



EPA

Superfund Record of Decision:

Naval Air Engineering
Center (Operable Unit 1), NJ



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12. Sponsoring Organization Name and Address U.S. Environmental Protection Agency 401 M Street, S.W. Washington, D.C. 20460	13. Type of Report & Period Covered 800/000					
	14.					
15. Supplementary Notes						
16. Abstract (Limit: 200 words) <p>The 7,400-acre Naval Air Engineering Center (NAEC) site is an active air base in Jackson and Manchester Townships, Ocean County, New Jersey. Activities conducted onsite include program research, engineering, development testing and evaluation, and various warfare support services. Land use in the area includes residential, woodland, vast wetland, and associated floodplain areas. Approximately 65,400 residents of the townships are serviced by several municipal supply wells located within one mile of the site to the southeast and north. From 1916 to 1919, the Eddystone Chemical Company conducted chemical artillery testing onsite. In 1921, the U.S. Navy took control of the site and conducted operations involving the use, handling, storage, and onsite disposal of hazardous substances in various onsite buildings. Site features within Area C include a barrel storage area and fuel station (site 10), a fire training area with unlined lagoons and an oil/water separator (site 16), and an onsite fuel farm with inactive dry wells that were removed in 1982 (site 17). Preliminary investigations in 1983 by the U.S. Navy identified 44 onsite areas of possible soil and ground water contamination, and determined that the primary sources of soil and ground water contamination in Area C (comprised of sites 10, 16, and 17) were leaky valves and</p> <p>(See Attached Page)</p>						
17. Document Analysis a. Descriptors Record of Decision - Naval Air Engineering Center (Operable Unit 1), NJ First Remedial Action Contaminated Medium: gw Key Contaminants: VOCs (benzene, TCE, xylenes), other organics (PAHs), metals b. Identifiers/Open-Ended Terms (arsenic, lead) c. COSATI Field/Group						
18. Availability Statement	19. Security Class (This Report) None	21. No. of Pages 60				
	20. Security Class (This Page) None	22. Price				

Abstract (Continued)

pipes, dispensing pumps, the underground fuel oil tanks, overflowing dry wells, and other accidental onsite chemical spills and releases. In 1988, NAEC removed and replaced the onsite tanks. This Record of Decision (ROD) provides an interim remedy for contaminated soil and ground water in Area C. The primary contaminants of concern affecting the ground water are VOCs including benzene, TCE, and xylenes; other organics including PAHs; and metals including arsenic and lead.

The selected remedial action for this site includes pumping and pretreating ground water to remove metals, residual amounts of free product, and solids, followed by offsite disposal of solids and free product, and onsite treatment using air stripping and vapor phase carbon adsorption to remove VOCs, and polishing the effluent using granular activated carbon; spray irrigating or infiltrating the treated ground water over the onsite soil; regenerating the spent carbon offsite; and disposing of all solids, residual sludge and free product offsite. The estimated capital cost for this remedial action is \$700,000, with an annual O&M cost of \$100,000 for 3 years.

PERFORMANCE STANDARDS OR GOALS: Chemical-specific cleanup goals for ground water will be addressed in the final remedy.

**ROD Fact Sheet for Interim Remedial Action
at Area C
Naval Air Engineering Center (NAEC), Lakehurst, NJ**

Site

Name - NAEC Lakehurst
Location - Ocean County, New Jersey
HRS score - 49.48
NPL rank - Group 4

ROD

Date Signed - by NAEC - 12/17/90, by EPA - 2/4/91
(Interim) Remedy - ground water pump and treat system
Capital Cost - \$700,000
O & M /year - \$100,000
Present worth -

LEAD

Remedial/Enforcement - Federal facility
EPA/State/PRP - Navy
Primary Contact - Jeff Gratz (212) 264-6667
Secondary Contact - Robert Wing (212) 264-8670
Main PRP - Navy
PRP Contact - Ms. Lucy Bottomley (201) 323-2612

WASTE

Type - jet fuel (B,T,E,X) and solvents (TCE, DCE)
Medium - ground water
Origin - dry wells, USTs, and old fire training pit
Est. quantity - ground water plume length: 1,000 ft.
width: 500 ft.
depth: 30 ft.
highest conc.: 2,700 ppb. (total VOCs)

Final
14 December 1990

DECLARATION STATEMENT
RECORD OF DECISION
AREA C - SITES 10, 16, 17

NAVAL AIR ENGINEERING CENTER

FACILITY NAME AND LOCATION

Naval Air Engineering Center
Lakehurst, NJ 08733

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected interim remedial action for Area C - Sites 10, 16, and 17, located at the Naval Air Engineering Center (NAEC) in Lakehurst, New Jersey. The interim remedial action was chosen in accordance with the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA) and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan. This decision is based on the administrative record for Area C.

Both the United States Environmental Protection Agency (USEPA), Region II Administrator and the Commissioner of the New Jersey Department of Environmental Protection (NJDEP) concur with the selected interim remedy (see Appendices C and D).

ASSESSMENT OF THE AREA

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this Record of Decision (ROD), may present an imminent and substantial endangerment to public health, welfare or the environment.

DESCRIPTION OF THE SELECTED REMEDY

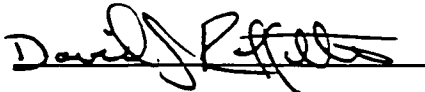
The selected interim remedial action addresses the principal threat of the migration of a contaminated groundwater plume from Area C by pumping, and treating the groundwater and removing residual amounts of floating free product from the groundwater. The selected remedy for Site 10 (location of three underground gasoline and diesel storage tanks (removed in 1988)), Site 16 (location of the former firefighting training area), and Site 17 (location of Fuel Farm 196 and dry wells (removed in 1982)) includes the following components:

- o Groundwater extraction (200 gallon/minute), pretreatment to remove metals, solid and residual amounts of free product from groundwater and treatment by air stripping with vapor phase carbon adsorption to remove Volatile Organic Compounds (VOCs).

- o Effluent water from the air stripper is "polished" by using a Granulated Activated Carbon (GAC) filter to further reduce VOCs and Semi-Volatile Organic Compounds (SVOCs).
- o Treated water meeting New Jersey Department of Environmental Protection (NJDEP) effluent limitations is spray irrigated during temperate weather and infiltrated during winter months over areas of subsurface soil contamination. Irrigation and infiltration will flush and aerate the soil, to increase biological activity and to promote contaminant decomposition.

STATUTORY DETERMINATIONS

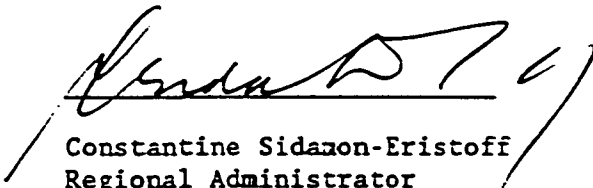
This interim action is protective of human health and the environment, and attains action specific Federal and State applicable or relevant and appropriate requirements directly associated with this remedy. Because the scope and role of this action is limited, chemical specific cleanup levels will not be addressed during the interim action, but will be addressed during the final remedy for Sites 10, 16, and 17. This action satisfies the statutory preference for remedies that employ treatment that reduces toxicity, mobility or volume of hazardous substances, pollutants, and contaminants as a principal element. This action, however, does not constitute the final remedy and subsequent actions are planned to fully address the problems posed by this site.



Captain David Raffetto
Commanding Officer
Naval Air Engineering Center
Lakehurst, New Jersey

17 Dec. 1990
(Date)

With the concurrence of:



Constantine Sidamon-Eristoff
Regional Administrator
U.S. Environmental Protection Agency, Region II

2/4/91
(Date)

DECISION SUMMARY
RECORD OF DECISION
AREA C - SITES 10, 16,17
NAVAL AIR ENGINEERING CENTER

SITE DESCRIPTION

NAEC is located in Jackson and Manchester Townships, Ocean County, New Jersey, approximately 14 miles inland from the Atlantic Ocean (Figure 1). NAEC is approximately 7,400 acres and is bordered by Route 547 to the east, the Fort Dix Military Reservation to the west, woodland to the north (portions of which are within Colliers Mill Wildlife Management Area), Lakehurst Borough and woodland, including the Manchester Wildlife Management Area, to the south. NAEC and the surrounding areas are located within the Pinelands National Reserve, the most extensive undeveloped land tract of the Middle Atlantic Seaboard.

NAEC is located within the Outer Coastal Plain physiographic province, which is characterized by gently rolling terrain with minimal relief.

Surface elevations within NAEC range from a low of approximately 60 feet above mean sea level in the east-central part of the base, to a high of approximately 190 feet above mean sea level in the southwestern part of the base. Maximum relief occurs in the southwestern part of the base because of its proximity to the more rolling terrain of the Inner Coastal Plain. Surface slopes are generally less than five percent.

NAEC is located within the Toms River Drainage Basin. The basin is relatively small (191 square miles) and the residence time for surface drainage waters is short. Drainage from NAEC discharges to the Ridgeway Branch to the north and to the Black and Union Branches to the south. All three streams discharge into the Toms River. Several headwater tributaries to these branches originate at NAEC. Northern tributaries to the Ridgeway Branch include the Elisha, Success, Harris and Obhanan Ridgeway Branches. The southern tributaries to the Black and Union Branches include the North Ruckles and Middle Ruckles Branches and Manapqua Brook. The Ridgeway and Union Branches then feed Pine Lake approximately 2.5 miles east of NAEC before joining Toms River. Storm drainage from NAEC is divided between the north and south, discharging into Ridgeway Branch and Union Branch, respectively. The Paint Branch located in the east-central part of the base is a relatively small stream which feeds the Manapqua Brook.

Three small water bodies are located in the western portion of NAEC: Bass Lake, Clubhouse Lake, and Pickerel Pond. NAEC also contains over 1,300 acres of flood-prone areas, occurring primarily in the south-central part of the base, and approximately 1,300 acres of prime agricultural land in the western portion of the base.

There are 913 acres on the eastern portion of NAEC that lie within Manchester Township and the remaining acreage is in Jackson Township. The combined population of Lakehurst Borough, Manchester and Jackson Townships, is approximately 65,400, for an area of approximately 185 square miles. The

average population density of Manchester and Jackson Townships is 169 persons per square mile, whereas the density of Lakehurst Borough is 3,061 persons per square mile.

The areas surrounding NAEC are, in general, not heavily developed. The closest commercial area is located near the southeastern section of the Center in the borough of Lakehurst. This is primarily a residential area with some shops but no industry. To the north and south are State wildlife management areas which are essentially undeveloped. Adjacent to and south of NAEC are commercial cranberry bogs, the drainage from which crosses the southeast section of NAEC property. NAEC is bordered to the west by Fort Dix Military Reservation.

For the combined area of Manchester and Jackson Townships, approximately 41 percent of the land is vacant (undeveloped), 57 percent is residential, one percent is commercial and the remaining one percent is industrial or farmed. For Lakehurst Borough, 83 percent of the land is residential, 11 percent is vacant, and the remaining six percent commercially developed.

In the local vicinity of the NAEC, water is generally supplied to the populace by municipal supply wells. Some private wells exist but these are used primarily for irrigation and not as a source of drinking water. In Lakehurst Borough there is a well field consisting of seven 50-foot deep wells, located approximately two-thirds of a mile south of the eastern portion of NAEC. Three of the seven wells (four of the wells are rarely operated) are pumped at an average rate of 70 to 90 gallons per minute and supply drinking water for a population of approximately 3,000. Jackson Township operates one supply well in the Legler area, approximately one-quarter mile north of the NAEC, which supplies water to a very small population (probably less than 1,000) in the immediate vicinity of the well.

Site 10 is located approximately 500 feet from the nearest NAEC boundary which is adjacent to cranberry bogs. There is a shallow groundwater table at Site 10 at a depth of approximately 6 feet. The groundwater flow at the site is in a northeasterly direction toward the Paint Branch of the Manapqua Brook. The Paint Branch is located approximately 2,000 feet east (downgradient) of the site. See Figures 2 and 2A.

Site 16 is located approximately 500 feet from the nearest NAEC boundary. There is a shallow groundwater table at Site 16 at a depth of approximately 6 feet. The groundwater flow direction is to the northeast. The Paint Branch is located approximately 1,000 feet downgradient of the site. Wetlands are located outside the facility boundary, approximately 500 feet southeast of the site. See Figures 2 and 2B.

Site 17 is located approximately 1,000 feet from the nearest NAEC boundary. The groundwater table at the site varies from 4.5 to 6.5 feet below ground surface. The groundwater flow direction is to the northeast toward the Paint Branch. The Paint Branch of the Manapqua Brook is located approximately 1,650 feet from the site. The Manapqua Brook is located approximately 1,500 feet southeast of the site. Cranberry bogs are located approximately 1,000 feet southeast from Site 17. See Figures 2 and 2C.

SITE HISTORY

The history of the site dates back to 1916, when the Eddystone Chemical Company leased from the Manchester Land Development Company property to develop an experimental firing range for the testing of chemical artillery shells. Testing was accomplished in cooperation and agreement with the Russian Imperial Government until its fall in 1919. At that time, the U.S. Army assumed control of chemical warfare testing by the Eddystone Chemical Company and named the area Camp Kendrick. By the early fall of 1919, construction of Hangar No. 1 for the Navy had commenced. Camp Kendrick was turned over to the Navy and formally commissioned Naval Air Station (NAS), Lakehurst, New Jersey on June 28, 1921. NAEC was moved from the Naval Base, Philadelphia to Lakehurst in December 1974. At that time, NAEC became the host activity, thus, the new name NAEC Lakehurst.

Currently, NAEC's mission is to conduct programs of research, engineering, development testing and evaluation, systems integration, limited production, procurement and fleet engineering support in the following areas: aircraft launching, recovery, and landing aid systems, ground support equipment for aircraft and for airborne weapons systems to provide, operate and maintain test sites, facilities, and support services for tests of the above systems and equipment and conduct research and development of equipment and instrumentation used in tests. NAEC supports Department of Defense (DoD) standardization and specification programs, provides services and material, operates and maintains aviation and other facilities in support of assigned programs.

NAEC and its tenant activities now occupy more than 300 buildings, built between 1919 and 1979, totaling over 2,845,000 square feet. The command also operates and maintains: two 5,000 foot long runways, a 12,000 foot long catapult and arrest runway, one mile long jet car test track, four one and one-quarter mile long jet car test tracks, a parachute jump circle, a 79 acre golf course, and a 3,500 acre conservation area.

The various operations and activities at NAEC required the use, handling, storage and occasionally the on-site disposal of hazardous substances. During the operational period of the facility, there have been documented, reported or suspected releases of these substances into the environment.

Initial Investigations:

As part of the DoD Installation Restoration Program, the Navy developed the Navy Assessment and Control of Installation Pollutants (NACIP) program to "identify, assess and control environmental contamination from past methods of storage, handling, and disposal of hazardous substances at naval shore facilities".

As part of the NACIP program, an Initial Assessment Study (IAS) was completed in 1983 by the Naval Energy and Environmental Support Activity (NEESA) at NAEC. The purpose of the IAS was to "identify and assess sites posing a potential threat to human health or the environment due to contamination from past hazardous materials operations".

Based on information from historical records, aerial photographs, field inspections, and personnel interviews, the IAS identified a total of 44 potentially contaminated sites, which were evaluated with regard to contamination characteristics, migration pathways, and pollutant receptors. The IAS concluded that "while none of the sites pose an immediate threat to human health or the environment, 16 warrant further investigation under the NACIP program, to assess potential impacts". A Remedial Investigation (RI) (Confirmation Study) was recommended "to confirm or deny the existence of the suspected contamination and to quantify the extent of any problems which may exist". Following further review of the available data by Navy personnel, it was decided that 42 of the 44 sites should be included in the Remedial Investigation. Two potentially contaminated sites (Site 41) and an Advanced Underground Weapons Storage Facility (Site 43), were deleted from the RI because they had already been remediated.

NAEC was designated in 1987 as a National Priorities List (NPL) site under CERCLA.

Environmental Investigations/Feasibility Study:

NAEC's Remedial Investigation (RI) was conducted in two phases. Implementation of the verification phase (Phase I of the RI) was initiated in October 1984. Phase II of the RI was initiated in the summer of 1988 to (a) confirm the results of the Phase I study (Fall 1984), specifically the presence or absence of contamination; (b) determine where contamination is present, characterize the extent of contamination, assess the potential for contaminant migration and define the sources of contamination; and (c) support a feasibility study and final actions at sites. See Table 1 for a summary of the analytical data for Area C - Sites 10, 16, and 17.

The following investigations and removal actions were conducted at Area C - Sites 10, 16, and 17 from 1981 to the present:

PHASE I AND PHASE II INVESTIGATIONS FOR AREA C - SITE 10:

Remedial Investigation - Phase I (November 1985 - January 1986), analyses of groundwater samples verified that the groundwater was contaminated with volatile organics, semi-volatile organics and metals (lead and arsenic). Chemical constituents in soils were below New Jersey soil action levels. Additional investigations were recommended.

Soil gas and groundwater screening surveys (May-June 1988) indicated the presence of total chlorinated hydrocarbons in the soil gas and groundwater, and total petroleum hydrocarbons in the groundwater in the vicinity of the 424 MOGAS Station.

Remedial Investigation - Phase II (August-December 1988), analyses of groundwater and soil samples confirmed the results of previous investigations indicating that a volatile organic compound (VOC) contaminant plume exists in the groundwater in the vicinity of the 424 MOGAS Station.

In 1989, the dispensing pumps and underground tanks at the 424 MOGAS Station, which apparently were the primary sources of contamination, were removed. A new facility with above ground tanks has been constructed nearby.

The available data indicate the presence of VOCs and polycyclic aromatic hydrocarbons (PAHs - components of jet fuel, diesel and gasoline) in ground water. The data suggest that the primary source of contamination was the underground fuel oil tanks located at the 424 MOGAS Station.

PHASE I AND PHASE II INVESTIGATIONS FOR AREA C - SITE 16:

Several monitoring wells were installed (1981-1984) at the site to monitor the thickness of the floating product in the aquifer. On June 3, 1983, a maximum of approximately 7 inches of free-phase product was recorded in monitoring well BJ.

Analyses of groundwater samples (Remedial Investigation - Phase I. November 1985 - January 1986) verified that the groundwater was contaminated with VOCs, Lead, petroleum hydrocarbons (PHCs), phenolics and halogenated organics.

Remedial Investigation - Phase II was conducted August-December 1988. Analyses of the groundwater, soil, surface water and sediment samples confirmed the results of previous investigations. Free phase floating product was detected in monitoring well BJ.

The available data indicate that the groundwater, soil, surface water and sediments at the site are contaminated at levels which exceed ARARs. The primary contaminants are VOCs, PAHs, PHCs and metals.

PHASE I AND PHASE II INVESTIGATIONS FOR AREA C - SITE 17:

The available data indicate that the groundwater at the site is contaminated at levels which exceed ARARs. The primary contaminants are VOCs and PAHs, which are components of jet fuel. Lead and PHCs were also detected above Applicable or Relevant and Appropriate Requirements (ARARs). Soil was contaminated with PHCs.

The data confirm that the primary sources of contamination were the releases from the underground tanks, leaky valves and pipes, overflowing dry wells and poor housekeeping practices.

The Navy determined in the spring of 1990, that it had sufficient data to perform interim remedial action at several sites even though a risk assessment and comprehensive feasibility study was not completed.

In August 1990, the Focused Feasibility Study (FFS) for Area C - Sites 10, 16, and 17 was distributed to the United States Environmental Protection Agency, (USEPA) Region II and the New Jersey Department of Environmental Protection (NJDEP), Bureau of Federal Case Management for their review (on September 7, 1990). The Proposed Interim Remedial Action Plan (PIRAP) was finalized by NAEC and approved (final concurrence subject to public meeting and comments) by the

above mentioned agencies on September 17, 1990, initiating a 30 day public comment period.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

The Area C - Sites 10, 16, and 17, Proposed Interim Remedial Action Plan (PIRAP) was issued to interested parties on September 14, 1990. On September 17-19, a newspaper notification inviting public comment on the FFS and PIRAP appeared in The Asbury Park Press, The Ocean County Observer, and The Advanced News. The comment period was held from September 17 to October 18, 1990. The newspaper notification also identified the Ocean County Library in Toms River, New Jersey, as the location of the Information Repository.

A public meeting was held on October 2, 1990. At this meeting, representatives from the Navy, USEPA and NJDEP were available to answer questions about Area C and the interim remedial alternatives under consideration. A list of attendees is attached (see Appendix B).

A response to the comments received during this period is included in the Responsiveness Summary, which is part of this Record of Decision. This decision document presents the selected remedial action for Sites 10, 16, and 17 of NAEC in Ocean County, New Jersey, chosen in accordance with CERCLA, as amended by SARA and, to the extent practicable, the NCP. The decision for Area C is based on the administrative record.

SCOPE AND ROLE OF RESPONSE ACTION

The remedial objectives consist of medium-specific or operable unit-specific goals for protecting human health and the environment. The remedial action objectives of this response action are removing residual amounts of free product, restricting contaminant plume migration, and collecting data on aquifer and contaminant response to the interim remedial action chosen.

The interim remedy is not a final action for groundwater or soil. This action will be the first operable unit (i.e. the first cleanup phase) of the remediation of Area C on the NAEC facility. One or more future RODs will address the ultimate objective which is decontamination to acceptable levels of any contaminated medium, including final remediation of groundwater. The interim remedy proposed, however, should be consistent with those objectives.

SUMMARY OF AREA CHARACTERISTICS

Several potential sources of soil and groundwater contamination which existed at Sites 10, 16, and 17 (see Figure 2) are summarized below.

SITE 10:

Figure 2A is an area map of site 10. Site 10 consists of: (a) an area located about 40 feet to the west and behind Building 306 which was used as a barrel storage area from about 1960 to 1970, (b) Rockwell Road, a wide sand and gravel area between McCord Road and Taxiway No. 5, which acts as a parking lot

for fuel trucks and provides access to the 424 gas station and the back side of Fuel Farm 196; and (c) the 424 MOGAS Station. Site 10 is adjacent to Site 17 (which includes Fuel Farm 196). The potential sources of contamination at Site 10 include:

1. A barrel storage area west and behind Building 306. It was reported that the barrels would often leak fluids (probably containing petroleum hydrocarbons) onto the ground. No estimate of the quantities of spilled fluids is available. No hazardous material is currently stored in this area.

2. The sand and gravel area comprising Rockwell Road. During a 17-year period from 1960 to 1977, approximately 2,000 gallons per year of waste oils were sprayed on Rockwell Road for dust control purposes for an estimated total of approximately 34,000 gallons.

3. The 424 MOGAS Station. Two 5,000-gallon underground gasoline tanks and one 1,000-gallon underground diesel tank were located here. These tanks which were about 25-30 years old, were removed in 1988 and replaced with above-ground tanks. Stains around the fill pipes and fuel dispensing area suggested surficial releases from tanks overfilling and poor maintenance practices.

SITE 16:

The former Naval Air Technical Training Center (NATTC) fire fighting training area was located east of Hangar 6 (Building 195), adjacent to the NAEC civilian fire fighting training area. (see Figures 2 and 2B). The two separate fire fighting training pits in the area were supplied from nearby fuel tanks. The fuel burned during the training was collected from defueling aircraft.

In preparation of fire fighting training, a pit was flooded with about six inches of water, after which several inches of fuel were pumped onto the surface of the water. The water and fuel control valves were underground and controlled by a NATTC instructor during the training. The fuel was ignited by a torch, and the students practiced fire fighting techniques, generally by applying Aqueous Film-Forming Foam (AFFF) from crash trucks to put out the fire.

The water, AFFF, and waste fuel flowed to a 10 ft. by 10 ft. cinder block oil/water separator located to the east of the two fire fighting pits. Effluent from the oil/water separator then discharged into an unlined lagoon.

Potential sources of contamination at the site include:

1. The operation of the cinder block oil/water separator and the unlined lagoon located adjacent to it. The oil/water separator was inadequate to contain the oil mixed with AFFF and carbon residue from fuel burning at the training area. The area was in use from 1970 to 1986. No estimates of quantities of oil spilled or soaked into the soil during these fire training activities are available.

2. The operation of an oil/water separator and the unlined lagoon mentioned above received discharge from the former civilian fire fighting area.

This area is located about 200 to 300 feet to the southwest of NATTC fire fighting area. The lagoon also received fuel condensate overflow from a dry well located in nearby Fuel Farm 196 (Site 17).

SITE - 17:

Fuel Farm No. 196 is located to the south of Hangar 6 (see Figures 2 and 2C). There are four 50,000-gallon underground tanks at this location. The tank farm was constructed in the mid-1940s. The tanks originally contained AVGAS until about 1974.

Since 1974, they used to hold JP-5 (jet fuel). Each tank had a pumping station and a dry well. As part of standard operating procedures, from about the mid-1940s to 1980, when this practice was discontinued, condensate from the fuel tanks was drained into the dry wells. The old fuel transfer area also had a dry well to contain fuel spills. Overflows from this dry well went to a drainage ditch that discharged to an unlined lagoon located about 600-700 feet southeast of the site. This fuel transfer area has been replaced with a new one.

To prevent the occurrence of spills, all piping in the fuel farm was subsequently placed above ground and cross-connections between tanks were eliminated. All filters/separators, meters, strainers, relaxation chambers, fuel overfill controls and associated hardware were installed in a new centralized fuel transfer area, which is within a spill containment structure. In addition, the use of all dry wells was discontinued. The dry wells were removed in 1982. There are plans to remove the 50,000 gallon underground JP-5 tanks from service.

Potential sources of contamination at this site include:

1. Minor fuel spills associated with filling fuel trucks. No estimate of the amount of spillage is available.

2. Draining of the condensate from the fuel tanks into a dry well, a common practice until about 1980. About 50 gallons of water and fuel were drained from each tank every week into a dry well. Approximately 200 gallons of water and fuel were drained weekly from the four tanks for a yearly estimate of 10,400 gallons. Since this practice had been ongoing for 40 years (about 1940-1980) approximately 400,000 gallons of water and fuel may have been discharged to the four dry wells.

3. Three fuel spills were reported by NAEC personnel: a spill of about 2,000 gallons in 1974, a spill of about 3,000 gallons in 1978, and a third spill in 1981 of 3,000 gallons. During a subsequent fuel recovery operation, a drawdown pump was installed in a recovery well to create a cone of depression on the groundwater table to facilitate the fuel recovery. Fuel spills associated with past practices were also recovered during the cleanup operation. A total of 11,000 gallons of fuel were recovered during this cleanup.

SUMMARY OF SITE RISKS

A baseline risk assessment was not conducted for Area C - Sites 10, 16, and 17 for the interim remedial action. A comprehensive feasibility study and risk assessment will be prepared prior to the implementation of the final remedial action at the site. The risk assessment will consist of hazard identification, a dose-response evaluation, exposure assessment and risk characterization. This interim action is being implemented to stop the migration of the contaminant plume and residual floating product (environmental risk) from Area C towards the Paint Branch, a tributary of the Manapaqua Brook which feeds Pine Lake, a major recreational body of water in the county. The exposed population consists of the natural fauna, flora along the water and the population using Pine Lake for recreational activities.

Only some of the contaminants listed below are found at Site 10, 16, and 17. Table 1 provides the Historical Summary of Analytical Data for Site 10, 16, and 17. The predominant Volatile Organic Compounds (VOCs) consist of chlorinated solvents and components of fuel. The chlorinated solvents include, but are not limited to:

- 1,1-dichloroethane
- 1,2-dichloroethane
- 1,1,2,2,-tetrachloroethane
- trichloroethene
- tetrachloroethene
- vinyl chloride
- chloroform

Fuel components include, but are not limited to:

- benzene
- ethylbenzene
- toluene
- xylene (total)
- 2-butanone
- 2-hexanone

The primary semi-volatile organic compounds consists mainly of various polycyclic aromatic hydrocarbons (PAHs), including but not limited to:

- 2-methylnaphthalene
- anthracene
- benzo(a)anthracene
- benzo(a)pyrene
- benzo(b)fluoranthene
- chrysene
- fluoranthene
- fluorene
- naphthalene
- phenanthrene
- pyrene

Figures 2D and 2E show the known extent of the VOC plume in Area C - Site 10, 16, and 17.

DESCRIPTION OF ALTERNATIVES

Two remedial alternatives (and the "no action alternative") were developed for analysis in the Area C - Sites 10, 16, and 17 Focused Feasibility Study (FFS).

ALTERNATIVE 1: NO ACTION

Estimated Construction Cost: \$ 0

Estimated Net Operation and Maintenance (O&M) Cost: \$ 100,000/yr

Estimated Implementation Time Frame: N/A

This alternative involves no additional interim actions at Area C (Site 10, 16 and 17) other than groundwater monitoring of the aquifer. No contaminants would be treated or contained and the existing health and environmental risks would remain.

Under this alternative, no further action to control the source would be taken. Long-term monitoring of the site can be implemented by using previously installed monitoring wells.

ALTERNATIVE 2: GROUNDWATER PUMPING, REMOVAL OF FREE PRODUCT, TREATMENT, RECHARGE AND IN SITU SOIL FLUSHING

Estimated Construction Cost: \$ 700,000

Estimated Net O&M Cost: \$ 100,000/yr

Estimated Implementation Time Frame: 9 months

Time frame for operation of system: 3 years

This alternative involves groundwater pumping from the existing 24 inch recovery well located in Fuel Farm 196. The well will be pumped at 80 gallons per minute (gpm). An existing four inch well adjacent to the old gas station (Building 424) will be pumped at 40 gpm. A new four inch recovery well will be installed adjacent to the Paint Branch and pumped at 80 gpm (see Figure 3). The groundwater pumped from the recovery wells will enter a tank which will serve as a flow equalizer.

To treat the Volatile Organic Compounds (VOCs) in the extracted groundwater, a facility containing a pretreatment unit for metals, free product and solids removal, air stripping columns (99% VOC removal), an activated carbon adsorber for air stripper effluent and a granular activated carbon polishing filter for residual VOC and Semi-Volatile Organic Compound removal (99.9% removal of VOCs) from treated groundwater will be constructed at Area C adjacent to fuel farm 196 (See Figure 4 and 5). The extracted free product will be sent to a permitted off-site disposal facility. The effluent exiting the air stripper will be treated by a granular activated carbon air filter before being discharged to the atmosphere. The treated groundwater, which will meet NJDEP effluent limitations

will be recharged to the aquifer at two irrigation/infiltration locations as seen in Figure 6. Treated groundwater will be spray irrigated over soil in Area C during temperate months and will be infiltrated during winter months. This alternative will halt the continued migration of the contaminated plume, enhance groundwater quality and flush the soil of some contaminants. Residual sludge from the pretreatment process will be tested to determine if the waste is hazardous and if RCRA land disposal restrictions are applicable. The waste will be handled accordingly. Spent granular activated carbon will be sent to the vendor for regeneration.

Figure 3, developed after aquifer characteristics were estimated using the image well theory, is a visual representation of groundwater flow gradients in an area where water is being pumped at 80 gallons per minute (gpm) from recovery well RW, interceptor well ISW at 80 gpm and well BA at 40 gpm and infiltrated at two locations at 120 and 80 gpm. The water pumped from these wells is being treated and infiltrated/irrigated into/onto the ground surface. Irrigation is accomplished by spraying the treated water over contaminated soil in Area C. Infiltration is accomplished using four inch perforated PVC piping 120 feet long for injection trench number 2 (INJ2) which recharges 80 gpm of treated ground water into the aquifer and two sections of 100 feet perforated PVC pipe 50 feet apart for injection trench 1 (INJ) which recharges 120 gpm of treated water into the aquifer.

ALTERNATIVE 3: GROUNDWATER PUMPING, TREATMENT AND DISCHARGE TO SURFACE WATER

Estimated Construction Cost: \$ 700,000
Estimated Net O&M Cost: \$ 100,000/yr
Estimated Implementation Time Frame: 9 months
Time frame for system operation: 3 years

This alternative would be similar to Alternative 2, except treated ground water would be discharged via piping to the Paint Branch (see Figure 5). No soil flushing action would take place. Free product would be sent to an off-site permitted disposal facility.

SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

The three alternatives identified above were evaluated using criteria derived from Section 300.430(E9) of the NCP and Section 121 as amended by SARA of 1986. The criteria are as follows:

Overall Protection of Human Health and the Environment draws on the assessments conducted under other evaluation criteria and considers how the alternative addresses site risks through treatment, engineering, or institutional controls.

Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) evaluates the ability of an alternative to meet ARARs established through Federal and State statutes and/or provides the basis for invoking a waiver.

Long-Term Effectiveness and Permanence evaluates the ability of an alternative to provide long-term protection of human health and the environment and the magnitude of residual risk posed by untreated wastes or treatment residuals.

Reduction of Toxicity Mobility or Volume through Treatment evaluates an alternative's ability to reduce risks through treatment technology.

Short-term Effectiveness addresses the cleanup time frame and any adverse impacts posed by the alternative during the construction and implementation phase, until cleanup goals are achieved.

Implementability is an evaluation of the technical feasibility, administrative feasibility, and availability of services and material required to implement the alternatives.

Cost includes an evaluation of capital costs, annual operation and maintenance costs, and net present worth costs.

State Acceptance indicates the State's response to the alternatives in terms of technical and administrative issues and concerns.

Community Acceptance evaluates the issues and concerns the public may have regarding the alternatives.

A comparative discussion of the three alternatives on the basis of the evaluation criteria presented above follows.

Overall Protection - Alternative 2, provides the greatest overall protection of human health and the environment through treatment of groundwater and to some degree soils. Alternative 3, is similar to Alternative 2, except treated water is discharged to surface water, therefore, no soil flushing action occurs. Rather than simply discharging treated groundwater into surface water, Alternative 2 calls for the utilization of both flushing the soil of contaminants and speeding up the groundwater cleanup process. The entire NAEC facility is in a water supply critical area in the Englishtown Aquifer. A smaller portion of the NAEC facility is part of a second critical area in the Raritan Aquifer. There is a general concern for over pumpage in Coastal Plain Aquifers. Groundwater discharge (Alternative 2) was selected over surface water discharge (Alternative 3) to prevent over pumpage and enhance recharge. Alternative 2 is a closed loop system in which the aquifer is recharged by the treated ground water from Area C. Alternative 1, which offers no soil or groundwater treatment is the least protective alternative.

Long-Term Effectiveness and Permanence - Alternative 2 and 3 are interim actions and intended to be short-term fixes, therefore; the long term effectiveness cannot be addressed. However, if the interim remedial alternative chosen proves to be effective it will be incorporated and/or modified to become the final remedial action. Alternative 1 provides no treatment and is not considered to

be effective.

Reduction of Toxicity, Mobility or Volume - Alternative 2 and 3 reduces the mobility and toxicity of groundwater by the reduction of volatile and semi-volatile compounds in the contaminated groundwater by air stripping and carbon treatment. The regeneration of carbon in Alternative 2 and 3 will provide for the destruction of the organics. Alternative 1 offers no treatment of the contaminated media.

Short-Term Effectiveness - Alternatives 2 and 3 in the short-term will halt the spread of contaminated groundwater and residual amounts of floating product from entering ecologically sensitive areas in Area C. It will also stop the migration of the contaminant plume and residual amounts of floating product from entering the Paint Branch. The Paint Branch is a tributary of the Manapqua Brook which feeds Pine Lake, a major recreational body of water in the county. This interim action will in the short term prevent degradation of the aquifer and limit contaminant exposure risks to the population using Pine Lake. Alternative 2 has the added benefit of flushing the soil of some contaminants (in areas where treated water is being recharged) and increasing the hydraulic gradient, thus speeding up the remediation process. In Alternative 3, treated groundwater is recharged into the Paint Branch, no soil flushing action takes place. Alternative 1 provides no treatment of soil or groundwater and is not considered to be effective in the short-term because risks are not reduced.

Implementability - Alternative 1 offers the greatest implementability followed by Alternative 2, and 3 which involves conventional technologies with proven reliability.

Cost - Alternative 1, the no action alternative, has the lowest associated cost. Alternative 2 and 3 have a cost of \$ 700,000 and \$100,000 for O & M costs. Alternative 3 does not have a cost associated with irrigation and infiltration system but this does not reduce the overall cost of the alternative because of the construction of the piping and pump system from the treatment building to the Paint Branch.

Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) - Alternative 1, does not have to comply with action-specific ARARs because no interim remedial action takes place. Alternative 2 and 3 both comply with action-specific ARARs such as Occupational Safety and Health Act (OSHA), Resource Conservation and Recovery Act (RCRA) and appropriate sections of the Clean Air and Water Acts. State and Federal action-specific ARARs pertaining to discharge of treated water to ground surfaces and surface waters is also addressed and will be complied with during the interim remedial action (See Table 2). Residual wastes from the treatment process for Alternatives 2 and 3 shall be managed in accordance with RCRA hazardous waste regulations such as land disposal restrictions if the waste is found to be hazardous.

State Acceptance - The preferred alternative (Alternative 2) is acceptable to the NJDEP. (See NJDEP letter of concurrence, Appendix D.)

Community Acceptance - Community acceptance of the preferred alternative will be evaluated on the basis of public comments and is described in the Responsive Summary of this Record of Decision. The alternative appears to be acceptable to the public.

SELECTED INTERIM REMEDY

The following section describes in detail the interim remedial action plan which the Naval Air Engineering Center, in concurrence with the USEPA and NJDEP, has selected to implement at Area C - Sites 10, 16, 17 (See USEPA and NJDEP Letters of Concurrence, Appendices C and D). This selection is identical to that presented in the Proposed Interim Remedial Action Plan. Because of the design's interim nature, changes could be implemented during the final design and construction processes. Such changes reflect modifications resulting from the engineering design process and will not substantially change the intent of the selected alternative described herein.

The selected interim remedial action is Alternative 2 - Groundwater Pumping, Removal of Free Product, Treatment, Recharge and In Situ Soil Flushing. This alternative will address groundwater treatment and product extraction simultaneously. This Alternative is cost effective and implements proven technologies.

Ground water and residual amounts of free product will be extracted via three wells at a rate of 200 gpm. The extracted water will be held in a flow equalization tank and then pretreated to remove metals, free product and solids. The extracted free product will be sent to a permitted off-site disposal facility. NAEC will comply with NJ Hazardous Waste Regulations. The pretreated water will be air stripped and polished to remove 99.9% of VOCs. Due to the transfer of contaminants from the aqueous phase to the airstream, emissions control units will be required on the air strippers. The treatment system, including the emission control unit will be designed to meet the substantive requirements of the New Jersey air pollution control regulations (NJAC 7:27-16). The effluent from the air stripper will be treated by a granulated activated carbon air filter, prior to discharge to the atmosphere. Residual sludge from the pretreatment process will be tested to determine if the waste is hazardous and if RCRA land disposal restrictions are applicable. The waste will be handled accordingly. Spent granular activated carbon will be sent to the vendor for regeneration.

Once treated, the groundwater, which will meet NJDEP effluent limitation standards, will be recharged to the aquifer at two irrigation and infiltration locations. The treated water will be spray irrigated over areas of subsurface soil contamination. This action will increase biological activity promoting contaminant decomposition. The groundwater classification for the immediate NAEC area is Central Pine Barrens GW1. The groundwater is suitable for potable water supply, agricultural water supply, continual replenishment of surface waters to maintain the existing quality of the surface waters in the Central Pine Barrens, and other reasonable uses. Quality criteria for these waters may be found in N.J.A.C. 7:9-3.6.

The remedial action in the short-term will halt the spread of contaminated groundwater and residual amounts of floating product from entering ecologically sensitive areas.

This interim remedial action will be implemented until the final remedy is selected, designed, and implemented. If the interim remedy proves to be effective it will be incorporated and/or modified to become the final remedial action.

STATUTORY DETERMINATIONS

Under Section 121 of CERCLA and Section 300.430(F5) of the NCP, selected remedies must meet certain statutory and regulatory requirements. These requirements and a description of how the selected remedy satisfies each requirement are presented below.

Protection of Human Health and the Environment

The selected alternative will protect human health and the environment through treatment of the contaminated groundwater and in situ soil flushing. The treated groundwater will meet NJDEP effluent limitations. Residual amounts of floating free product will be extracted and removed to a permitted off-site disposal facility.

The interim remedial action will stop the migration of the contaminant plume and residual amounts of floating product from entering the Paint Branch a tributary of the Manapqua Brook which feeds Pine Lake, a major recreational body of water in the county. This interim action will, in the short-term, prevent degradation of the aquifer and limit contaminant exposure risks to the population using Pine Lake.

Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

The selected remedy will comply with action specific ARARs such as Occupational Safety and Health Act (OSHA), Resource Conservation and Recovery Act (RCRA) and appropriate sections of the Clean Air and Water Acts. State and Federal action specific ARARs pertaining to the discharge of treated water to ground surfaces is also addressed and will be complied with during the interim action. Also, treated water will meet NJDEP effluent limitations prior to spray irrigation and infiltration. A list of ARARs specific to this action is presented in Table 2.

Cost Effectiveness

The selected remedy provides groundwater treatment and removal of residual amounts of floating product through treatment methods that have been proven effective, cost efficient and expected to attain ARARs.

Preference for Treatment as a Principal Element

The principal threats at Area C - Sites 10, 16, and 17 include ground

water and soil contamination and the presence of residual amounts of floating free product associated with the presence of the plume at Area C. The selected remedy satisfies the statutory preference for treatment as a principal element in addressing the human health and environmental threats posed by the site. Groundwater will be treated by air stripping and carbon adsorption to remove VOCs and polished by granular activated carbon to remove SVOCs and further reduce VOC levels. In situ soil flushing will aerate and enhance biological activity and contaminant decomposition. Residual amounts of floating product will be collected and disposed at an off-site permitted hazardous waste facility. The interim remedy is not a final action for groundwater or soil. The ultimate goal of the final remediation of this area should include decontamination to acceptable levels of any contaminated medium, not just ground water. The selected interim remedy, however, should be consistent with those objectives.

Documentation of Significant Changes

The Proposed Interim Remedial Action Plan (PIRAP) for Area C - Sites 10, 16 and 17 was released for public comment on September 14, 1990. The PIRAP identified Alternative 2 as the preferred alternative. NAEC did not receive any written comments, all verbal comments were responded to at the public hearing on October 2, 1990. Upon review of the comments, it was determined that no significant changes to the interim remedy, as it was originally identified in the

RESPONSIVENESS SUMMARY
AREA C - SITES 10, 16, 17
NAVAL AIR ENGINEERING CENTER

The purpose of this responsiveness summary is to review public response to the Proposed Interim Remedial Action Plan (PIRAP) for Area C - Sites 10, 16 and 17. It also documents Naval Air Engineering Center's (NAEC's) consideration of such comments during the decision making process and provides answers to any major comments raised during the public meeting and comment period.

The responsiveness summary for Area C - Sites 10, 16, 17 is divided into the following sections:

- o OVERVIEW - This section briefly describes the Focused Feasibility Study (FFS) process used to develop and evaluate interim remedial responses for Area C - Sites 10, 16, and 17, the interim remedial alternative recommended within the PIRAP and any impacts on the proposed plan due to public comment.
- o BACKGROUND ON COMMUNITY INVOLVEMENT - This section describes community relations activities conducted with respect to the area of concern.
- o SUMMARY OF MAJOR QUESTIONS AND COMMENTS - This section summarizes verbal and written comments received during the public meeting and public comment period.
- o REMEDIAL DESIGN/REMEDIAL ACTION CONCERNS - This section describes public concerns which are directly related to design and implementation of the selected remedial alternative.

OVERVIEW

Area C - Sites 10, 16, and 17 are located at NAEC in Ocean County, Lakehurst, NJ. Area C is under investigation for potential environmental contamination. This responsiveness summary addresses remediation and public response to the PIRAP for Area C - Sites 10, 16 and 17 only.

A summary of the site background, the alternatives evaluated, and a comparison of alternatives are presented in the Area C - Sites 10, 16 and 17 PIRAP and as more fully described in the FFS report. Both documents, as well as other supporting information, are available for public review at the information repository located at the Ocean County Library, 101 Washington Street, Toms River, NJ.

BACKGROUND ON COMMUNITY INVOLVEMENT

This section provides a brief history of community participation in the investigation and interim remedial planning activities conducted at Area C. Throughout the investigation and FFS period, the United States Environmental Protection Agency (USEPA) and New Jersey Department of Environmental Protection (NJDEP) have been directly involved through proposal and project review and

comments. Periodic meetings have been held to maintain open lines of communication and to keep all parties abreast of current activities.

Prior to the public release of site-specific Area C documents, NAEC's public relations staff compiled a list of local public officials who demonstrated or were expected to have an interest in the investigation. Local environmental interest groups were also identified and included on this list. The list is included in Appendix A.

On September 14, 1990, NAEC mailed Area C - Sites 10, 16 and 17 PIRAPs to concerned parties on the list described above. On September 17 through 19 a public notice appeared in The Asbury Park Press and The Ocean County Observer, and in The Advance News on September 19. The public notice summarized the feasibility study process, the remedial alternatives considered and the preferred remedial alternative. The announcement also identified the time and location of a public comment period, and the address to which the written comments could be sent. Public comments were accepted from September 17 through October 18, 1990.

A public meeting was held on October 2, 1990, at 7:30 p.m. at the Lakehurst Elementary School in Lakehurst, New Jersey. The Area C - Sites 10, 16 and 17 investigations, feasibility study process and the proposed interim remedial alternative were discussed. NAEC representatives included: Captain David J. Raffetto, the Commanding Officer of NAEC; Commander Thomas Breitzke, Public Works Department head; Robert Kirkbright, Engineering Director, Lucy Bottomley, Head Environmental Engineer; Aarti Dalal, Environmental Engineer. Jeffrey Gratz, represented the EPA's Federal Facility Section; Ms. Christine Holstrom, represented the NJDEP's Bureau of Federal Case Management; Mr. Kevin Schick; represented NJDEP's Division of Hazardous Site Mitigation and Ms. Linda Welkom represented NJDEP's Division of the Water Resources. See Appendix B for attendance list.

SUMMARY OF MAJOR QUESTIONS AND COMMENTS

During the public comment period September 17 through October 18, 1990 no written public comments were received. The questions raised at the public meeting on October 2 and NAEC's response to these comments are summarized below.

PUBLIC MEETING COMMENTS

Question: Mr. Cicalese, Councilperson Manchester Township, questioned the Superfund Cleanup schedule. Is NAEC going to begin clean up in January 1993?

NAEC Comment: We are going to start the actual cleanup of four sites in about five months.

Clarification: Mr. Cicalese, whose question referred to the Federal Facilities Agreement, which was agreed upon by the EPA and Navy, assumed that January 1993 was the start of the cleanup of sites at NAEC. NAEC will start site cleanup prior to 1993; however, the final Records of Decision (RODs) for each site are due to the EPA in January 1993.

Question: Mr. Cicalese, Councilperson Manchester Township, questioned why a contractor and lots of paperwork were necessary once the problem was known and where the problem was?

NAEC Comment: The naval base has 44 individual sites. Each site is at a different stage in its remediation plan. Our plan calls for having a final decision for each site by January 1993. If there are no significant objections to the interim remedial action at Area C, we then can go forward to the EPA and the DEP and ask for approval to do it.

Clarification: Mr. Cicalese questioned the need of extensive paperwork prior a site cleanup. NAEC is mandated to follow congressional Superfund regulations and submit Focused Feasibility Studies, Proposed Interim Remedial Action Plans and Records of Decision prior to site cleanup. Documentation and public involvement are crucial parts of the process. Contractors are used because of their expertise in the field of hazardous waste cleanups.

Question: A concerned citizen: How long do you expect before you are done with the clean up of all 44 sites?

NAEC Comment: A number of these sites will be "no action" Sites. 1993 is when we will have a final decision on all the sites, and the time it takes for actual work will depend on how complicated and involved the remediation process is.

Question: Ms Dicenso, a concerned citizen, questioned if there was any contamination to the cranberry bogs?

NAEC Comment: No, there are three to four hundred monitoring wells, both shallow and deep which are being monitored on various schedules along the entire site or Center to track the plume.

Clarification: NAEC does a monthly volatile organics analysis of a water sample from the Manapaqua Brook taken at a point where the brook exits the facility and flows towards the cranberry bogs. There are approximately 200 monitoring wells on the facility. Approximately 150 were monitored during the Phase I and II remedial investigation. These wells are not monitored routinely.

NJDEP Comment: To find exact detailed information about the studies, the public can actually look it up in the Public Records (Ocean County Library).

Question: Looking at the sites in general, what type of contaminants will you be facing? Is it mainly fuel or may other things crop up, like pesticides.

NAEC Comment: There are certainly other sites which are contaminated by fuels. Having our aviation history, that is one of our major concerns. Other sites are varied. We want to restrict the discussion to the three sites.

Question: Ms. Dicenso, a concerned citizen: What are VOCs, and PHCs, metals? Are they related to the gasoline in groundwater?

NJDEP Comment: VOCs are Volatile Organic Compounds (such as benzene and toluene); they evaporate like gasoline. PHCs are petroleum hydrocarbons. Metals are another group of compounds. Heavier fractions which are associated with gasoline are not prevalent here.

Question: Mr. Klee, Borough of Lakehurst: How would the Public be afforded access to this site?

NAEC Comment: The site like any activity on the Center is not generally open to the public. Certain responsible groups will be given an opportunity through

our Public Affairs Office to tour the operation at our facility.

REMEDIAL DESIGN/REMEDIAL ACTION CONCERNS

The public concerns which were directly related to design and implementation of the interim remedial alternative are summarized below.

Question: Ms. Dicenso, a concerned citizen, questioned what happened to the effluent from the oil/water separator entering the lagoon? (Area C - Site 16)

NAEC Comment: The effluent evaporated or moved along as ground water. Some of the contamination came from the fire pits and from the fuel farm. NAEC said that the interim remedial action should commence immediately to stop the groundwater flow in the direction of the Paint Branch.

Question: Mr. Klee, Borough of Lakehurst, questioned whether the four 50,000 thousand gallon tanks constructed in the mid 1940s at Area C - Site 17 were going to be removed?

NAEC Comment: The tanks were emptied and relined in 1980. Two were never put back in service and NAEC is looking into installing leak monitoring equipment for the other two tanks.

Question: Mr. Klee, Borough of Lakehurst, questioned why in 1980 11,000 gallons of fuel were recovered when a total of 8,000 gallons were reported spilt?

NAEC Comment: In the past each one of the tanks (Area C - Site 17) had a dry well next to it. As part of the daily practice condensate from the tank was pumped into a dry well. The operators didn't look to see whether water and fuel entered the dry well or just water. When NAEC did a cleanup of the reported 8,000 gallon spill in 1983, we also recovered fuel generated by pumping to the dry wells.

Question: Ms. Hodges, concerned citizen: Who's requirement is it that the water (after remediation) be of drinking water quality? Is that an agency requirement? Which one?

NJDEP Comment: It is a complicated issue because this is an interim remedial measure under Superfund. When you do this interim measure, it is not necessarily going to be the final thing that's done with the site. It is when you realize you have a real problem, rather than study it for more years, you go out there and you do something right away. For an interim action such as this you don't necessarily have to meet the final cleanup standards which will be determined by the EPA and DEP jointly, when a final action is determined for the site.

Question: Mr. Cicalese, Councilperson Manchester Township: How many gallons of water will be processed once the treatment facility in Area C is operational?

NAEC Comment: 200 gallons per minute.

Question: Ms. Lettman, Environmental Commission Manchester Township: Do you know how long you will pump and treat at Area C?

NAEC Comment: Three years. We will analyze the groundwater coming into our monitoring wells to determine the contaminant levels, this is how we will determine what our final cleanup action will be.

Clarification: NAEC is estimating pumping and treating groundwater for 3 years.

A final ROD for the site will determine the final remedial action for cleanup of the site. This interim action could become the final action for groundwater cleanup. This will be determined by groundwater monitoring of the site after treatment begins.

Question: Mr. Cicalese, Councilman Manchester Township: The rationale as to why this interim action is being implemented is to stop the migration of the contaminant plume and residual floating product - has this plume been defined? Do you know where this plume is?

NJDEP/NAEC Comment: One of the problems of giving an estimate like this is that the contaminants in groundwater do not move as fast as the groundwater because they are retarded by soils. We have done sampling of sediments in the brook and surface water and there is really no significant amounts at the area where the plume should be coming out of. Currently, there doesn't appear to be any significant discharges to the stream, but this is certainly a site where we have floating product. We deal with drinking water standards that are set on parts per billion basis; so when you have floating product, the potential exists for continuing release of these contaminants. Because of the floating product and because of the fact we know we had these contaminants already dissolved in the groundwater near the boundary of NAEC that may in the future be discharged from the Center, the Navy has initiated an interim remedial action.

Question: Ms. Dicenso, a concerned citizen: How do you cleanup lead (in ground water)?

NJDEP Comment: A pretreatment system is used. For the entire treatment system to operate optimally you have to remove as much of the metals and other particulates as you can. The pretreatment removes many of the inorganics.

Question: Ms. Dicenso, a concerned citizen: What would happen to the lead?

NJDEP Comment: The lead in the groundwater is removed by the pretreatment system. Basically, a chemical can be added which binds the metals and allows them to settle out. This sludge can then be removed periodically and disposed of properly.

Question: Ms. Dicenso, concerned citizen: What is done with the sludge materials after it is removed?

NJDEP Comment: It will be disposed of according to the regulations for hazardous waste.

Question: Mr. Klee, Borough of Lakehurst: Who will be testing and inspecting to make sure everything is functioning properly?

NAEC Comment: The contractor is required to construct the facility, prove it out and then give us split samples so we can take them to our lab to confirm the results.

EPA Comment: EPA will also take split samples to insure that discharge limitations are met.

Question: Mr. Klee, Borough of Lakehurst: Does the contractor provide testing?

NAEC Comment: He provides testing and we do our own testing. Neither, one of these groups have their own labs. The contract labs are certified through the State of New Jersey. All this information is then submitted to the EPA.

TABLE 1.
HISTORICAL SUMMARY OF
ANALYTICAL DATA - SITE 10

Pre-1995

Phase I Remedial Investigation

Phase II Remedial Investigation

Soil Gas and Groundwater Screening Surveys

Total chlorinated hydrocarbons
in soil gas samples: ND - 0.05 ug/l

Total petroleum hydrocarbons
in groundwater: ND - 1,800 ug/l

Total chlorinated hydrocarbons
in groundwater: ND - 0.35 ug/l

Groundwater

Traces of floating product
were observed in monitoring
well BB

Groundwater

Volatile Organic Compounds (ug/l)

Benzene: ND - 410
Toluene: ND - 33.6
Ethylbenzene: ND - 96.3

Semi-Volatile Organic Compounds (ug/l)

2,4-Dimethyl phenol: 16.4

Miscellaneous

Total Organic Halides: 92.4 - 93

Groundwater

Volatile Organic Compounds (ug/l)

Benzene: ND - 380
Toluene: ND - 81
Ethylbenzene: ND - 17
Xylenes: ND - 990

Metals (ug/l)

Lead: ND - 135

Soil

No contamination detected

Soil

Miscellaneous

Petroleum Hydrocarbons: ND-10,819.68 (ug/g)

HISTORICAL SUMMARY OF
ANALYTICAL DATA - SITE 16

Phase I Remedial Investigation

Phase II Remedial Investigation

Soil Gas and Groundwater Screening Surveys

Total chlorinated hydrocarbons
in soil gas: ND - 10.01 ug/l

Total petroleum hydrocarbons
in soil gas: ND - 1,400 ug/l

Total chlorinated hydrocarbons
in groundwater: ND - 120.11 ug/l

Total petroleum hydrocarbons
in groundwater: ND - 48,000 ug/l

Groundwater

Several monitoring wells were installed at the site under NAEC direction to monitor the thickness of floating product. On June 3, 1983, a maximum of approximately 7 inches of free-phase product was recorded in monitoring well BJ.

In the summer of 1984, the NJDEP performed a site investigation utilizing electrical resistivity profiling and sounding techniques

Groundwater

Metals (ug/l)

Lead: 15 - 99

Miscellaneous

Petroleum hydrocarbons (mg/l): 36-540
Total phenolics (ug/l): 334
Total Organic Halogens (ug/l):
20.2 - 27.7

Groundwater

Volatile Organic Compounds (ug/l)

Trichloroethene: ND - 12
Toluene: ND - 54
Xylenes: ND - 89
1,2-Dichloroethene: ND - 12

Metals (ug/l)

Lead: ND - 169
Arsenic: ND - 57

Miscellaneous

Petroleum Hydrocarbons (mg/l): ND-1,901.23
Ethylene Glycol (mg/l): ND - 1.23
Surfactants (mg/l): ND - 0.37

Soil

No data collected

Soil

Volatile Organic Compounds (ug/kg)

Toluene: ND - 9

Semi-Volatile Organic Compounds (ug/kg)

2-Methylnaphthalene: ND - 220,000
Phenanthrene: ND - 410

Pesticides/PCBs (ug/kg)

Beta-BHC: ND - 26

Miscellaneous (ug/g)

Petroleum Hydrocarbons: ND - 14,097.51

HISTORICAL SUMMARY OF
ANALYTICAL DATA - SITE 17

<u>Pre-1985</u>	<u>Phase I Remedial Investigation</u>	<u>Phase II Remedial Investigation</u>
No data available	<u>Groundwater</u>	<u>Groundwater</u>
	<u>Metals (ug/l)</u>	<u>Volatile Organic Compounds (ug/l)</u>
	Pb: 175	Benzene: ND - 16 4-Methyl-2-Pentanone: ND - 300 2-Hexanone: ND - 87 Toluene: ND - 990 Chlorobenzene: ND - 14 Ethylbenzene: ND - 560 Xylenes: ND - 4,500
	<u>Miscellaneous</u>	<u>Semi-Volatile Organic Compounds (ug/l)</u>
	Petroleum Hydrocarbons: 34 ug/l	Naphthalene: ND - 86 2-Methylnaphthalene: ND - 730
		<u>Metals (ug/l)</u>
		Lead: ND - 717
		<u>Miscellaneous</u>
		Petroleum Hydrocarbons: ND - 170.26 ug/l

<u>Soil</u>	<u>Soil</u>
No data collected	<u>Volatile Organic Compound (ug/kg)</u>
	Toluene: ND - 7
	<u>Miscellaneous</u>
	Petroleum Hydrocarbons: ND - 226.69 ug/g

TABLE 2
LIST OF ARARS

Only Action-specific ARARS which include surface water, groundwater, and air discharge limitations as well as hazardous waste handling requirements, wetland and floodplain requirements will be identified and complied with during the interim remedial design. Contaminant specific cleanup levels will be addressed in the final remedy.

The interim remediation activities at Area C (Sites 10, 16, and 17) will primarily address groundwater and residual floating product. Preliminary identification of Federal Action-Specific ARARS applicable to the interim remedial alternatives chosen are:

Occupational Safety and Health Act (OSHA) (29 CFR 1910, 1926, 1904): ARARS for workers and workplace throughout the implementation of hazardous activities.

Resource Conservation and Recovery Act (RCRA) (40 CFR 264.10-.77): Potential ARARS for alternatives utilizing treatment, storage or disposal actions (Note: permits not required for onsite actions)

RCRA (40 CFR 264.90-.101): Groundwater protection. Groundwater monitoring/corrective action requirements; dictate adherence to MCLs and establishes points of compliance.

RCRA - Part 263 (40 CFR 263.10-.31) and Hazardous Materials Transportation Act (49 CFR 170, 171): Transporter Requirements. ARARS for alternatives involving shipment of hazardous materials or wastes.

RCRA - Part 268 (40 CFR 268): Land Disposal Restrictions. Potentially pertains to spent carbon filters and sludge from pretreatment process. Wastes will be tested to determine if they are hazardous waste under RCRA.

Clean Air Act (40 CFR 50): ARARS for alternatives which involve treatments which impact ambient air.

Additional air pollution control regulations: Permits and Certificates (N.J.A.C. 7:27:8) and Control and Prohibition of Air Pollution by Toxic Substances (N.J.A.C. 7:27-17).

Clean Water Act (40 CFR 401): NPDES Permit Requirements. Requirements for point source discharge to surface waters. Potential ARARS which will affect the implementability of remedial action involving effluent discharge to the Manapapaqua Brook.

Clean Water Act (40 CFR 404): Prohibits actions that impact a wetland unless no other alternatives are available.

Preliminary Identification of Potential State Action-Specific ARARs are as follows:

N.J. Hazardous Waste Regulations (NJAC 7:26 et seq.): Permitting, Contingency Plans, Specification for Treatment/Disposal Units. Potential ARARs for alternatives which involve the treatment, storage or disposal of hazardous wastes.

NJ Pollutant Discharge Elimination System (NJAC 7:14A-1 et seq.): Permit Requirements and ARARs for alternatives involving effluent discharge to ground surfaces and groundwater.

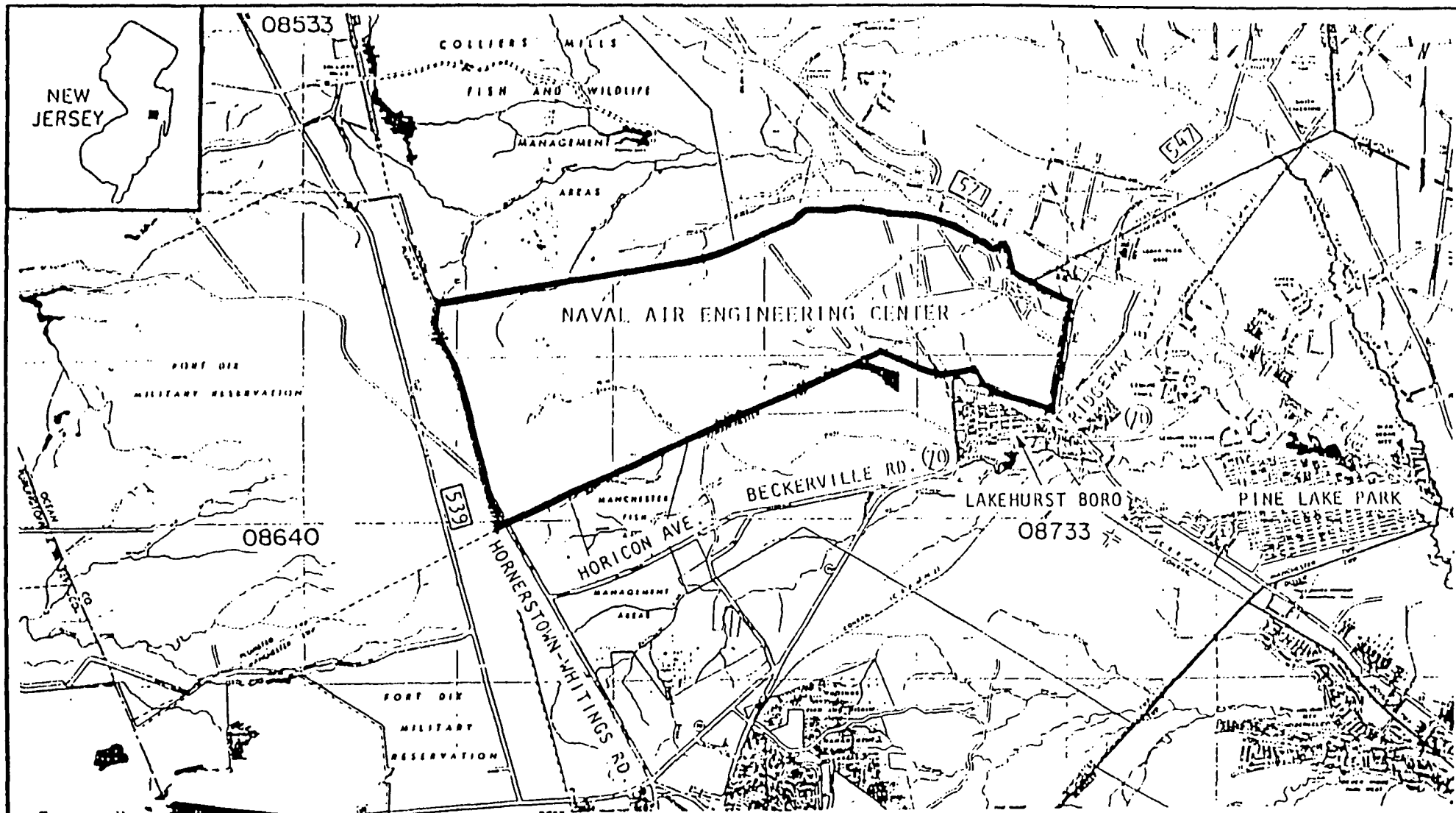
N.J. Ground Water Quality Standards (N.J.A.C 7:9-5.1 et seq.): ARARs for ground water quality cleanup criteria and effluent limitations.

NJ Surface Water Regulations (NJAC 7:9-5.1 et seq.): ARARs for alternatives involving treatment which discharge toxic pollutants to area water bodies.

NJ Air Pollution Control Regulations (NJAC 7:27-16): Permits and Emission Limitation for VOCs. ARARs for alternatives for treatments which impact ambient air.

Water Supply Management Act (N.J.S.A. 58:1A-1 et seq.): Permit requirements for groundwater diversion during recovery operations.

Endangered Species Act (16 USC 1531): Consultation will be undertaken with the Fish and Wildlife Service to determine if the remedial action will adversely affect endangered species in the area.

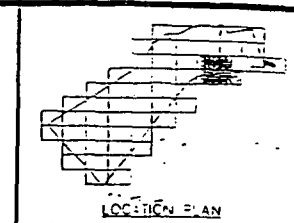
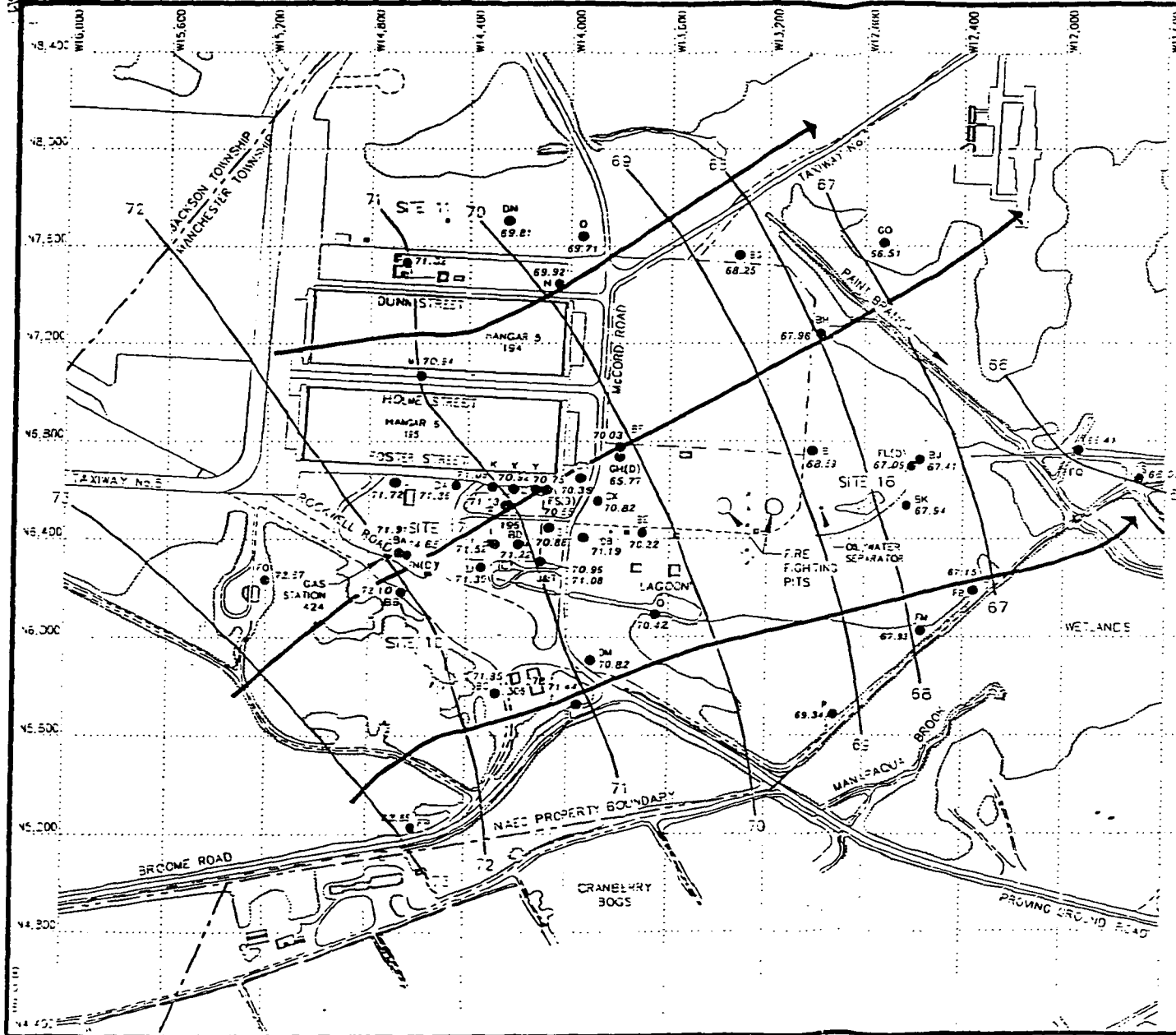


VICINITY MAP NAVAL AIR ENGINEERING CENTER LAKEHURST, NEW JERSEY

0 1 2 3

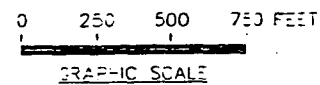
APPROXIMATE SCALE IN MILES

REFERENCE: HANGSTROM MAP
OF OCEAN CO., N.J.

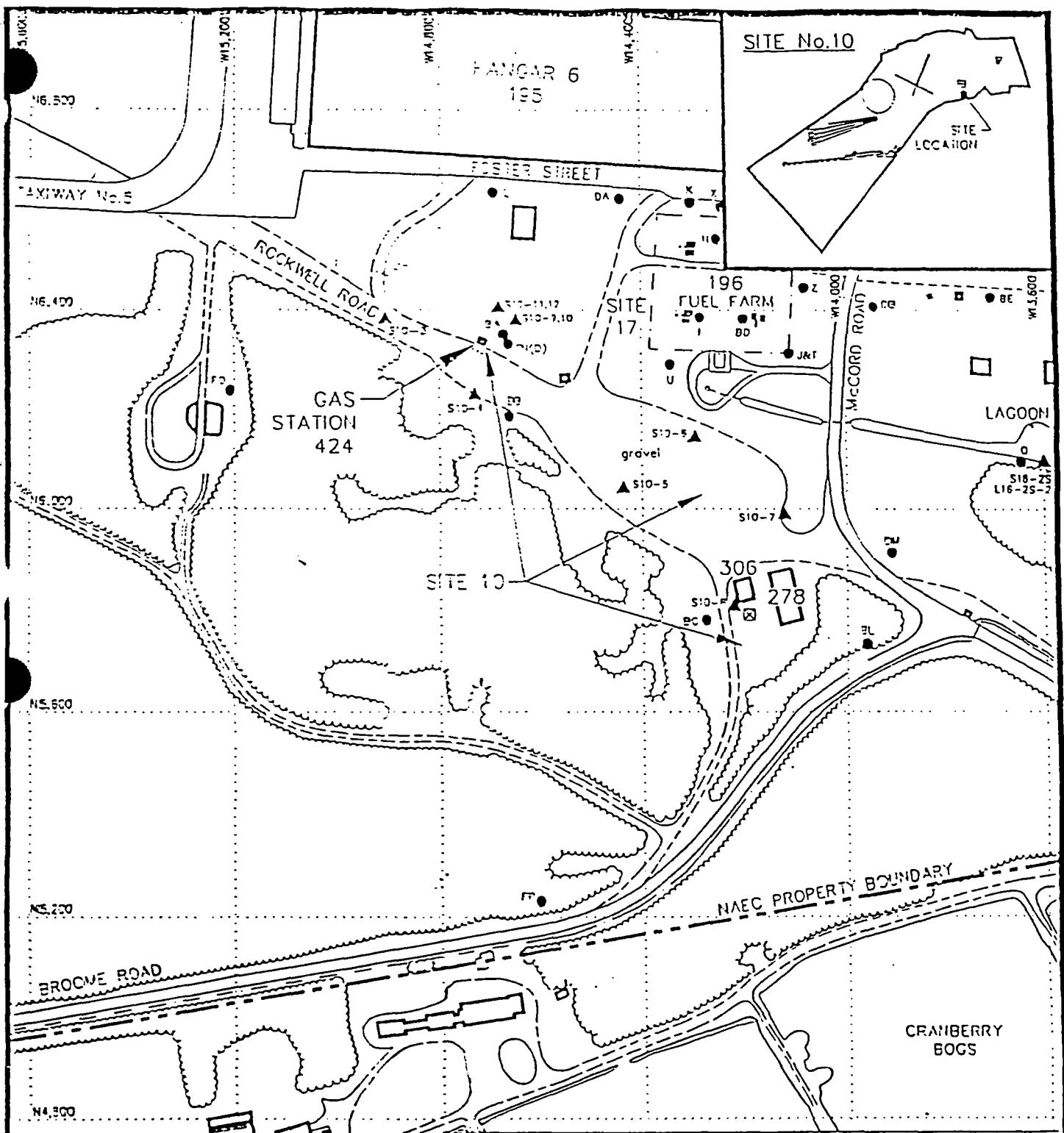


EXPLANATION:

- 69.81 MONITORING WELL (with groundwater elevation in feet above mean sea level based on measurements recorded on March 22, 1983). (D)=Deep
- 70 — GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL BASED ON MEASUREMENTS RECORDED ON MARCH 22, 1983
- ESTIMATED GROUNDWATER FLOW DIRECTION

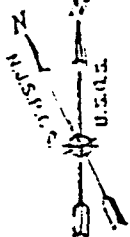


TITLE			
AREA C			
GROUNDWATER ELEVATION AND FLOW DIRECTIONS			
PROJECT REMEDIAL INVESTIGATION - PHASE II			
NAVAL AIR ENGINEERING CENTER			
LAKEHURST, NEW JERSEY			
Dames & Moore			
PRINCIPAL ENGINEER			
SCALE	AS NOTED	DATE	7-16-90
BY	R.G.B.	JOB NO.	7930-013
DATE	7-16-90	APPROVED	DATE
			7-16-90



EXPLANATION:

- BA ● MONITORING WELL LOCATION (D=Depth)
- S10-4 ▲ SOIL OR SEDIMENT SAMPLING LOCATION
- ☒ TEST PIT LOCATION (no sample collected)



0 100 200 300 FEET

GRAPHIC SCALE

SITE No.10, AREA C
FUEL TRUCK STORAGE AREA AND 424 GAS STATION
PROJECT REMEDIAL INVESTIGATION - PHASE II
NAVAL AIR ENGINEERING CENTER
LAKEHURST, NEW JERSEY



Dames & Moore

CRANFORD, NEW JERSEY

SCALE AS NOTED

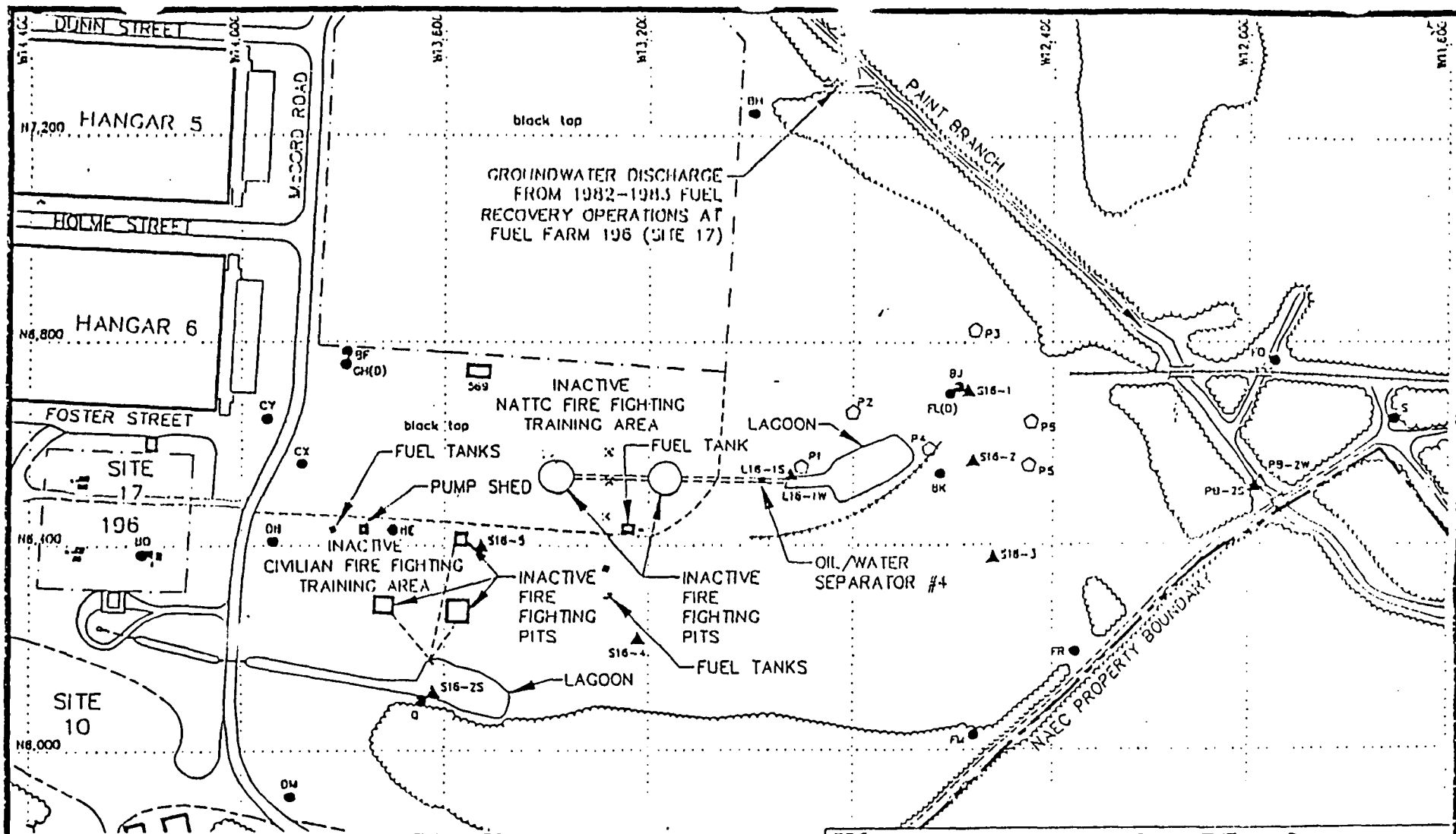
DATE 8-8-90

APPR. BY C.I.T.

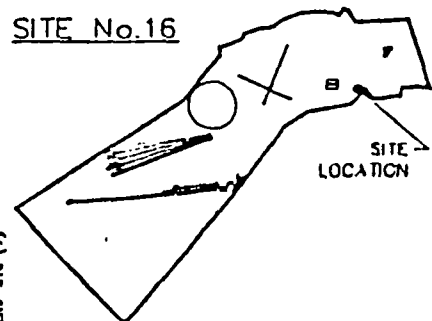
DRW. BY R.G.B.

APP. NO. 7980-013

FIG. NO. 2A



SITE No.16

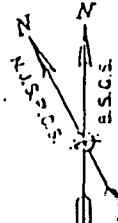


EXPLANATION:

- BH ● MONITORING WELL LOCATION (0=Deep)
 PB-25 ▲ SOIL OR SEDIMENT SAMPLING LOCATION
 PG-2W △ SURFACE WATER SAMPLING LOCATION
 PI ○ PIEZOMETER LOCATION

0 100 200 300 FEET

GRAPHIC SCALE



TITLE

SITE No.16, AREA C
NATTC FIRE FIGHTING TRAINING AREA (INACTIVE)

PROJECT REMEDIAL INVESTIGATION - PHASE II
NAVAL AIR ENGINEERING CENTER
LAKEHURST, NEW JERSEY



Dames & Moore

CLARKSON, NEW JERSEY

SCALE AS NOTED

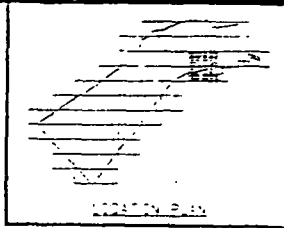
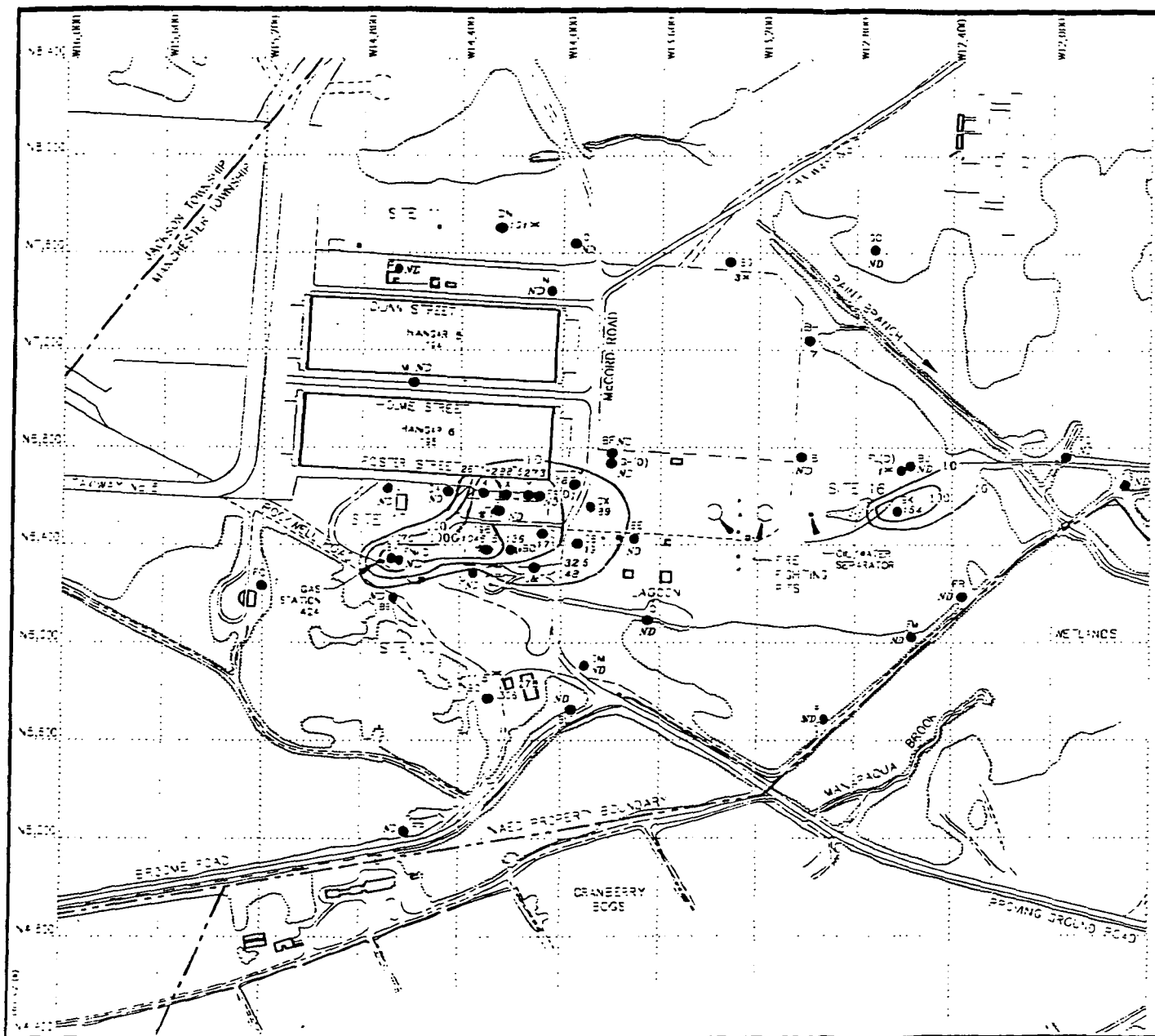
OWN. BY R.G.B.

JOB NO. 7980-015

DATE 8-8-90

APPR. BY C.I.T.

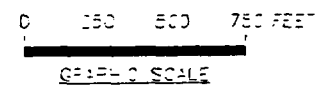
FIG. NO. 28



EXPLANATION

- MONITORING WELL SHOWING CONCENTRATION OF TOTAL VOLATILE ORGANIC COMPOUNDS (ug/l)
- CONTOUR OF CONCENTRATION OF TOTAL VOLATILE ORGANIC COMPOUNDS IN SHALLOW GROUNDWATER (ug/l)
- ND NO VOLATILE ORGANIC COMPOUNDS DETECTED OR PRESENCE ATTRIBUTABLE TO LABORATORY AND/OR FIELD CONTAMINATION OF THE SAMPLE
- * PRESENCE OF CONTAMINANTS IS ATTRIBUTABLE TO:
 a) LABORATORY AND/OR FIELD CONTAMINATION OF THE SAMPLE (i.e. methylene chloride, carbon tetrachloride)
 b) NATURAL CAUSES (e.g. carbon disulfide)

NOTES:
 1. FOR LABORATORY DILUTIONS, REPLICATES, AND FIELD REPLICATE SAMPLES, AN AVERAGE VALUE IS PROVIDED.
 2. FOR ADDITIONAL INFORMATION, REFER TO TABLES 57 AND 58.

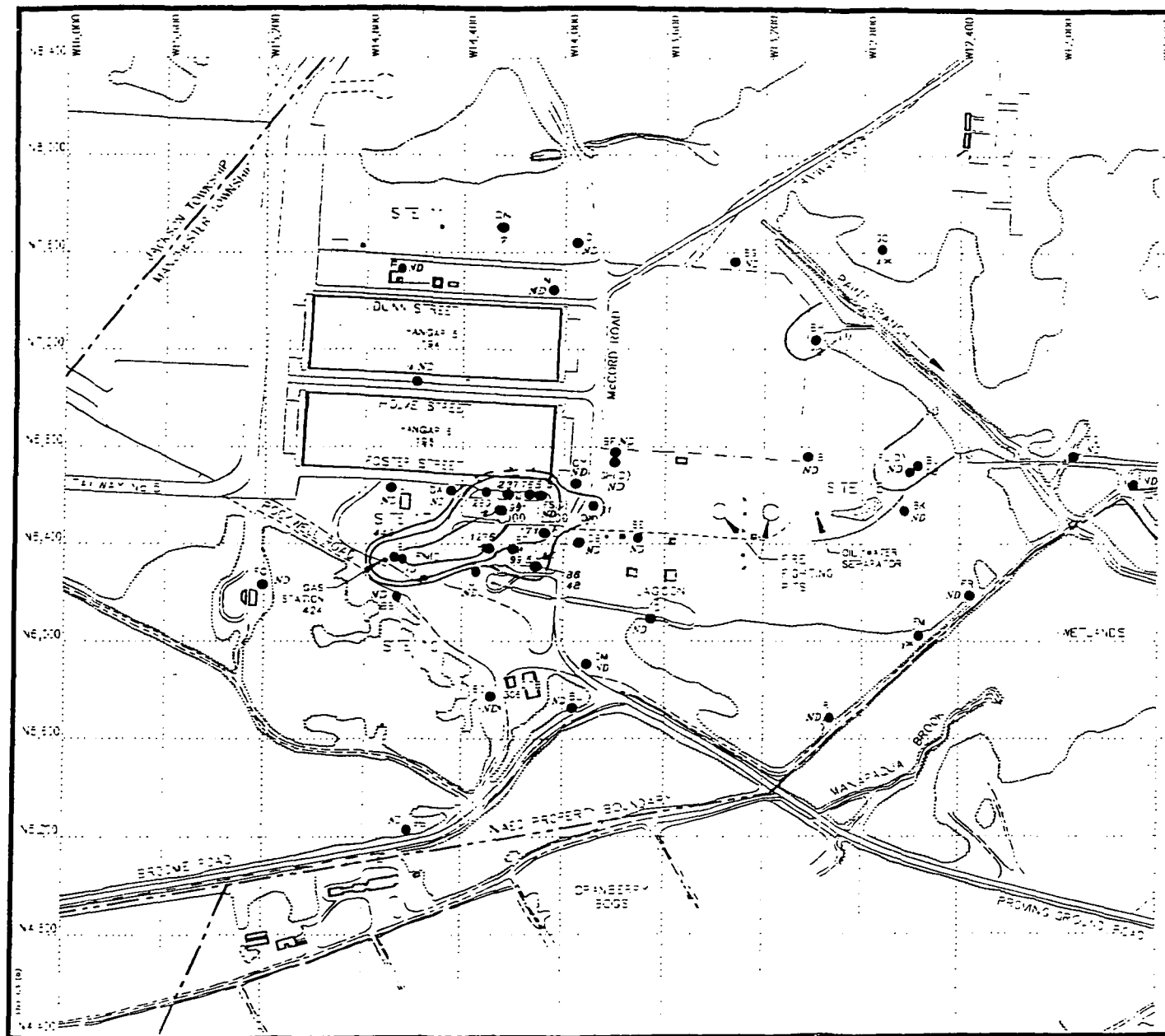


FILE AREA C
 CONCENTRATION OF TOTAL VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER, FIRST SAMPLING ROUND
 PROJECT REMEDIAL INVESTIGATION - PHASE II
 NATIONAL AIR ENGINEERING CENTER
 AKEN, NEW JERSEY

Dames & Moore
 DRAFTER NEW JERSEY

SCALE AS NOTED DATE 7-16-82 1999 31 73 NC 7983-013 2D





EXPLANATION:

- MONITORING WELL SHOWING CONCENTRATION OF TOTAL VOLATILE ORGANIC COMPOUNDS (ug/l)
- CONTOUR OF CONCENTRATION OF TOTAL VOLATILE ORGANIC COMPOUNDS IN SHALLOW GROUNDWATER (ug/l)
- ND NO VOLATILE ORGANIC COMPOUNDS DETECTED OR PRESENCE ATTRIBUTABLE TO LABORATORY AND/OR FIELD CONTAMINATION OF THE SAMPLE
- x PRESENCE OF CONTAMINANTS ATTRIBUTABLE TO a) LABORATORY AND/OR FIELD CONTAMINATION OF THE SAMPLE (i.e. methylene chloride, acetone, nitrobenzene or b) NATURAL CAUSES (i.e. carbon disulfide)

NOTES:

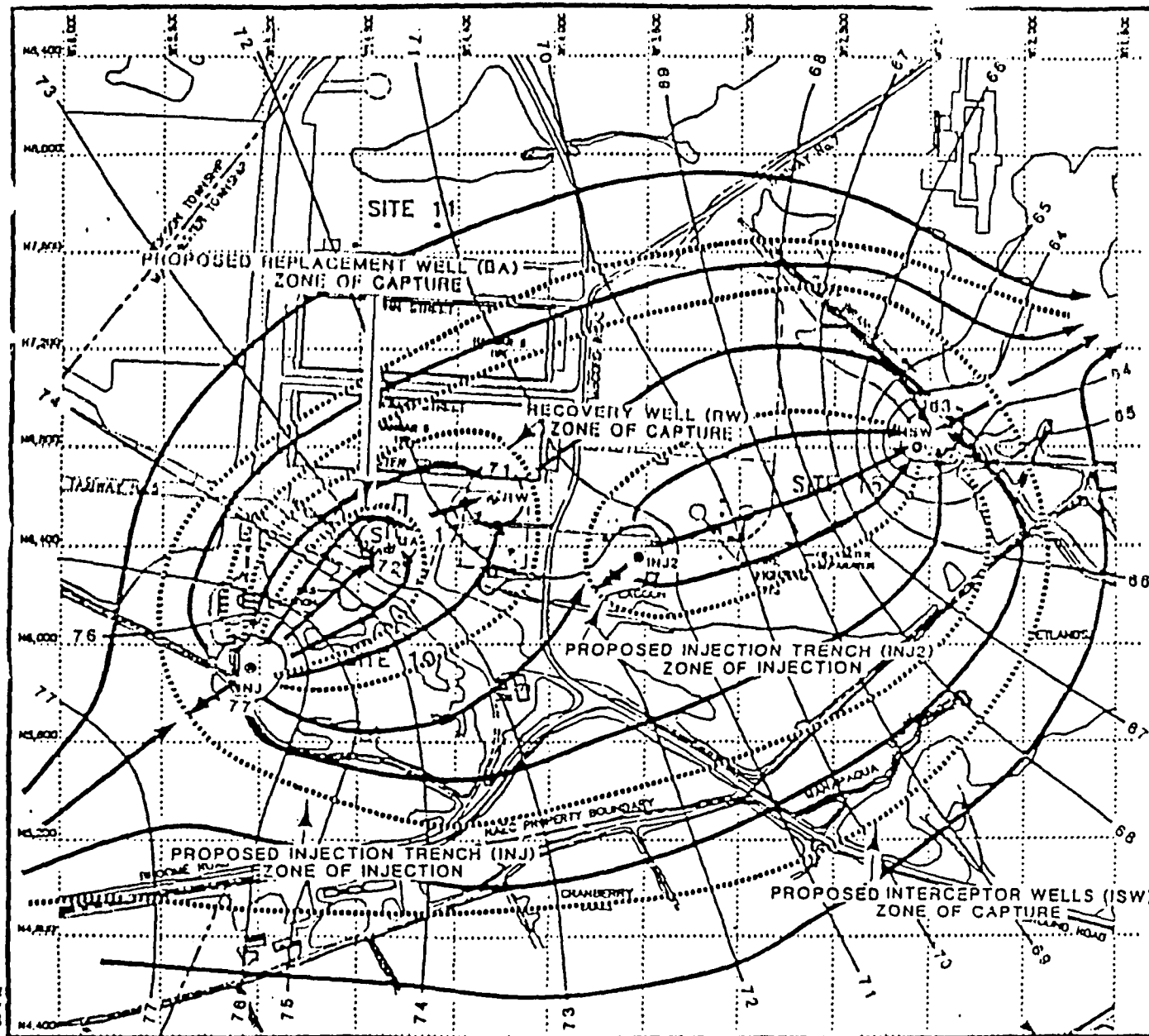
- 1. FOR LABORATORY DILUTIONS, REPLICATES, AND FIELD REPLICATE SAMPLES, AN AVERAGE VALUE IS PROVIDED
- 2. FOR ADDITIONAL INFORMATION, REFER TO TABLES B7 AND B8

0 150 300 450 600 750 FEET
GRAPHIC SCALE

CONCENTRATION OF TOTAL VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER, SECOND BAMP, NO. 100, REMEDIAL INVESTIGATION - PHASE II
NATIONAL AIR ENGINEERING CENTER
LAKE HESTER, NEW JERSEY

Dames & Moore

SCALE AS NOTED DATE 7-15-90



LOCATION MAP

KEY:

- EXISTING RECOVERY WELL
- TEST WELL LOCATION
- PROPOSED INTERCEPTOR WELLS
- PROPOSED INJECTION TRENCH LOCATION
- SELECTED GROUNDWATER FLOW LINES
- PROJECTED WATER TABLE ELEVATION CONTOUR LINE (FEET ABOVE MSL)

DRAFT

0 250 500 750 FEET

GRAPHIC SCALE

FILE AREA C (SITES 10, 16, 17) OPTION 3
PROJECTED ZONE OF CAPTURE
RECOVERY WELL (RW) PUMPING 80 GPM PROPOSED
INTERCEPTOR WELLS (ISW) PUMPING 80 GPM PROPOSED
REPLACEMENT WELL (BA) PUMPING 40 GPM PROPOSED
INJECTION TRENCH (INJ) INJECTING 120 GPM PROPOSED
INJECTION TRENCH (INJ2) INJECTING 80 GPM FOR 30 DAYS
PROJECT REMEDIAL INVESTIGATION - PHASE IIIA
NAVAL AIR ENGINEERING CENTER
LAKEHURST, NEW JERSEY

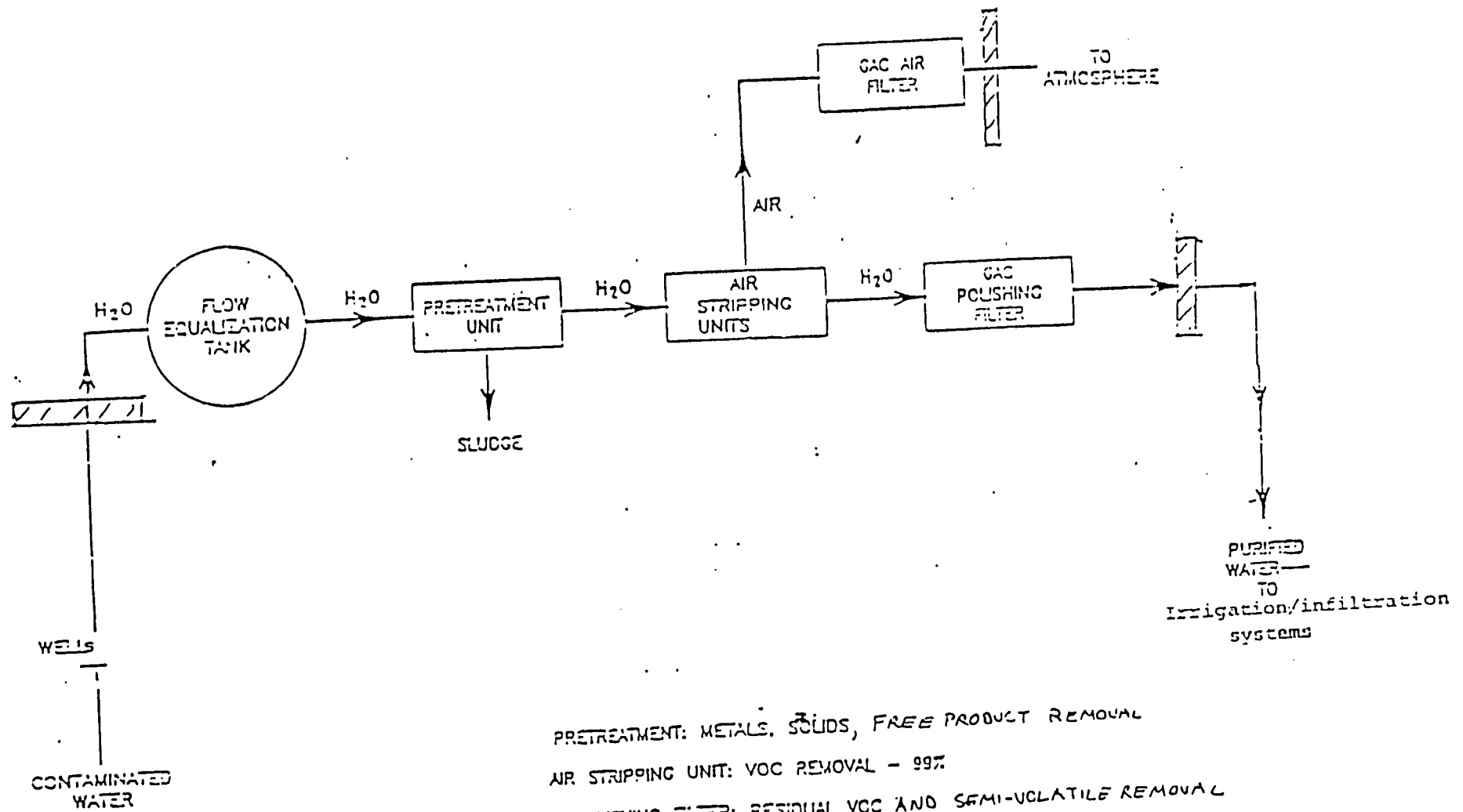


Dames & Moore

SCALE AS NOTED	DESIGNED BY A.P.D.	JOB NO. 7080-014
DATE 7-3-07	APPROVED BY C.I.T.	PAGE NO. 3

ALTERNATIVE # 2

FIGURE # 4



PRETREATMENT: METALS, SOLIDS, FREE PRODUCT REMOVAL

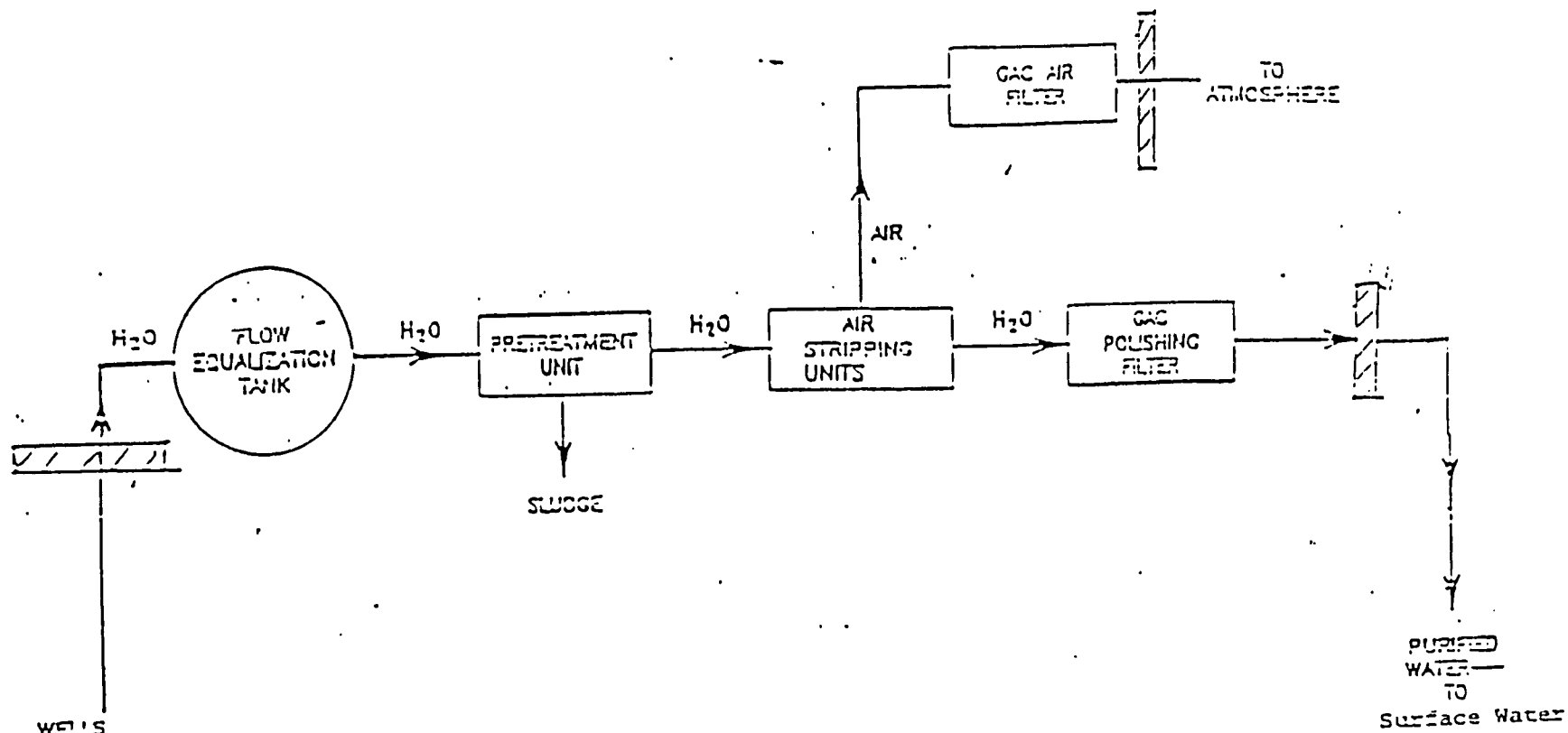
AIR STRIPPING UNIT: VOC REMOVAL - 99%

GAC POLISHING FILTER: RESIDUAL VOC AND SEMI-VOLATILE REMOVAL

GAC AIR FILTER: VOC REMOVAL FROM EXHAUST AIR

ALTERNATIVE # 3

FIGURE # 5

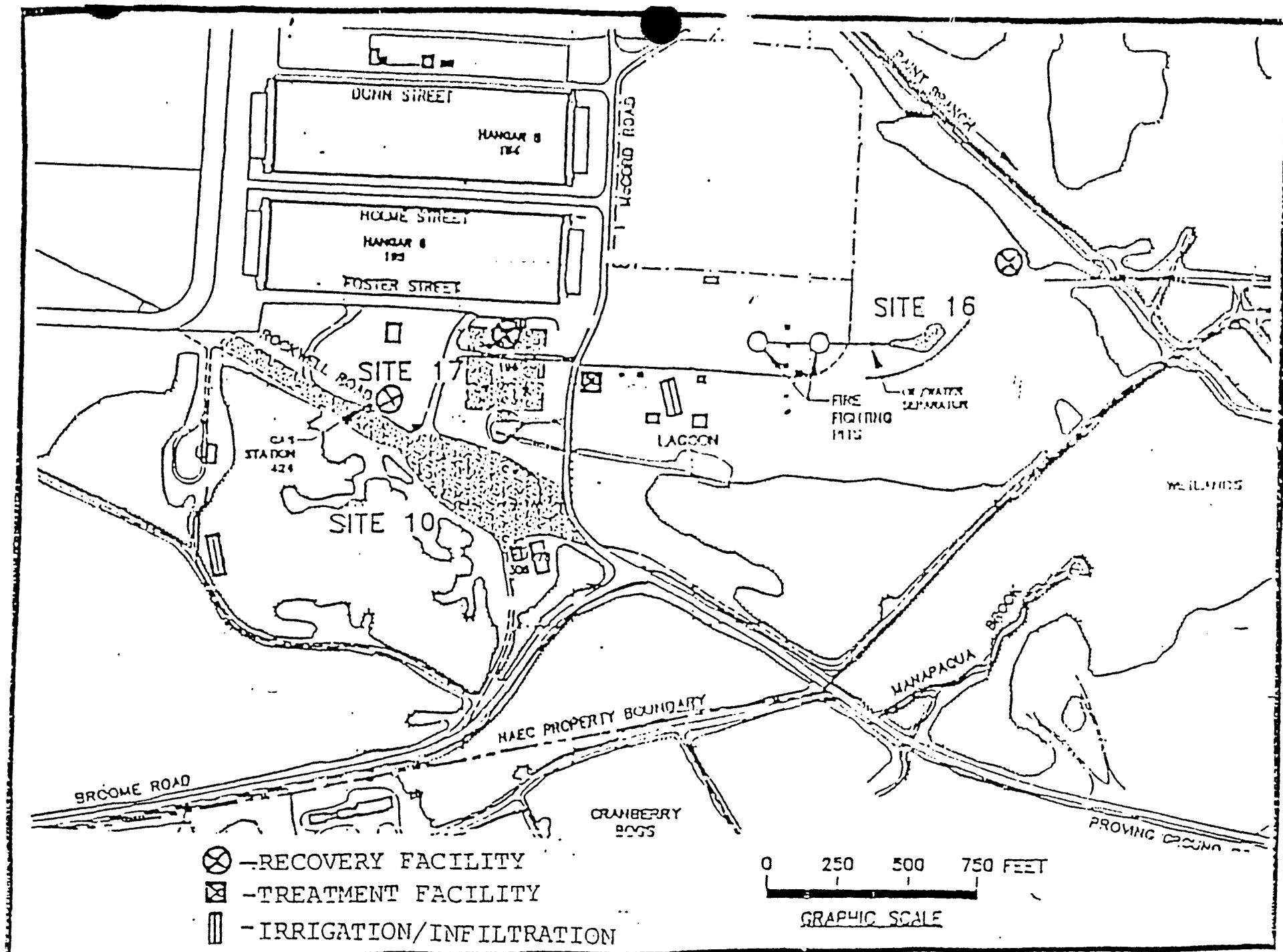


PRETREATMENT: METALS, SOLIDS, FREE PRODUCT REMOVAL

AIR STRIPPING UNIT: VOC REMOVAL - 99%

GAC POLISHING FILTER: RESIDUAL VOC AND SEMI-VOLATILE REMOVAL

GAC AIR FILTER: VOC REMOVAL FROM EXHAUST AIR



Appendix A
List of Contacts and Interested Parties
for the Navy Lakehurst site

Naval Air Engineering Center

Captain David J. Raffetto (908) 323-2380
Commanding Officer
Naval Air Engineering Center
Lakehurst, New Jersey 08733-5000

Lewis Lundberg, Executive Director (908) 323-2290
Naval Air Engineering Center
Lakehurst, New Jersey 08733-5000

Commander Thomas Erefzke (908) 323-2601
Public Works Officer
Naval Air Engineering Center
Lakehurst, New Jersey 08733-5065

Frank Montarelli, Public Affairs Officer (908) 323-2620
Naval Air Engineering Center
Lakehurst, New Jersey 08733-5041

Norther Division, Naval Facilities Engineering Command

Mr. Thomas G. Sheckels (215) 897-6424
Restoration Management Section
Northern Division
Naval Facilities Engineering Command
Philadelphia, Pennsylvania 19112-5094

Mr. Lonnie Monaco
Public Affairs Office
Northern Division
Naval Facilities Engineering Command
Bldg. 77LOW
Philadelphia, Pennsylvania 19112-5094

(215) 897-6431

Federal Elected Officials

Senator William Bradley
1709 Yauxhall Road
P.O. Box 1720
Union, New Jersey 07083

(201) 688-0960

Senator Frank R. Lautenberg
208 White Horse Pike
Suite 18-19
Barrington, NJ 08007

(609) 757-5353

Congressman H. James Saxton
115 High Street
Mount Holly, NJ 08060

(609) 261-5800

Congressman Christopher H. Smith
655 Park Avenue
Freehold, NJ 07728

(908) 780-0707

Congressman Frank Pallone, Jr.
540 Broadway
Room 119
Long Branch, New Jersey 07740

(201) 571-1140

State Elected Officials

Senator Leonard T. Connors, Jr.
620 West Lacey Road
Forked River, New Jersey 08731

(609) 693-6700

Senator John F. Russo (908) 240-2200
917 North Main Street
Toms River, New Jersey 08753

Assemblyman Jefferey Moran (609) 693-6700
620 West Lacey Road
Forked River, New Jersey 08731

Assemblyman Christopher J. Connors (609) 693-6700
620 West Lacey Road
Forked River, New Jersey 08731

Assemblyman John Paul Doyle (908) 240-2200
917 North Main Street
Toms River, New Jersey 08753

Assemblywoman Marlene L. Ford (908) 899-1208
2611 Spruce Street
Point Pleasant, New Jersey 08742

U.S. Environmental Protection Agency Officials

Jeff Gratz (212) 264-6667
Project Manager
Room 2930, Division ERRD
U.S. Environmental Protection Agency
Region II
26 Federal Plaza
New York, New York 10278

John Filipelli (212) 264-6723
Federal Facilities Coordinator
Room 500
U.S. Environmental Protection Agency
Region II 26 Federal Plaza
New York, New York 10278

Superfund Community Relations Coor. (212) 264-2515
U.S. Environmental Protection Agency
Region II
Office of External Programs, Room 907
26 Federal Plaza
New York, New York 10278

New Jersey State Department of Environmental Protection

Christine Holstrom, Case Manager (609) 633-1455
Hazardous Waste Management
New Jersey Department of Environmental Protection
401 East State Street
Trenton, New Jersey 08625

Kevin Schick (609) 984-3068
Technical Coordinator
Hazardous Site Mitigation
New Jersey Department of Environmental Protection
401 East State Street
Trenton, New Jersey 08625

New Jersey Department of Health

J. Richard Goldstein, M.D. (609) 292-7837
New Jersey Department of Health
CN 360
Trenton, New Jersey 08625

Ms. Laurie A. Pyrch
New Jersey Department of Health
Environmental Health Service
Room 706
CN 360
Trenton, NJ 08625

New Jersey Pinelands Commission

Alan W. Avery, Jr., Commissioner (609) 894-9342
New Jersey Pinelands Commission
15 Springfield Road
New Lisbon, New Jersey 08064

Terrence Moore, Executive Director
New Jersey Pine Lands Commission
15 Springfield Road
New Lisbon, New Jersey 08064

(609) 894-9342

Ocean County Officials

Joseph H. Vicari, Director
Ocean County Board of Freeholders
CN2121
Toms River, New Jersey 08754

(908) 244-2121

Joseph Przywara, Coordinator
Ocean County Health Department
Environmental Health
2191 Sunset Avenue
Toms River, New Jersey 08753

(908) 341-9700

A. Jerome Walnut, Chairman
Ocean County Environmental
11 East 12th Street
Barnegat Light, New Jersey 08006

(908) 349-1152

Dover Township Officials

Hon. W. Thomas Renkin
Mayor of Dover Township
P.O. Box 728
33 Washington Street
Toms River, New Jersey 08754

(908) 341-1000

Ian Borden
Dover Township Environmental Commission
33 Washington Street
P.O. Box 728
Toms River, New Jersey 08754

(908) 341-1000

Manchester Township Officials

Hon. Jane Cardo Cameron (908) 657-8121
Mayor of Manchester Township
One Colonial Drive
Lakehurst, New Jersey 08733

Wynn A. Mauer, Chairman (908) 657-8121
Manchester Township Municipal Utilities Authority
One Colonial Drive
Lakehurst, New Jersey 08733

William Jamieson, Jr., Chairman (908) 657-8121
Manchester Township Environmental Commission
One Colonial Drive
Lakehurst, New Jersey 08733

Jackson Township Officials

Hon. Arthur F. Conway (908) 928-1200
Mayor of Jackson Township
R.D. 4
P.O. Box 100
Jackson, New Jersey 08527

William A. Santos, Administrator (908) 928-1200
Township of Jackson
R.D. 4
P.O. Box 100
Jackson, New Jersey 08527

William Bangs, Chairman (908) 928-1200
Jackson Township Environmental Commission
R.D. 4
P.O. Box 100
Jackson, New Jersey 08527

Borough of Lakehurst Officials

Hon. Nicholas Kamai
Mayor of Lakehurst Borough
5 Union Avenue
Lakehurst, New Jersey 08733

(908) 657-4141

Robert J. Morris
Borough of Lakehurst
5 Union Avenue
Lakehurst, New Jersey 08733

(908) 657-4141

Plumstead Township Officials

Hon. Ronald S. Dancer
Mayor of Plumstead Township
31 Main Street
New Egypt, New Jersey 08533

(609) 758-2241

Community Groups/Organizations

Pine Lake Park Association
1616 Seventh Avenue
Toms River, New Jersey 08757

(908) 341-3653

Media Organizations

Advanced News
2048 Route 37 West
Lakehurst, New Jersey 08733

(908) 657-8936

Alyn Ackerman
Asbury Park Press
3601 Highway 66
P.O. Box 1550
Neptune, New Jersey 07754-1550

1-800-822-9770

Debra Coombe
Newark Star Ledger
27 Washington Street
Toms River, New Jersey 08753 (908) 244-7171

New Egypt Press
37 Main Street
P.O. Box 288
New Egypt, New Jersey 08533 (609) 758-2112

Ocean County Leader
611 Laurel Avenue
Point Pleasant Beach, New Jersey 08742 (908) 899-1000

Robert LaTorte
Ocean County Review
715 Boulevard
Seaside Heights, New Jersey 08751 (908) 793-0147

Ocean County Reporter
8 Robbins Street
P.O. Box 908
Toms River, New Jersey 08754 (908) 349-1501*

Theresa Hollifield
Ocean County Observer
CN 2449
8 Robbins Street
Toms River, New Jersey 08754 (908) 349-3000

Shawn Marsh
WJLK Radio
Press Plaza
Asbury Park, New Jersey 07712 (201) 774-7700

Joan Jones
WJRZ Radio
22 West Water Street
P.O. Box 100
Toms River, New Jersey 08754 (908) 270-5757

Doug Doyle
WUEM Radio
U.S. Highway 9
Bayville, New Jersey 08721

(908) 269-0927

Gary Myervich
Adelphia Cable
830 Highway 37 West
Toms River, New Jersey 08753

(908) 341-8818

Abi Montefiore
Monmouth Cable
P.O. Box 58
Belmar, New Jersey 07719

(908) 681-8222

Ed Rogers
WNJN-TV
1573 Parkside Avenue
Trenton, New Jersey 08638

(609) 530-5252

APPENDIX B

PLEASE SIGN IN

PUBLIC MEETING TUESDAY, OCTOBER 2, 1990

PROPOSED INTERIM REMEDIAL ACTION PLANS (PIRAPs)

FOR AREA C (SITE 10, 16 AND 17)

AND

AREA H (SITE 32)

NATAL AIR ENGINEERING CENTER

LAKEHURST, NEW JERSEY 08733

YOUR NAME

ADDRESS

APT D.S. RAFFETTO	CO NAEC Lakehurst NJ 08733
Lucy Bottomley	10 Bayview Ave Island Heights
Frank Montanelli	PAO NAEC Lakehurst NJ 08733
Patricia Hodgson	212 Cedar St. Lakehurst NJ 08733
Heleen V. Linn	403 Leland St. Lakehurst NJ 08733
Carmelle Keane	211 Cedar St. Lakehurst NJ 08733
Kimberly Sucha	Ocean Co. Pl. Bd - 119 Hooper Ave Toms River 08754
Jeffrey Grotz	USEPA Region II, 262 Federal Plaza NY NY
ARTI DALAL	203 MAPLE HILL DR. WOODBRIDGE NJ 07095
Eileen Delands	NORTH DIV Phila. PA
Charles J. Encelini	Deputy PAO NAEC Lakehurst NJ 08733
LONNIE MONTGOMERY	NORTH DIV Phila. PA
Shirley Williams	NJ DEP
Chris Holstrom	NJ DEP
Kevin Schick	NJ DEP
Louise A. Lynch	NJ DOH

PLEASE SIGN IN

PUBLIC MEETING TUESDAY, OCTOBER 2, 1990

PROPOSED INTERIM REMEDIAL ACTION PLANS (PIRAPs)

FOR AREA C (SITE 10, 16 AND 17)

AND

AREA H (SITE 32)

NAVAL AIR ENGINEERING CENTER

LAKEHURST, NEW JERSEY 08733

YOUR NAME

ADDRESS

Ilana Lettman, Manchester Twp Env. Commission
7 Gloria Dr., Lakehurst 08733

Arvin Hartmann PO Box 561, Lakehurst, 08733

WHIT ANDREWS Ocean County Observer, 8 Robbins St, Toms River 07554

Alan Corsan - councilman - Lakehurst.

JOAN LAWLER Rep. of Cong. H. JAMES SAKTON

CARMEN J. GICALESE Councilman - Manchester Township

W. L. Mills NDI Engineering Bricktown

Wm. H. H. 5 Union Ave Lakehurst N.J.

PATRICK CLINCH NDI ENGINEERING CO. BRICKTOWN

J. R. WALTON NDI ENGINEERING Co. BRICKTOWN.

Jane Nisbett Advance News / Holly Pines Resident

Sam FUSARO 245 Brandon Rd. Manchester NJ 08733

ROBERT KIRKBRIGHT NAEC LAKEHURST

APPENDIX C



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION I

JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, NEW YORK 10278

SEP 17 1990

Mr. Richard Gillespie, Director
Environmental Division (Code 014)
Naval Facilities Engineering Command
U.S. Naval Base, Building 77L
Philadelphia, PA 19112

Dear Mr. Gillespie:

This is to notify you that, after reviewing the Navy's Focused Feasibility Studies and associated documents for NAEC Lakehurst, the U.S. Environmental Protection Agency (EPA) supports the Navy's proposed interim remedial action plans for Areas A and C.

As the plans are subject to public comment, we are deferring our final concurrence on the proposed interim remedies until we have reviewed comments from the public, the Navy's responsiveness summaries, and the draft Records of Decision.

The proposed interim remedial actions consist of ground water remediation at two areas on the facility (Areas A and C). Specifics include:

- extraction of contaminated ground water,
- pre-treatment system for the removal of metals, solids, etc. from ground water,
- air stripper for removal of volatile organic compounds (VOCs) from the ground water,
- activated carbon absorber for air stripper effluent,
- granular activated carbon polishing filter for residual VOC and semi-volatile removal from treated ground water, and
- reinjection of treated ground water (which will meet Federal and State drinking water standards) by spray irrigation or infiltration trenches upgradient of contaminated ground water.

These interim actions are meant to address the immediate concern of contaminant migration in ground water. We understand that final actions for these areas will include remediation of soils and sediment as well as final actions for the cleanup of ground water. In accordance with the Interagency Agreement between EPA and the Navy, Proposed Plans for final actions at Areas A and C as well as all areas of concern at NAEC Lakehurst will be submitted to EPA no later than January, 1993.

We are pleased to continue the cooperative working relationship established with the Navy to address environmental concerns at NAEC Lakehurst. If you have any questions regarding the subject of this letter, please call me at (212) 264-2525, or Jeffrey Gratz, USEPA Project Manager at (212) 264-6667.

Sincerely,

/S/

Constantine Sidamon-Eristoff
Regional Administrator

cc: C. Holstrom, NJDEP
R. Kirkbright, P.E., NAEC Lakehurst
L. Monaco, North. Div., Navy

APPENDIX D

Let's protect our earth



State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT
CN 528
Trenton, N.J. 08625-0028
(609) 633-1408
Fax # (609) 633-1454

26 SEP 1990

Mr. Orlando Monaco
Northern Division, Naval Facilities Engineering Command
Philadelphia Naval Shipyard
Philadelphia, PA 19112-5094

Dear Mr. Monaco:

Re: Lakehurst NAEC
Proposed Interim Remedial Action Plan
for Area C and Area H

The New Jersey Department of Environmental Protection has reviewed the Proposed Plans (PPs) and concurs with the pump and treat method proposed as an interim action. The Department's approval is conditional pending review of the Draft Record of Decision (ROD) for these areas. If there are no substantial changes in the ROD, NJDEP will approve the action.

If you have any questions, please contact me at (609) 633-1455.

Sincerely,

Christina Holstrom, Case Manager
Bureau of Federal Case Management

CH:mcs

c: Jeffrey Gratz, USEPA
Lucy Bottomley, NAEC
Kevin Schick, DHSM/BEEPA
Linda Welton, DWR/BG&FA

