more stringent provision shall prevail. Nothing in this subsection shall be construed as requiring any further remediation of any release which has been remediated and which remediation has been approved in writing by the Commissioner, unless the Commissioner takes action to require such remediation pursuant to any section of Chapter 446k of the General Statutes.

(c) Time frames for Issuance of Approvals by the Commissioner.

The Commissioner shall, no later than thirty days after the date of receipt of a request for his approval of any variance from or alternative criteria pursuant to sections 22a-133k-1 through 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies, provide to the requester in writing estimated time frames for the Commissioner to (1) determine whether additional information is needed for him to evaluate the request; and (2) approve or deny a complete request. In addition, no later than one hundred and eighty days following adoption of said sections 22a-133k-1 through 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies, the Commissioner shall make available general estimated written time frames for the Commissioner to approve any variance or alternative criterion pursuant to these regulations, including estimated time frames for the Commissioner to (1) determine whether additional information is needed to evaluate the request; and (2) approve or deny a complete request. In establishing estimated time frames pursuant to this subsection, the Commissioner shall take into account the complexity of the request, and the environmental and economic significance of the remediation, and shall expedite any request associated with any voluntary remediation pursuant to Public Acts 95-183 or 95-190.

(d) Public Participation.

(1) Public Hearing on Remediation. If the Commissioner determines that there is substantial public interest in any remediation proposed pursuant to section 2 of P.A. 95-190 or section 2 or 3 of P.A. 95-183, he may hold a public hearing on such proposed remediation, and he shall hold a hearing upon receipt of a petition signed by twenty-five or more persons. Notice of any such hearing shall be published in a newspaper of substantial circulation in the area of the proposed remediation at least thirty days prior to such hearing. Such hearing need not be conducted pursuant to the provisions of Chapter 54 of the General Statutes.

(2) Comment Procedures. Any public notice published or mailed pursuant to section 2 of P.A. 95-190 or section 2 or 3 of P.A. 95-183 shall provide that comments on the proposed remediation may be submitted to the Commissioner within forty-five days of the publication or mailing of such notice. The Commissioner shall forward a copy of all comments received by the date specified in the public notice and all comments made at a public hearing to the owner of the subject parcel and, if different, the person undertaking remediation at such parcel. The person undertaking remediation at the subject parcel shall, within sixty days of receiving such comments, submit to the Commissioner a written summary of all such comments and a written response to each such comment. The Commissioner shall review such summary and responses and shall adopt it as his own, adopt it with modifications, or reject it and prepare a response to each such comment. The

Commissioner shall send a copy of the initial summary and responses and of his action with respect thereto to each person who submitted comments on the remediation proposal.

(e) Periodic review.

The Commissioner shall periodically review sections 22a-133k-1 through 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies to determine whether the implementation of such regulations is successfully protecting public health and the environment from the hazards of pollution. The Commissioner shall also evaluate whether the implementation of the regulations streamlines the process of conducting remediation projects in Connecticut, based upon, among other things, his review of the number of remediation projects completed in accordance with said sections 22a-133k-1 through 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies, the number of such projects reviewed by the Commissioner pursuant to sections 2 or 3 of P.A. 95-183, the length of time required for the Commissioner's review of complete requests for approval of alternative criteria or variances, and the number of remediation projects conducted pursuant to P.A. 95-190 or sections 2 or 3 of P.A. 95-183 which projects were verified by a licensed environmental professional. Such reviews shall be conducted at intervals of no more than five years, provided that nothing in this subsection shall preclude the Commissioner, at his discretion, from conducting such a review at any time and further provided that the first such review shall be conducted no later than eighteen months after the effective date of sections 22a-133k-1 through 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies. As a result of such a periodic review, the Commissioner may conclude that the goals of this subsection and section 22a-133k of the General Statute are being met, or he may conclude that revisions to such regulations are necessary to ensure that the implementation of said sections 22a-133k-1 through 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies achieves such goals, in which case he may revise such Regulations as he deems necessary to achieve those goals.

Section 2. The Regulations of Connecticut State Agencies are amended by adding a new section 22a-133k-2 as follows:

22a-133k-2 Standards for Soil Remediation

(a) General.

Unless otherwise specified in sections 22a-133k-1 through 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies, polluted soil at a release area shall be remediated to a concentration which meets (1) (A) the direct exposure criteria set forth in subsection (b) of this section or alternative direct exposure criteria established in accordance with subdivision (2) or subdivision (7) of subsection (d) of this section; and (B) the pollutant mobility criteria set forth in subsection (c) of this section or alternative pollutant mobility criteria established in accordance with subdivision (3) or (5) of subsection (d) of this section; or (2) the background concentration for soil provided notice has been submitted to the Commissioner which notice shall be submitted on a form furnished by the Commissioner and shall include a brief description of the subject release area and of the general characteristics of soils in the vicinity of such release area; a map showing the location of such release area, and based on reasonable inquiry of other release areas in the vicinity thereof, and of all soil samples taken for the purpose of characterizing background concentration for soil; and the results of all laboratory analyses of such samples.

(b) Direct Exposure Criteria.

(1) Except as otherwise provided in this paragraph, polluted soil at a release area shall be remediated to at least that concentration at which the residential direct exposure criteria for each substance is met.

(2) (A) Polluted soil at a release area may be remediated to a concentration at which the industrial/commercial direct exposure criteria for each substance except PCB is met if (i) access to the parcel containing such release area is limited to individuals working at or people temporarily visiting the subject parcel; and (ii) an environmental land use restriction is in effect with respect to such parcel, or to the portion of such parcel containing such

release area, which environmental land use restriction ensures that the parcel or restricted portion thereof is not used for any residential activity in the future and that any future use of such parcel or restricted portion thereof is limited to an industrial or commercial activity.

(B) Soil polluted with PCB at a release area may be remediated to a concentration at which the industrial/commercial direct exposure criteria for PCB is met if the parcel upon which such release area is located is (i) an outdoor electrical substation as defined in 40 CFR 761.123; or (ii) an other restricted access location as defined in said section 40 CFR 761.123 and an environmental land use restriction is in effect with respect to such parcel, or to the portion of such parcel containing such release area, which environmental land use restriction ensures that the parcel or restricted portion thereof is not used for any residential activity in the future and that any future use of such parcel or restricted portion thereof is limited to an industrial or commercial activity.

(3) The direct exposure criteria for substances other than PCB do not apply to inaccessible soil at a release area provided that if such inaccessible soil is less than 15 feet below the ground surface an environmental land use restriction is in effect with respect to the subject parcel or to the portion of such parcel containing such release area, which environmental land use restriction ensures that such soils will not be exposed as a result of excavation, demolition or other activities and that any pavement which is necessary to render such soil inaccessible is maintained in good condition unless and until such restriction is released in accordance with said section 22a-133q-1. Unless an alternative criterion has been approved in accordance with subsection 22a-133k-2(d)(7), inaccessible soil polluted with PCB may be remediated to a concentration of 10 ppm PCB by weight provided that (A) if such inaccessible soil is located on a parcel which is an other restricted access location as defined in said section 40 CFR 761.123, such soil may be remediated to a concentration of 25 ppm PCB by weight, or (B) if such inaccessible soil is located on a parcel which is an outdoor electrical substation as defined in 40 CFR 761.123, such soil may be remediated to a concentration of 25 ppm PCB by weight, or if a label or notice is visibly placed in the area in accordance with 40 CFR Part 761, to a concentration of 50 ppm PCB by weight.

(4) Additional Polluting Substances

(A) With respect to a substance at a release area for which a direct exposure criterion is not specified in sections 22a-133k-1 through 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies, the Commissioner may, after consultation with the Commissioner of Public Health, approve in writing a direct exposure criterion to apply to such substance at a particular release area. Any person requesting approval of a direct exposure criterion for such substance shall submit to the commissioner (i) a proposed risk-based direct exposure concentration for such substance calculated in accordance with subparagraph (B) or (C) of this subdivision as applicable, and (ii) the analytical detection limit for such substance. Before approving a direct exposure criterion the Commissioner shall consider the proposed risk-based direct exposure concentration for such substance, the analytical detection limit for such substance, any information about the health effects such substance may cause due to exposure pathways not accounted for in the proposed risk-based direct exposure, and any other information that the Commissioner reasonably deems necessary.

(B) The proposed residential risk-based direct exposure concentration shall be calculated using the following equations:

(i) For carcinogenic substances:

$$DEC_{RB} = \left[\frac{Risk}{CSF}\right] x \left[\frac{BW_C \text{ x } AT}{IR_C \text{ x } ED_C \text{ x } EF \text{ x } CF} + \frac{BW_A \text{ x } AT}{IR_A \text{ x } ED_A \text{ x } EF \text{ x } CF}\right]$$

(ii) For non-carcinogenic substances:

$$DEC_{RB} = \left[RFD \times HI\right] \times \left[\frac{BW_C \times AT_C}{IR_C \times ED_C \times EF \times CF} + \frac{BW_A \times AT}{IR_A \times ED_A \times EF \times CF}\right]$$

(iii) The abbreviations used in subparagraphs (i) and (ii) shall be interpreted in accordance with the following table and shall be assigned the values specified therein:

Term	Description	Units	Value
DEC_{RB}	Risk-based Direct Exposure Criterion	mg/kg	calculated
Risk	Target Cancer Risk Level	unitless	1.0E-06
HI	Hazard Index	unitless	1.0
CSF	Cancer slope Factor	$(mg/kg\text{-}day)^{-1}$	substance-specific
RFD	Reference Dose	mg/kg-day	substance-specific
IR_C	Ingestion Rate, Child	mg/day	200
IR_A	Ingestion Rate, Adult	mg/day	100
EF	Exposure Frequency	days/year	365
ED_C	Exposure Duration, Child	years	6
ED_A	Exposure Duration, Adult	years	24
CF	Conversion Factor	kg/mg	0.000001
BW_C	Body Weight, Child	kg	15
BW_A	Body Weight, Adult	kg	70
AT	Averaging Time, for carcinogens	days	25550
AT_C	Averaging Time, Child for non-carcinogens	days	2190
AT_A	Averaging Time, Adult for non-carcinogens	days	8760

(C) The proposed industrial/commercial risk-based direct exposure concentration shall be calculated using the following equations:

(i) For carcinogenic substances:

$$DEC_{RB} = \left[\frac{Risk}{CSF}\right] \times \left[\frac{BW \times AT}{IR \times ED \times EF \times CF}\right]$$

(ii) For non-carcinogenic substances:

$$DEC_{RB} = \left[RFD \times HI\right] \times \left[\frac{BW \times AT}{IR \times EF \times ED \times CF}\right]$$

(iii) The abbreviations used in subparagraphs (i) and (ii) shall be interpreted in accordance with the following table and shall be assigned the values specified therein:

Term	Description	Units	Value
DEC_{RB}	Risk-based Direct Exposure Criterion	mg/kg	calculated
Risk	Target Cancer Risk Level	unitless	1.0E-06
HI	Hazard Index	unitless	1.0
CSF	Cancer slope Factor	$(mg/kg\text{-}day)^{-1}$	substance-specific
RFD	Reference Dose	mg/kg-day	substance-specific
IR	Ingestion Rate	mg/day	50
EF	Exposure Frequency	days/year	250
ED	Exposure Duration	years	25
CF	Conversion Factor	kg/mg	0.000001
BW	Body Weight	kg	70
AT	Averaging Time, for carcinogens	days	25550
AT_A	Averaging Time, Adult for non-carcinogens	days	9125

(c) Pollutant Mobility Criteria.

(1) General.

(A) A substance, other than an inorganic substance or PCB, in soil above the seasonal low water table, or above the seasonal high water table if (i) remediation to the seasonal low water table is not technically practicable or would not result in the permanent elimination of a source of pollution or (ii) the subject soil is located in a GB area, shall be remediated to at least that concentration at which the results of a mass analysis of such soil for such substance does not exceed the pollutant mobility criterion applicable to the ground-water classification of the area at which such soil is located, except that in the circumstances identified in subdivision (2) of this subsection, remediation to achieve compliance with the pollutant mobility criteria may be conducted in accordance with the requirements established in said subdivision (2).

(B) An inorganic substance or PCB in soil above the seasonal low water table, or above the seasonal high water table if (i) remediation to the seasonal low water table is not technically practicable or would not result in the permanent elimination of a source of pollution or (ii) the subject soil is located in a GB area, shall be remediated to at least that concentration at which the results of a TCLP or SPLP analysis of such soil for such substance does not exceed the pollutant mobility criterion applicable to the ground-water classification of the area at which such soil is located, except that in the circumstances identified in subdivision (2) of this subsection, remediation to achieve compliance with the pollutant mobility criteria may be conducted in accordance with the requirements established in said subdivision (2).

(2) Specific Circumstances

(A) Polluted Soils in a GA Area.

A soil in a GA area and polluted with a substance, other than 1,2 dichlorobenzene, ethyl benzene, toluene, xylenes or total petroleum hydrocarbons, which soil is at or above the seasonal low water table, or at or above the seasonal high water table if remediation to the seasonal low water table is not technically practicable or would not result in the permanent elimination of a source of pollution, may be remediated to at least that concentration at which the results of a TCLP or SPLP analysis of such soil for such substance do not exceed the ground-water protection criterion for such substance.

(B) Soils Polluted with Volatile Organic Substances in a GA area.

A soil in a GA area polluted with a volatile organic substance, other than 1,2 dichlorobenzene, ethyl benzene, toluene, or xylenes which soil is at or above the seasonal low water table, or at or above the seasonal high water table if remediation to the seasonal low water table is not technically practicable or would not result in the permanent elimination of a source of pollution, may be remediated to at least that concentration at which the results of a TCLP or SPLP analysis of such soil for such substance do not exceed the ground-water protection criterion for such substance multiplied by ten or the results of a mass analysis of such soil for such substance do not exceed the pollutant mobility criterion for such substance multiplied by ten or by an alternative dilution or dilution and attenuation factor approved by the Commissioner in accordance with subdivision (4) of subsection (d) of this section, provided no non-aqueous phase liquids are present in the subject release area as determined in accordance with subdivision (3) of this subsection, the water table is at least fifteen feet above the surface of the bedrock and the downward vertical flow velocity is not greater than the horizontal flow velocity, and:

(i) (aa) a public water supply distribution system is available within 200 feet of the subject parcel, all adjacent parcels, and any parcel within the areal extent of the ground-water plume caused by the subject release area, (bb) the ground water within the areal extent of such ground-water plume is not used for drinking water, (cc) no public or private water supply wells exist within 500 feet of the subject release area, and (dd) the ground water affected by the subject release area is not a potential public water supply resource; or

(ii) (aa) the concentration of any volatile organic substance in a ground-water plume and within seventy-five feet of the nearest downgradient parcel boundary does not exceed the ground-water protection criterion, (bb) except for seasonal variation, the areal extent of volatile organic substances in the ground-water plume is not increasing over time and the concentration of any volatile organic substance in the ground-water plume is not increasing, except as a result of natural attenuation, at any point over time and (cc) notice of such condition is provided to the Commissioner on a form furnished by the Commissioner, which notice shall include: a brief description of the release area; a brief description of the distribution and concentration of volatile organic substances in soil and ground water; a map showing the location of the release area, and based on reasonable inquiry all other volatile organic substance release areas in the vicinity of the subject release area, all ground-water and soil monitoring points, and the areal extent of the volatile organic substance ground-water plume; and the results of all laboratory analyses conducted to determine whether the requirements of this subparagraph have been met; or

(iii) (aa) the concentration of any volatile organic substance within such ground-water plume does not exceed the ground-water protection criterion for such substance at a location downgradient of the release area, on the subject parcel, and within 25 feet of such release area, and (bb) notice of such condition is provided to the Commissioner on a form furnished by the Commissioner, which notice shall include: a brief description of the release area; a brief description of the distribution and concentration of volatile organic substances in soil and ground water; a map showing the location of the release area, and based on reasonable inquiry all other volatile organic substance release areas in the vicinity of the subject release area, and all ground-water and soil monitoring points; and the results of all laboratory analyses conducted to determine whether the requirements of this subparagraph have been met.

(C) Inorganic, semi-volatile, PCB or pesticide contamination in a GA area.

A soil in a GA area and polluted with inorganic substances, semi-volatile substances, PCB or pesticides, which soil is at or above the seasonal low water table, or at or above the seasonal high water table if remediation to the seasonal low water table is not technically practicable or would not result in the permanent elimination of a source of pollution, may be remediated to a level at which (i)(aa) the results of a TCLP or SPLP analysis of such soil for such substance do not exceed the ground-water protection criterion for such substance multiplied by ten or by an alternative dilution or dilution and attenuation factor approved by the Commissioner in accordance with subdivision (4) of subsection (d) of this section or (bb) the results of a mass analysis of such soil for a substance do not exceed the pollutant mobility criterion for such substance multiplied by ten or by an alternative dilution or dilution and attenuation factor approved by the Commissioner in accordance with subdivision (4) of subsection (d) of this section; provided (ii) (aa) the release area and any portion thereof is located at least twenty-five feet from the nearest legal boundary of the parcel in the downgradient direction, (bb) no non-aqueous phase liquids are present in the release area as determined in accordance with subdivision (3) of this subsection, and (cc) the water table is at least fifteen feet above the surface of the bedrock.

(D) Polluted Soils in a GB area.

A substance other than total petroleum hydrocarbons in soil above the seasonal high water table in a GB area may be remediated to a level at which the results of a TCLP or SPLP analysis of such soil does not exceed the ground-water protection criterion for any such substance (i) (aa) multiplied by 10, (bb) multiplied by the ratio of the summation of the areas downgradient and upgradient of the release area to the release area, provided that such ratio does not exceed 500, or (cc) or multiplied by an alternative dilution or dilution and attenuation factor approved by the Commissioner in accordance with subdivision (5) of subsection (d) of this section; (ii) provided non-aqueous phase liquids are not present in such soil as determined in accordance with subdivision (3) of this subsection.

(E) Site specific dilution in a GB area.

(i) A substance, other than total petroleum hydrocarbons, in a soil at or above the seasonal high water table in a GB area where the background concentration for ground water for such substance is less than the applicable ground-water protection criterion, may be remediated to a level at which the results of a mass analysis of such soil for a substance do not exceed the pollutant mobility criterion applicable to such substance in a GA area multiplied by a site-specific dilution factor calculated in accordance with clause (ii) of this subparagraph, or the results of a TCLP or SPLP analysis of such soil for a substance do not exceed the ground-water protection criterion for such substance multiplied by a site-specific dilution factor calculated in accordance with clause (ii) of this subparagraph, provided (aa) no non-aqueous phase liquids are present in such soil as determined in accordance with subdivision (3) of this subsection; (bb) notice has been submitted to the Commissioner in accordance with clause (iii) of this subparagraph; and (cc) the water table in the release area is at least fifteen feet above the surface of the bedrock and the downward ground water vertical flow velocity is not greater than the ground water horizontal flow velocity.

(ii) For the purpose of clause (i) of this subparagraph, the site-specific dilution factor shall be calculated using the following formula: $DF = (1 + (Kid/IL))(1-F_{adj})$, where:

DF = site-specific dilution factor
K = hydraulic conductivity, in feet per year, of the unconsolidated aquifer underlying the release area
i = horizontal hydraulic gradient in feet per feet
d = 15 feet
I = infiltration rate in feet per year as specified in subparagraph (iv) of this subparagraph
L = length in feet of the release area parallel to the direction of ground-water flow
F_{adj} = background concentration for ground water divided by the ground-water protection criterion for the subject substance, or, where the background concentration for ground water can not be quantified, ½ the minimum detection limit for the subject substance divided by the ground-water protection criterion for the subject substance.

(iii) A notice submitted pursuant to clause (i) of this subparagraph shall be submitted on a form prescribed and provided by the Commissioner and shall include: a brief description of the release area and the general characteristics of soils in the vicinity of the release area; a map showing the location of the release area, and based on reasonable inquiry other release areas in the vicinity containing the substance for which the site-specific dilution factor is calculated, and all monitoring points; if applicable, justification for use of a till infiltration rate other than 0.5 feet per year, and the results of all the laboratory analyses and field analyses used to determine the (aa) parameters of the equation in clause (ii) of this subparagraph and (bb) identification of geologic material for the purposes of choosing an infiltration rate in accordance with clause (iv) of this subparagraph.

(iv)

Geologic Material	Infiltration Rate (feet/year)
Stratified Drift	2.0
Till	0.5 - 1.0
Lacustrine Deposits	0.4

(3) Determining the Presence of Non-aqueous Phase Liquids in Soil. For the purpose of this subsection, the presence of non-aqueous phase liquids in soil shall be determined using the following equation: $C_{nap} = (S/2\rho_b)(K_d \rho_b + \theta_w + H'\theta_a)$, where:

C_{nap} = the concentration of an organic substance at which or above which such substance may be present in a non-aqueous phase
S = the effective solubility
ρ_b = dry soil bulk density
K_d = soil-water partition coefficient, which may be approximated by $K_{OC} \cdot f_{OC}$
K_{OC} = soil organic carbon-water partition coefficient
f_{OC} = fraction organic carbon of soil
θ_w = water-filled soil porosity (L_{water}/L_{soil})
θ_a = air-filled soil porosity (L_{air}/L_{soil})
H' = Henry's law constant (dimensionless)
H = Henry's law constant (atm-m^3/mol)

The terms defined above shall be assigned the following values:

Term	Units	Value
C_{NAP}	mg/kg	calculated
S	mg/L	chemical-specific
ρ_b	kg/L	1.5 or the lowest value measured at the subject release area
K_d	L/kg	calculated
K_{OC}	L/kg	chemical-specific
f_{OC}	g/g	0.006 or the lowest value measured at the subject release area
θ_w	L_{water}/L_{soil}	0.15
θ_a	L_{air}/L_{soil}	0.28
H'	unitless	H x 41 where 41 is a conversion factor
H	atm-m^3/mol	chemical-specific

(4) Exceptions.

(A) If at a release area (i) the ground-water classification is GB and (ii) the elevation of the water table is below the elevation of the top of bedrock, such release area shall be remediated to a concentration which meets the pollutant mobility criteria applicable to any location at which the ground-water classification is GA or GAA.

(B) The pollutant mobility criteria do not apply to environmentally isolated soil provided an environmental land use restriction is in effect with respect to the parcel, or portion thereof, containing such soil which environmental land use restriction ensures that such soil will not be exposed to infiltration of soil water due to, among other things, demolition of the building.

(C) The pollutant mobility criteria do not apply to polluted fill on a parcel if: (aa) such fill is polluted only with coal ash, wood ash, coal fragments, asphalt paving fragments, or any combination thereof; (bb) such fill is not polluted with any volatile organic substance; (cc) the concentration of each substance in any such fill is consistent with the requirements established in subsection (b) of this section; (dd) such substance is not affecting and will not affect the quality of an existing or potential public water supply resource or an existing private drinking water supply; (ee) a public water supply distribution system is available within 200 feet of such parcel and all parcels adjacent thereto; and (ff) the placement of the fill was not prohibited by law at the time of placement.

(5) Additional Polluting Substances.

With respect to a substance for which a pollutant mobility criterion is not specified in sections 22a-133k-1 through 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies, the Commissioner may approve a pollutant mobility criterion, a dilution or dilution and attenuation factor, and a method for determining compliance with such criterion to apply to such substance at a particular release area, provided he finds that such criterion will ensure that soil water at such release area does not exceed, in a GA area, the ground-water protection criterion, or in a GB area the ground-water protection criterion multiplied by a dilution factor of 10.

(d) Alternative Soil Criteria.

(1) Requests for Approval of Alternative Soil Criteria.

(A) Any person requesting that the Commissioner approve an alternative criterion applicable to a particular release area shall submit: the name and address of the owner of the parcel at which such release area is located; the address of such release area and a brief description of its location; a detailed description of such release area; and a map at a scale of not less than 1:1200 showing the location of all release areas on such parcel, the subject release area, and describing the concentration and distribution of all substances in the soil of the subject release area, including but not limited to the substance for which an alternative criterion is sought; a detailed written report describing the justification for the proposed alternative criterion; and any other information the Commissioner reasonably deems necessary to evaluate such request.

(B) Any person requesting that the Commissioner approve an alternative pollutant mobility criterion or an alternative dilution or dilution attenuation factor shall submit, in addition to the information required by subparagraph (A) of this subdivision, a detailed description of any other release area located on the same parcel as the subject release area and which other release area (i) is affected or potentially affected by the subject release area or (ii) is affecting or potentially may affect the subject release area;

(C) Any person requesting that the Commissioner approve an alternative direct exposure criterion shall submit, in addition to the information required by subparagraph (A) of this subdivision, a detailed description of any other release area located on the same parcel as the subject release area.

(2) Alternative Direct Exposure Criteria.

With respect to a substance except PCB for which a direct exposure criterion is specified in sections 22a-133k-1 through 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies, the Commissioner may approve an alternative direct exposure criterion and an alternative method for determining compliance with such criterion provided it is demonstrated to the satisfaction of the Commissioner, after consultation with the Commissioner of Public Health that the application of such alternative criterion at the subject release area will protect human health and the environment from the risks associated with direct exposure to polluted soil by ensuring that (A) the concentration of each carcinogenic substance in such soil does not exceed a 1×10^{-6} excess lifetime cancer risk level and the concentration of each non-carcinogenic substance in such soil does not exceed a hazard index of 1; or (B) for a release area polluted with multiple substances, the cumulative excess lifetime cancer risk for all carcinogenic substances in such soil does not exceed 1×10^{-5}, and the cumulative hazard index does not exceed 1 for non-carcinogenic substances in such soil with the same target organ. Any person requesting approval of an alternative direct exposure criterion shall submit to the Commissioner and the Commissioner of Public Health a risk assessment prepared in accordance with the most recent EPA Risk Assessment Guidance for Superfund or other risk assessment method approved by the Commissioner in consultation with the Commissioner of Public Health, and shall submit any additional information specified by the Commissioner or the Commissioner of Public Health.

(3) Alternative Pollutant Mobility Criteria for GA Areas.

With respect to a substance occurring at a release area located in a GA area, and for which substance a pollutant mobility criterion is specified in sections 22a-133k-1 through 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies, the Commissioner may approve an alternative pollutant mobility criterion and an alternative method for determining compliance with such criterion, provided it is demonstrated to the Commissioner's satisfaction that the application of such alternative criterion at the subject release area will ensure that soil water at such release area will not exceed the ground-water protection criterion for such substance.

(4) Alternative Dilution or Dilution Attenuation Factor for GA Areas.

With respect to a substance occurring at a release area located in a GA area, and for which substance a pollutant mobility criterion is specified in sections 22a-133k-1 through 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies, the Commissioner may approve an alternative dilution or dilution attenuation factor, provided that it is demonstrated to the Commissioner's satisfaction that application of such dilution factor will ensure that such release area will not degrade ground-water quality and thereby prevent the achievement of the applicable ground-water remediation standards.

(5) Alternative Pollutant Mobility Criteria for GB Areas.

With respect to a substance occurring at a release area located in a GB area, and for which substance a pollutant mobility criterion is specified in sections 22a-133k-1 through 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies, the Commissioner may approve an alternative pollutant mobility criterion and an alternative method for determining compliance with such criterion at such release area, provided it is demonstrated to the Commissioner's satisfaction that the application of such criterion will ensure that soil water at the release area, after dilution with ground water derived from infiltration on the parcel, will not exceed the ground-water protection criterion for such substance.

(6) Alternative Dilution or Dilution Attenuation Factor for GB Areas.

With respect to a substance occurring at a release area located in a GB area, and for which substance a pollutant mobility criterion is specified in sections 22a-133k-1 through 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies, the Commissioner may approve an alternative dilution or dilution attenuation factor, provided that it is demonstrated to the Commissioner's satisfaction that application of such alternative dilution or dilution attenuation factor will ensure that the soil water at such release area will not cause the ground water at the nearest downgradient property boundary to exceed the ground-water protection criterion for such substance.

(7) Alternative Direct Exposure Criterion for PCB.

The Commissioner may approve an alternative direct exposure criterion for PCB including an alternative direct exposure criterion for an inaccessible soil polluted with PCB, and an alternative method for determing compliance with such criterion, provided it is demonstrated to the satisfaction of the Commissioner after consultation with the Commissioner of Public Health that the application of such alternative criterion at the subject release area will protect human health and the environment from the risks associated with direct exposure to soil polluted with PCB and is consistent with 40 CFR Part 761 and with the "Guide on Remedial Actions at Superfund Sites with PCB Contamination" (EPA Directive 9355.4-01, August 1990).

(e) Applying the Direct Exposure and Pollutant Mobility Criteria

(1) Unless an alternative method for determining compliance with a direct exposure criterion has been approved by the Commissioner in writing, compliance with a direct exposure criterion is achieved when (A) the ninety-five percent upper confidence level of the arithmetic mean of all sample results of laboratory analyses of soil from the subject release area is equal to or less than such criterion, provided that the results of no single sample exceeds two times the applicable direct exposure criterion or (B) the results of all laboratory analyses of samples from the subject release area are equal to or less than the applicable direct exposure criterion.

(2) Unless an alternative method for determining compliance with a pollutant mobility criterion for a particular substance has been approved by the Commissioner in writing, compliance with a

pollutant mobility criterion for such substance is achieved when:

(A) (i) a representative sampling program consisting of not less than twenty samples of soil located above the water table has been used to characterize the distribution and concentration of such substance at the subject release area or remaining at the subject release area following remediation, (ii) the release area has not been remediated by means of excavation and removal of polluted soil, (iii) the ninety-five percent upper confidence level of the arithmetic mean of all the sample results of laboratory analyses of soil from the subject release area for such substance is equal to or less than the applicable pollutant mobility criterion or the results of all laboratory analyses of samples from the subject release area are equal to or less than the applicable direct exposure criterion, and (iv) no single sample result exceeds two times the applicable pollutant mobility criterion;

(B) (i) a representative sampling program consisting of less than twenty samples of soil located above the water table has been used to characterize the distribution and concentration of substances remaining at the subject release area following remediation, (ii) the release area has not been remediated by means of excavation and removal of polluted soil, and (iii) the results of all laboratory analysis of samples from the subject release area for such substances are equal to or less than such pollutant mobility criterion; or

(C) (i) the subject release area has been remediated by means of excavation and removal of polluted soil, (ii) a representative sampling program consisting of samples of soil located above the water table has been used to characterize the distribution and concentration of substances remaining at the subject release area following excavation and removal, and (iii) the results of all laboratory analyses of samples from the subject release area for such substances are equal to or less than such pollutant mobility criterion.

(3) Matrix interference effects.

If any applicable criterion for a substance in soil is less than the concentration for such substance that can be consistently and accurately quantified in a specific sample due to matrix interference effects, the following actions shall be taken:

(A) (i) "Test Methods for Evaluating Solid Waste : Physical/Chemical Methods," SW-846, U.S. Environmental Protection Agency, Office of Solid Waste, Washington D.C. 20460 shall be consulted to determine if an analytical method sufficiently sensitive to achieve the applicable analytical detection limit was used to conduct the analysis of the subject substance. If there is available an alternative analytical method which is sufficient to achieve the required analytical detection limit, appropriate for the sample matrix, and has been approved by EPA or approved in writing by the Commissioner, the subject soil shall be re-analyzed for the subject substance using such alternative method.
(ii)If a sample has been analyzed by one or more analytical methods in accordance with subparagraph (A)(i) of this subdivision and the applicable analytical detection limit has not been achieved due to matrix interference effects, such method(s) shall be modified in order to compensate for such interferences, in accordance with analytical procedures specified by EPA within the scope of the analytical method.

(B) If, after re-analyzing the subject soil and attempting to compensate for matrix interference effects in accordance with to subparagraph (A) of this subdivision, any applicable criterion for a substance in soil is less than the concentration for such substance that can be consistently and accurately quantified in a specific sample due to matrix interference effects, compliance with such criterion shall be achieved when such soil has been remediated to the lowest concentration for such substance which can be consistently and accurately quantified without matrix interference effects.

(C) A detailed summary of all measures taken to overcome matrix interference effects and a determination of the lowest alternative quantification level applicable to the analysis of such substance shall be prepared and, if requested by the Commissioner in writing, shall be submitted to the Commissioner for his review and approval.

(f) Variances.

(1) Widespread Polluted Fill.

The Commissioner may grant a variance from any of the requirements of subsection (c) of this section upon the written request of the owner of the subject parcel if the Commissioner determines that (A) geographically extensive polluted fill is present at such parcel and at other parcels in the vicinity of the subject parcel; (B) such fill is not polluted with volatile organic substances; (C) such fill is not affecting and will not affect the quality of an existing or potential public water supply resource or an existing private drinking water supply; (D) the concentration of each substance in such fill is consistent with subsection (b) of this section; (E) the placement of such fill was not prohibited by law at the time of placement; and (F) the person requesting the variance did not place the fill on the subject parcel. In determining whether to grant or deny such a variance, the Commissioner may consider the relative cost of compliance with subsection (c) of this section, how extensive the polluted fill is, what relative proportion of such fill occurs on the subject parcel, and whether the person requesting the variance is affiliated with any person responsible for such placement through any direct or indirect familial relationship or any contractual, corporate or financial relationship other than that by which such person's interest in such parcel is to be conveyed or financed.

(2) Engineered Control of Polluted Soils.

(A) Provided that an engineered control of polluted soils is implemented pursuant to subparagraphs (B) and (C) of this subsection, the requirements of subsections (a) through (e) of this section do not apply if:

(i) the Commissioner authorized the disposal of solid waste or polluted soil at the subject release area;

(ii) the soil at such release area is polluted with a substance for which remediation is not technically practicable;

(iii) the Commissioner, in consultation with the Commissioner of Public Health, has determined that the removal of such substance or substances from such release area would create an unacceptable risk to human health; or

(iv) the Commissioner has determined, after providing notice and an opportunity for a public hearing, that a proposal by the owner of the subject parcel to use an engineered control is acceptable because (aa) the cost of remediating the polluted soil at such release area is significantly greater than the cost of installing and maintaining an engineered control for such soil and conducting ground-water monitoring at such release area in accordance with subsection (g) of section 22a-133k-3, and (bb) that the significantly greater cost outweighs the risk to the environment and human health if the engineered control fails to prevent the mobilization of a substance in the soil or human exposure to such substance. The Commissioner may hold a public hearing pursuant to this section if in his discretion the public interest will be best served thereby, and he shall hold a hearing upon receipt of a petition signed by at least twenty-five persons. Notice of the subject proposal shall be provided by the owner of the subject parcel in two of the three following manners: (i) by publication in a newspaper of substantial circulation in the affected area; (ii) by placing and maintaining on the subject parcel, for at least thirty days, in a legible condition a sign which shall be not less than six feet by four feet which sign shall be clearly visible from the public highway; or (iii) by mailing notice to the owner of record of each property abutting the subject parcel at his address on the most recent grand tax list of the municipality or municipalities in which such properties are located. When notice is published or mailed, it shall include the name and address of owner of the subject parcel; the location address and/or a description of the location such parcel; a brief description of the nature of the pollution on the subject parcel; a brief description of the proposed engineered control; and a brief description of the procedures for requesting a hearing. When notice is provided by posting a sign, the sign shall include the words "Environmental remediation is proposed for this site. For further information contact..." and shall include the name and telephone number of an individual from whom any interested person may obtain information about the remediation. The owner of the subject parcel shall verify to the Commissioner in writing on a form furnished by him that notice has been given in accordance with this subsection.

(B) A request to use an engineered control shall be submitted to the Commissioner in writing and shall be accompanied by a detailed written report and plan which demonstrates that:

(i) (aa) the proposed engineered control is designed and will be constructed to physically isolate polluted soil and to minimize migration of liquids through soil, to function with minimum maintenance, to promote drainage and minimize erosion of or other damage to such control, and to accommodate settling and subsidence of the underlying soil so as to maintain the control's structural integrity and permeability; and (bb) with respect to an engineered cap, such cap has been designed and constructed to have a permeability of less than 10^{-6} cm/sec or, unless otherwise specified by the Commissioner in writing, to have the permeability specified in a closure plan implemented under sections 22a-209-1 et seq of the Regulations of Connecticut State Agencies for a release area which is a lawfully authorized solid waste disposal area;
(ii) plans for ground-water monitoring at the subject release area are adequate to ensure that any substance migrating therefrom will be detected;
(iii) plans for maintenance of the subject release area are adequate to ensure that the structural integrity, design permeability, and effectiveness of the engineered control will be maintained; such plans shall include without limitation measures to prevent run-on and run-off of storm water from eroding or otherwise damaging the engineered control and measures to repair such control to correct the effects of any settling, subsidence, erosion or other damaging events or conditions;
(iv) an environmental land use restriction is or will be in effect with respect to the parcel at which the subject release area is located, which restriction ensures that such parcel will not be used in a manner that could disturb the engineered control or the polluted soil;
(v) any other information that the Commissioner reasonably deems necessary; and
(vi) with respect to any release area subject to any of the requirements of section 22a-209-4(i) or section 22a-449(c)-100 through 110 of the Regulations of Connecticut State Agencies, all such requirements are or will be satisfied. With respect to a release area which is not subject to any such regulations, the owner of the subject parcel shall demonstrate that he has posted or will post a surety in a form and amount approved in writing by the Commissioner, which surety during the first year after installation of the engineered control shall be equal to the cost of one year's maintenance and monitoring of the engineered control, and which in each subsequent year shall be increased in amount by adding an amount equal to the cost of one year's maintenance and monitoring, until the total amount of such surety is equal to the cost of five year's of maintenance and monitoring, which amount shall be maintained in effect for the next twenty-five years or for such other period as may be required by the Commissioner.

(C) When the Commissioner approves a request pursuant to this subsection to use an engineered control he may require that such control incorporate any measures which he deems necessary to protect human health and the environment. Any person implementing an engineered control under this subsection shall perform all actions specified in the approved engineered control proposal including the recordation of the environmental land use restriction and posting of the surety, and any additional measures specified by the Commissioner in his approval of such plan. Nothing in this subdivision shall preclude the Commissioner from taking any action he deems necessary to protect human health or the environment if an approved engineered control fails to prevent the migration of pollutants from the release area or human exposure to such pollutants.

(g) Removal of Non-aqueous Phase Liquids.

Removal of light non-aqueous phase liquids from soil and ground water shall be conducted in accordance with section 22a-449(d)-106(f) of the Regulations of Connecticut State Agencies. Any other non-aqueous phase liquid shall be contained or removed from soil and ground water to the maximum extent prudent.

(h) Use of Polluted Soil and Reuse of Treated Soil.

Any soil excavated from and/or treated at a release area during remediation shall be managed as follows:

(1) Hazardous Waste.

Treatment, storage, disposal and transportation of soil which is hazardous waste as defined pursuant to section 22a-449(c) of the General Statutes shall be carried out in conformance with the provisions of sections 22a-449(c)-101 through 110 of the Regulations of Connecticut State Agencies, and any other applicable law;

(2) Special Wastes.

In accordance with section 22a-209-8 of the Regulations of Connecticut State Agencies, the Commissioner may authorize polluted soil, which is not hazardous waste as defined pursuant to subsection 22a-449(c) of the General Statutes, to be disposed of as special wastes as defined in said section 22a-209-1.

(3) Polluted soil.

Polluted soil from a release area may be treated to achieve concentrations of substances that do not exceed either the applicable direct exposure criteria or pollutant mobility criteria. After such treatment, such soil may be reused on the parcel from which it was excavated or on another parcel approved by the Commissioner, provided that such reuse is consistent with all other provisions of sections 22a-133k-1 through 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies and:

(A) Prior to reuse, a map showing the location and depth of proposed placement of such soil is submitted to the Commissioner;
(B) Such soil is not placed below the water table;
(C) Such soil is not placed in an area subject to erosion; and
(D) Any such soil in which the concentration of any substance exceeds the pollutant mobility criteria applicable to a GA area is not placed over soil and ground water which have not been affected by a release at the parcel at which placement is proposed; and
(E) For soils polluted with PCB, the Commissioner has issued a written approval in accordance with by section 22a-467 of the General Statutes.

(4) Natural Soil.

Polluted soil may be used at any parcel of land if after treatment of such soil to reduce or remove substances: (A) any naturally-occurring substance is present therein in concentrations not exceeding background concentration for soil of such substance at the release area from which such soil is removed; and (B) no other substance is detectable in such soil at a concentration greater than its analytical detection limit.

(i) Additional remediation of soil.

Nothing in sections 22a-133k-1 through 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies shall preclude the Commissioner from taking any action necessary to prevent or abate pollution or to prevent or abate any threat to human health or the environment, including without limitation:

(1) at any location at which, despite remediation in accordance with sections 22a-133k-1 through 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies, the Commissioner determines that there is a potential ecological risk he may require that an ecological risk assessment be conducted in accordance with EPA/630/R-92/001, February 1992, "Framework For Ecological Risk Assessment" and that additional remediation be conducted to mitigate any risks identified in such assessment;

(2) at any location at which polluted soil has eroded into a surface-water body, the Commissioner may require that the effect of such polluted soil on aquatic life be assessed and that remediation to protect or restore aquatic life and surface water quality from the effects of such polluted soils be undertaken; or

(3) at any release area or parcel at which there is polluted soil containing multiple polluting substances, the Commissioner may require additional remediation to ensure that the risk posed by such substances does not exceed (A) a cumulative excess lifetime cancer risk of 10^{-5} for carcinogenic substances and (B) a cumulative hazard index of 1 for non-carcinogenic substances with the same target organ.

Section 3. The Regulations of Connecticut State Agencies are amended by adding a new section 22a-133k-3 as follows:

22a-133k-3 Ground-water Remediation Standards

(a) General.

(1) Remediation of a ground-water plume shall result in the attainment of: (A) the requirements concerning surface water protection set forth in subsection (b) of this section and the requirements concerning volatilization set forth in subsection (c) of this section; or (B) the background concentration for ground water for each substance in such plume.

(2) Remediation of a ground-water plume in a GA area shall also result in the reduction of each substance therein to a concentration equal to or less than the background concentration for ground water of such substance, except as provided in subsection (d) of this section.

(3) Remediation of a ground-water plume in a GB area shall also result in the reduction of each substance therein to a concentration such that such ground-water plume does not interfere with any existing use of the ground water.

(b) Surface-water protection criteria.

(1) Except as provided in subdivision (2) of this subsection, remediation of a ground-water plume which discharges to a surface water body shall result in the reduction of each substance therein to a concentration which is consistent with subdivision (2) of subsection (f) of this section and which is equal to or less than the surface-water protection criterion or an alternative surface-water protection criterion established in accordance with subdivision (3) of this subsection.

(2) If a ground-water plume (A) discharges to a wetland or an intermittent stream, or (B) the areal extent of such ground-water plume occupies more than 0.5%, or other percentage which is approved in writing by the Commissioner, of the upstream drainage basin of the stream to which such plume discharges measured from the intersection of stream and such ground-water plume, each substance therein shall be remediated to a concentration equal to or less than the applicable aquatic life criteria contained in Appendix D to the most recent Water Quality Standards, or equal to or less than an alternative water quality criterion adopted by the Commissioner in accordance with section 22a-426 of the General Statutes and paragraph 12b of the Water Quality Standards effective May 15, 1992.

(3) Alternative surface-water protection criteria.

Alternative surface-water criteria may be calculated in accordance with subparagraph (A) of this subdivision or may be approved in writing by the Commissioner in accordance with subparagraph (B) of this subdivision.

(A) An alternative surface-water protection criterion may be calculated for a substance in Appendix D of the most recent Water Quality Standards by multiplying the lower of the human health or aquatic life criterion for such substance in said Appendix D by $[(0.25 \times 7Q10)/Q_{plume}]$ where Q_{plume} is equal to the average daily discharge of polluted ground water from the subject ground-water plume.

(B) The Commissioner may approve an alternative surface-water protection criterion to be applied to a particular substance at a particular release area. Any person requesting such approval shall submit to the Commissioner: (i) a report on the flow rate, under seven day ten year low flow conditions, of the surface water body into which the subject ground water plume discharges (ii) a report on other surface water or ground water discharges to the surface water body within one-half mile upstream of the areal extent of the ground-water plume, (iii) a report on the instream water quality, (iv) a report on the flow rate of the ground-water discharge from such release area to the surface water body and the extent and degree of mixing of such discharge in such surface water, and (v) and any other information the Commissioner reasonably deems necessary to evaluate such request. The Commissioner shall not approve an alternative surface-water protection criterion under this subparagraph unless the requester demonstrates that such criterion will protect all existing and proposed uses of such surface water.

(c) Volatilization criteria.

(1) Except as specified in subdivisions (2), (3), (4) and (5) of this subsection, all ground water polluted with a volatile organic substance within 15 feet of the ground surface or a building, shall be remediated such that the concentration of each such substance is equal to or less than the applicable residential volatilization criterion for ground water.

(2) If ground water polluted with a volatile organic substance is below a building used solely for industrial or commercial activity, such ground water shall be remediated such that the concentration of such substance is equal to or less than the applicable industrial/commercial volatilization criterion for ground water, provided that an environmental land use restriction is in effect with respect to the parcel or portion thereof upon which such building is located, which restriction ensures that the parcel or portion thereof will not be used for any residential purpose in the future and that any future use of the parcel or portion thereof is limited to industrial or commercial activity;

(3) (A) Remediation of a volatile organic substance to the volatilization criterion for ground water shall not be required if the concentration of such substance in soil vapors below a building is equal to or less than (i) the residential volatilization criterion for soil vapor or (ii) the industrial/commercial volatilization criterion for soil vapor, if such building is solely used for industrial or commercial activity and, an environmental land use restriction is in effect with respect to the parcel or portion thereof upon which such building is located, which restriction ensures that the parcel or portion thereof will not be used for any residential purpose in the future and that any future use of the parcel or portion thereof is limited to industrial or commercial activity.

(B) The requirements of subdivision (1), (2), and (3) of this subsection do not apply if: (i) measures acceptable to the Commissioner have been taken to prevent the migration of such substance into any overlying building, (ii) a program is implemented to maintain and monitor all such measures, and (iii) notice of such measures has been submitted to the Commissioner on a form furnished by him which notice includes (aa) a brief description of the areal extent of the ground-water plume and of the area which exceeds any such volatilization or soil vapor criterion; (bb) a brief description of the method of controlling the migration of such substance into any overlying building; (cc) a plan for the monitoring and maintenance of such control method; and (dd) a map showing all existing buildings, the areal extent of the ground-water plume, and the location of such control method.

(4) Site-specific and alternative volatilization criteria.

(A) Site-specific residential volatilization criteria for ground water or soil vapor may be calculated using the equations in Appendix G to sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies.

(B) The Commissioner may approve an alternative volatilization criterion for ground water or for soil vapor to be applied to a substance at a particular release area. The Commissioner shall not approve any alternative criterion under this subparagraph unless it has been demonstrated that such criterion will ensure that volatile organic substances from such ground water or soil do not accumulate in the air of any structure used for residential activities at a concentration which, (i) for any carcinogenic substance creates a risk to human health in excess of a 10^{-6} excess lifetime cancer risk level, and for any non-carcinogenic substance does not exceed a hazard index of 1, or (ii) for a ground-water plume polluted with multiple volatile organic substances does not exceed a cumulative excess cancer risk level of 10^{-5} for carcinogenic substances, and for non-carcinogenic substances with the same target organ, the cumulative hazard index does not exceed 1.

(5) Exemption from volatilization criteria.

(A) The volatilization criteria do not apply to ground water polluted with volatile organic substances, where the water table is less than fifteen feet below the ground surface, if no building exists over the ground water polluted with volatile organic substances at a concentration above the applicable volatilization criteria, and (i) it has been documented that best efforts have been made to ensure that each owner of any parcel of land or portion thereof overlying such polluted ground water records an environmental land use restriction which ensures that no building is constructed over such polluted ground water; or (ii) the Commissioner has approved in writing a request demonstrating that no building can reasonably be expected to be constructed over the subject ground water or that natural attenuation or other methods of remediation will, within five years, reduce the concentration of volatile organic substances in such ground water to a concentration equal to or less than the applicable volatilization criteria.

(B) The volatilization criteria for ground water underlying an existing building do not apply to ground water polluted with volatile organic substances where the Commissioner has approved in writing and there have been implemented an indoor air monitoring program and measures to control the level of any such volatile organic substances in the air of the subject building.

(i) Any person seeking the Commissioner's approval of an indoor air monitoring program shall submit to him: a detailed written plan describing the proposed indoor air monitoring program, including but not limited to a description of the distribution and concentration of volatile organic compounds beneath the building, the location of proposed monitoring points, the proposed frequency of monitoring, the parameters to be monitored, and a description of proposed actions to be taken in the event such monitoring indicates that the monitored parameters exceed proposed specified concentrations and a proposed schedule for reporting to the Commissioner on the results of such monitoring for as long as monitoring is conducted at the site.

(ii) In approving any indoor air monitoring program pursuant to this subdivision, the Commissioner may impose any additional conditions he deems necessary to ensure that the program adequately protects human health. In the event that the Commissioner approves an indoor air monitoring program pursuant to this subparagraph, any person implementing such program shall perform all actions specified in the approved plan, and any additional measures specified by the Commissioner in his approval of such plan.

(d) Applicability of Ground-water Protection Criteria.

(1) Ground water in a GA area may be remediated to a concentration for each substance therein equal to or less than the ground-water protection criterion for each such substance if, with respect to the subject ground-water plume: (A) the background concentration for ground water is equal to or less than such ground-water protection criterion; (B) a public water supply distribution system is available within 200 feet of the subject parcel, parcels adjacent thereto, and any parcel within the areal extent of such plume; (C) such ground-water plume is not located in an aquifer protection area; and (D) such ground-water plume is not located within the area of influence of any public water supply well.

(2) If prior to any ground-water remediation the maximum concentration of a substance in a ground-water plume in a GA area is equal to or less than the ground-water protection criteria, remediation of ground water to achieve background ground-water concentration is not required,

provided that the extent of the ground-water plume is not increasing over time and, except for seasonal variations, the concentration of the subject substance in such ground-water plume is not increasing at any point over time.

(3) Any ground water in a GB area and which is used for drinking or other domestic purposes shall be remediated to reduce the concentration of each substance therein to a concentration equal to or less than the applicable ground-water protection criterion until such time as the use of such ground water for drinking or other domestic purposes is permanently discontinued.

(e) Technical Impracticability of Ground-water Remediation.

(1) Exemption from Background Due to Technical Impracticability

If remediation of a ground-water plume in a GA area to achieve compliance with subdivision (2) of subsection (a) of this section has reduced the concentration of a polluting substance to less than the ground-water protection criterion, and if further reduction of such concentration is technically impracticable, no further remediation of such ground-water plume for such substance shall be required.

(2) Variance Due to Technical Impracticability of Ground-water Remediation

The Commissioner may grant a variance from any of the requirements of this section if he finds that: non-aqueous phase liquids that cannot be contained or removed in accordance with R.C.S.A. section 22a-133k-2(g) are present; remediation to the extent technically practicable has reduced the concentration of pollutants in ground water to steady-state concentrations that exceed any applicable criteria; or achieving compliance with the applicable criteria is technically impracticable as determined using Directive No. 9234.2-25 issued September 1993 by the U.S. Environmental Protection Agency's Office of Solid Waste and Emergency Response.

(A) Any person requesting a variance pursuant to this subsection from any ground-water protection criterion shall submit: (i) information concerning the concentration of each substance in the ground-water plume with respect to which a variance is sought; (ii) information demonstrating that (aa) the extent of the ground-water plume which exceeds such ground-water protection criterion has been reduced to the extent technically practicable, or (bb) it is not technically practicable to reduce the extent of the ground-water plume; (iii) the results of a study conducted to determine the risks to human health posed by the polluted ground water remaining after such reduction; (iv) if such study shows a risk or a potential risk to human health, a plan to eliminate such risk or potential risk; (v) an application to change the ground-water classification of such polluted ground water to GB in accordance with section 22a-426 of the General Statutes; and (vi) any other information the Commissioner reasonably deems necessary to evaluate such request.

(B) Any person requesting a variance pursuant to this subsection from the requirement to remediate ground water to a concentration which does not exceed the applicable surface-water protection criteria shall submit information concerning the concentration of each substance in the ground-water plume with respect to which a variance is sought. If such information demonstrates that any such concentration exceeds any applicable surface-water protection criterion, such person shall also submit: (i) a map showing the areal extent of the ground-water plume that exceeds such surface-water protection criterion, and (ii) a plan for controlling the migration of such substance to the receiving surface water body.

(C) If the Commissioner grants a variance pursuant to this subsection from any ground-water protection criterion, the person receiving the variance shall, no later than thirty days after the date of granting of such variance, submit to the Commissioner on a form prescribed and provided by him: (i) certification that written notice of the extent and degree of such pollution has been provided to each owner of property overlying the subject ground-water plume at which it is not technically practicable to remediate a substance to a concentration equal to or less than the ground-water protection criterion; (ii) certification that written notice of the presence of pollution on each such parcel and a description of the extent and degree of such pollution has been sent to the Director of Health of the municipality or municipalities in which the ground-water plume is located; and (iii) certification that best efforts have been made to ensure that each owner of property overlying the subject ground-water plume records an environmental land use restriction which ensures that the subject ground-water plume is not used for drinking or other domestic purposes;

(D) If the Commissioner grants a variance pursuant to this subsection from the requirement to remediate ground water to a concentration which does not exceed the applicable surface-water protection criteria, the person receiving the variance shall perform all actions specified in the plan submitted with the request for such variance, and any additional actions required by the Commissioner in his approval of such plan or granting of such variance.

(f) Applying the Criteria for Ground Water

(1) Compliance with the ground-water protection criterion for a substance in ground water or background concentration for ground water for such substance is achieved when the sampling locations are representative of the subject ground-water plume and (A) the analytical results for such substance at such all sampling locations are equal to or less than either the ground-water protection criterion for such substance or the background concentration for ground water therefor, whichever is applicable, for at least four consecutive quarterly sampling periods, or (B) a representative sampling program consisting of not less than twelve consecutive monthly samples from each such sampling location has been used to characterize the ground-water plume and the ninety-five percent upper confidence level of the arithmetic mean of all results of laboratory analyses of such samples for such substance are equal to or less than the criterion for such substance and that no single sample exceeds two times the applicable criterion for such substance.

(2) Compliance with a surface-water protection criterion for a substance in ground water is achieved when the sampling locations are representative of the subject ground-water plume and(A) the average concentration of such substance in such plume is equal to or less than the applicable surface-water protection criterion for at least four consecutive quarterly sampling periods, or (B) the concentration of such substance in that portion of such plume which is immediately upgradient of the point at which such ground-water discharges to the receiving surface-water body is equal to or less than the applicable surface-water protection criterion, provided that the areal extent of such ground-water plume is not increasing over time and that, except for seasonal variations, the concentration of the subject substance in such ground-water plume is not increasing, except as a result of natural attenuation, at any point over time.

(3) Compliance with a volatilization criterion for a substance in ground water or soil vapor is achieved when the sampling locations are representative of the subject ground-water plume or soil vapor and (A) the ninety-five percent upper confidence level of the arithmetic mean of all sample results from such locations is equal to or less than the applicable volatilization criterion for at least four consecutive quarterly sampling periods and that the result of no single sample exceeds two times the applicable volatilization criterion, or (B) the results of all laboratory analyses of samples for such substance are equal to or less than the volatilization criterion therefor.

(4) Matrix interference effects.

If any applicable criterion for a substance in ground water is less than the concentration for such substance that can be consistently and accurately quantified in a specific sample due to matrix interference effects, the following action shall be taken:

(A) (i)"Test Methods for Evaluating Solid Waste : Physical/Chemical Methods," SW-846, U.S. Environmental Protection Agency, Office of Solid Waste, Washington D.C. 20460 shall be consulted to determine if an analytical method sufficiently sensitive to achieve the applicable analytical detection limit was used to conduct the analysis of the subject substance. If there is available an alternative analytical method which is sufficient to achieve the required analytical detection limit, appropriate for the sample matrix, and has been approved by EPA or approved in writing by the Commissioner, the subject ground water shall be re-analyzed for the subject substance using such alternative method.

(ii) If a sample has been analyzed by one or more analytical methods in accordance with subparagraph (A)(i) of this subdivision and the applicable analytical detection limit has not been achieved due to matrix interference effects, such method(s) shall be modified in order to compensate for such interferences, in accordance with analytical procedures specified by EPA within the scope of the analytical method.

(B) If, after re-analyzing the subject ground water and attempting to compensate for matrix interference effects in accordance with subparagraph (A) of this subdivision, any applicable criterion for a substance in ground water is less than the concentration for such substance that can be consistently and accurately quantified in a specific sample due to matrix interference effects, compliance with such criterion shall be achieved when such ground water has been remediated to the lowest concentration for such substance which can be consistently and accurately quantified without matrix interference effects.

(C) A detailed summary of all measures taken to overcome matrix interference effects and a determination of the lowest alternative quantification level applicable to the analysis of such substance shall be prepared and, if requested by the Commissioner in writing, shall be submitted to the Commissioner for his review and approval.

(g) Ground-water Monitoring.

For any remediation which is conducted to achieve compliance with sections 22a-133k-1 through 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies, ground-water monitoring shall be conducted in accordance with this subsection.

(1) Ground-water Monitoring at GA Areas.

With respect to remediation of a release area or a ground-water plume in a GA area, a ground-water monitoring plan shall be prepared and implemented. Ground-water monitoring under such plan shall be designed to determine:

(A) the effectiveness of soil remediation in preventing the pollution of ground water by substances from the release area;
(B) the effectiveness of any remediation taken to eliminate or minimize health or safety risks identified in any risk assessment conducted in accordance with subdivision (2) of subsection (e) of this section or otherwise identified; and
(C) whether applicable requirements identified in subsection (a) of this section have been met.

(2) Ground-water Monitoring at GB Areas.

With respect to remediation of a release area or a ground-water plume in a GB area, a ground-water monitoring plan shall be prepared and implemented. Ground-water monitoring under such plan shall be designed to determine:

(A) the effectiveness of soil remediation in preventing further pollution of ground water by substances from the release area;
(B) the effectiveness of any remediation taken to eliminate or minimize identified health or safety risks associated with such release;
(C) whether applicable ground-water protection criteria, surface-water protection criteria, and volatilization criteria have been met; and
(D) whether the ground-water plume interferes with any existing use of the ground water

for a drinking water supply or with any other existing use of the ground water, including but not limited to industrial, agricultural or commercial purposes.

(3) Discontinuation of Ground-water Monitoring.

(A) Unless otherwise specified in writing by the Commissioner, ground-water monitoring in a GA area may be discontinued in accordance with the following:

(i) a minimum of one year after compliance with the background concentration for ground water has been achieved in accordance with subsection (f) of this section if the background concentration for ground water of all substances in the subject ground-water plume has been maintained in all sampling events and ground-water monitoring data demonstrate that the soil remediation was effective in preventing the pollution of ground water by any substance from the subject release area; or

(ii) a minimum of three years after compliance with the ground-water protection criteria has been achieved in accordance with subsection (f) of this section if (aa) all applicable ground-water protection criteria for all subject substances or the background concentration for ground water for all substances in the subject ground-water plume, which ever is higher, is maintained in all sampling events; (bb) ground-water monitoring data demonstrate that the soil remediation was effective in preventing the pollution of ground water by substances from the subject release area; and (cc) the volatilization and surface-water protection criteria have been met in accordance with subsection (f) of this section.

(B) Unless otherwise specified in writing by the Commissioner, ground-water monitoring in a GB area may be discontinued two years after the cessation of all remediation of such ground water or soil if the applicable surface-water protection and volatilization criteria have been met in accordance with subsection (f) of this section, and such ground water is suitable for all existing uses.

(h) Additional Polluting Substances

(1) With respect to a substance in ground water for which a ground- water protection criterion is not specified in sections 22a-133k-1 through 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies, the Commissioner may approve in writing a ground-water protection criterion to apply to such substance. Any person requesting approval of a ground-water protection criterion for such substance shall submit to the commissioner (A) a risk-based ground-water protection criterion for such substance calculated in accordance with subdivision (2) of this subsection, (B) the analytical detection limit for such substance, (C) a description of the organoleptic properties of such substance. Before approving a ground-water protection criterion the Commissioner shall consider the proposed risk-based ground-water protection criterion for such substance, the analytical detection limit for such substance, the organoleptic effects of such substance, any information about the health effects such substance may cause due to exposure pathways not accounted for in the proposed risk-based ground-water protection criterion, and any other information that the Commissioner reasonably deems necessary.

(2) The risk-based ground-water protection criterion shall be calculated using the following equations:

(A) For carcinogenic substances;

$$GWPC = \left[\frac{Risk}{CSF} \right] x \left[\frac{BW \text{ x } AT}{IR \text{ x } EF \text{ x } ED \text{ x } CF} \right]$$

(B) For non-carcinogenic substances:

$$GWPC = \left[Rfd \times HI \right] \times \left[\frac{BW \times AT}{IR \times EF \times ED \times CF \times SA} \right]$$

(C) The abbreviations used in subparagraphs (A) and (B) of this subdivision shall be interpreted in accordance with the following table and shall be assigned the values specified therein:

Term	Description	Units	Value
$GWPC_{RB}$	Risk-based Ground-water protection Criterion	ug/l	calculated
Risk	Target Cancer Risk Level	unitless	1.0E-06
HI	Hazard Index	unitless	1.0
CSF	Cancer slope Factor	$(mg/kg\text{-}day)^{-1}$	substance-specific
RFD	Reference Dose	mg/kg-day	substance-specific
IR	Ingestion Rate	l/day	2
EF	Exposure Frequency	days/year	365
ED	Exposure Duration	years	70
CF	Conversion Factor	unitless	1000
BW	Body Weight	kg	70
AT	Averaging Time,	days	25550
SA	Source Allocation	unitless	0.2

(i) Additional Remediation of Ground Water.

Nothing in sections 22a-133k-1 through 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies shall preclude the Commissioner from taking any action necessary to prevent or abate pollution, or to prevent or abate any threat to human health or the environment. If the presence of any substance impairs the aesthetic quality of any ground water which is or can reasonably be expected to be a source of water for drinking or other domestic use, additional remediation shall be conducted in order to reduce the concentration of such substance to a concentration appropriate for such use.

Appendix A to
Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies
Direct Exposure Criteria for Soil

Substance	Residential Criteria in mg/kg (ppm)	Industrial/ Commercial Criteria in mg/kg (ppm)
Volatile Organic Substances		
Acetone	500	1000
Acrylonitrile	1.1	11
Benzene	21	200
Bromoform	78	720
2-Butanone(MEK)	500	1000
Carbon tetrachloride	4.7	44
Chlorobenzene	500	1000
Chloroform	100	940
Dibromochloromethane	7.3	68
1,2-Dichlorobenzene	500	1000
1,3-Dichlorobenzene	500	1000
1,4-Dichlorobenzene	26	240
1,1-Dichloroethane	500	1000
1,2-Dichloroethane	6.7	63
1,1-Dichloroethylene	1	9.5
cis-1,2-Dichloroethylene	500	1000
trans-1,2-Dichloroethylene	500	1000
1,2-Dichloropropane	9	84
1,3-Dichloropropene	3.4	32
Ethylbenzene	500	1000

Substance	Residential Criteria in mg/kg (ppm)	Industrial/ Commercial Criteria in mg/kg (ppm)
Ethylene dibromide (EDB)	0.007	0.067
Methyl-tert-butyl-ether	500	1000
Methyl isobutyl ketone	500	1000
Methylene chloride	82	760
Styrene	500	1000
1,1,1,2-Tetrachloroethane	24	220
1,1,2,2-Tetrachloroethane	3.1	29
Tetrachloroethylene	12	110
Toluene	500	1000
1,1,1-Trichloroethane	500	1000
1,1,2-Trichloroethane	11	100
Trichloroethylene	56	520
Vinyl chloride	0.32	3
Xylenes	500	1000
Semivolatile Substances		
Acenaphthylene	1000	2500
Anthracene	1000	2500
Benzo(a)anthracene	1	7.8
Benzo(b)fluoranthene	1	7.8
Benzo(k)fluoranthene	8.4	78
Benzo(a)pyrene	1	1

Substance	Residential Criteria in mg/kg (ppm)	Industrial/ Commercial Criteria in mg/kg (ppm)
Bis(2-chloroethyl)ether	1	5.2
Bis(2-chloroisopropyl) ether	8.8	82
Bis(2-ethyl hexyl) phthalate	44	410
Butyl benzl phthalate	1000	2500
2-chlorophenol	340	2500
Di-n-butyl phthalate	1000	2500
Di-n-octyl phthalate	1000	2500
2,4-Dichlorophenol	200	2500
Fluoranthene	1000	2500
Fluorene	1000	2500
Hexachloroethane	44	410
Hexachlorobenzene	1	3.6
Naphthalene	1000	2500
Pentachlorophenol	5.1	48
Phenanthrene	1000	2500
Phenol	1000	2500
Pyrene	1000	2500
Inorganic Substances		
Antimony	27	8200
Arsenic	10	10
Barium	4700	140000

Substance	Residential Criteria in mg/kg (ppm)	Industrial/ Commercial in mg/kg (ppm)
Beryllium	2	2
Cadmium	34	1000
Chromium, trivalent	3900	51000
Chromium, hexavalent	100	100
Copper	2500	76000
Cyanide	1400	41000
Lead	500	1000
Mercury	20	610
Nickel	1400	7500
Selenium	340	10000
Silver	340	10000
Thallium	5.4	160
Vanadium	470	14000
Zinc	20000	610000
Pesticides, PCB's, and Total Petroleum Hydrocarbons (TPH)		
Alachlor	7.7	72
Aldicarb	14	410
Atrazine	2.8	26
Chlordane	0.49	2.2
Dieldrin	0.038	0.36
Endrin	20	610
2-4 D	680	20000

Substance	Residential Criteria in mg/kg (ppm)	Industrial/ Commercial in mg/kg (ppm)
Heptachlor epoxide	0.067	0.63
Heptachlor	0.14	1.3
Lindane	20	610
Methoxychlor	340	10000
Toxaphene	0.56	5.2
PCB's	1	10
TPH	500	2500

Appendix B to
Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies
Pollutant Mobility Criteria for Soil

Substance	GA, GAA Mobility Criteria in mg/kg (ppm)	GB Mobility Criteria in mg/kg (ppm)
Volatile Organic Substances		
Acetone	14	140
Acrylonitrile	0.01	0.1
Benzene	0.02	0.2
Bromoform	0.08	0.8
2-Butanone(MEK)	8	80
Carbon tetrachloride	0.1	1
Chlorobenzene	2	20
Chloroform	0.12	1.2
Dibromochloromethane	0.01	0.1
1,2-Dichlorobenzene	3.1	3.1
1,3-Dichlorobenzene	12	120
1,4-Dichlorobenzene	1.5	15
1,1-Dichloroethane	1.4	14
1,2-Dichloroethane	0.02	0.2
1,1-Dichloroethylene	0.14	1.4
cis-1,2-Dichloroethylene	1.4	14
trans-1,2-Dichloroethylene	2	20
1,2-Dichloropropane	0.1	1.0
1,3-Dichloropropene	0.01	0.1
Ethyl benzene	10.1	10.1
Ethylene dibromide (EDB)	0.01	0.1
Methyl-tert-butyl-ether	2	20
Methyl isobutyl ketone	7	14
Methylene chloride	0.1	1.0
Styrene	2	20
1,1,1,2-Tetrachloroethane	0.02	0.2

Substance	GA, GAA Mobility Criteria in mg/kg (ppm)	GB Mobility Criteria in mg/kg (ppm)
1,1,2,2-Tetrachloroethane	0.01	0.1
Tetrachloroethylene	0.1	1
Toluene	20	67
1,1,1-Trichloroethane	4	40
1,1,2-Trichloroethane	0.1	1
Trichloroethylene	0.1	1.0
Vinyl chloride	0.04	0.40
Xylenes	19.5	19.5
Semivolatile Substances		
Acenaphthylene	8.4	84
Anthracene	40	400
Benzo(a)anthracene	1	1
Benzo(b)fluoranthene	1	1
Benzo(k)fluoranthene	1	1
Benzo(a)pyrene	1	1
Bis(2-chloroethyl)ether	1	2.4
Bis(2-chloroisopropyl)ether	1	2.4
Bis(2-ethyl hexyl)phthalate	1	11
Butyl benzl phthalate	20	200
2-chlorophenol	1	7.2
Di-n-butyl phthalate	14	140
Di-n-octyl phthalate	2	20
2,4-Dichlorophenol	1	4
Fluoranthene	5.6	56
Fluorene	5.6	56
Hexachloroethane	1	1
Hexachlorobenzene	1	1
Naphthalene	5.6	56
Pentachlorophenol	1	1
Phenanthrene	4	40
Phenol	80	800
Pyrene	4	40

Substance	GA, GAA Mobility Criteria in mg/kg (ppm)	GB Mobility Criteria in mg/kg (ppm)
Pesticides and TPH		
Alachlor	0.230	0.4
Aldicarb	1	1
Atrazine	0.2	0.2
Chlordane	0.066	0.066
Dieldrin	0.007	0.007
2-4 D	1.4	14
Heptachlor epoxide	0.02	0.02
Heptachlor	0.013	0.013
Lindane	0.02	0.04
Methoxychlor	0.8	8
Simazine	0.8	8
Toxaphene	0.33	0.6
Total Petroleum Hydrocarbon By EPA Method 418.1 or another EPA-approved method acceptable to the Commissioner	500	2500
Inorganic Substances and PCB	**GA, GAA Mobility Criteria By TCLP or by SPLP in mg/l (ppm)**	**GB Mobility Criteria By TCLP or by SPLP in mg/l (ppm)**
Antimony	0.006	0.06
Arsenic	0.05	0.5
Barium	1	10.0
Beryllium	0.004	0.04
Cadmium	0.005	0.05
Chromium, total	0.05	0.5
Copper	1.3	13
Cyanide (by SPLP only)	0.2	2
Lead	0.015	0.15
Mercury	0.002	0.02
Nickel	0.1	1.0
Selenium	0.05	0.5

Substance	GA, GAA Mobility Criteria By TCLP or by SPLP in mg/l (ppm)	GB Mobility Criteria By TCLP or by SPLP in mg/l (ppm)
Silver	0.036	0.36
Thallium	0.005	0.05
Vanadium	0.05	0.50
Zinc	5	50
PCB	0.0005	0.005

Appendix C to
Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies
Ground-Water Protection Criteria for GA and GAA Areas

Substance	Ground-water Protection Criteria in ug/l (ppb)
Volatile Organic Substances	
Acetone	700
Acrylonitrile	0.5
Benzene	1
Bromoform	4
2-Butanone(MEK)	400
Carbon tetrachloride	5
Chlorobenzene	100
Chloroform	6
Dibromochloromethane	0.5
1,2-Dichlorobenzene	600
1,3-Dichlorobenzene	600
1,4-Dichlorobenzene	75
1,1-Dichloroethane	70
1,2-Dichloroethane	1
1,1-Dichloroethylene	7
cis-1,2-Dichloroethylene	70
trans-1,2-Dichloroethylene	100
1,2-Dichloropropane	5
1,3-Dichloropropene	0.5
Ethyl benzene	700
Ethylene dibromide (EDB)	0.05
Methyl-tert-butyl-ether	100
Methyl isobutyl ketone	350
Methylene chloride	5
Styrene	100
1,1,1,2-Tetrachloroethane	1
1,1,2,2-Tetrachloroethane	0.5
Tetrachloroethylene	5

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Substance	Ground-water Protection Criteria in ug/l (ppb)
Toluene	1000
1,1,1-Trichloroethane	200
1,1,2-Trichloroethane	5
Trichloroethylene	5
Vinyl chloride	2
Xylenes	530
Semivolatile Substances	
Acenaphthylene	420
Anthracene	2000
Benzo(a)anthracene	0.06
Benzo(b)fluoranthene	0.08
Benzo(k)fluoranthene	0.5
Benzo(a)pyrene	0.2
Bis(2-chloroethyl)ether	12
Bis(2-chloroisopropyl)ether	12
Bis(2-ethyl hexyl)phthalate	2
Butyl benzl phthalate	1000
2-chlorophenol	36
Di-n-butyl phthalate	700
Di-n-octyl phthalate	100
2,4-Dichlorophenol	20
Fluoranthene	280
Fluorene	280
Hexachloroethane	3
Hexachlorobenzene	1
Naphthalene	280
Pentachlorophenol	1
Phenanthrene	200
Phenol	4000
Pyrene	200

Substance	Ground-water Protection Criteria in ug/l (ppb)
Inorganic Substances	
Antimony	6
Arsenic	50
Asbestos in mfl	7 (mfl)
Barium	1000
Beryllium	4
Cadmium	5
Chromium (total)	50
Copper	1300
Cyanide	200
Lead	15
Mercury	2
Nickel	100
Selenium	50
Silver	36
Thallium	5
Vanadium	50
Zinc	5000
Pesticides, PCB and Total Petroleum Hydrocarbons	
Alachlor	2
Aldicarb	3
Atrazine	3
Chlordane	0.3
Dieldrin	0.002
2-4 D	70
Heptachlor epoxide	0.2
Heptachlor	0.4
Lindane	0.2
Methoxychlor	40
Simazine	4
Toxaphene	3

Substance	Ground-water Protection Criteria in ug/l (ppb)
PCB's	0.5
Total Petroleum Hydrocarbon By EPA Method 418.1 or another EPA-approved method acceptable to the Commissioner	500

Appendix D to
Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies
Surface-water Protection Criteria
for Substances in Ground Water

Substance	Surface-Water Protection Criteria in ug/l (ppb)
Volatile Organic Substances	
Acrylonitrile	20
Benzene	710
Bromoform	10800
Carbon tetrachloride	132
Chlorobenzene	420000
Chloroform	14100
Dibromochloromethane	1020
1,2-Dichlorobenzene	170000
1,3-Dichlorobenzene	26000
1,4-Dichlorobenzene	26000
1,2-Dichloroethane	2970
1,1-Dichloroethylene	96
1,3-Dichloropropene	34000
Ethylbenzene	580000
Methylene chloride	48000
1,1,2,2-Tetrachloroethane	110
Tetrachloroethylene	88
Toluene	4000000
1,1,1-Trichloroethane	62000
1,1,2-Trichloroethane	1260
Trichloroethylene	2340
Vinyl chloride	15750
Semivolatile Substances	
Acenaphthylene	0.3
Anthracene	1100000
Benzo(a)anthracene	0.3
Benzo(b)fluoranthene	0.3
Benzo(k)fluoranthene	0.3

Substance	Surface-Water Protection Criteria in ug/l (ppb)
Benzo(a)pyrene	0.3
Bis(2-chloroethyl) ether	42
Bis(2-chloroisopropyl) ether	3400000
Bis(2-ethyl hexyl)phthalate	59
Di-n-butyl phthalate	120000
2,4-Dichlorophenol	15800
Fluoranthene	3700
Fluorene	140000
Hexachloroethane	89
Hexachlorobenzene	0.077
Phenanthrene	0.077
Phenol	92000000
Pyrene	110000
Inorganic Substances	
Antimony	86000
Arsenic	4
Asbestos (in mfl)	7 mfl
Beryllium	4
Cadmium	6
Chromium, trivalent	1200
Chromium, hexavalent	110
Copper	48
Cyanide	52
Lead	13
Mercury	0.4
Nickel	880
Selenium	50
Silver	12
Thallium	63
Zinc	123

Substance	Surface-Water Protection Criteria in ug/l (ppb)
Pesticides and PCB	
Chlordane	0.3
Dieldrin	0.1
Endrin	0.1
Heptachlor epoxide	0.05
Heptachlor	0.05
Toxaphene	1
PCB's	0.5

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Appendix E to
Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies
Volatilization Criteria for Ground Water

Volatile Substance	Residential Volatilization Criteria for Ground water in parts per billion	Industrial/Commercial Volatilization Criteria for Ground water in parts per billion
Acetone	50000	50000
Benzene	215	530
Bromoform	920	3800
2-Butanone (MEK)	50000	50000
Carbon Tetrachloride	16	40
Chlorobenzene	1800	6150
Chloroform	287	710
1,2-Dichlorobenzene	30500	50000
1,3-Dichlorobenzene	24200	50000
1,4-Dichlorobenzene	50000	50000
1,1-Dichloroethane	34600	50000
1,2-Dichloroethane	21	90
1,1-Dichloroethylene	1	6
1,2-Dichloropropane	14	60
1,3-Dichloropropene	6	25
Ethyl benzene	50000	50000
Ethylene dibromide (EDB)	4	16
Methyl-tert-butyl-ether	50000	50000
Methyl isobutyl ketone	50000	50000
Methylene chloride	50000	50000
Styrene	580	2065
1,1,1,2-Tetrachloroethane	12	50
1,1,2,2-Tetrachloroethane	23	100
Tetrachloroethylene	1500	3820
Toluene	23500	50000
1,1,1-Trichloroethane	20400	50000
1,1,2-Trichloroethane	8000	19600

Volatile Substance	Residential Volatilization Criteria for Ground water in parts per billion	Industrial/Commercial Volatilization Criteria for Ground water in parts per billion
Trichloroethylene	219	540
Vinyl chloride	2	2
Xylenes	21300	50000

Appendix F to
Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies
Volatilization Criteria for Soil Vapor

Volatile Substance	Residential Volatilization Criteria for Soil Vapor in parts per million	Industrial/Commercial Volatilization Criteria for Soil Vapor in parts per million
Acetone	2400	8250
Benzene	1	113
Bromoform	1.5	6
2-Butanone (MEK)	2400	8285
Carbon Tetrachloride	1	2.7
Chlorobenzene	31	106
Chloroform	4.5	10.4
1,2-Dichlorobenzene	240	818
1,3-Dichlorobenzene	240	818
1,4-Dichlorobenzene	950	3270
1,1-Dichloroethane	850	3037
1,2-Dichloroethane	1	1
1,1-Dichloroethylene	1	1
1,2-Dichloropropane	1	1
1,3-Dichloropropene	1	1
Ethyl benzene	1650	5672
Ethylene dibromide (EDB)	1	1
Methyl-tert-butyl-ether	1000	3415
Methyl isobutyl ketone	140	480
Methylene chloride	1200	2907
Styrene	8	28
1,1,1,2-Tetrachloroethane	1	1.5
1,1,2,2- Tetrachloroethane	1	1
Tetrachloroethylene	11	27
Toluene	760	2615

Volatile Substance	Residential Volatilization Criteria for Soil Vapor in parts per million	Industrial/Commercial Volatilization Criteria for Soil Vapor in parts per million
1,1,1-Trichloroethane	1310	4520
1,1,2-Trichloroethane	40	93
Trichloroethylene	7	16
Vinyl chloride	1	1
Xylenes	500	1702

Appendix G to
Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies
Equations, Terms and Values for Calculating Site-specific Volatilization Criteria
for Ground Water and Soil Vapor

Volatilization Criteria for Ground Water

Site-Specific Volatilization Criteria for Ground Water may be calculated using the following equations:

$$GWC = TAC / (1000 \cdot VF_{GW})$$

$$VF_{GW} = \frac{H\,[(D_{EFF\,WS}/L_{GW})/(ER \cdot L_B)] \cdot 1000}{1+[(D_{EFF\text{-}WS}/L_{GW})/(ER \cdot L_B)] + [(D_{EFF\text{-}WS}/L_{GW})/((D_{EFF\text{-}CRACK}/L_{CRACK}) \cdot \eta)]}$$

$$D_{EFF\,WS} = (h_{cap} + h_v) / [(h_{cap} / D_{EFF\text{-}CAP}) + (h_v / D_{EFF\text{-}S})]$$

$$D_{EFF\text{-}CAP} = D_{AIR} \cdot (\theta_{ACAP}{}^{3.33}/\theta_T{}^2) + D_{WATER}/H \cdot (\theta_{WCAP}{}^{3.33}/\theta_T{}^2)$$

$$D_{EFF\text{-}S} = D_{AIR} \cdot (\theta_{AS}{}^{3.33}/\theta_T{}^2) + D_{WATER}/H \cdot (\theta_{WS}{}^{3.33}/\theta_T{}^2)$$

$$D_{EFF\text{-}CRACK} = D_{AIR} \cdot (\theta_{ACRACK}{}^{3.33}/\theta_T{}^2) + D_{WATER}/H \cdot (\theta_{WCRACK}{}^{3.33}/\theta_T{}^2)$$

Where:

Term	Description	Units	Value
GWC	Ground Water Volatilization Criteria	ug/kg	calculated
TAC	Target Indoor Air Concentration	ug/m^3	**
VF_{GW}	Ground Water Volatilization Factor	mg/m^3	calculated
H	Henry's Law Constant	unitless	substance-specific
$D_{EFF\,WS}$	Effective Diffusion-Ground Water to Soil Surface	cm^2/s	calculated
L_{GW}	Depth to Ground Water (= $h_{CAP} + h_V$)	cm	site-specific
h_{CAP}	Thickness of Capillary Fringe	cm	site-specific
h_V	Thickness of Vadose Zone	cm	site-specific
ER_R	Residential Enclosed Space Air Exchange Rate	1/s	.00014
ER_I	Industrial Enclosed Space Air Exchange Rate	1/s	.00023

Term	Description	Units	Value
$L_{B\,R}$	Residential Enclosed Space Volume/Infiltration Area Ratio	cm	site-specific
$L_{B\,I}$	Industrial Enclosed Space Volume/Infiltration Area Ratio	cm	site-specific
$D_{EFF\text{-}CRACK}$	Effective Diffusion through Foundation Cracks	cm^2/s	calculated
L_{CRACK}	Enclosed Space Foundation or Wall Thickness	cm	site-specific
η	Areal Fraction of Cracks in Foundations / Walls	unitless	.01
$D_{EFF\text{-}CAP}$	Effective Diffusion through Capillary Fringe	cm^2/s	calculated
$D_{EFF\text{-}S}$	Effective Diffusion through Soil (In Vapor Phase)	cm^2/s	calculated
D_{AIR}	Diffusion Coefficient in Air	cm^2/s	8.40E-02 or chemical specific
D_{WATER}	Diffusion Coefficient in Water	cm^2/s	1.00E-05 or chemical specific
θ_{ACAP}	Volumetric Air Content in Capillary Fringe	unitless	site-specific
θ_{AS}	Volumetric Air Content in Vadose Zone	unitless	site-specific
θ_{ACRACK}	Volumetric Air Content in Foundation/Wall Cracks	unitless	site-specific
θ_{WCAP}	Volumetric Water Content in Capillary Fringe	unitless	site-specific
θ_{WS}	Volumetric Water Content in Vadose Zone	unitless	site-specific
θ_{WCRACK}	Volumetric Water Content in Foundation/Wall Cracks	unitless	site-specific
θ_{T}	Total Soil Porosity	unitless	site-specific

**See attached "Table of Target Air Concentrations"

Volatilization Criteria for Soil Vapor

Site-Specific Volatilization Criteria for Soil Vapor may be calculated using the following equations:

$$SSVC = TAC / (1000 \cdot VF_{SSV})$$

$$VF_{SSV} = \frac{[(D_{EFF\,S}/L_S)/(ER \cdot L_B)]}{1+[(D_{EFF\text{-}S}/L_S)/(ER \cdot L_B)] + [(D_{EFF\text{-}S}/L_S)/(D_{EFF\text{-}CRACK}/L_{CRACK}) \cdot \eta]}$$

$$D_{EFF\text{-}S} = D_{AIR} \cdot (\theta_{AS}{}^{3.33}/\theta_T{}^2) + D_{WATER}/H \cdot (\theta_{WS}{}^{3.33}/\theta_T{}^2)$$

$$D_{EFF\text{-}CRACK} = D_{AIR} \cdot (\theta_{ACRACK}{}^{3.33}/\theta_T{}^2) + D_{WATER}/H \cdot (\theta_{WCRACK}{}^{3.33}/\theta_T{}^2)$$

Where:

Terms	Description	Units	Value
SSVC	Volatilization Criteria for Soil Vapor	mg/m^3-air	calculated
TAC	Target Indoor Air Concentration	ug/m^3-air	**
VF_{SSV}	Volatilization Factor for Subsurface Vapors	unitless	calculated
H	Henry's Law Constant	unitless	substance-specific
$D_{EFF\,S}$	Effective Diffusion through Soil (in Vapor Phase)	cm^2/s	calculated
L_S	Depth to Soil Vapor Sample	cm	site-specific
ER_R	Residential Enclosed Space Air Exchange Rate	1/s	.00014
ER_I	Industrial Enclosed Space Air Exchange Rate	1/s	.00023
$L_{B\,R}$	Residential Enclosed Space Volume/Infiltration Area Ratio	cm	site-specific
$L_{B\,I}$	Industrial Enclosed Space Volume/Infiltration Area Ratio	cm	site-specific
$D_{EFF\text{-}CRACK}$	Effective Diffusion through Foundation Cracks	cm^2/s	calculated
L_{CRACK}	Enclosed Space Foundation or Wall Thickness	cm	site-specific
η	Areal Fraction of Cracks in Foundations / Walls	unitless	calculated
θ_{AS}	Volumetric Air Content in Vadose Zone	unitless	site-specific
θ_{ACRACK}	Volumetric Air Content in Foundation/Wall Cracks	unitless	site-specific
θ_{WS}	Volumetric Water Content in Vadose Zone	unitless	site-specific
θ_{WCRACK}	Volumetric Water Content in Foundation/Wall Cracks	unitless	site-specific
θ_T	Total Soil Porosity	unitless	site-specific

** See attached "Table of Target Air Concentrations"

Table of Target Air Concentrations

Volatile Substance	Residential Target Indoor Air Concentration in micrograms per cubic meter	Industrial/Commercial Target Indoor Air Concentration in micrograms per cubic meter
Acetone	8.34 E02	1.17 E03
Benzene	3.25 E00	2.15 E01
Bromoform	2.21 E00	3.72 E00
2-Butanone (MEK)	1.04 E03	1.46 E03
Carbon Tetrachloride	1.00 E00	1.00 E00
Chlorobenzene	2.09 E01	2.92 E01
Chloroform	3.00 E00	3.00 E00
1,2-Dichlorobenzene	2.09 E02	2.92 E02
1,3-Dichlorobenzene	2.09 E02	2.92 E02
1,4-Dichlorobenzene	8.34 E02	1.17 E03
1,1-Dichloroethane	5.21 E02	7.30 E02
1,2-Dichloroethane	9.36 E-02	1.57 E-01
1,1-Dichloroethylene	4.87 E-02	8.18 E-02
1,2-Dichloropropane	1.28 E-01	2.15 E-01
1,3-Dichloropropene	6.58 E-02	1.10 E-01
Ethyl benzene	1.04 E03	1.46 E03
Ethylene dibromide (EDB)	1.11 E-02	1.86 E-02
Methyl-tert-butyl-ether	5.21 E02	7.30 E02
Methyl isobutyl ketone	8.34 E01	1.17 E02
Methylene chloride	6.00 E02	6.00 E02
Styrene	5.00 E00	7.17 E00
1,1,1,2-Tetrachloroethane	3.29 E-01	5.52 E-01
1,1,2,2-Tetrachloroethane	4.20 E-02	7.05 E-02
Tetrachloroethylene	1.10 E01	1.10 E01
Toluene	4.17 E02	5.84 E02

Volatile Substance	Residential Target Indoor Air Concentration in micrograms per cubic meter	Industrial/Commercial Target Indoor Air Concentration in micrograms per cubic meter
1,1,1-Trichloroethane	1.04 E03	1.46 E03
1,1,2-Trichloroethane	3.00 E01	3.00 E01
Trichloroethylene	5.00 E00	5.00 E00
Vinyl chloride	2.90 E-02	4.87 E-02
Xylenes	3.13 E02	4.38 E02

Section 4. The Regulations of Connecticut State Agencies are amended by adding a new section 22a-133q-1 as follows:

22a-133q-1 Environmental land use restrictions

(a) Definitions.

For the purpose of this section, the definitions of the terms shall be the same as the definitions of terms in section 22a-133k-1 of the Regulations of Connecticut State Agencies. In addition, the following definitions shall apply:

"Class A-2 survey" means a first survey or independent re-survey which conforms to the "Recommended Standards for Surveys and Maps in the State of Connecticut Adopted on September 24, 1992, effective January 1, 1993 by the Connecticut Association of Land Surveyors, Inc." and which has been prepared by a land surveyor licensed in the State of Connecticut; complies with the minimum detail requirements for urban land title surveys adopted by the American Land Title Association and American Congress on Surveying and Maps (such requirements shall include all optional items on Table A thereof, exclusive of Items #1 (Monumentation), #5 (Contours in Elevation), #7b-2 (Other Data), and #12; and specifically shows (1) the boundaries of the Property by course and distance, together with the metes and bounds description corresponding to such survey; (2) the location of all improvements; (3) the location and width of all easements, utility lines, rights of way and building setback lines, with references to the book and page numbers for the instruments granting the same; (4) the location of all encroachments and restrictions, if any affecting the property; (5) the location of the portion of the parcel which is the subject of the proposed environmental land use restriction and (6) the latitude and longitude of the center of the subject property.

"Environmental land use restriction" means (1) a declaration of environmental land use restriction in the form set forth in Appendix 1 to section 22a-133q-1 of the Regulations of Connecticut State Agencies, or, in the case of an environmental land use restriction approved by a licensed environmental professional pursuant to P.A. 95-190, a declaration of environmental land use restriction in the form set forth in Appendix 2 to section 22a-133q-1 of the Regulations of Connecticut State Agencies; (2) a class A-2 survey of the subject parcel or portion thereof; (3) a certificate of title demonstrating that the subordination agreement(s) required under section 22a-133o of the General Statutes as amended by P.A. 95-190 has been recorded; and (4) a copy of the decision document prepared in accordance with subsection (f) of this section.

"Licensed environmental professional" means an environmental professional licensed in accordance with section 4 of P.A. 95-183.

(b) Applicability.

This section shall govern the execution and recording of environmental land use restrictions in accordance with section 22a-133n to 22a-133s, inclusive, of the General Statutes. Except as otherwise provided by section 22a-133o of the General Statutes, no environmental land use restriction shall be effective unless and until it has (1) been submitted to the Commissioner for his review and approved by him as evidenced by his signature on the original of the instrument setting forth such restriction; and (2) been recorded on the land records in the municipality in which the subject parcel is located.

(c) Publishing Notice of an Environmental Land Use Restriction.

(1) The owner of the parcel which is the subject of a proposed environmental land use restriction shall, except as specified in subdivision (1) of this subsection, publish in at least one newspaper of general circulation in the area affected by the proposed environmental land use restriction, notice of intent to record an environmental land use restriction. Such notice shall include the name and address of such owner, the address of the parcel or a brief description of its location, a brief description of the purpose of the proposed environmental land use restriction, the name and address of an individual from whom

interested persons may obtain a copy of the proposed use restriction, and a statement that public comments on the proposed environmental land use restriction may be submitted in writing to the Commissioner of Environmental Protection, 79 Elm Street, Hartford, CT 06106 for thirty days after the date of publication of the notice.

(2) Notice of a proposed environmental land use restriction need not be published if (A) such restriction provides solely that the use of the subject parcel or portion thereof is restricted to industrial or commercial activities, and (B) the municipal zoning of such parcel limits the parcel to such use.

(d) Proposing an Environmental Land Use Restriction.

When submitting a proposed environmental land use restriction to the Commissioner for his review and approval, the owner of the affected parcel of land shall simultaneously submit:

(1) a draft declaration of environmental land use restriction in the form set forth in Appendix 1 or 2 to section 22a-133q-1 of the Regulations of Connecticut State Agencies, as applicable;
(2) a Class A-2 survey of the parcel or portion thereof which is the subject of the proposed environmental land use restriction;
(3) a proposed decision document in accordance with subsection (f) of this section; and
(4) a certified copy of the notice required by subsection (c) of this section, as such notice appeared in the newspaper or newspapers.

(e) Approval of an Environmental Land Use Restriction by the Commissioner.

After the close of the public comment period, the Commissioner shall decide whether to approve an environmental land use restriction. When making such decision the Commissioner shall consider: (1) all comments submitted; (2) whether such restriction will adequately protect human health and the environment from pollution at or emanating from the subject release area; and (3) whether such restriction conforms in all respects to the requirements of this section and sections 22a-133n through 22a-133s of the General Statutes.

(f) Decision Document.

Any environmental land use restriction approved pursuant to this section shall include a decision document prepared in accordance with this section. The decision document shall contain a detailed written description of:

(1) the type and location of pollutants present in soil or ground water on or underlying the parcel or portion thereof which is the subject of the environmental land use restriction;
(2) the provisions of the environmental land use restriction, including any limitations on the use of such parcel or portion thereof; and
(3) description of the reason for the environmental land use restriction, including an explanation why such restriction is consistent with sections 22a-133k-1 through 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies.

The decision document shall also contain a summary of all comments on the proposed environmental land use restriction received following the publication of notice in accordance with subsection (c) of this section and a brief response to each comment. The decision document shall be signed by the Commissioner or, in the case of a restriction approved pursuant to P.A. 95-190, a licensed environmental professional to indicate approval of the decision document.

(g) Approval of an Environmental Land Use Restriction by a Licensed Environmental Professional.

When an environmental land use restriction is to be approved by a licensed environmental professional in accordance with P.A. 95-190, the licensed environmental professional shall review the documents listed in subsection (e), shall prepare a written approval of such restriction, and shall retain documentation of all documents reviewed by him. A licensed environmental professional shall not approve any environmental land use restriction unless it is consistent with sections 22a-133k-1 through 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies.

(h) Subordination Agreements.

Whether the Commissioner or a licensed environmental professional approves an environmental land use restriction, prior to recording such environmental land use restriction on the municipal land records, the owner of the subject parcel shall submit to the Commissioner for his review and written approval: (1) copies of each subordination agreement, properly executed, required under section 22a-133o of the General Statutes; or (2) a certificate of title indicating that each person holding an interest in such parcel or any part thereof, including without limitation each mortgagee, lessee, lienor and encumbrancer, has irrevocably subordinated such interest to the environmental land use restriction.

(i) Recording an Environmental Land Use Restriction.

After the Commissioner or a licensed environmental professional, as applicable, has approved an environmental land use restriction in accordance with this section, the owner of the subject parcel shall record such restriction in accordance with this section and all other applicable law.

(j) Mailing Notice of an Environmental Land Use Restriction.

After an environmental land use restriction has been recorded, the owner of the subject parcel shall send, by certified mail, return receipt requested, a copy of such environmental land use restriction to (1) the chief administrative officer in the town where the parcel is located; (2) the chairman of the municipal planning, zoning or planning and zoning commission; (3) the local director of health; and (4) any person who submitted comments on such environmental use restriction.

(k) Release.

The owner of any parcel which is subject to an environmental land use restriction recorded in accordance with this section may request that the Commissioner release such parcel, in whole or in part, from the limitations of such restriction. If the Commissioner grants such request, the owner of such parcel shall, in accordance with law, record such release on the land records in the municipality where such parcel is located. No release of an environmental land use restriction shall be effective unless and until it has been submitted to the Commissioner for his review and approved by him as evidenced by his signature on the original of the instrument setting forth such release, and has been recorded on the land records of the municipality in which such parcel is located.

(l) Effect of Court Ruling on Environmental Land Use Restriction.

In the event that a court of competent jurisdiction rules that any portion of an environmental land use restriction recorded pursuant to this section is invalid, the owner of the subject parcel shall submit a copy of such restriction and such ruling to the Commissioner. The Commissioner shall review such restriction, and if he determines that such restriction would not have been approved without the invalid portion, he shall give notice that the environmental land use restriction is terminated as evidenced by his signature on in instrument setting forth such termination, and shall record such instrument on the land records of the municipality where such parcel is located. Promptly thereafter, the owner of the subject parcel shall take actions consistent with sections 22a-133k-1 through 22a-133k-3, inclusive, of the Regulations of Connecticut State Agencies to remediate the subject parcel or portion thereof. If the Commissioner determines in writing that the environmental land use restriction would have been approved without the invalid portion, the valid portion of the environmental land use restriction shall remain in full force and effect.

Appendix 1 to
Section 22a-133q-1 of the Regulations of Connecticut State Agencies
Form of Environmental Land Use Restriction for Commissioner's Approval

Instructions: Any environmental land use restriction pursuant to R.C.S.A. section 22a-133q-1 shall be in the following form. The appropriate information shall be inserted in the blanks shown, and the appropriate language shall be selected from the choices shown in brackets, or if none of the choices addresses the specific circumstance, substitute language shall be inserted.

DECLARATION OF ENVIRONMENTAL LAND USE RESTRICTION
AND GRANT OF EASEMENT

This Declaration of environmental land use restriction and Grant of Easement is made this day of , 1995 , between ("the Grantor") and the Commissioner of Environmental Protection of the State of Connecticut ("the Grantee").

WITNESSETH:

WHEREAS, Grantor is the owner in fee simple of certain real property (the "Property") known as [Address/Location located in the Town of in County] [designated as Lot , Block on the tax map of the Town of in County], more particularly described on Exhibit A which is attached hereto and made a part hereof; and

WHEREAS, the Grantee has determined that the environmental land use restriction set forth below is consistent with regulations adopted by him pursuant to Section 22a-133k of the Connecticut General Statutes; and

WHEREAS, the Grantee has determined that this environmental land use restriction will effectively protect public health and the environment from the hazards of pollution; and

WHEREAS, the Grantee's written approval of this Environmental land use restriction is contained in the document attached hereto as Exhibit B (the "Decision Document") which is made a part hereof; and

WHEREAS, the property or portion thereof identified in the class A-2 survey ("the Subject Area") which survey is attached hereto as Exhibit C which is made a part hereof, contains pollutants and

WHEREAS, to prevent exposure to or migration of such pollutants and to abate hazards to human health and the environment, and in accordance with the Decision Document, the Grantor desires to impose certain restrictions upon the use, occupancy, and activities of and at the Subject Area, and to grant this environmental land use restriction to the Grantee on the terms and conditions set forth below; and

WHEREAS, Grantor intends that such restrictions shall run with the land and be binding upon and enforceable against Grantor and Grantor's successors and assigns;

NOW, THEREFORE, Grantor agrees as follows:

1. Purpose. In accordance with the Decision Document, the purpose of this Environmental land use restriction is to assure [that the Subject Area is not used for residential activities], [that ground water at the Subject Area is not utilized for drinking purposes], [that humans are not exposed to soils at the Subject Area polluted with substances in concentrations exceeding the direct exposure criteria established in R.C.S.A. sections 22a-133k-1 through 22a-133k-3, inclusive], [that water does not infiltrate soils at the Subject Area polluted with substances in concentrations exceeding the pollutant mobility criteria established in R.C.S.A. sections 22a-133k-1 through 22a-133k-3, inclusive] [that buildings are not constructed over soils or ground water at the Subject Area polluted with substances in concentrations exceeding the volatilization criteria established in R.C.S.A. sections 22a-133k-1 through 22a-133k-3,

inclusive], [that the engineered control described in Exhibit D attached hereto is not disturbed and is properly maintained to prevent human exposure to soils at the Subject Area polluted with substances in concentrations exceeding the direct exposure criteria established in R.C.S.A. sections 22a-133k-1 through 22a-133k-3, inclusive, and/or that water does not infiltrate soils at the Subject Area polluted with substances in concentrations exceeding the pollutant mobility criteria established in R.C.S.A. sections 22a-133k-1 through 22a-133k-3, inclusive.]

2. Restrictions Applicable to the Subject Area: In furtherance of the purposes of this environmental land use restriction, Grantor shall assure that use, occupancy, and activity of and at the Subject Area are restricted as follows:

[A. Use. No residential use of the Subject Area shall be permitted.

B. Ground water. Ground water at the Subject Area shall not be used for drinking or other domestic purposes.

C. Disturbances. Soil at the Subject Area shall not be disturbed in any manner, including without limitation,

D. Construction. No building shall be constructed on the Subject Area.]

3. Except as provided in Paragraph 4 below, no action shall be taken, allowed, suffered, or omitted if such action or omission is reasonably likely to:

i. Create a risk of migration of pollutants or a potential hazard to human health or the environment; or

ii. Result in a disturbance of the structural integrity of any engineering controls designed or utilized at the Property to contain pollutants or limit human exposure to pollutants.

4. Emergencies. In the event of an emergency which presents a significant risk to human health or the environment, the application of Paragraph 3 above may be suspended, provided such risk cannot be abated without suspending such Paragraph <u>and</u> the Grantor:

i. Immediately notifies the Grantee of the emergency;

ii. Limits both the extent and duration of the suspension to the minimum reasonably necessary to adequately respond to the emergency;

iii. Implements all measures necessary to limit actual and potential present and future risk to human health and the environment resulting from such suspension; and

iv. Implements a plan approved in writing by the Grantee, on a schedule approved by the Grantee, to ensure that the Subject Area is remediated in accordance with R.C.S.A. sections 22a-133k-1 through 22a-133k-3, inclusive, or restored to its condition prior to such emergency.

5. Release of Restriction; Alterations of Subject Area. Grantor shall not make, or allow or suffer to be made, any alteration of any kind in, to, or about any portion of any of the Subject Area inconsistent with this Environmental land use restriction unless the Grantor has first recorded the Grantee's written approval of such alteration upon the land records of [name of municipality where Subject Area is located]. The Grantee shall not approve any such alteration and shall not release the Property from the provisions of this environmental land use restriction unless the Grantor demonstrates to the Grantee's satisfaction that Grantor has remediated the Subject Area in accordance with R.C.S.A. sections 22a-133k-1 through 22a-133k-3, inclusive.

6. Grant of Easement to the Grantee. Grantor hereby grants and conveys to the Grantee, his agents, contractors, and employees, and to any person performing pollution remediation activities under the direction thereof, a non-exclusive easement (the "Easement") over the Subject Area and over such other parts of the Property as are necessary for access to the Subject Area or for carrying out any actions to abate a threat to human health or the environment associated with the Subject Area. Pursuant to this Easement, the Grantee, his agents, contractors, and employees, and any person performing pollution remediation activities under the direction thereof, may enter upon and inspect the Property and perform such investigations and actions as the Grantee deems necessary for any one or more of the following purposes:

i. Ensuring that use, occupancy, and activities of and at the Property are consistent with this environmental land use restriction;

ii. Ensuring that any remediation implemented complies with R.C.S.A. sections 22a-133k-1 through 22a-133k-3, inclusive;

iii. Performing any additional investigations or remediation necessary to protect human health and the environment;

[iv. Ensuring the structural integrity of any engineering controls described in this Environmental land use restriction and Grant of Easement and their continuing effectiveness in containing pollutants and limiting human exposure to pollutants.]

7. Notice and Time of Entry onto Property. Entry onto the Property by the Grantee pursuant to this Easement shall be upon reasonable notice and at reasonable times, provided that entry shall not be subject to these limitations if the Grantee determines that immediate entry is necessary to protect human health or the environment.

8. Notice to Lessees and Other Holders of Interests in the Property. Grantor, or any future holder of any interest in the property, shall cause any lease, grant, or other transfer of any interest in the Property to include a provision expressly requiring the lessee, grantee, or transferee to comply with this environmental land use restriction and Grant of Easement. The failure to include such provision shall not affect the validity or applicability to the Property of this environmental land use restriction and Grant of Easement.

9. Persons Entitled to Enforce Restrictions. The restrictions in this environmental land use restriction on use, occupancy, and activity of and at the Property shall be enforceable in accordance with section 22a-133p of the General Statutes.

10. Severability and Termination. If any court of competent jurisdiction determines that any provision of this environmental land use restriction or Grant of Easement is invalid or unenforceable, such provision shall be deemed to have been modified automatically to conform to the requirements for validity and enforceability as determined by such court. In the event that the provision invalidated is of such nature that it cannot be so modified, the provision shall be deemed deleted from this instrument as though it had never been included herein. In either case, the remaining provisions of this instrument shall remain in full force and effect. Further, in either case, the Grantor shall submit a copy of this restriction and of the judgement of the Court to the Grantee in accordance with R.C.S. A. section 22a-133q-1(1). This environmental land use restriction shall be terminated if the Grantee provides notification pursuant to R.C.S.A. section 22a-133q-1(l).

11. Binding Effect. All of the terms, covenants and conditions of this environmental land use restriction and grant of easement shall run with the land and shall be binding on the Grantor, the Grantor's successors and assigns, and each owner and any other party entitled to possession or use of the Property during such period of ownership or possession.

12. Terms Used Herein. The definitions of terms used herein shall be the same as the definitions contained in sections 22a-133k-1 and 22a-133o-1 of the Regulations of Connecticut State Agencies as such sections existed on the date of execution of this environmental land use restriction..

Appendix 2 to
Section 22a-133q-1 of the Regulations of Connecticut State Agencies
Form of Environmental Land Use Restriction for Licensed Environmental Professional's Approval

Instructions: Any environmental land use restriction pursuant to R.C.S.A. section 22a-133q-1 shall be in the following form. The appropriate information shall be inserted in the blanks shown, and the appropriate language shall be selected from the choices shown in brackets, or if none of the choices addresses the specific circumstance, substitute language shall be inserted.

DECLARATION OF ENVIRONMENTAL LAND USE RESTRICTION
AND GRANT OF EASEMENT

This Declaration of environmental land use restriction and Grant of Easement is made this day of , 1995 , between ("the Grantor") and the Commissioner of Environmental Protection of the State of Connecticut ("the Grantee").

WITNESSETH:

WHEREAS, Grantor is the owner in fee simple of certain real property (the "Property") known as [Address/Location located in the Town of in County] [designated as Lot , Block on the tax map of the Town of in County], more particularly described on Exhibit A which is attached hereto and made a part hereof; and

WHEREAS, remediation of the Property has been conducted in accordance with Public Act 95-190; and

WHEREAS, the Licensed Environmental Professional whose signature appears below has determined that the environmental land use restriction set forth below is consistent with regulations adopted by the Commissioner of Environmental Protection pursuant to Section 22a-133k of the Connecticut General Statutes; and

WHEREAS, the Licensed Environmental Professional whose signature appears below has determined that this environmental land use restriction will effectively protect public health and the environment from the hazards of pollution; and

WHEREAS, the written approval of this Environmental land use restriction by the Licensed Environmental Professional whose signature appears below is contained in the document attached hereto as Exhibit B (the "Decision Document") which is made a part hereof; and

WHEREAS, the property or portion thereof identified in the class A-2 survey ("the Subject Area") which survey is attached hereto as Exhibit C which is made a part hereof, contains pollutants; and

WHEREAS, to prevent exposure to or migration of such pollutants and to abate hazards to human health and the environment, and in accordance with the Decision Document, the Grantor desires to impose certain restrictions upon the use, occupancy, and activities of and at the Subject Area, and to grant this environmental land use restriction to the Grantee on the terms and conditions set forth below; and

WHEREAS, Grantor intends that such restrictions shall run with the land and be binding upon and enforceable against Grantor and Grantor's successors and assigns;

NOW, THEREFORE, Grantor agrees as follows:

1. Purpose. In accordance with the Decision Document, the purpose of this Environmental land use restriction is to assure [that the Subject Area is not used for residential activities], [that ground

water at the Subject Area is not utilized for drinking purposes], [that humans are not exposed to soils at the Subject Area polluted with substances in concentrations exceeding the direct exposure criteria established in R.C.S.A. sections 22a-133k-1 through 22a-133k-3, inclusive], [that water does not infiltrate soils at the Subject Area polluted with substances in concentrations exceeding the pollutant mobility criteria established in R.C.S.A. sections 22a-133k-1 through 22a-133k-3, inclusive] [that buildings are not constructed over soils or ground water at the Subject Area polluted with substances in concentrations exceeding the volatilization criteria established in R.C.S.A. sections 22a-133k-1 through 22a-133k-3, inclusive], [that the engineered control described in Exhibit D attached hereto is not disturbed and is properly maintained to prevent human exposure to soils at the Subject Area polluted with substances in concentrations exceeding the direct exposure criteria established in R.C.S.A. sections 22a-133k-1 through 22a-133k-3, inclusive, and/or that water does not infiltrate soils at the Subject Area polluted with substances in concentrations exceeding the pollutant mobility criteria established in R.C.S.A. sections 22a-133k-1 through 22a-133k-3, inclusive].

2. Restrictions Applicable to the Subject Area: In furtherance of the purposes of this environmental land use restriction, Grantor shall assure that use, occupancy, and activity of and at the Subject Area are restricted as follows:

[A. Use. No residential use of the Subject Area shall be permitted.

B. Ground water. Ground water at the Subject Area shall not be used for drinking or other domestic purposes.

C. Disturbances. Soil at the Subject Area shall not be disturbed in any manner, including without limitation,

D. Construction. No building shall be constructed on the Subject Area.]

3. Except as provided in Paragraph 4 below, no action shall be taken, allowed, suffered, or omitted if such action or omission is reasonably likely to:

i. Cause migration of pollutants or create a potential hazard to human health or the environment; or

ii. Result in a disturbance of the structural integrity of any engineering controls or other structures designed or utilized at the Property to contain pollutants or limit human exposure to pollutants.

4. Emergencies. In the event of an emergency which presents a significant risk to human health or the environment, the application of Paragraph 3 above may be suspended, provided such risk cannot be abated without suspending such Paragraph and the Grantor:

i. Immediately notifies the Grantee of the emergency;

ii. Limits both the extent and duration of the suspension to the minimum reasonably necessary to adequately respond to the emergency;

iii. Implements all measures necessary to limit actual and potential present and future risk to human health and the environment resulting from such suspension; and

iv. Implements a plan approved in writing by the Grantee, on a schedule approved by the Grantee, to ensure that the Subject Area is remediated in accordance with R.C.S.A. sections 22a-133k-1 through 22a-133k-3, inclusive, or restored to its condition prior to such emergency.

5. Release of Restriction; Alterations of Subject Area. Grantor shall not make, or allow or suffer to be made, any alteration of any kind in, to, or about any portion of any of the Subject Area inconsistent with this Environmental land use restriction unless the Grantor has first recorded the Grantee's written approval of such alteration upon the land records of [name of municipality where Subject Area is located]. The Grantee shall not approve any such alteration and shall not release the Property from the provisions of this environmental land use restriction unless the Grantor demonstrates to the Grantee's satisfaction that Grantor has remediated the Subject Area in accordance with R.C.S.A. sections 22a-133k-1 through 22a-133k-3, inclusive.

6. Grant of Easement to the Grantee. Grantor hereby grants and conveys to the Grantee, his agents, contractors, and employees, and to any person performing pollution remediation activities under the direction thereof, a non-exclusive easement (the "Easement") over the Subject Area and over such other parts of the Property as are necessary for access to the Subject Area or for carrying

out any actions to abate a threat to human health or the environment associated with the Subject Area. Pursuant to this Easement, the Grantee, his agents, contractors, and employees, and any person performing pollution remediation activities under the direction thereof, may enter upon and inspect the Property and perform such investigations and actions as the Grantee deems necessary for any one or more of the following purposes:

I. Ensuring that use, occupancy, and activities of and at the Property are consistent with this environmental land use restriction;
ii. Ensuring that any remediation implemented complies with R.C.S.A. sections 22a-133k-1 through 22a-133k-3, inclusive;
iii. Performing any additional investigations or remediation necessary to protect human health and the environment;
[iv. Ensuring the structural integrity of any engineering controls described in this Environmental land use restriction and Grant of Easement and their continuing effectiveness in containing pollutants and limiting human exposure to pollutants.]

7. Notice and Time of Entry onto Property. Entry onto the Property by the Grantee pursuant to this Easement shall be upon reasonable notice and at reasonable times, provided that entry shall not be subject to these limitations if the Grantee determines that immediate entry is necessary to protect human health or the environment.

8. Notice to Lessees and Other Holders of Interests in the Property. Grantor, or any future holder of any interest in the property, shall cause any lease, grant, or other transfer of any interest in the Property to include a provision expressly requiring the lessee, grantee, or transferee to comply with this environmental land use restriction and Grant of Easement. The failure to include such provision shall not affect the validity or applicability to the Property of this environmental land use restriction and Grant of Easement.

9. Persons Entitled to Enforce Restrictions. The restrictions in this environmental land use restriction on use, occupancy, and activity of and at the Property shall be enforceable in accordance with section 22a-133p of the General Statutes.

10. Severability and Termination. If any court of competent jurisdiction determines that any provision of this environmental land use restriction or Grant of Easement is invalid or unenforceable, such provision shall be deemed to have been modified automatically to conform to the requirements for validity and enforceability as determined by such court. In the event that the provision invalidated is of such nature that it cannot be so modified, the provision shall be deemed deleted from this instrument as though it had never been included herein. In either case, the remaining provisions of this instrument shall remain in full force and effect. Further, in either case, the Grantor shall submit a copy of this restriction and of the judgement of the Court to the Grantee in accordance with R.C.S. A. section 22a-133q-1(1). This environmental land use restriction shall be terminated if the Grantee provides notification pursuant to R.C.S.A. section 22a-133q-1(l).

11. Binding Effect. All of the terms, covenants and conditions of this environmental land use restriction and grant of easement shall run with the land and shall be binding on the Grantor, the Grantor's successors and assigns, and each owner and any other party entitled to possession or use of the Property during such period of ownership or possession.

12. Terms Used Herein. The definitions of terms used herein shall be the same as the definitions contained in sections 22a-133k-1 and 22a-133o-1 of the Regulations of Connecticut State Agencies as such sections existed on the date of execution of this environmental land use restriction.

Section 5. Section 22a-209-1 of the Regulations of Connecticut State Agencies is repealed and the following is substituted in lieu thereof:

Sec. 22a-209-1. Definitions

"AASHTO specification" means a standard of performance for buried structures set forth in "Standard Specifications for Transportation Materials," published by the American Association of State Highway and Transportation Officials in 1989, 14TH edition.

"All weather access" means that affected roads or land surface can support operation of vehicles for the transportation of solid waste and vehicles for the maintenance of solid waste facilities under all normal climatic conditions, provided that snow is removed and flooding is precluded.

"Alter" (1) when referring to a solid waste facility which has no permit, means to change the existing configuration or method of operation of the facility in any manner, including but not limited to adding to the volume of solid waste deposited at the facility; (2) when referring to a solid waste facility which holds a permit, means to change the approved configuration or method of operation of the facility in any manner, including but not limited to adding to the approved volume of solid waste deposited at the facility.

"Asbestos" means actinolite, amosite, antnophyllite, chrysotile, crocidolite, tremolite, or any material which contains the above, all or part of which is in a friable state.

"ASTM specification" means a standard for pipes or other construction materials set forth in "Annual Book of ASTM Standards," published by the American Society of Testing Materials in 1989.

"Base flood" means a flood that has a one percent or greater chance of recurring in any year or a flood of a magnitude equaled or exceeded once in 100 years on the average over a significantly long period. If the Commissioner deems it necessary for a particular location, the base flood shall represent a less common occurrence as specified by him or her.

"Bird hazard" means an increase in the likelihood of bird/aircraft collisions that may cause damage to the aircraft or injury to its occupants.

"Bulky waste" means landclearing debris and waste resulting directly from demolition activities other than clean fill.

"Cell construction method" means the spreading, compacting and daily covering of solid wastes through use of the area, ramp, or trench methods of landfilling.

"Certified operator" means the solid waste facility operator or an employee of the such operator who is present on site and oversees or carries out the daily operation of the facility, and whose qualifications are approved in accordance with Section 22a-209-6 of the Regulations of Connecticut State Agencies.

"Certified soil scientist" means a person who has been certified as a soil scientist by the Board of Directors of the Society of Soil Scientists of Southern New England.

"Clean fill" means (1) natural soil (2) rock, brick, ceramics, concrete, and asphalt paving fragments which are virtually inert and pose neither a pollution threat to ground or surface waters nor a fire hazard AND (3) POLLUTED SOIL AS DEFINED IN SUBDIVISION (45) OF SUBSECTION (a) OF SECTION 22a-133k-1 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES WHICH SOIL HAS BEEN TREATED TO REDUCE THE CONCENTRATION OF POLLUTANTS TO LEVELS WHICH DO NOT EXCEED THE APPLICABLE POLLUTANT MOBILITY CRITERIA AND DIRECT EXPOSURE CRITERIA ESTABLISHED IN SECTIONS 22a-133k-1 THROUGH 22a-133k-3 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES AND WHICH SOIL IS REUSED IN ACCORDANCE WITH R.C.S.A. SUBDIVISION (3) OF SUBSECTION (h) OF SECTION 22a-133k-2 OF SUCH REGULATIONS.

"Cover material" means soil, or other suitable material as approved by the Commissioner, which is used to cover compacted solid waste in a solid or special waste disposal area. Any soils used shall be classified as GM, silty gravels, poorly graded gravel-sand-silt mixtures; GC, clayey gravels, poorly graded gravel-sand-clay mixtures; SM, silty sands, poorly graded sand-silt mixtures; SC, clayey sands, poorly graded sand-clay mixtures; ML, inorganic silts and very fine sands, rock flour, silty or clayey fine sands with slight plasticity in accordance with the unified soil classification system.

"Dewater" means to subject material to a process that removes water.

"Dioxin sampling well" means a stainless steel ground water monitoring well installed within the area of predicted leachate plume from any portion of a solid waste facility at which residue is disposed.

"Facility plan" means the engineering studies and proposals to build, establish, alter, operate, monitor and close a solid waste facility, required by Section 22a-209-4(b)(2) of the Regulations of Connecticut State Agencies.

"Floodplain" means the lowland and relatively flat areas adjoining inland and coastal waters, including flood-prone areas of offshore islands, which are inundated by the base flood.

"Friable" means readily crumbled, pulverized or reduced to powder, when dry, by hand pressure.

"Geotextile" means a woven or nonwoven fabric or film which is utilized for the engineering management of soil and water.

"Groundwater" means water present in the zone of saturation.

"Groundwater monitoring well" means a dug, driven or drilled well used to determine groundwater elevation, direction of groundwater flow, or the quality of groundwater.

"Hazardous Waste" means any waste material which may pose a present or potential hazard to human health or the environment when improperly treated, stored, transported or disposed of or otherwise managed, including hazardous waste identified in accordance with Section 3001 of the Resource Conservation and Recovery Act of 1976 (42 USC 6901 et seq.) as amended.

"Leachate" means that liquid which results from ground or surface water which has been in contact with solid waste and has extracted material, either dissolved or suspended, from the solid waste.

"Lift" means a horizontal layer of cells within a solid waste disposal area at which the cell construction method is utilized.

"Lower explosive limit" means the lowest percent by volume of gas which will propagate a flame in air at 25° C and atmospheric pressure.

"Maximum high water table" means the highest elevation reached by the upper level of the ground water as determined by an engineering evaluation conducted in accordance with test methods approved by the Commissioner.

"Monocell" means a variation of the cell construction method whereby only a single type of solid waste is disposed of in any individual cell.

"Mottling indicator" means a residual trace of reduced or oxidized iron left on soil strata as the result of fluctuations in groundwater elevation.

"Mulch" means a protective cover of organic material placed over soil to preserve soil moisture, prevent erosion, or promote the growth of plants.

"Municipal solid waste" means solid waste from residential, commercial, industrial and institutional sources, excluding solid waste consisting of significant quantities of hazardous waste as defined in Section 22a-115 of the General Statutes, landclearing debris, biomedical waste, sewage sludge and scrap metal.

"NATURAL SOIL" MEANS SOIL IN WHICH ALL SUBSTANCES NATURALLY OCCURRING THEREIN ARE PRESENT IN CONCENTRATIONS NOT EXCEEDING THE CONCENTRATIONS OF SUCH SUBSTANCE OCCURRING NATURALLY IN THE ENVIRONMENT AND IN WHICH SOIL NO OTHER SUBSTANCE IS ANALYTICALLY DETECTABLE. FOR THE PURPOSE OF THIS DEFINITION, SUBSTANCE SHALL HAVE THE SAME MEANING AS IN SECTION 22a-133k-1 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES.

"New municipal solid waste disposal area" means a solid waste facility or expansion thereof, other than a vertical expansion, for the disposal of municipal solid waste, for which facility or expansion a completed application under Sections 22a-430 and 22a-208a of the General Statutes is received by the Commissioner after the effective date of Section 22a-209-14 of the Regulations of Connecticut State Agencies.

"Open dump" means a site at which solid waste is disposed of in a manner which does not comply with Subtitle D of the Resource Conservation and Recovery Act of 1976, (42 USC 6901 et seq.), as amended, and regulations promulgated thereunder.

"Operator" means a person who is ultimately responsible for maintaining the solid waste facility in conformance with applicable statutes and regulations and the facility permits.

"Pan lysimeter" means a leachate collection device for sampling leachate from monocells within a solid waste disposal area.

"Person" means any individual, firm, partnership, association, syndicate, company, trust, corporation, municipality, agency or political or administrative subdivision of the state, or other legal entity of any kind.

"Public airport" means an airport open to the public without prior permission and without restrictions within the physical capacities of available facilities.

"Recharge" means water which enters a geologic formation.

"Regional solid waste disposal area" means a solid waste disposal area used for the disposal of solid waste generated in more than one municipality.

"Residue" means bottom ash, air pollution control residue, and other residues from the combustion process at resource recovery facilities, municipal solid waste incinerators, and biomedical waste incinerators.

"Resources recovery facility" means a volume reduction plant, as defined by Section 22a-207 of the General Statutes as amended, utilizing processes aimed at reclaiming the material or energy values from solid wastes.

"Rip-rap" means a loose assemblage of broken or whole stones utilized to dissipate the velocity and energy of moving water.

"Scarification" means the process of raking, harrowing or otherwise disturbing a soil surface to allow infiltration of water or other material.

"Solid waste boundary" means the outermost perimeter of the solid or special waste (projected in the horizontal plane) as it would exist at completion of the permitted disposal activity at a solid waste or special waste disposal area.

"Special waste disposal area" means a solid waste disposal area at which special wastes, as defined in this section, are disposed of.

"Special wastes" means the following wastes, so long as they are not hazardous waste pursuant to section 22a-115 of the General Statutes or radioactive material subject to section 22a-148 of the General Statutes: (1) water treatment, sewage treatment or industrial sludges, liquid, solids and contained gases; fly-ash and casting sands or slag; and contaminated dredge spoils; (2) scrap tires; (3) bulky waste, as defined in this section; (4) asbestos; (5) residue; and (6) biomedical waste.

"Standard proctor density" means the maximum weight per unit volume of earthen material which has been compacted by a specific weight and procedure, at an optimum soil moisture, according to a laboratory engineering test developed by Proctor.

"State Solid Waste Management Plan" means the State plan adopted pursuant to Section 22a-211 of the Connecticut General Statutes, as amended.

"Stormwater" means precipitation runoff.

"Transfer station" means a volume reduction plant, as defined by Section 22a-207 of the General Statutes, as amended, that is a central collection point for the solid waste generated within a municipality or group of municipalities, where solid wastes received are transferred to a vehicle for removal to another solid waste facility.

"Underdrainage" means a system of pipes, structures, stone, pumps, wells, or other devices utilized to lower or divert groundwater.

"Vector" means as insect or rodent or other animal (not human) which can transmit infectious diseases from one person or animal to another person or animal.

"Vertical expansion" means an expansion of an existing solid waste disposal area such that future disposal of municipal solid waste will take place only where solid waste has previously been disposed of and is still present.

"Washout" means the carrying away of solid waste by waters of the base flood.

"Water Quality Standards" means the water quality standards and water quality Classifications Map published by the Connecticut Department of Environmental Protection, February, 1987.

"Water table" means that surface of a body of unconfined groundwater at which the pressure is equal to that of the atmosphere.

"Working face" means that portion of a solid waste or special waste disposal area where the waste is deposited, spread and compacted prior to the placement of cover material.

"Zone of influence" means the area in which, assuming the absence of any means at a solid waste facility to collect or treat leachate, groundwater may be altered in quality due to discharge of leachate from any portion of such facility.

CERTIFICATION
R-39 REV. 1/77

Be it known that the foregoing: Page 1 of 2 pages

[X] Regulations [ ] Emergency Regulations

Are:

[X] Adopted [ ] Amended as hereinabove stated [ ] Repealed

By the aforesaid agency pursuant to:

[X] Section 22a-133q of the General Statutes.

[X] Section 22a-133k of the General Statutes, as amended by Public Act No. 190 of the 95 Public Acts.

[ ] Public Act No. ______ of the Public Acts.

After publication in the Connecticut Law Journal on October 3 19 95, of the notice of the proposal to:

[X] Adopt [ ] Amend [ ] Repeal such regulations

(If applicable): [X] And the holding of an advertised public hearing on 6th day of November 1995

WHEREFORE, the foregoing regulations are hereby:

[X] Adopted [ ] Amended as hereinabove stated [ ] Repealed

Effective:

[X] When filed with the Secretary of the State.

(OR)

[ ] The ______ day of ______ 19___.

	DATE	SIGNED (Head of Board, Agency or Commission)	OFFICIAL TITLE, DULY AUTHORIZED
In Witness Whereof:	29 Dec 95	[signature]	Commissioner of Environmental Protection
Approved by the Attorney General as to legal sufficiency in accordance with Sec. 4-169, as amended, C.G.S.:	1/2/96	SIGNED [signature]	OFFICIAL TITLE, DULY AUTHORIZED Attorney General

[X] Approved WITH TECHNICAL CORRECTIONS

[ ] Disapproved

[ ] Disapproved in part, *(Indicate Section Numbers disapproved only)*

[ ] Rejected without prejudice.

	DATE	SIGNED (Clerk of the Legislative Regulation Review Committee)
By the Legislative Regulation Review Committee in accordance with Sec. 4-170, as amended, of the General Statutes.	1/16/96	Nancy Aver, Acting Clerk

Two certified copies received and filed, and one such copy forwarded to the Commission on Official Legal Publications in accordance with Section 4-172, as amended, of the General Statutes.

DATE	SIGNED (Secretary of the State.)	BY
January 30, 1996	Miles S. Rapoport	[signature]

INSTRUCTIONS

1. One copy of all regulations for adoption, amendment or repeal, except emergency regulations, must be presented to the Attorney General for his determination of legal sufficiency. Section 4-169 of the General Statutes.

2. Seventeen copies of all regulations for adoption, amendment or repeal, except emergency regulations, must be presented to the standing Legislative Regulation Review Committee for its approval. Section 4-170 of the General Statutes.

3. Each regulation must be in the form intended for publication and must include the appropriate regulation section number and section heading. Section 4-172 of the General Statutes.

4. Indicate by "(NEW)" in heading if new regulation. Amended regulations must contain new language in capital letters and deleted language in brackets. Section 4-170 of the General Statutes.

RECEIVED

JAN 30 1996

RECORDS & LEGISLATIVE SERVICES
SECRETARY OF THE STATE

CERTIFICATION
R-39 REV. 1/77

Be it known that the foregoing:

[X] Regulations [ ] Emergency Regulations

Are:

[ ] Adopted [X] Amended as hereinabove stated [ ] Repealed

By the aforesaid agency pursuant to:

[X] Section 22a-209 of the General Statutes.

[ ] Section ______ of the General Statutes, as amended by Public Act No. ______ of the ______ Public Acts.

[ ] Public Act No. ______ of the Public Acts.

After publication in the Connecticut Law Journal on October 3, 1995, of the notice of the proposal to

[ ] Adopt [x] Amend [ ] Repeal such regulations.

(If applicable): [x] And the holding of an advertised public hearing on 6th day of November 1995

WHEREFORE, the foregoing regulations are hereby:

[ ] Adopted [x] Amended as hereinabove stated [ ] Repealed

Effective:

[x] When filed with the Secretary of the State.

(OR)

[ ] The ______ day of ______ 19____.

	DATE	SIGNED (Head of Board, Agency or Commission)	OFFICIAL TITLE, DULY AUTHORIZED
In Witness Whereof:	29 Dec 95	[signature]	Commissioner of Environmental Protection
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RECEIVED

JAN 30 1996

RECORDS & LEGISLATIVE SERVICES
SECRETARY OF THE STATE

RESPONSE TO LOCAL REUSE AUTHORITY COMMENTS ON DRAFT FINAL EBS REPORT

RESPONSE TO LOCAL REUSE AUTHORITY COMMENTS ON DRAFT FINAL EBS REPORT DATED OCTOBER 10, 1996 JULY 1996 DRAFT ENVIRONMENTAL BASELINE SURVEY STRATFORD ARMY ENGINE PLANT

Comment No.	Comment

General Comments:

1. Comment: **Page ES-2 Site Description and History**: "SAEP is located in Stratford...and 50 acres are riparian rights."...Please define Riparian rights for the public.

   Response: The following definition was added to the text on page ES-2, "A riparian right is a right of access to or use of, the shore, bed, and water of land on the bank of a natural watercourse."

2. Comment: **Page ES-6 & 7 Environmental Setting**: "Stratified drift deposits...Water wells for drinking supply or other domestic uses are reportedly not present in the SAEP vicinity"...There are some wells DEP and the Stratford Health Dept. did a well survey. Check with Elaine O'Keefe on well survey.

   Response: The Stratford Health Dept. well survey indicated that no water supply wells are located within a 0.5-mile radius of SAEP.

3. Comment: **Page ES-7 Environmental Setting**: "Two prehistoric archeological sites are reportedly located on SAEP property, as well as, an Indian burial site"...This could be interesting and pose a problem.

   Response: Comment noted. These issues are discussed in Section 3.6.7, Cultural Resources.

4. Comment: **Page ES-10 Known or Potential Areas of Environmental Contamination**: "Research and Development Area...the potential for subsurface soil and/or groundwater contamination." Contaminated with what?

   Response: The sentence has been changed to read, "Phase I Remedial Investigation data from surrounding areas indicate the potential for subsurface soil and/or groundwater contamination by halogenated solvents and fuel-related VOCs."

5. Comment: **Page ES-11 Known or Potential Areas of Environmental Contamination**: "South Parking Lot, Chemical Waste Treatment Plant (CWTP), and Closed Lagoons...decommissioned in 1990 in accordance with regulations."...Whose regulations and are they final?

   Response: The sentence has been changed to read, "Three equalization and sludge lagoons, used for chemical wastewater treatment process, were decommissioned in 1990 in accordance with Connecticut Department of Environmental Protection (CTDEP) RCRA regulations."

6. Comment: **Page ES-12 CERFA Assessment**: "No CERFA parcels or...Of the 33 parcels, two were categorized as..." Please give an explanation of what the category system is that is used in the Executive Summary.

   Response: The description of CERFA category system was added to the Executive Summary.

7. Comment: **Page 1-2, Section 1 - 1.1 Authority for the Environmental Baseline Survey (EBS):** "This EBS Report is based...Revisions to the risk assessment and/or remedial investigation may change the findings of this EBS." Revisions based on what? New information? edits Risk Assessment review?

   Response: The sentence has been changed to read, "Revisions to the risk assessments and/or remedial investigations, based on comments from CTDEP and USEPA, may change findings of this EBS."

8. Comment: **Page 1-3, Section 1 - 1.1 Authority for the Environmental Baseline Survey (EBS):** "an industrial reuse of SAEP. As a result, the risk assessment focused on potential exposures to..." ...Current exposure and future exposure?

   Response: The risk assessment evaluates both current and future exposure scenarios.

9. Comment: **Page 2-1, Section 2 - 2.1 Existing Investigation Documents**: "Numerous existing investigation documents have been used in the preparation..." ...Are these reports available in the information repository? They should be!

   Response: A formal repository will be established, and the administrative record will be maintained by the Army at the local Stratford, Connecticut library. All documents pertaining to the SAEP will be available.

9a. Comment: **Page 2-5, Section 2 - 2.2 Federal, State and Local Government Regulatory Records**... This is a very thorough search!

   Response: Comment noted.

10. Comment: **Page 3-5, Section 3 - 3.4 Tenant Activities and Practices**: "In 1944, the shoreline...industrial trash in the fill, including battery cases..."...Battery cases = ? Mercury (Hg), Lead (Pb), Cadmium (Cd)?

   Response: No reference was found identifying the type of battery cases that were encountered in the fill. Mercury, lead, and/or cadmium could potentially be associated with the battery cases.

11. Comment: **Page 3-9, Section 3 - 3.4.1 Industrial Operations**: "A detailed account of industrial operation...provided in the Waste Minimization Study for SAEP (INEL, 1991)...Is this Study available?

   Response: A formal repository will be established, and the administrative record will be maintained by the Army at the local Stratford, Connecticut library. All documents pertaining to the SAEP will be available.

12. Comment: **Page 3-11, Section 3 - 3.4.1.1. Machining**: "A Fluorescent metal penetrant is used for inspection of machined work pieces for..." ...What chemical is used for the "penetrant"?

Response: Zÿglo dye was used as a fluorescent metal penetrant.

13. Comment: **Page 3-14, Section 3 - 3.4.1.4 Corrosion Resistance**: "Painting was apparently the primary...reportedly piped to a septic tank between B-2 and B-3."...After the septic tank where did it go?

    Response: It is presumed that the septic tank emptied into a leachfield. However, no references were found indicating the existence or location of any such leachfield.

14. Comment: **Page 3-17 & 3-18, Section 3 - 3.4.1.7 Engine Testing**: "According to personnel interviews, large amounts of solvents...and in 1988 were plugged with concrete (SAEP, 1995). This whole paragraph does not give me a warm fuzzy feeling.

    Response: Comment noted.

15. Comment: **Page 3-18, Section 3 - 3.4.1.7 Engine Testing**: "Mercury manometers were formerly...little mercury was recovered from the described accidental spills." ...Air monitoring may be an issue during cleanup...Mercury (Hg).

    Response: Dust created during remediation activities in the engine testing facility could cause mercury to become airborne. Monitoring of airborne concentrations can be conducted during remediation activities using mercury vapor analyzers to monitor airborne mercury concentrations.

16. Comment: **Page 3-23 & 3-24, Section 3 - 3.4.3.1 Known or Suspected Areas of On-site Disposal or Release**: The shoreline along the plant has been extended...the Town of Stratford that have utilized asbestos waste derived from the former Raymark facility...produced no verification that fills from the Raymark Site were used at SAEP, although sampling for asbestos in fill areas has not been performed." Why not? I hope it's not a don't sample and you won't find policy! You very likely find Raymark waste!

    Response: The Army is planning on conducting additional investigation activities in this area during the next phase of work. Sampling for asbestos will be included during this phase of work.

17. Comment: **Page 3-30, Section 3 - 3.4.3.4 Solid Waste**: "At present, scrap wood, waste paper... Reportedly, ash and cinders from incineration have been disposed of on site" Incineration of Municipal waste? Medical waste? Hazardous waste?

    Response: The statement was taken from the Woodward-Clyde Preliminary Assessment Screening Report dated December 1991, no references as to the type of waste incinerated to generate ashes and cinders was included.

18. Comment: **Page 3-32, Section 3 - 3.4.5 Explosives/Ordnance Storage and Use**:

"Explosives were stored in B-59...The type and quantity of explosives used and stored at SAEP is not known." This is just not enough information! Ambiguous at best then they state..."No unexploded ordnance was reported or observed at SAEP."

Response: Interviews of SAEP personnel indicated that the only storage of explosives at SAEP was in B-59. The sentence has been changed to read, "No unexploded ordinance was reported or observed at SAEP during site visits."

19. Comment: **Page 3-33, Section 3 - 3.4.6 Use of Radiological Materials**: "Some instruments used at SAEP contain small amounts of radioactive material."...What does this mean? Please clarify.

Response: Information obtained from the NRC licenses pertaining to possession and use of nuclear byproduct material included byproduct materials used in testing and evaluation instruments used at SAEP. These instruments included gas chromatographs, density gauges, and thickness gauges that use radioactive sources to perform their function.

The text on page 3-33 was updated to include the information obtained from the NRC licenses. A table, Table 3-6, was also added to the document to identify nuclear byproduct materials and their use at SAEP.

20. Comment: **Page 3-33, Section 3 - 3.4.6 Use of Radiological Materials**: "Radiological inspection of the installation are conducted by the NRC...unannounced, random basis."...Is that supposed to make us feel better? NRC has a major credibility problem right now.

Response: As part of the NRC License Number STB-393, the NRC periodically inspects the installation to evaluate compliance with NRC regulations and license conditions. Failure to adhere to NRC regulations and license conditions could result in issuance of a notice of violation, imposition of a civil penalty, ordering of license suspension, or revoking of license as specified in the General Policy and Procedures for NRC Enforcement Actions, 10 CFR Part 2, Appendix C.

The last NRC inspection at the SAEP was in September 1994; findings indicated no items out of compliance. The results of this inspection are attached to this response to comments.

20a. Comment: **Page 3-37, Section 3 - 3.5.1.1.2 Compliance History**: Manifest Warning Letters...and November 12, 1990 letters."...These seem minor.

Response: Comment noted.

20b. Comment: **Page 3-39, Section 3 - 3.5.1.1.2 Compliance History**: "CTDEP Orders...No correspondence was discovered during this study to indicate if CTDEP considers SAEP to be in compliance with this order."...Is this due to some deficiency of CTDEP???

Comment No.	Comment
	Response: The sentence page 3-40 was changed to read, "No correspondence from the CTDEP acknowledging compliance or non-compliance with this order was discovered during this study. It is not known if any correspondence exists."
21.	Comment: **Page 3-42, Section 3 - 3.5.1.1.4 RCRA Facility Assessment**: "In 1992, the USEPA conducted an RFA of SAEP...for future impact to human health and the environment." Please get the Environmental Subcommittee a copy of this important document!
	Response: A formal repository will be established, and the administrative record will be maintained by the Army at the local Stratford, Connecticut library. All documents pertaining to the SAEP will be available. Additionally, a copy of this document has been forwarded to Tom Yourk, BEC, to be passed to the LRA.
22.	Comment: **Page 3-43, Section 3 - 3.5.1.1.5 Future Regulatory Status/Issues**: "At this time, it..It is possible that SAEP could again come under CERCLA consideration..."...Under what circumstances could that happen?
	Response: The SAEP would fall under CERCLA jurisdiction if the Army were to abandon the site. Since that is highly unlikely, the statement has been removed from the text.
23.	Comment: **Page 3-49, Section 3 - 3.5.4.1.2. Compliance History/Orders**: "May 8, 1978. Twenty-five...and were not detectable by May 11, 1978."...Chromium levels exceed aquatic toxification!
	Response: Comment noted.
24.	Comment: **Page 3-49, Section 3 - 3.5.4.1.2 Compliance History/Orders**: "August 1978. CTDEP was advised that a yellow plume...discharge (OF-0007) into the Housatonic River..."...This is not good for water creatures and is carcinogenic too!
	Response: Comment noted.
25.	Comment: **Page 3-54, Section 3 - 3.5.5.3.1 Asbestos Emissions**: "To date, no asbestos fibers have been detected in the air of this area."...According to whom? What method of detection? What frequency?
	Response: The following sentence was added to the text on page 3-54, "SAEP's Health and Safety Officer reported that monthly air monitoring is performed in a hallway between B-1 and B-2 because of a worker complaint. To date, no asbestos fibers have been detected in the air of this area (W-C, 1991)."
26.	Comment: **Page 3-54, Section 3 - 3.5.5.3.2 Radionuclide Emissions**: "NESHAPS regulations set limits...Emissions to the ambient air cannot exceed an amount that would result in a member of the public receiving an effective dose equivalent of 10 millirems per year (mrem/yr) in any year (40 CFR 61.102). No

information was found in the files indicating non-compliance with these requirements."...Are there adequate monitoring records? Are there adequate NRC reports? When was the last NRC unannounced visit?

Response: Radiation and contamination surveys are performed and recorded semi-annually at SAEP. As part of the NRC inspection, these records are reviewed, and evaluated in the inspection report. The last NRC inspection at the SAEP was in September 1994; radiation and contamination survey recorded for ambient air monitoring were reviewed during the inspection, and were in compliance. The results of this inspection are attached to this response to comments.

27. Comment: **Page 3-58 & 3-59, Section 3 - 3.5.10.1.1 Nuclear Regulatory Commission (NRC):** An NRC materials license was issued to AVCO Lycoming Textron on January 5, 1995, for possession and use of thorium...required reports and notifications, and enforcement." --
3.5.10.1.2 U.S. Environmental Protection Agency (USEPA): The USEPA regulates radiation and radioactive materials in several areas...Emissions to the ambient air cannot exceed an amount that would result in a member of the public receiving an effective dose equivalent of 10 millirems per year (mrem/yr) in any year (40 CFR 61.102)."...Please give the public more specifics in regards to this thorium issue, it seems to be glossed over in the EBS! Please give the public access to the quarterly or end of year emission reports that show what has been released and how much has been released...Freedom of information act if necessary.

Response: Radiation and contamination surveys are performed and recorded semi-annually at SAEP. As part of the NRC inspection, these records are reviewed, and evaluated in the inspection report. The last NRC inspection at the SAEP was in September 1994; radiation and contamination surveys are performed and recorded for ambient air monitoring were in compliance. The results of this inspection are attached to this response to comments.

27a. Comment: **EBS Page 3-46, Section 3 - 3.5.3 Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA, or SARA Title III)** Also please get a copy of the latest NRC report.

Response: The last NRC inspection at the SAEP was in September 1994. The results of this inspection are attached to this response to comments.

28. Comment: **Page 3-87, Section 3 - 3.6.7 Cultural Resources**: "During the present record search, a newspaper article written sometime during the 1930's was found, reporting and archaeological site was discovered when expanding a parking lot...a more detailed archaeological survey may be required."...The State Archeologist should be called in. He works with environmental projects.

Response: The text on page 3-87 was changed to read, "If this area is planned to be disturbed at some future date, the state archeologist would be notified, and a more detailed archeological survey may be required.

Comment No.	Comment
	29. Comment: **Page 4-29, Section 4 - 4.4 Risk Assessment Summaries**: "The following...The conclusions in the risk assessments may need to be updated as they receive review and comment."...Who reviewed and who commented on these preliminary drafts? Also, please get the Environmental Subcommittee a copy with appropriate updates of the Preliminary Draft Baseline Ecological Risk Assessment and Preliminary Draft Baseline Human Health Risk Assessment prepared by Woodward-Clyde Consultants in November 1995.
	Response: The CTDEP and the USEPA will review and comment on the preliminary drafts of the Baseline Ecological Risk Assessment and the Baseline Human Health Risk Assessment. Copies of these documents are available through Tom Yourk, BEC. Additionally, these documents will be maintained in the formal repository established and maintained by the Army at the local Stratford, Connecticut library.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

Docket No.(s) 40-02917 License No.(s) STB-393

TEXTRON LYCOMING

ATTN: MR. JOHN FLEMING
RADIATION SAFETY OFFICER

Gentlemen:

Subject: Inspection Report No. 94-001

Date(s) of Inspection SEPTEMBER 19&20, 1994

This letter forwards NRC Form 591, "Safety Inspection," indicating that no items of non-compliance were found during the above described inspection of your licensed activities. Please retain the form in your files. No acknowledgement of this letter is required. However, should you have any questions, we shall be pleased to discuss them with you. In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this NRC Form 591 will be placed in the Public Document Room.

Your cooperation with us is appreciated.

Sincerely,

Richard H. [signature]

Health Physicist
Nuclear Materials Safety Branch

Enclosure:
NRC Form 591

Region I Form 306
(10/88)

NRC FORM 591 PART 1
(7-91)
10 CFR 2.201

U.S. NUCLEAR REGULATORY COMMISSION

SAFETY INSPECTION

Page 1 of ____

1. LICENSEE	2. REGIONAL OFFICE
TEXTRON LYCOMING 550 MAIN STREET STRATFORD, CT. 06497	REGION I U S NUCLEAR REGULATORY COMMISSION 475 ALLENDALE ROAD KING OF PRUSSIA PA 19406-1415

3. DOCKET NUMBER(S)	4. LICENSE NUMBER(S)	5. DATE OF INSPECTION
40-02917	STB-393	SEPTEMBER 20, 1994

LICENSEE:
The inspection was an examination of the activities conducted under your license as they relate to radiation safety and to compliance with the Nuclear Regulatory Commission (NRC) rules and regulations and the conditions of your license. The inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector. The findings as a result of this inspection are as follows:

- [x] 1. Within the scope of this inspection, no violations were observed.
- [x] 2. The inspector also verified the steps you have taken to correct the violations identified during the last inspection. We have no further questions on those actions at this time.
- [ ] 3. During this inspection certain of your activities, as described below or attached, were in violation of NRC requirements. This form is a **NOTICE OF VIOLATION**, which is required to be posted in accordance with 10 CFR 19.11.
  - [ ] A. ____ was not properly posted to indicate the presence of a ____. 10 CFR 20.203(b),(c),(d),(e) or 34.42.
  - [ ] B. ____ of sealed sources were not performed at the proper frequencies. 10 CFR ____ or License Condition Number ____.
  - [ ] C. Records of ____ were not properly maintained. 10 CFR ____ or License Condition Number ____.
  - [ ] D. Documents were not properly posted or otherwise made available. 10 CFR 19.11.
  - [ ] E. Reports or notification of ____ were not made in accordance with 10 CFR ____ or License Condition Number ____.
  - [ ] F. ____

I hereby state that, within 30 days, the actions described by me to the inspector will be taken to correct the violations identified in the items checked above. This statement of corrective actions is made in accordance with the requirements of 10 CFR 2.201. No further response will be submitted unless required by the NRC.

SIGNATURE – LICENSEE	DATE	SIGNATURE – NRC INSPECTOR	DATE
		Richard H Fairbanks	9-21-94

ORIGINAL TO LICENSEE

CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION EBS AND CERFA CONCURRENCE LETTER

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER MANAGEMENT
Permitting, Enforcement & Remediation Division

November 18, 1996

Mr. Glen S. Boldt
USAEC
Attn: SFIM-AEC-BCB
Aberdeen P. G., MD 21010-5401

RE: SAEP EBS

Dear Mr. Boldt:

Staff of the Permitting, Enforcement and Remediation Division (PERD) have reviewed the document entitled "Stratford Army Engine Plant, Stratford, Connecticut, Environmental Baseline Survey, Draft Final Environmental Baseline Survey Report" dated July 1996 which was prepared for the United States Army Environmental Center by ABB Environmental Services.

The Department concurs with the EBS report and, based on the data contained within the EBS, concurs with the CERFA letter report incorporated as Chapter 5.

Nothing in this determination shall affect the authority of the Commissioner under any other statute or regulation, including, but not limited to, any authority to institute any proceeding, or take any other action to prevent or abate pollution, to recover costs and natural resource damages, and to impose penalties for violations of law. If at any time the Commissioner determines that the actions at the parcel have not fully characterized the extent and degree of pollution or have not successfully abated or prevented pollution, the Commissioner may institute any proceeding, or take any action to require further investigation or further action to prevent or abate pollution.

In addition, nothing in this determination shall relieve any person of his or her obligations under applicable federal, state and local law.

Please direct all future correspondence and any questions pertaining to this matter to Kenneth Feathers of my staff at 860/424-3770.

Sincerely,

Michael J Harder

Michael J Harder
Director

MJH:KRF:krf
cc:
Mr. Tom Yourk, BEC, SAEP, Allied Signal, 550 Main Street, Stratford, CT 06497
Mr. Nelson Walker, ABB Environmental Service, Inc., P.O. Box 7050, Portland, ME 04112-7050
Mr. Peter Szymanski, USA TACOM, Attn: AMSTA-RM-XEM, Bldg. 230, 6501 East Eleven Mile Road, Warren MI 48397-5000
Mr. Vincenzo Crifasi, USA COE, Attention CENEN, 26 Federal Plaza, New York, NY 10278-0090
Mr. Frederic D. Hyatt, Base Transition Coordinator, Stratford Army Engine Plant, 550 South Main St. Stratford, CT 06497
Mr. Rick Leighton, EPA

<SAEP6NL.WPD>-<November 15, 1996>