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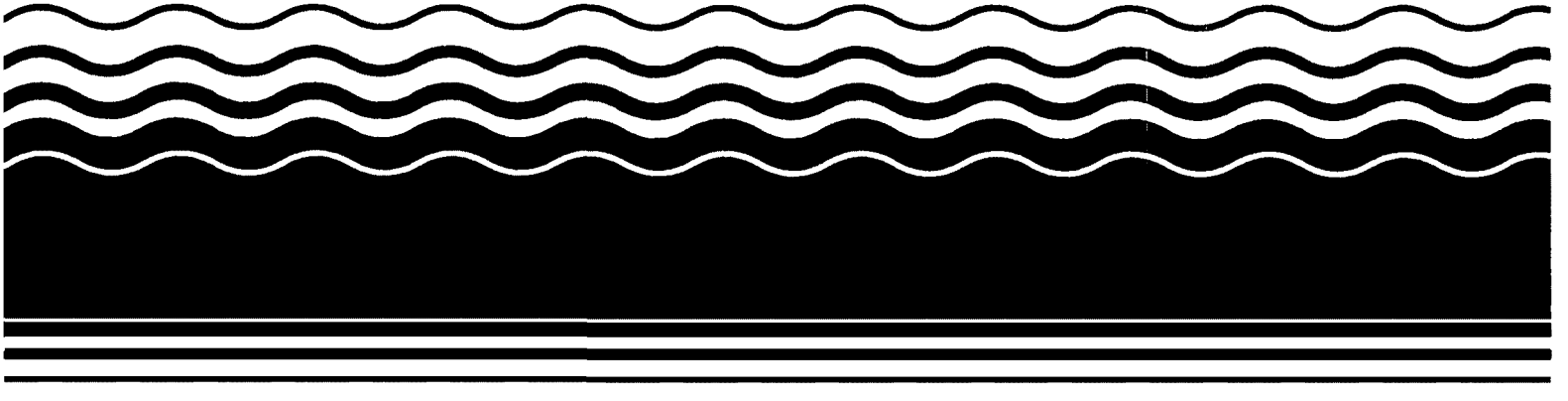
EPA Superfund Record of Decision:

Naval Air Engineering Station, Area H Groundwater, Lakehurst, NJ 2/20/1996



NAVAL AIR ENGINEERING STATION, Lakehurst, NJ

RECORD OF DECISION

Area H Groundwater

10 January 1996

10 January 1996

RECORD OF DECISION
DECLARATION STATEMENT
AREA H GROUNDWATER
NAVAL AIR ENGINEERING STATION

FACILITY NAME AND LOCATION

Naval Air Engineering Station
Lakehurst, New Jersey 08733

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected alternative to address Area H groundwater at the Naval Air Engineering Station in Lakehurst, New Jersey. The selected alternative 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 Substance Pollution Contingency Plan.

This decision is based on information contained in the Remedial Investigation (RI) Report (October 1992), the Endangerment Assessment (EA) Report (October 1992), the Focused Feasibility Study for Area H Groundwater (March 1995), the Proposed Plan for Area H Groundwater (August 1995), and sampling data obtained from the Area H interim pump and treat facility (July 1992 - May 1995). These reports and other information used in the remedy selection process are part of the Administrative Record file for Area H, which is available for public review at the Ocean County Library in Toms River, New Jersey.

This document provides background information on the Area, presents the selected alternative, reviews the public's response to the Proposed Plan and provides answers to comments raised during the public comment period.

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

DESCRIPTION OF THE SELECTED REMEDY

The selected alternative to address groundwater at Area H is: continued operation of the existing groundwater treatment facility with modifications to enhance system performance.

The objectives of the proposed action are to: 1) remediate Area H groundwater to meet applicable or relevant and appropriate requirements (ARARs); and 2) control contaminant plume migration

and treat higher levels of groundwater contamination via the existing groundwater treatment facility.

Extensive monitoring will be performed to show the effectiveness of this alternative and monitor the extent and migration of groundwater contamination (if any).

STATUTORY DETERMINATIONS

This final action for Area H is protective of human health and the environment. The results of this action will attain Federal and State applicable or relevant and appropriate requirements (ARARs).

Captain Leroy Farr (Date)
Commanding Officer
Naval Air Engineering Station
Lakehurst, New Jersey

With the concurrence of:

2/20/96

Jeanne Fox (Date)
Regional Administrator
U.S. Environmental Protection Agency, Region II

DECISION SUMMARY
RECORD OF DECISION
AREA H GROUNDWATER
NAVAL AIR ENGINEERING STATION

SITE DESCRIPTION

The Naval Air Engineering Station (NAES) is located in Jackson and Manchester Townships, Ocean County, New Jersey, approximately 14 miles inland from the Atlantic Ocean (Figure 1). NAES 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. NAES and the surrounding area are located within the Pinelands National Reserve, the most extensive undeveloped land tract of the Middle Atlantic Seaboard. The groundwater at NAES is currently classified by NJDEP as Class I-PL (Pinelands).

NAES lies within the Outer Coastal Plain physiographic province, which is characterized by gently rolling terrain with minimal relief. Surface elevations within NAES 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.

NAES lies 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 NAES 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 NAES. 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 Manapaqua Brook. The Ridgeway and Union Branches then feed Pine Lake; located approximately 2.5 miles east of NAES before joining Toms River. Storm drainage from NAES is divided between the north and south, discharging into the 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 Manapaqua Brook.

Three small water bodies are located in the western portion of NAES: Bass Lake, Clubhouse Lake, and Pickerel Pond. NAES 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 NAES 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.

The areas surrounding NAES are, in general, not heavily developed. The closest commercial area is located near the southeastern section of the facility 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 NAES are commercial cranberry bogs, the drainage from which crosses the southeast section of NAES property.

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 6 percent commercially developed.

In the vicinity of NAES, 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 NAES. 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 NAES, which supplies water to a very small population (probably less than 1,000) in the immediate vicinity of NAES.

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. In 1919, the U.S. Army assumed control of the site and named it Camp Kendrick. Camp Kendrick was turned over to the Navy and formally commissioned Naval Air Station (NAS) Lakehurst, New Jersey on June 28, 1921. The Naval Air Engineering Center (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. In January 1992, NAEC was renamed the Naval Air Warfare Center Aircraft Division Lakehurst (NAWCADLKE), due to a reorganization within the Department of the Navy. In January 1994, the NAWCADLKE was renamed the Naval Air Engineering Station (NAES), due to continued reorganization within the Department of the Navy.

Currently, NAES's mission is to support programs of technology development, engineering, developmental evaluation and verification, systems integration, limited manufacturing, procurement, integrated logistic support management, and fleet

engineering support for Aircraft-Platform Interface (API) systems. This includes terminal guidance, recovery, handling, propulsion support, avionics support, servicing and maintenance, aircraft/weapons/ship compatibility, and takeoff. The Station provides, operates, and maintains product evaluation and verification sites, aviation and other facilities, and support services (including development of equipment and instrumentation) for API systems and other Department of Defense programs. The Station also provides facilities and support services for tenant activities and units as designed by appropriate authority.

NAES and its tenant activities now occupy more than 300 buildings, built between 1919 and 1989, totaling over 2,845,00 square feet. The command also operates and maintains: two 5,000-foot long runways, a 12,000-foot long test 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.

In the past, the various operations and activities at the Center 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.

SITE HISTORY

Area H is located in the central portion of the NAES, to the south of Area G (Figure 2). Area H consists of Sites 2, 21 and 32. The predominant physical feature in Area H is the Recovery System Track Sites (RSTS), Site 32, which consists of the launch end of five system test tracks and ancillary facilities (Figure 3). The test tracks are used to launch sled-mounted aircraft or jet engines that simulate aircraft landings on aircraft carriers. The sleds are arrested at the other end of the tracks to test arresting cables and nets. The tracks, which resemble railroad tracks, are one to one and one-half miles long. Ancillary facilities consist of several buildings used for storage and maintenance of equipment and supplies. Site 32 is believed to be responsible for the groundwater contamination present at Area H.

Tow Way No. 11 is located at the end of the test track and runs southeastward from Area H toward Area I and the southeastern NAES boundary. Several small buildings and two non-potable water supply wells are also present near the end of the tracks. The test tracks and buildings are surrounded by wooded areas which are transected by several dirt roads. To the southeast of the test tracks and associated buildings are several small duck ponds. The Manapaqua Brook traverses the southeast corner of Area H, immediately southeast of the ponds. The general direction of groundwater flow in Area H is to the east/southeast (Figure 4).

Of note, the results of previous investigations and removal actions conducted at former Sites 2 and 21 in Area H have documented the absence of any significant contamination posing a threat to human health or the environment. Site 2, located between

tracks 1 and 2, had 200 cubic yards of visually oil-stained soil, removed in 1981. At Site 21, 22 cubic yards of petroleum hydrocarbon contaminated soil were removed in March 1991. Proposed Plans were prepared for these former Sites, proposing the "no-action" alternative, and released for public comment. Following 30-day public comment periods, the Navy, with EPA, issued Records of Decision, documenting the no action determination for these two sites.

Potential sources of contamination at Site 32 included:

1. A drainage system located at the end of each of the five test tracks designed to receive oil and fuel runoff. Each system consisted of a catch basin at the end of the track connected to a dry well located adjacent to the track. The five dry wells, which were constructed in 1957 of terra-cotta and/or concrete, were about 5 to 6 feet in diameter and 6 to 8 feet deep. Some were unlined and some had bottoms. As part of standard operating procedures, fuel drained from the jet engines would enter the catch basin and drain into the dry well. It was originally intended that the fuel would then be pumped out for reuse or disposal. However, the fuel was not pumped out until 1979, when access ports to the dry wells were discovered. Subsequently, the dry wells were pumped out by a contractor periodically until about 1985 or 1986, when they were taken out of service and the drains were plugged. The dry wells were excavated and removed in October 1988. Currently, the fuel drained from the jet engines is collected in a container attached to the engines and disposed of appropriately. During the 22-year period that the dry wells were not pumped, oily waste may have run off into swales between the tracks that led to a swale leading to the north of the launching area from the beginning of Track 1. The swale is not connected to any of the streams that traverse NAES and discharge to other major streams in the area. The quantity of waste released is not known.

2. A 1,500-gallon underground fuel storage steel tank located near Building 408, at the south launching end of Test Track No. 1. The tank, which was used initially to store JP-4 and later JP-5, was installed in 1958, was taken out of service around 1985, and was removed in April 1989. The tank was connected to a pump housed in an adjacent shed (Building 518). It was reported that when the tank was excavated and removed, the soil adjacent to the tank on the northern side was saturated with fuel. It was also reported that leaky valves in the pump house and spills from overfilling the tank were the primary sources of fuel releases.

3. A 15,000-gallon underground JP-5 fuel storage tank and a 400-gallon underground alcohol tank located adjacent to Building 393, to the east of Tracks 4 and 5. The tanks were connected

to pumps housed in an adjacent shed (Building 406). The tanks, which served as the central RSTS fuel storage for jet sled operations, were installed in 1958, taken out of service in 1986, and excavated and removed in April 1989.

4. A 5,400-gallon above ground JP-5 fuel storage tanker located adjacent to Building 393. This tanker was placed there around 1986 to replace a nearby 15,000-gallon underground tank which was taken out of service at that time (see Item 3 above). The 5,400-gallon tanker was later replaced by a 2,000-gallon tanker. Building 393 is the pump house associated with the tank. It was reported that on May 12, 1989, approximately 1,200 gallons of JP-5 were spilled as a result of a ruptured hose in the pump house. Contaminated soil was excavated from a drainage swale by NAES Environmental Branch personnel, placed in 65, 55-gallon drums, and disposed of at a permitted off-site facility. There was no direct migration of fuel to a surface water body.

5. A 500 to 1,000-gallon underground steel tank used to store No. 2 heating fuel. The tank, which was located near Building 397, was removed around 1982. No evidence of leakage was reported.

6. Potential spills in the area of Buildings 388 and 397. Prior to 1980, this area was used as a storage area for drums containing fuel, solvents and oils. Building 388 and the surrounding area were also used for maintenance on jet sleds and other equipment.

7. Numerous documented, and potentially undocumented, small volume spills resulting from operations at the site. The most probable materials spilled are jet fuels.

INITIAL INVESTIGATIONS

As part of the DOD Installation Restoration Program and the Navy Assessment and Control of Installation Pollutants (NACIP) program, an initial Assessment Study was conducted in 1983 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 study identified a total of 44 potentially contaminated sites. An additional site, Bomarc, was also investigated by NAES. The Bomarc Site is the responsibility of the U.S. Air Force and is located on Fort Dix adjacent to the western portion of NAES. A Remedial Investigation (RI) 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 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, an ordnance site (Site 41) and an Advanced Underground Storage Facility (Site 43), were deleted from the Remedial Investigation because they had already been addressed through previous investigations or standard removal procedures. In 1987 NAES was designated as a National Priorities List (NPL) or Superfund site under the federal Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

ENVIRONMENTAL INVESTIGATIONS

Investigations at Area H were initiated from 1981 to 1984 by NAES, with the installation of a series of groundwater monitoring wells, which were monitored on a regular basis for the presence of free product. Six groundwater monitoring wells were installed by NAES. The wells were monitored for about three years for the presence of floating fuel product. None was detected. Groundwater samples were not collected for analysis. The locations of all groundwater sampling locations are indicated in Figures 5 and 6. Additional actions conducted at Area H include:

Phase I Remedial Investigation (1985-1986)

Analyses of groundwater samples collected from two monitoring wells and one non-potable water supply well revealed contamination with alkylbenzenes (BTEX). Other media were not investigated. Based on the findings of the Phase I investigation, additional investigations were recommended at the sites in Area H. Table 1 provides a summary of Phase I groundwater data in Area H.

Soil Gas and Groundwater Screening Survey (May - June 1988)

A soil gas and groundwater screening survey was conducted at and downgradient from several sites in Area H to determine possible source areas. The survey indicated the presence of floating product at Site 32 in the drainage swale between Test Tracks Nos. 3 and 4. Contamination of groundwater by VOCs was also detected and appeared to extend to a distance of at least 800 feet southeast (downgradient) of the launching end of the test tracks. The data suggested that more than one source of contamination may exist. On the basis of these data, additional investigations were recommended.

Phase II Remedial Investigation (1988)

Two rounds of groundwater samples were collected from Site 2. The only compound detected in the analysis of these samples was ethylene glycol, which was detected in the second round sample only.

The results of sampling conducted at Site 21 indicated the absence of any significant contamination posing a threat to human health or the environment.

Analyses of groundwater, soil and sediment samples at Site 32 revealed contamination of all media with VOCs, SVOCs, metals, and

PHC. Five dry wells were excavated and removed from the site. A groundwater contamination plume appears to extend beyond the limits of the investigation. Table 1 provides a summary of Phase II groundwater data in Area H.

Aquifer Characterization Study (1990)

A short-term pump test was conducted on two monitoring wells (GG and GX) to evaluate hydrologic properties of the aquifer. Analysis of samples collected from the wells during the tests revealed volatile and semi-volatile organic contamination. Floating product was also detected in monitoring well GX during the pump test. Soil samples were collected from a test pit excavated at the site for soil flushing, biological and stabilization bench-scale treatability studies. Three additional soil samples were collected from soil borings drilled at the site to further characterize the nature of soil contamination and assess the feasibility of a soil vapor venting remedial system. Contamination detected in the analysis of these samples was limited to low levels of a few VOC compounds. Table 1 provides a summary of groundwater data collected during the aquifer characterization study in Area H.

Interim Remedial Action - Area H Pump & Treat (1990)

The Navy determined in the spring of 1990, that it had sufficient data to perform an interim remedial action at Area H. Although an indepth risk assessment and comprehensive feasibility study had not been completed, a decision to halt ground water plume migration and treat ground water contamination from Area H was made.

A Proposed Plan, highlighting an interim remedial action to be conducted for Area H groundwater, was issued on September 4, 1990. A public meeting to present the proposed interim action to the public for their approval and comments was held on October 2, 1990. The Record of Decision (ROD) which indicates the selected interim remedial action for Area H groundwater was issued by the Navy on December 14, 1990 and signed by the USEPA, Regional Administrator on February 4, 1991.

The interim alternative implemented includes groundwater pumping, treatment and recharge of treated water back to the aquifer. Groundwater is extracted via two wells at a combined rate of 120 GPM. A new six inch recovery well which was installed at the launch end of the test tracks is pumped at 40 gpm. A new six inch recovery well which was installed downgradient of the plume is pumped at 80 gpm. The original pumping rates when treatment was initiated were 80 GPM for the well at the tracks and 40 GPM for the downgradient well. The pumping rates were modified as the plume migrated past the recovery well at the tracks toward the downgradient recovery well.

The extracted groundwater is pretreated to remove metals, free product and solids. To treat the Volatile Organic Compounds (VOCs) in the extracted groundwater, the water is passed through air stripping columns. Granular activated carbon polishing filters are used for residual VOC and Semi-volatile Organic Compound removal.

The effluent exiting the air stripper is treated by granular activated air filters before being discharged to the atmosphere. The treated water is recharged to aquifer irrigation/infiltration areas located upgradient of contaminated groundwater to form a "closed loop" treatment system.

The treatment system was designed by the Navy and awarded for construction in April 1991. Construction of the facility was completed and began operation in May 1992. This interim remedial action was implemented to halt the spread of contaminated groundwater.

The interim action cost 1.25 million dollars to construct, approximately $325,000 per year to operate and maintain, approximately $70,000 per year for power and approximately $120,000 per year for project oversight.

Table 1 provides a summary of groundwater data collected during interim treatment in Area H.

Phase III Remedial Investigation (1991-1992)

To determine the downgradient and vertical extent of the groundwater contamination plume identified in previous investigations, 16 groundwater samples were collected, using the Hydropunch®, at five locations downgradient of Site 32. One shallow monitoring well (II) and one well pair (IJ and IK) were also installed downgradient of the site. Benzene was detected above Applicable or Relevant and Appropriate Requirements (ARARs) in two samples collected from a location along the presumed axis of the plume. Chlorinated solvents were detected at levels exceeding ARARs/standards in two samples collected from locations at the presumed northern fringe of the alkylbenzene groundwater plume. Soil samples were collected from borings drilled at seven locations where prior sampling had revealed contamination or where potential contaminant sources once existed. Contamination consisting of volatile and semi-volatile fuel components and petroleum hydrocarbons extended to the saturated zone at the locations of the former dry wells near Track 1 and between Tracks 3 and 4, at the former UST near Building 408, and at the southwest corner of Building 397. No significant contamination was detected in the analysis of sediment and surface water samples collected from the man-made ponds downgradient of the site and Manapaqua Brook, and from a drainage swale near Track 1. Table 1 provides a summary of Phase III groundwater data in Area H.

Site 32 Soil (1993-1994)

Investigations conducted at Site 32 identified contamination in the surficial soils in the drainage swales at the launching end of the test tracks, particularly between Tracks 3 and 4. The soils under the dry wells at Tracks 1, 2, 3, and 5 also exhibited contamination. The analysis also confirmed the contamination suspected when a 1,500 gallon tank was removed at the launch end of track 1. The primary contaminant present in soil were petroleum hydrocarbons. Some metals were detected sporadically in soil samples, but none above NJDEP non-residential soil cleanup

criteria.

A Proposed Plan for Site 32 soil was issued on June 4, 1993. A public meeting concerning this Site was held on June 30, 1993 at the Manchester Branch of the Ocean County Library. A Record of Decision (ROD) for Site 32 soil was issued by the Navy on September 14, 1993 and signed by the USEPA on September 27, 1993. The ROD presented the selected action to be Excavation and On-base Recycling. Additional information concerning the decision for this Site is available in the Administrative Record at the Ocean County Library in Toms River, New Jersey.

The contaminated soil was excavated during August 1993. The excavated soil was covered to await implementation of asphalt batching for treatment. The contaminated soil was treated during July 1994 and used as sub-base for road paving at NAES.

Confirmation Sampling for Site 32 Soil (March 1994)

Post-excavation sampling was performed by the Navy CLEAN contract in March of 1994. Samples were collected from each of the five former dry wells which had been removed, the drainage swale, and the UST area near track 1. A total of 13 soil samples were collected. These results indicated that no further action was required for soil at Site 32.

Summary

Sampling of Area H sediment, surface water and post excavation sampling of soil indicate that these media do not pose a risk to human health or the environment.

Based on the results of the interim remedial action, for groundwater, it appears that the existing system is capable of preventing the migration of groundwater contamination. A groundwater flow and contaminant transport model was established to optimize the recovery system in Area H. Modifications to the groundwater recovery system will allow the highest levels ("source areas") of contamination to be captured for remediation.

TABLE 1
Volatile Organic Compounds Which Exceeded EPA MCLs and/or NJDEP PQLs

Area H Groundwater Phase I Results

CONTAMINANT	DETECTED CONCENTRATIONS (µg/l)	EPA MCL (µg/l)	NJDEP PQL (µg/l)
Benzene	ND-5.91	5.0	1.0
Ethylbenzene	ND-456	700.0	5.0

Area H Groundwater Phase II Results

CONTAMINANT	DETECTED CONCENTRATIONS (µg/l)	EPA MCL (µg/l)	NJDEP PQL (µg/l)
Benzene	ND-150	5.0	1.0
Toluene	ND-600	1000.0	5.0
Ethylbenzene	ND-1200	700.0	5.0
Xylenes	ND-6300	10,000.0	2.0
2-Butanone (MEK)	ND-1100	-	300.0
Styrene	ND-57	-	5.0

TABLE 1 (continued)

Area H Groundwater
Aquifer Characterization/Treatability Study

CONTAMINANT	DETECTED CONCENTRATIONS (µg/l)	EPA MCL (µg/l)	NJDEP PQL (µg/l)
Benzene	ND-45	5.0	1.0
Ethylbenzene	48-370	700.0	5.0
Xylenes	200-1300	10000.0	2.0

Area H Groundwater Phase III Results

CONTAMINANT	DETECTED CONCENTRATIONS (µg/l)	EPA MCL (µg/l)	NJDEP PQL (µg/l)
Benzene	ND-5.7	5.0	1.0
1,1,1-Trichloroethane	ND-1.94	200.0	1.0
Trichloroethene	ND-2.02	5.0	1.0
Tetrachloroethene	ND-4.5	5.0	1.0

TABLE 1 (continued)

Area H Groundwater Additional Sampling
Conducted During Operation of Interim Treatment
July 1992 - June 1995

CONTAMINANT	DETECTED CONCENTRATIONS (µg/l)	EPA MCL (µg/l)	NJDEP PQL (µg/l)
Benzene	ND-57	5.0	1.0
Toluene	ND-540	1000.0	5.0
Ethylbenzene	ND-820	700.0	5.0
m+p-Xylene	ND-310	10,000.0	2.0
o-Xylene	ND-2200	10,000.0	1.0
Chloroform	ND-31.95	100.0	1.0
1,1,1-Trichloroethane	ND-152.3	200.0	1.0
cis-1,2-Dichloroethene	ND-125	70.0	2.0
Trichloroethene	ND-81.45	5.0	1.0
Tetrachloroethene	ND-6.63	5.0	1.0
1,1,2,2-Tetrachloroethane	ND-7	-	1.0

NOTE:

Primary Maximum Contaminant Levels (MCLs) are Federally enforceable contaminant levels allowable in public drinking water supplies. They have been established from health-based data by EPA's Office of Drinking Water Regulations (40 CFR 141) established under the authority of the Safe Drinking Water Act. MCLs are periodically revised as more information becomes available. When MCLs are not available, proposed MCLs were used as the comparison criteria for some analytes.

On 13 January 1993, the revised N.J.A.C. 7:9-6 which include the Groundwater Quality Criteria was signed. The criteria establish the groundwater classifications for the Pinelands, including Class I-PL (Preservation Area) and Class I-PL (Protection Area). The actual groundwater criteria are the natural quality and background quality, respectively (N.J.A.C. 7:9-6.7).

Practical Quantitation Levels (PQLs) are the lowest concentration of a constituent that can be reliably achieved among laboratories within specified limits of precision and accuracy during routine laboratory operating conditions. The PQLs will be used to determine compliance with the Groundwater Quality Criteria for Class I-PL groundwater.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

The Proposed Plan for Area H was issued to interested parties on August 16, 1995. On August 24 and 25, 1995, a newspaper notification inviting public comment on the Proposed Plan appeared in The Ocean County Observer and The Asbury Park Press. The notification was also published in the Station's newspaper, The Air Scoop, on September 1, 1995. The comment period was held from September 5, 1995 to October 5, 1995. The newspaper notification also identified the Ocean County Library as the location of the Information Repository.

A Public Meeting was held on September 6, 1995 at the Manchester Branch of the Ocean County Library at 7:00 p.m. At this meeting representatives from the Navy, USEPA and NJDEP were available to answer questions concerning Area H groundwater and the preferred alternative. The attendance list is provided in this Record of Decision as Appendix A. Comments received and responses provided during the public hearing are included in the Responsiveness Summary, which is part of this Record of Decision. A transcript of the meeting is available as part of the Administrative Record.

During the public comment period from September 5, 1995 through October 5, 1995, no written comments were received pertaining to Area H.

This decision document presents the selected alternative (i.e., continued groundwater treatment with modifications to the current recovery system) for Area H, chosen in accordance with CERCLA, as amended by SARA and, to the extent practicable, the National Contingency Plan (NCP). The decision for Area H groundwater is based on the information contained in the Administrative Record, which is available for public review at the Ocean County Library, 101 Washington Street, Toms River, New Jersey.

SCOPE AND ROLE OF RESPONSE ACTION

Studies conducted in Area H between 1985 and 1990 showed that the groundwater in this area had been contaminated with various VOCs as a result of past operations dating back to the 1960s and 1970s. The Navy implemented an interim remedial action to address the contamination prior to the implementation of a final action which is described in this document.

Based on the levels of contamination detected in Area H groundwater during Phase I and II of the Remedial Investigation, an interim Focused Feasibility Study (September 5, 1990) was prepared to evaluate alternatives for controlling contaminated groundwater migration.

The Proposed Interim Remedial Action Plan was issued on September 14, 1990. The Navy proposed and the regulatory agencies (U.S. Environmental Protection Agency and New Jersey Department of Environmental Protection) concurred that a

groundwater extraction, treatment and recharge system was the preferred option to remediate the contaminated groundwater.

An interim Record of Decision was issued on 14 December 1990. This decision document presented the selected remedial action for Area H groundwater. In 1992 an interim treatment system began operation to control the downgradient migration of groundwater contamination. Documentation supporting the interim action conducted at Area H can be found in the Administrative Record for the NAES, at the Ocean County Library in Toms River, NJ.

The decision to recover and treat groundwater in Area H was made to protect human health and the environment by preventing the further migration of groundwater contamination. This decision was made in accordance with CERCLA, as amended by SARA and, to the extent practicable, the NCP.

The selected interim remedy was not a final action for groundwater or soil. The interim action for groundwater was the first cleanup phase of Area H. Based on data obtained from monitoring throughout the interim treatment period, a groundwater model has been produced to design the optimum groundwater extraction scenario capable of controlling the downgradient migration of contamination and also removing the higher "hot spot" area of contamination for treatment.

This document outlines final remedial actions to remediate Area H groundwater and meet Applicable or Relevant and Appropriate Requirements (ARARs) for all media.

SUMMARY OF SITE RISKS

In January 1989, a preliminary health assessment for NAES was conducted by the Office of Health Assessment, Agency for Toxic Substances and Disease Registry (ATSDR). The assessment was required by the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). The assessment was intended to identify potential health risks posed by NPL sites.

Based on available information, NAES was considered to be of potential public health concern because of the risk to human health caused by the possibility of exposure to hazardous substances via contaminated groundwater, soil, sediment, and surface water.

In April 1992, an overall endangerment assessment for NAES was conducted. The objective of this Endangerment Assessment (EA) was to assess the potential current and future human health risks and potential environmental impacts posed by contaminated soils, groundwater, sediment, and surface water at NAES. The specific objectives of the EA were to:

- Apply appropriate human health EA and ecological assessment (ECA) methodologies to fulfill the U.S. Environmental Protection Agency's (EPA) requirement to conduct such assessments.

- Identify the NAES sites that should be targeted to undergo a remedial alternatives evaluation to control or reduce contamination, based on the quantitative human health EA results and the semiquantitative ECA results.

- Identify prudent target remedial objectives such as: (1) source control and monitoring, (2) chemical and media-specific cleanup goals, and (3) other objectives, if applicable, for those sites estimated to require a remedial alternatives evaluation (i.e., sites posing current or future risks or posing unacceptable ecological impacts).

Based on available information, NAES was considered to be a potential public health concern because of the risk to human health caused by the possibility of exposure to hazardous substances via contaminated groundwater, soil, sediment, and surface water.

CONTAMINANTS OF CONCERN

For Area H groundwater, contaminants of concern were determined to be the following: lead, benzene, ethylbenzene, toluene, xylenes, and naphthalene.

LAND USE AND EXPOSURE ASSUMPTIONS

Four different scenarios representing current and potential future land uses were evaluated to assess applicability to the site. Evaluated scenarios included military, light industrial, construction and residential land uses. For each of these scenarios, human exposure is effected by mechanisms that include direct contact, inhalation and ingestion.

Based on current land use conditions within Area H, a light industrial land use scenario was quantified for direct exposure to contaminated groundwater via incidental ingestion.

Although future residential land use conditions were not investigated as part of the risk characterization for Area H, groundwater cleanup levels are based on residential land use assumptions.

HUMAN HEALTH RISK AND HAZARD FINDINGS

Hazards for noncarcinogens are 0.396 which is below the EPA's hazard index criteria value of 1.0. The hazard index values ranged from a minimum value of 2.94×10^{-2} for toluene to a maximum of 2.18×10^{-1} for naphthalene. Carcinogenic risk estimates for groundwater in Area H are within EPA's acceptable risk range of 10^{-4} to 10^{-6}. The overall area groundwater risk represented by the chemical-specific risk estimate for benzene is 1.52×10^{-5}.

These risk numbers are based on non-residential assumptions. If residential assumptions are used, the risk numbers would be higher and would fall out of the EPA acceptable risk range.

ECOLOGICAL ASSESSMENT

As part of the Endangerment Assessment, a Baseline Ecological Evaluation (BEE) was conducted to obtain a description of the ecosystems at NAES. The objective of the BEE was:

- To identify contaminants at each site that are of ecological concern.
- To identify whether sensitive ecological receptors are present or may have been present at the contaminated site.
- To identify potential exposure pathways to sensitive ecological receptors that exist or may have existed
- To determine whether or not sensitive ecological receptors are being or potentially may be adversely impacted by contaminants.

Currently it does not appear that groundwater is having an impact on the ecology of the Area. However, groundwater may be hydraulically connected to downgradient surface water which does have ecological receptors. Past sampling of downgradient surface water and sediment has indicated that groundwater contaminants do not appear to be impacting these possible ecological pathways.

ENDANGERMENT ASSESSMENT SUMMARY

In summary, the results of the EA indicate that contaminants present in groundwater at Area H may pose a concern relative to potential future, exposed populations. Therefore, alternatives for the remediation of groundwater contamination in these Areas may be warranted.

The results of the EA should not be considered a characterization of absolute risks posed to human health or the environment. Rather, risk and hazard index values estimated in the EA should be used to identify potential sources of risks at NAES, with resultant consideration of sites for remedial action. The nine criteria used in the detailed analysis of alternatives were used to help determine the ultimate cleanup alternative.

SUMMARY OF REMEDIAL ALTERNATIVES

Under CERCLA, the alternative selected must be protective of human health and the environment, cost effective, and in accordance with statutory requirements. Permanent solutions to contamination are to be achieved wherever possible. The remedial alternatives considered for the site are summarized below. Detailed descriptions of the remedial alternatives can be found in the FFS (May 1993), which is available in the Administrative Record for NAES.

ALTERNATIVE 1: NO ACTION

Estimated Construction Cost: $ 52,700 (To Abandon Facility)
Estimated Net O&M Cost: $ 0

Estimated Implementation Time Frame: N/A

The groundwater contamination present in Area H is believed to be a result of past activities conducted at various sites. The sources of the contamination are believed to no longer exist. This alternative involves no action to control or remove groundwater contamination at Area H. Under this alternative, the existing treatment of groundwater would be discontinued.

This alternative has been included to provide a baseline for the comparison of other alternatives.

ALTERNATIVE 2: NATURAL RESTORATION/GROUNDWATER MONITORING - DISCONTINUE EXISTING GROUNDWATER TREATMENT

Estimated Construction Cost: $ 210,000
Estimated Net O&M Cost: $ 300,000/yr
Estimated Implementation Time Frame: 1 year

This alternative involves no additional interim actions at Area H other then ground water monitoring of the aquifer and study of the natural restoration processes occurring within the Area. The existing groundwater treatment system would be discontinued. Extensive monitoring of the plume extent and migration would be monitored through the existing well network and additional monitoring wells if necessary. Contaminants would not be treated but would be allowed to reduce naturally. The natural reduction occurring at the site would be studied to determine if the microorganisms at the site have the potential to degrade the VOCs to harmless products.

Under this alternative, no further action to control the source would be taken.

Additional costs involve the installation of up to 10 additional monitoring wells and an initial restoration study to prove that this process will effectively remediate the Area. Yearly operation and maintenance costs include quarterly sampling and analysis, continued study of natural restoration and project oversight.

ALTERNATIVE 3: CONTINUE EXISTING TREATMENT - GROUND WATER PUMPING, TREATMENT AND RECHARGE

Construction Cost: $ 1.25 million (SUNK COST)
Estimated Additional Construction Cost: $ 0
Estimated Net O&M Cost: $ 440,000/yr
Estimated Implementation Time Frame: already implemented

This alternative involves ground water pumping from the existing six inch recovery well (RW-GG) located downgradient of the plume, this well is pumped at 80 gallons per minute (gpm). An existing six inch well (RW-GX) at the launch end of the test tracks is pumped at 40 gpm.

At the existing treatment facility, a tank serves as an

initial flow equalizer. A pretreatment unit is used for metals, free products and solids removal. Air stripping columns and granular activated carbon polishing filters are used to treat the volatile organic contaminants in the extracted groundwater. The effluent exiting the air stripper is treated by granular activated carbon air filters and clean air is discharged to the atmosphere. The treated groundwater, which meets or exceeds Federal and State drinking water standards is recharged to the aquifer at two irrigation/infiltration locations. Treated groundwater which meets Safe Drinking Water Standards is spray irrigated over soil in Area H during temperate months and is infiltrated during winter months.

This alternative has been effective at halting the continued migration of the contaminated plume.

The only modifications to the existing system included under this alternative would be modifications to the sampling frequency. Based on previous sampling results, it is appropriate to reduce the frequency of sampling. The sampling of monitoring wells will be reduced from quarterly to biannually for VOCs and annually for SVOCs and metals. The sampling of deep monitoring wells that have not detected any contamination may be discontinued. Treatment system VOCs will continue to be monitored on a monthly basis. However, the frequency of sampling for semi-volatile organic compounds in the treatment process will be reduced to annually for system influent and quarterly for system effluent.

ALTERNATIVE 4: MODIFICATIONS TO TREATMENT/RECOVERY SYSTEM

Estimated Construction Cost: $ 1.25 million (SUNK COST)
Estimated Additional Construction Cost: $ $ 81,200
Estimated Net O&M Cost: $ 480,000/yr
Estimated Implementation Time Frame: 1 year

This alternative would utilize the existing treatment system as indicated in alternative 3, however changes in recovery well location and pumping intervals would be implemented. Modifications to the existing groundwater recovery system would be made based on the results of the interim treatment system performance and quarterly data and additional modeling conducted in February 1995.

The following modifications would be implemented to improve contaminant recovery and accelerate the remediation of groundwater:

- Pumping of recovery well GX will be reduced. Most of the contamination in the Area has migrated to or past this recovery well. Any groundwater contamination remaining near this well would be captured by downgradient pumping wells.

- An additional well will be placed adjacent to existing monitoring well BN. This well will be pumped at a rate of 60 GPM

to capture the higher levels of contamination. Figure 5 shows the location of the existing and proposed recovery wells.

Under this alternative modifications would be made to the current sampling frequency. Based on previous sampling results, it is appropriate to reduce the frequency of sampling. The sampling of monitoring wells will be reduced from quarterly to biannually for VOCs and annually for SVOCs and metals. The sampling of deep monitoring wells that have not detected any contamination may be discontinued. Treatment system VOCs will continue to be monitored on a monthly basis. However, the frequency of sampling for semi-volatile organic compounds in the treatment process will be reduced to annually for system influent and quarterly for system effluent.

Under this general alternative, three potential modifications to the existing treatment system will be developed individually. Costs associated with each should be considered additional to those shown in Alternative 4.

The individual alternative development presented here is conducted to aid any future decision making processes which center on treatment system optimization. However, in the analysis of alternatives, modification will be treated as a single alternative.

The influent data from the recovery system proposed as alternative 4 will be reviewed to determine if modifications to the current treatment system are possible. These modifications could include one or several of the following alternatives.

Alternative 4T1 Elimination of pH Adjustment for Treatment.

Sodium hydroxide is currently used in the Area H treatment process for pH adjustment. The pH of the plant influent is raised to allow metal hydroxides to precipitate out of solution. The use of this chemical is currently increasing the sodium content in the Area groundwater. Under this alternative the reduction and possible elimination of pH adjustment would be investigated. The effects of this change on treatment system performance would be investigated to determine implementability.

Alternative 4T2 Elimination of Pretreatment.

If metals levels entering the treatment facility do not increase above the existing levels, once the new recovery scenario is implemented, the use of open aeration will be investigated. The use of this type of treatment would allow the elimination of oxidation/flocculation/precipitation. This process is currently used in Area H to remove metals and solids from the system influent. The elimination of this process may cause excessive iron to buildup in air strippers and carbon units. The precipitated iron may also block subsurface infiltration piping.

Alternative 4T3 Open Aeration to Treat Groundwater.

Based on the existing levels of VOCs in the treatment system influent, controls on air emissions are not required. If the influent levels from the new recovery system to be installed

under alternative 4 continue to meet these requirements, the use of alternate open aeration treatment would be investigated. The use of this technology would require no pretreatment of groundwater. However, the level of contaminants entering the system would have to meet the NJDEP air pollution control requirements. The discharge requirements would have to meet applicable Federal and State requirements.

If the use of open aeration is implemented, the use of surface infiltration basins may be required to return treated water back to the aquifer. This type of discharge system would be more capable of handling precipitated iron than subsurface infiltration since the basins are more easily maintained.

EVALUATION OF ALTERNATIVES

During the detailed evaluation of remedial alternatives, each alternative is assessed against the nine evaluation criteria which are summarized below.

1. **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.

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

3. **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.

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

5. **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.

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

7. **Cost** includes an evaluation of capital costs, annual operation and maintenance (O&M) costs, and net present worth costs.

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

9. **Community Acceptance** evaluates the issues and concerns the

public may have regarding the alternatives.

The first two criteria, protection of human health and the environment and compliance with Applicable or Relevant and Appropriate Requirements (ARARs) are considered by the EPA to be threshold criteria which each alternative must meet. The next five are balancing criteria, and the final two are considered modifying criteria.

ANALYSIS OF ALTERNATIVES

Overall Protection of Human Health and Environment -

Alternative 4 provides the greatest overall protection of human health and the environment through treatment of both higher concentration and downgradient groundwater contaminant areas and extensive monitoring. Based on the results of the interim action (Alternative 3) modifications will be made to the current system to optimize the recovery of contaminated groundwater. Therefore, alternative 4 provides advantages over Alternative 3 through more extensive removal and treatment.

Alternative 3 provides overall protection of human health and the environment through hydraulic control and treatment of groundwater and extensive monitoring. However, pH adjustment and chemical addition under this alternative may have an adverse effect on the aquifer. Removal of these treatment steps may be investigated under Alternative 4.

Alternative No. 2, which offers no groundwater treatment, is the next protective alternative. However, if current land use changes, protection of human health and the environment is uncertain.

Alternative No. 1, which offers no groundwater treatment or monitoring, is the least protective alternative.

Long-Term Effectiveness and Permanence -

Alternative 4 provides the overall most effective and permanent options for protection of human health and the environment through removal and treatment of both higher concentration and downgradient levels of contamination. Long-term permanence is ensured since monitoring wells throughout and downgradient of the plume are monitored until all levels within the plume have been reduced below ARARs. The estimated time for this alternative to meet ARARs through treatment is less than 15 years.

Alternative 3 would provide long-term protection of human health through the removal and treatment of all contamination migrating from the sites in Area H. The estimated time for this alternative to capture and treat all contamination above ARARs is 16 years.

Alternative No. 2 provides no active treatment and is not considered to be effective at remediating the aquifer. The current levels of contamination appear to be too high for natural reduction to effectively reduce contamination. This alternative would be effective toward the closing stages of remediation when pumping is no longer an effective option.

Alternative No. 1 is not considered to be effective.

Reduction of Toxicity, Mobility or Volume -

Alternative 4 recovers and treats the largest area of contamination. The toxicity, mobility and volume are reduced through capture and treatment of the plume.

Alternative 3 recovers and treats contamination as it migrates to the recovery wells.

Alternative Nos. 1 and 2 offer no reduction of toxicity, mobility or volume through treatment of the contaminated media.

Short-Term Effectiveness -

Remedial action Alternatives 3 and 4 in the short-term, would halt the continued migration of contaminated groundwater downgradient of residual source areas. The estimated cleanup duration for alternative 4 is less than 15 years to reach ARARs. The estimated time to reduce all contamination below ARARs for Alternative 3 is 16 years.

Alternative No. 2 is effective at monitoring the movement of contamination but would not prevent the short-term migration of contamination.

Alternative No. 1 provides no treatment of groundwater and is not considered to be effective in the short-term because residual risks are not reduced.

Implementability -

Alternative No. 1 offers the greatest implementability. This alternative involves the shutdown of the existing treatment facility and no further action.

Alternative No. 3 has already been implemented. This alternative requires continued operation and maintenance of the existing treatment facility.

Alternative No. 2 involves the shut-down of treatment and continued monitoring of the aquifer. This alternative can be implemented in several months with the initiation of a study to determine the natural degradation occurring within the aquifer.

Alternative No. 4 would be more difficult to implement due to the additional construction required. It is estimated that this alternative can be implemented within 1 year.

Cost -

Alternative No. 1, the no action/long term monitoring alternative, has the lowest associated cost. Alternative No. 2, the limited action alternative, has the second lowest cost. The cost for Alternative No. 3 involves operation and maintenance costs only and is therefore the lowest cost treatment option. Alternative No. 4 involves the construction of additional groundwater recovery systems.

Compliance with ARARs -

EPA considers drinking water Maximum Contaminant Levels (MCLs) or State Practical Quantitation Levels (PQLs), whichever is more stringent for each contaminant of concern, to be ARARs.

Alternative No. 1 does not comply with ARARs because no remedial action takes place. Alternative No. 2 will not reduce contamination to meet ARARs without continued migration of the plume. Alternatives 3 and 4 are designed to meet ARARs through active treatment.

Agency Acceptance - The NJDEP and the Pinelands Commission concur with the Proposed Alternatives detailed in the Selected Alternative section below.

Community Acceptance - Community acceptance is addressed in the responsiveness summary included in this Record of Decision.

THE SELECTED ALTERNATIVE

The selected alternative to address groundwater at Area H is Alternative 4: Modifications to Existing Treatment.

Based on quarterly groundwater data collected throughout Area H during interim treatment system operation, since July 1992 and contaminant transport modeling, Alternative 4 has been selected as the preferred alternative to address groundwater contamination in Area H.

The NAES proposes to modify the existing groundwater treatment system to improve the capture of contaminated groundwater. Modifications to recovery well locations and pumping rates would be implemented as part of the proposed action. Additional modifications to treatment are also included as part of the proposed action and could be implemented based on system influent concentrations after recovery system modifications are implemented.

The objectives of the proposed action for groundwater are to: 1) protect human health and the environment by reducing the downgradient migration of contaminated groundwater; 2) remove higher "source areas" of contamination through the location of additional recovery wells within the plume; and 3) reduce groundwater contamination to meet ARARs.

STATUTORY DETERMINATIONS

Under CERCLA, the alternative selected must protect both human health and the environment, be cost effective and comply with statutory requirements. Permanent solutions to contamination problems are to be achieved whenever possible.

Based on the consideration of alternatives, Alternative 4 has been selected as the preferred alternative to address the groundwater in Area H for the following reasons:

- The selected alternative will provide protection of human health and the environment through active treatment of groundwater. The remedial system will be designed to meet ARARs. A combination of extensive monitoring and institutional controls will be used to ensure protection of human health.

- The treatment system described in the selected alternative has already been implemented and will continue to be operated with modifications made to enhance system performance.

- The selected alternative is cost effective.

RECORD OF DECISION
RESPONSIVENESS SUMMARY
AREA H
NAVAL AIR ENGINEERING STATION

The purpose of this responsiveness summary is to review public response to the Proposed Plan for Area H. It also documents the Navy's consideration of comments during the decision making process and provides answers to any comments raised during the public comment period.

The responsiveness summary for Area H is divided into the following sections:

OVERVIEW - This section briefly describes the alternative recommended in the proposed plan and any impacts on the proposed plan due to public comment.

BACKGROUND ON COMMUNITY INVOLVEMENT - This section describes community relations activities conducted with respect to the area of concern.

SUMMARY OF MAJOR QUESTIONS AND COMMENTS - This section summarizes verbal and written comments received during the public meeting and public comment period.

OVERVIEW

Area H is located at the NAES in Ocean County, Lakehurst, New Jersey. This responsiveness summary addresses public response to the Proposed Plan, proposing continued operation of the existing groundwater treatment system with modifications to the recovery system to enhance system performance.

The Proposed Plan and other supporting information are available for public review at the information repository located at the Ocean County Library, 101 Washington Street, Toms River, New Jersey.

BACKGROUND ON COMMUNITY INVOLVEMENT

This section provides a brief history of community participation in the investigation and interim remedial planning activities conducted for Area H. Throughout the investigation period, the USEPA and NJDEP have been reviewing work plans and reports and have been providing comments and recommendations which are incorporated into the appropriate documents. A Technical Review Committee (TRC), consisting of representatives of the Navy, the USEPA, the NJDEP, the Ocean County Board of Health, the New Jersey Pinelands Commission, other agencies and communities surrounding NAES was formed and has been holding periodic meetings to maintain open lines of communication and to inform all parties of current activities.

Prior to public release of site-specific documents, NAES'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 attached as Appendix B to this Record of Decision.

On August 24 and 25, 1995, a newspaper notification inviting public comment on the Proposed Plan appeared in The Ocean County Observer and The Asbury Park Press. The public notice summarized the Proposed Plan and the preferred alternative. The announcement also identified the time and location of a Public Meeting and specified a public comment period, and the address to which written comments could be sent. Public comments were accepted from September 5, 1995 through October 5, 1995.

A Public Meeting was held on September 6, 1995, at 7:00 p.m. at the Manchester Branch of the Ocean County Library, Colonial Drive, Manchester, New Jersey. The Area investigations, Area evaluation process and the proposed remedial alternative were discussed. NAES representatives present included: CAPT Leroy Farr, Commanding Officer; CDR Michael Murtha, Public Works Officer; Lucy Bottomley, Supervisory Environmental Engineer; Dorothy Peterson, Environmental Engineer; Michael Figura, Environmental Engineer; and Carole Ancelin, Public Affairs Officer. Mr. Bob Wing, represented the USEPA's Federal Facility Section; Ms. Donna Gaffigan represented the NJDEP's Bureau of Federal Case Management and Mr. Kevin Schick represented the NJDEP's Bureau of Environmental Evaluation and Risk Assessment. The complete attendance list is provided in Appendix A to this Record of Decision.

SUMMARY OF MAJOR QUESTIONS AND COMMENTS

Written Comments

During the public comment period from September 5, 1995 through October 5, 1995, no written comments were received pertaining to Area H.

Public Meeting Comments

The following is a summary of major questions and comments, pertaining to Area H, received at the Public Meeting held on September 6, 1995. A complete transcript of the Public Meeting is provided in the Information Repository at the Ocean County Library, Toms River NJ.

Question No. 1

It was mentioned that a large quantity of soil was excavated and reused in roads on the base. Is there any chance in the future as those roads disintegrate that any of the contamination will reenter the soil?

Response

This technology has been used extensively in New York State and other states, but NAES is the first in New Jersey to use this technology with petroleum contaminated soils. Asphalt used to produce roadways is basically sand mixed with a petroleum emulsion. NAES has taken soil that already had a petroleum

aspect to it and added more of an asphalt-based emulsion to it. Laboratory testing performed on the asphalt produced with the contaminated soils indicated that the emulsion binds the contaminants so that none can leach out. The excavated material was used as road base material, mixed to meet DOT standards. A wearing course or a hot asphalt layer was added above the emulsion base. This layer is a very good wearing layer and acts as a cap to cover the base material. The materials used to produce the roads meet all the same DOT specifications as the roads you see normally.

Appendix A

Attendance List for Public Meeting Held September 6, 1995

Attendance

Name	Agency	Phone
Theresa Lettman	Pinelands Pres. Alliance 114 Hanover St, Pemberton	609 894-8000
David E. Albertson Sr.	155 Beckerville Rd.	657-4138
Jean S. Albertson	"	"
Blackwell S. Albertson		
Ralph Monie	Court Reporter	
Carole I. Ancelin	Navy	323-2811
Lucy Bottomley	NAVY	323-2612
Michael Figura	NAES	323-4857
Dorothy Peterson	NAES	323-4863
John P. Ransom	M+T Company	657-5600
Nick Florez	NAES	323-7551
Thom Tryon.	NAES	323-2727
Mike Muzeth	NAES	323-2201
Kevin Schick	NJDEP	(609) 984-1822
Donna L Gaffigan	NJDEP	(609) 633-1455
John F. Ford	Consultant	(908) 270-5733
Robert Wing	US EPA-Region 2	212-637-4332
CAPT. Leroy Farr	NAES	908 323-2380
Henry A Schumacher Jr	LVW	657-5486
Leonard Marshall	1716 9th Ave Manchester	349-5835
Molly Harwing Jim	87 Guadeloupe Dr. TR.	505-3119
Dick Rand	328 Johnson AVE,	657-9286
Bob Revite	NAES	323-7800

Attendance

NAME	AGENCY	PHONE
RAYMOND J. HAHN	NAES	323-1011
IRV DINKIN		657-4362

updated 9-13-95

APPENDIX B
LIST OF CONCERNED PARTIES

Naval Air Engineering Station - Lakehurst

Captain L. Farr (908) 323-2380
Commanding Officer
Naval Air Engineering Station
Lakehurst, NJ 08733-5000

Ms. Carole Ancelin, Public Affairs (908) 323-2620
Naval Air Engineering Station
Lakehurst, NJ 08733-5000

Commander Mike Murtha (908) 323-2601
Public Works Officer
Naval Air Engineering Station
Lakehurst, NJ 08733-5000

Northern Division, Naval Facilities Engineering Command

Mr. Lonnie Monaco (215) 595-0555
Northern Division
Naval Facilities Engineering Command
Code 182
10 Industrial Highway
Mail Stop 82
Lester, PA 19113-2090

Federal Elected Officials

Senator William Bradley (908) 688-0960
1705 Vauxhall Road
P.O. Box 1720
Union, NJ 07083

Senator Frank R. Lautenberg (609) 757-5353
208 White Horse Pike
Suite 18-19
Barrington, NJ 08007

Congressman H. James Saxton (609) 261-5800
100 High Street
Mount Holly, NJ 08060

Congressman Christopher H. Smith (908) 350-2300
100 Lacey Road
Suite 38A
Whiting, NJ 08759

Congressman Frank Pallone, Jr. (201) 571-1140
540 Broadway
Room 118
Long Branch, NJ 07740

State Elected Officials

Senator Leonard T. Connors, Jr. (609) 693-6700
620 West Lacey Road
Forked River, NJ 08731

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

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

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

U.S. Environmental Protection Agency Officials

Ms. Laura Livingston (212) 264-6723
Federal Facilities Coordinator
Room 1104
U.S. Environmental Protection Agency
Region II
26 Federal Plaza
New York, NY 10278

Mr. Steven Katz (212) 264-2515
Superfund Community Relations Coordinator
U.S. Environmental Protection Agency
Region II
External Programs Division, Room 905
26 Federal Plaza
New York, NY 10278

Other Federal Agencies

Mr. Steve Aoyama (404) 639-6070
Agency for Toxic Substances and
Disease Registry
1600 Clifton Road
Mail Stop E-56
Atlanta, GA 30333

Commanding Officer
Attn: Joyce Patterson
NEESA Code 112E2
1001 Lyons St. Suite 1
Port Hueneme, CA 93043-4340

New Jersey Pinelands Commission

Mr. Todd DeJesus (609) 894-9342
The Pinelands Commission
P. O. Box 7
New Lisbon, NJ 08064

Ocean County Officials

Mr. Alan W. Avery, Jr., Commissioner (908) 929-2054
Ocean County Planning Board
P.O. Box 2191
Toms River, NJ 08754-2191

Mr. Joseph H. Vicari, Director (908) 244-2121
Ocean County Board of Freeholders
P.O. Box 2191
Toms River, NJ 08754

Mr. Joseph Przywara, Coordinator (908) 341-9700
Ocean County Health Department
Environmental Health
2191 Sunset Avenue
Toms River, NJ 08753

Mr. A. Jerome Walnut, Chairman (908) 505-3671
Ocean County Environmental Agency
1623 Whitesville Road
Toms River, NJ 08755

Dover Township Officials

Hon. J. Mark Mutter (908) 341-1000
Mayor of Dover Township
P.O. Box 728
33 Washington Street
Toms River, NJ 08754

Ms. Janet Carson (908) 341-1000
Dover Township Environmental Commission
P.O. Box 728
33 Washington Street
Toms River, NJ 08754

Manchester Township Officials

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

Mr. Wynn A. Mauer, Chairman
Manchester Township Municipal Utilities Authority
One Colonial Drive
Lakehurst, NJ 08733

Mr. William Jamieson, Jr., Chairman
Manchester Township Environmental Commission
One Colonial Drive
Lakehurst, NJ 08733

Jackson Township Officials

Mr. Richard Bizub, Chairman (908) 928-0900
Jackson Township Environmental Commission
128 Willow Drive
Jackson, NJ 08527

Borough of Lakehurst Officials

Hon. Alton Tilton (908) 657-4141
Mayor of Lakehurst Borough
5 Union Avenue
Lakehurst, NJ 08733

Mr. Robert J. Morris (908) 657-4141
Municipal Clerk, Borough of Lakehurst
5 Union Avenue
Lakehurst, NJ 08733

Plumsted Township Officials

Hon. Ronald S. Dancer (609) 758-2241
Mayor of Plumsted Township
P.O. Box 398
New Egypt, NJ 08533-0398

Community Groups and Interested Citizens

Pine Lake Park Association (908) 341-3653
1616 Seventh Avenue
Toms River, NJ 08757

Mr. Holmes Ertley (908) 657-4690
699C Friar Court
Lakehurst, NJ 08733

Mr. John Lewis (908) 657-1890
315 Beckerville Road
Lakehurst, NJ 08733

Ms. Candy Vesce
733 Sixth Ave.
Pine Lake Park
Toms River, NJ 08757

Ms. Theresa Lettman (609) 893-4747
Pinelands Preservation Alliance
120-34B White Bogs Road
Browns Mills, NJ 08015

Ms. Susan Marshall
1716 Ninth Ave.
Toms River, NJ 08757

Ms. Gisela Tsambikou
1162 Beacon St.
Pine Lake Park
Toms River, NJ 08757

Mr. Dieter Rand
3288 Johnson Ave.
Lakehurst, NJ 08733

Mr. & Mrs. Blackwell Albertson
135 Beckerville Rd.
Lakehurst, NJ 08733

Heritage Minerals, Inc.
Attn: Ms. Adele Hovnanian
One Hovchild Plaza
4000 Route 66
Tinton Falls, NJ 07753

Chuck Lindstrom
526-D Crescent Ave.
Jackson, NJ 08527

Ben Epstein
Ocean County Citizens for Clean Water
2230 Agin Court Road
Toms River, NJ 08733

Media Organizations

Advance News (908) 657-8936
2048 Route 37 West
Lakehurst, NJ 08733

Alyn Ackerman 1-800-822-9770
Asbury Park Press
3601 Highway 66
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Neptune, NJ 07754-1550

Ms. Debra Coombe (908) 244-7171
Newark Star Ledger
44 Washington Street
Toms River, NJ 08753

New Egypt Press (609) 758-2112
37 Main Street
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New Egypt, NJ 08533

Ocean County Leader (908) 899-1000
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Point Pleasant Beach, NJ 08742

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Seaside Heights, NJ 08751
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8 Robbins Street
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Mr. Sam Christopher
Ocean County Observer
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Toms River, NJ 08753
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and Risk Assessment
New Jersey Department of Environmental
Protection and Energy
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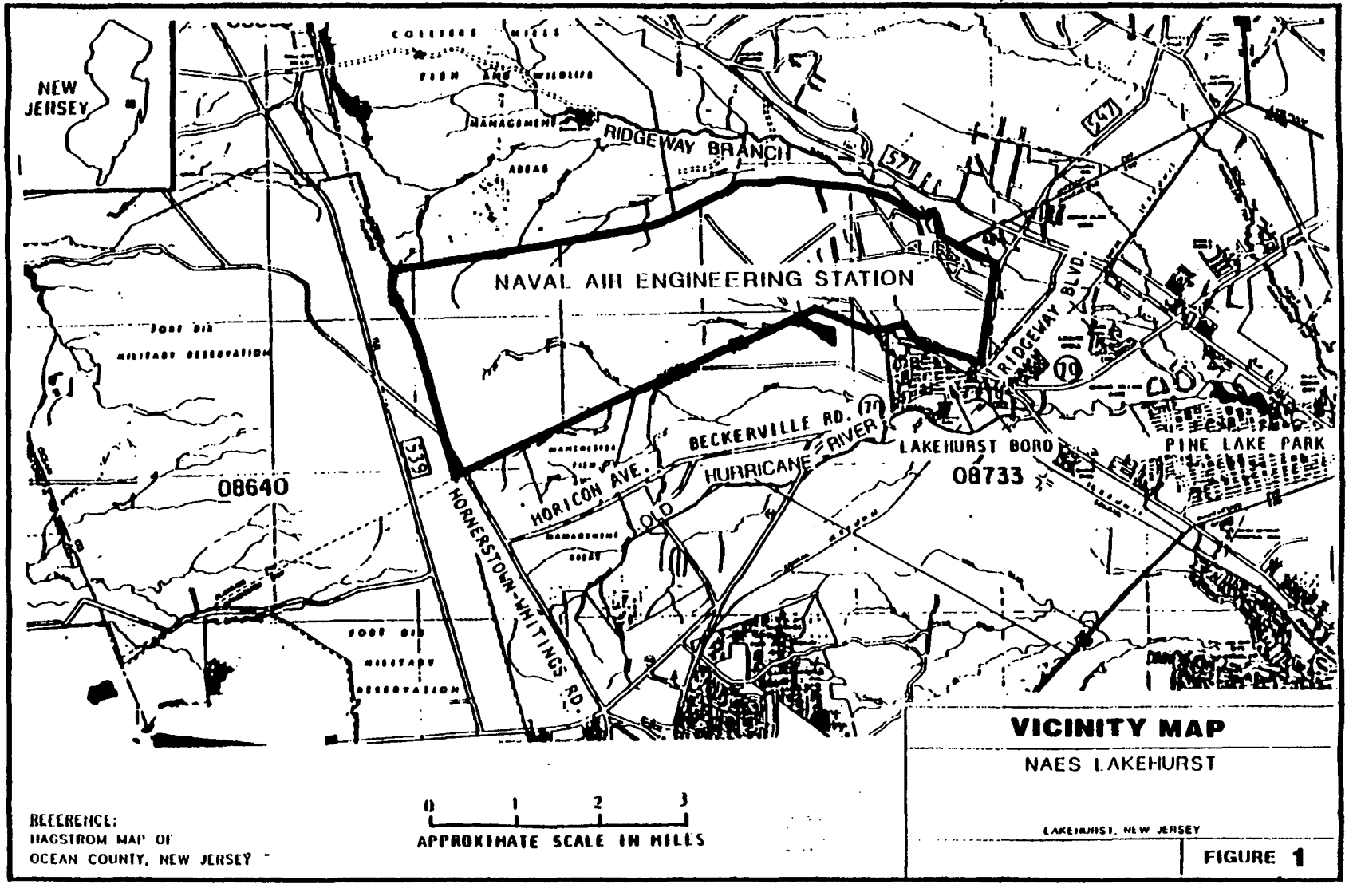
FIGURES



REFERENCE:
HAGSTROM MAP OF
OCEAN COUNTY, NEW JERSEY

VICINITY MAP

NAES LAKEHURST

LAKEHURST, NEW JERSEY

FIGURE 1

NAES Lakehurst NPL Sites

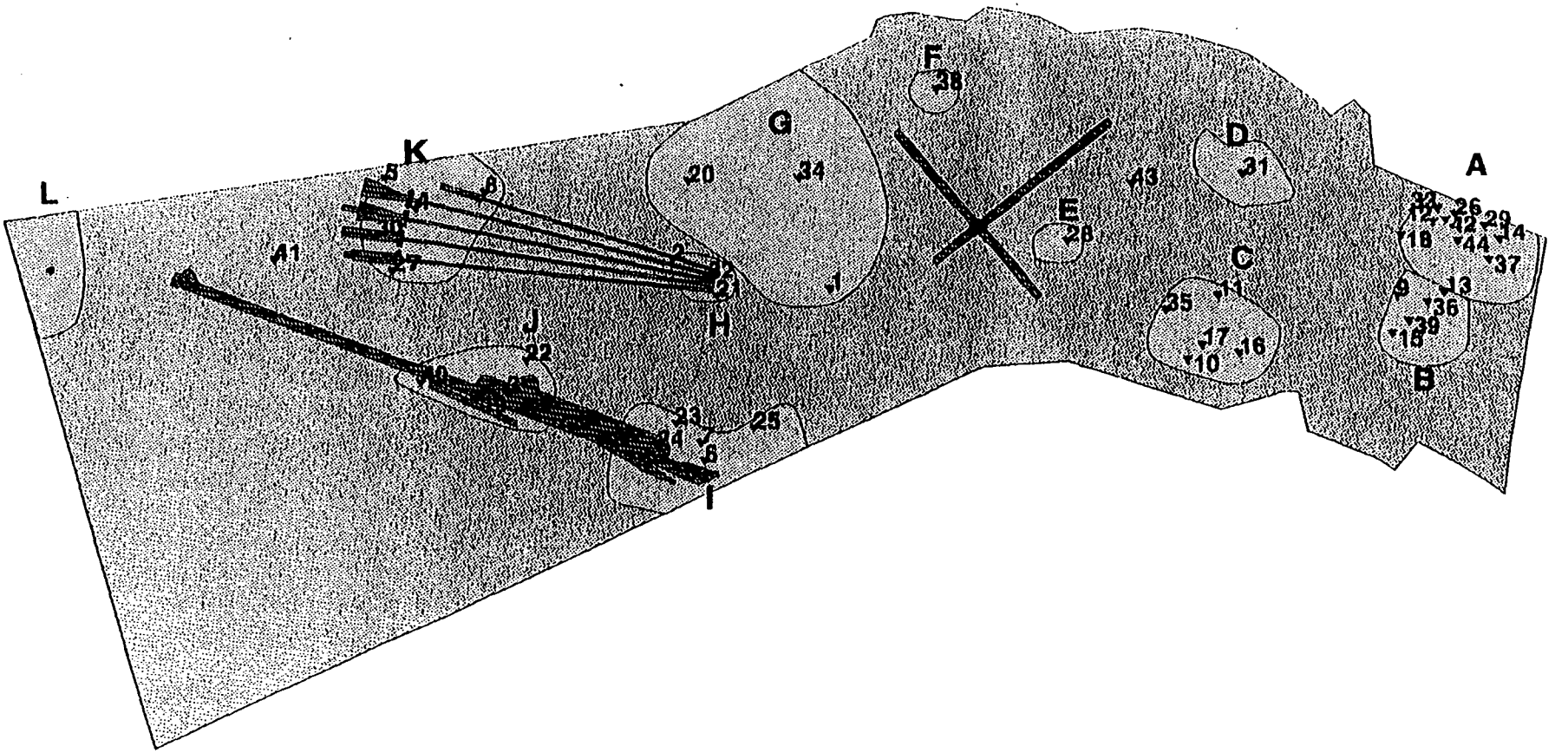
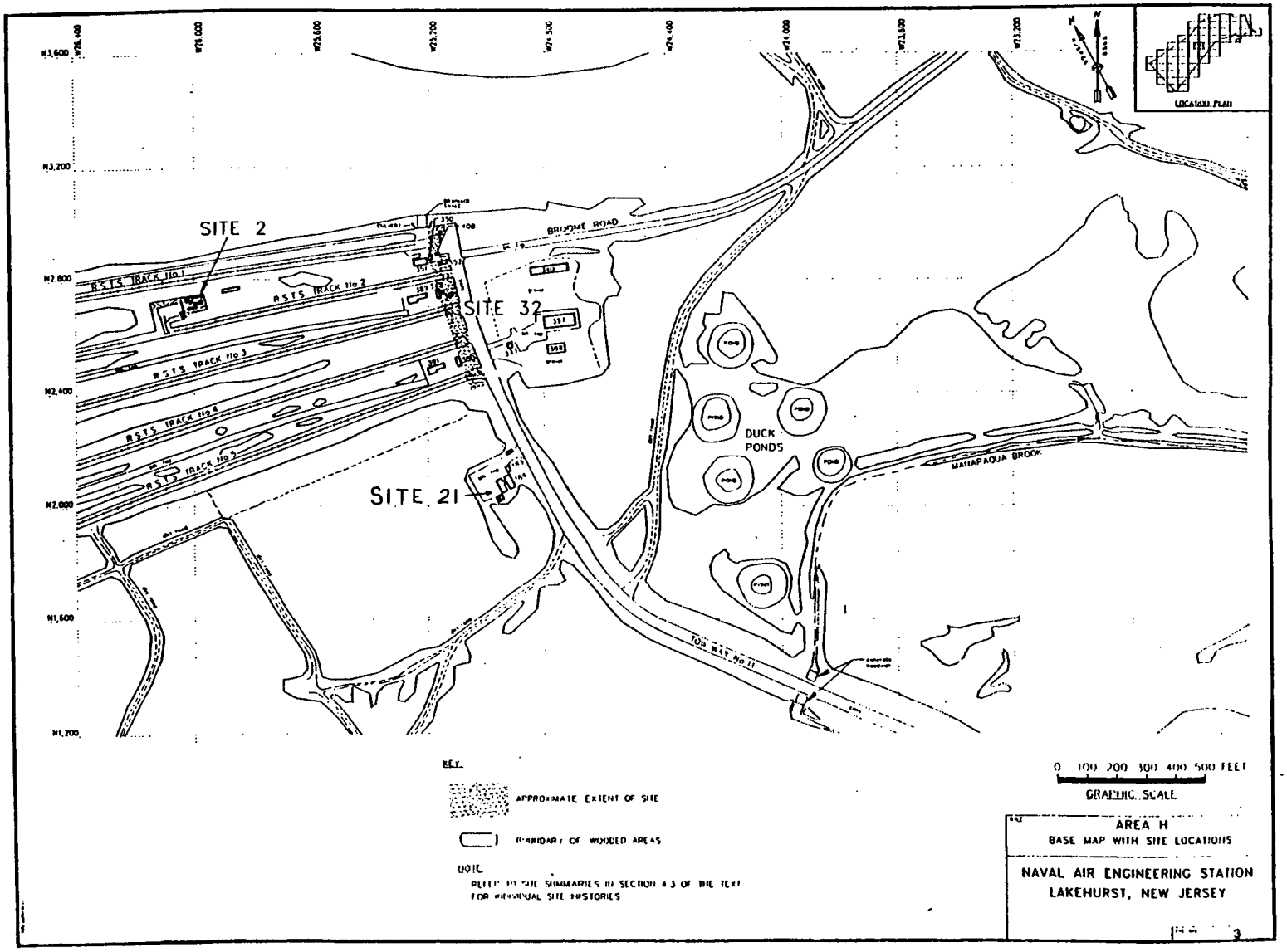
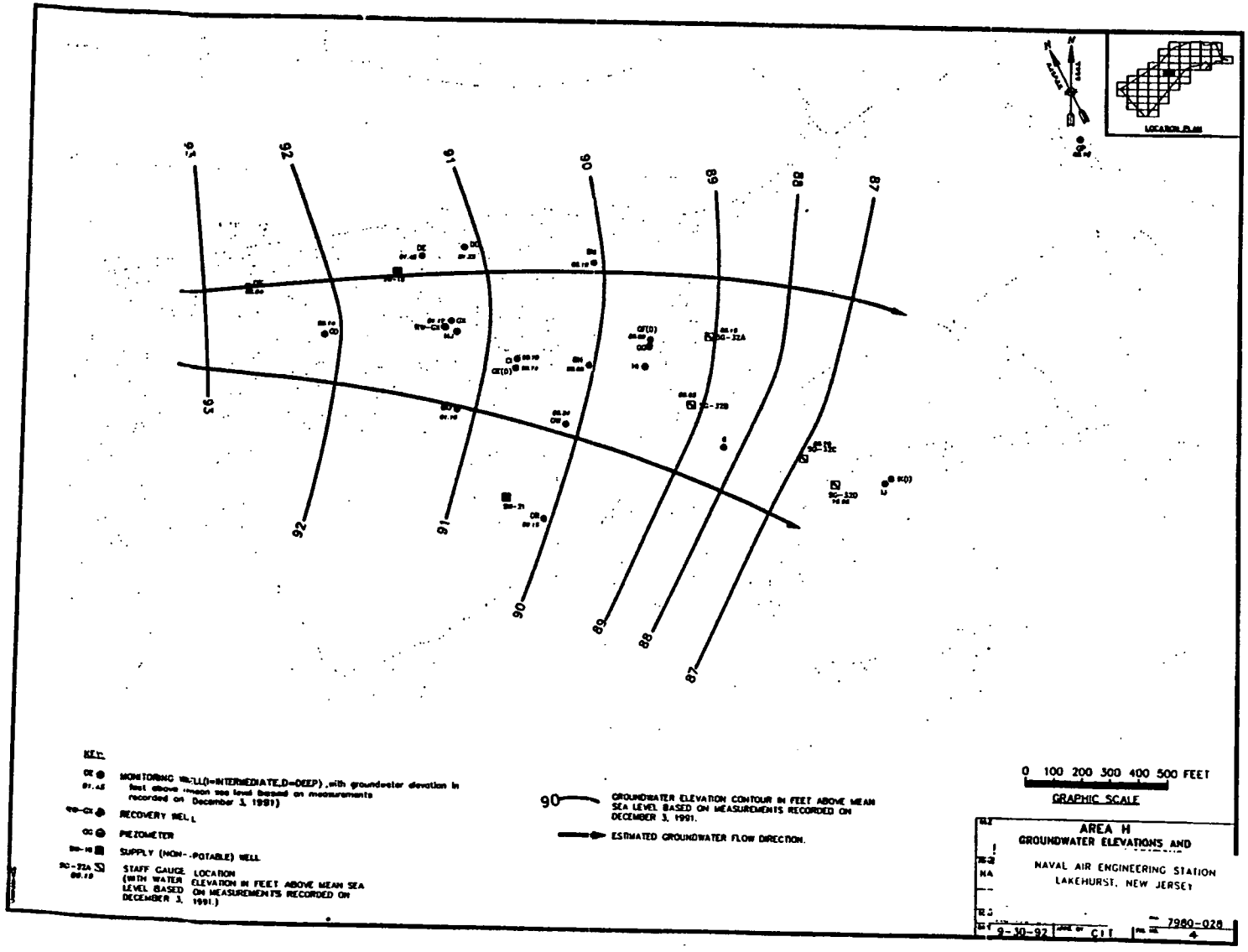
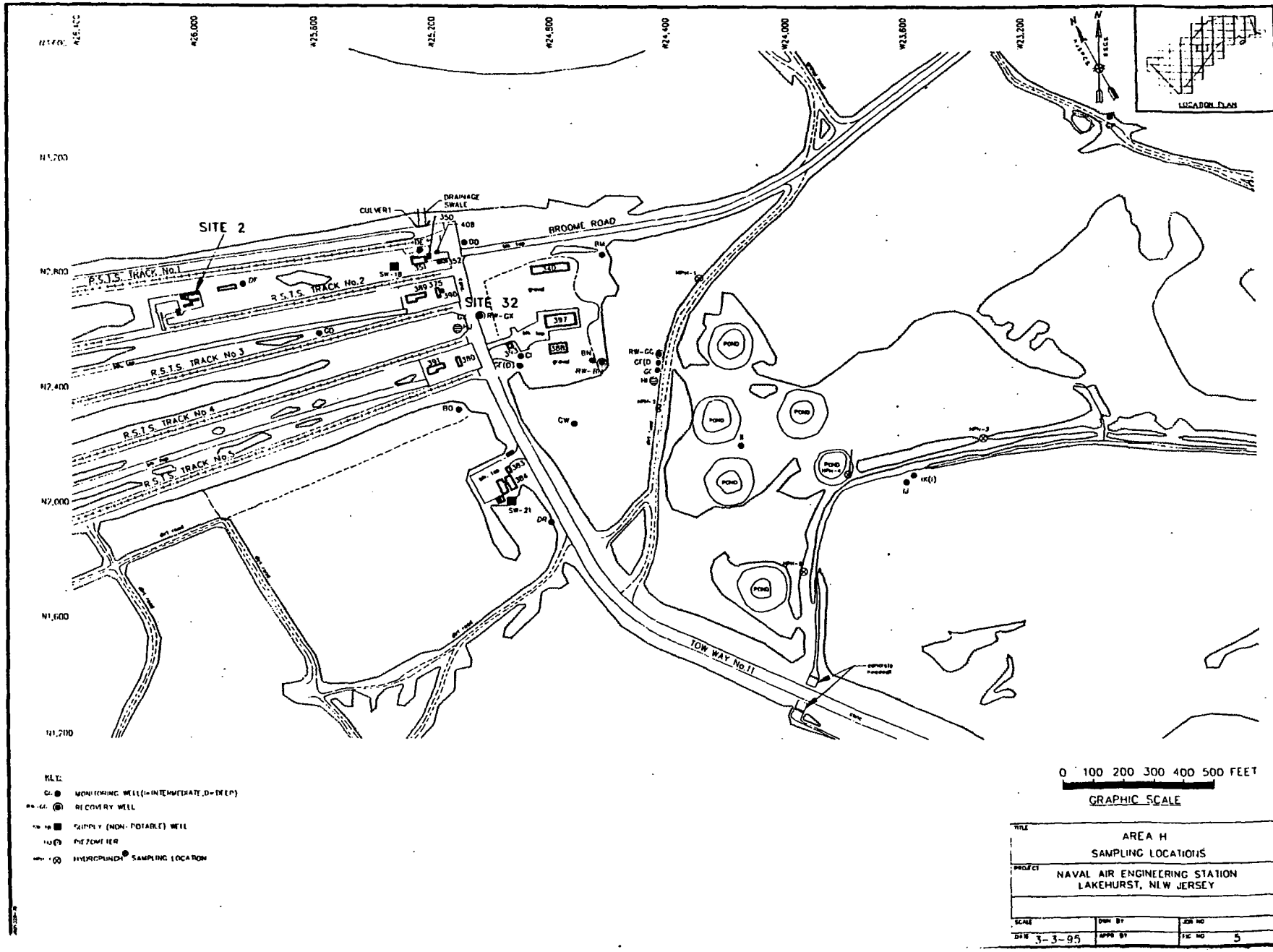


FIGURE 2


SITE 2
SITE 32
SITE 21
BROOME ROAD
RSTS TRACK No 1
RSTS TRACK No 2
RSTS TRACK No 3
RSTS TRACK No 4
RSTS TRACK No 5
DUCK PONDS
MANAPAQUA BROOK
TOM'S RIVER
LOCATION PLAN
KEY
APPROXIMATE EXTENT OF SITE
BOUNDARY OF WOODED AREAS
NOTE
REFER TO SITE SUMMARIES IN SECTION 4.3 OF THE TEXT FOR INDIVIDUAL SITE HISTORIES
0 100 200 300 400 500 FEET
GRAPHIC SCALE
AREA H
BASE MAP WITH SITE LOCATIONS
NAVAL AIR ENGINEERING STATION
LAKEHURST, NEW JERSEY


LOCATION PLAN
95
94
93
92
91
90
89
88
87
Key:
MONITORING WELL(I)=INTERMEDIATE,D=DEEP), with groundwater elevation in feet above mean sea level based on measurements recorded on December 3, 1991)
RECOVERY WELL
PIEZOMETER
SUPPLY (NON-POTABLE) WELL
STAFF GAUGE LOCATION (WITH WATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL BASED ON MEASUREMENTS RECORDED ON DECEMBER 3, 1991.)
GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL BASED ON MEASUREMENTS RECORDED ON DECEMBER 3, 1991.
ESTIMATED GROUNDWATER FLOW DIRECTION.
0 100 200 300 400 500 FEET
GRAPHIC SCALE
AREA H
GROUNDWATER ELEVATIONS AND
NAVAL AIR ENGINEERING STATION
LAKEHURST, NEW JERSEY
7980-026
9-30-92
4


SITE 2
SITE 32
CULVERT
DRAINAGE SWALE
BROOME ROAD
R.S.I.S. TRACK No.1
R.S.I.S. TRACK No.2
R.S.I.S. TRACK No.3
R.S.I.S. TRACK No.4
R.S.I.S. TRACK No.5
TOW WAY No.11
POND
LOCATION PLAN
0 100 200 300 400 500 FEET
GRAPHIC SCALE
KEY:
MONITORING WELL (I=INTERMEDIATE, D=DEEP)
RECOVERY WELL
SUPPLY (NON-POTABLE) WELL
PIEZOMETER
HYDROPUNCH® SAMPLING LOCATION
TITLE
AREA H
SAMPLING LOCATIONS
PROJECT
NAVAL AIR ENGINEERING STATION
LAKEHURST, NEW JERSEY
SCALE
DRN BY
JOB NO
DATE 3-3-95
APPD BY
FIG NO 5

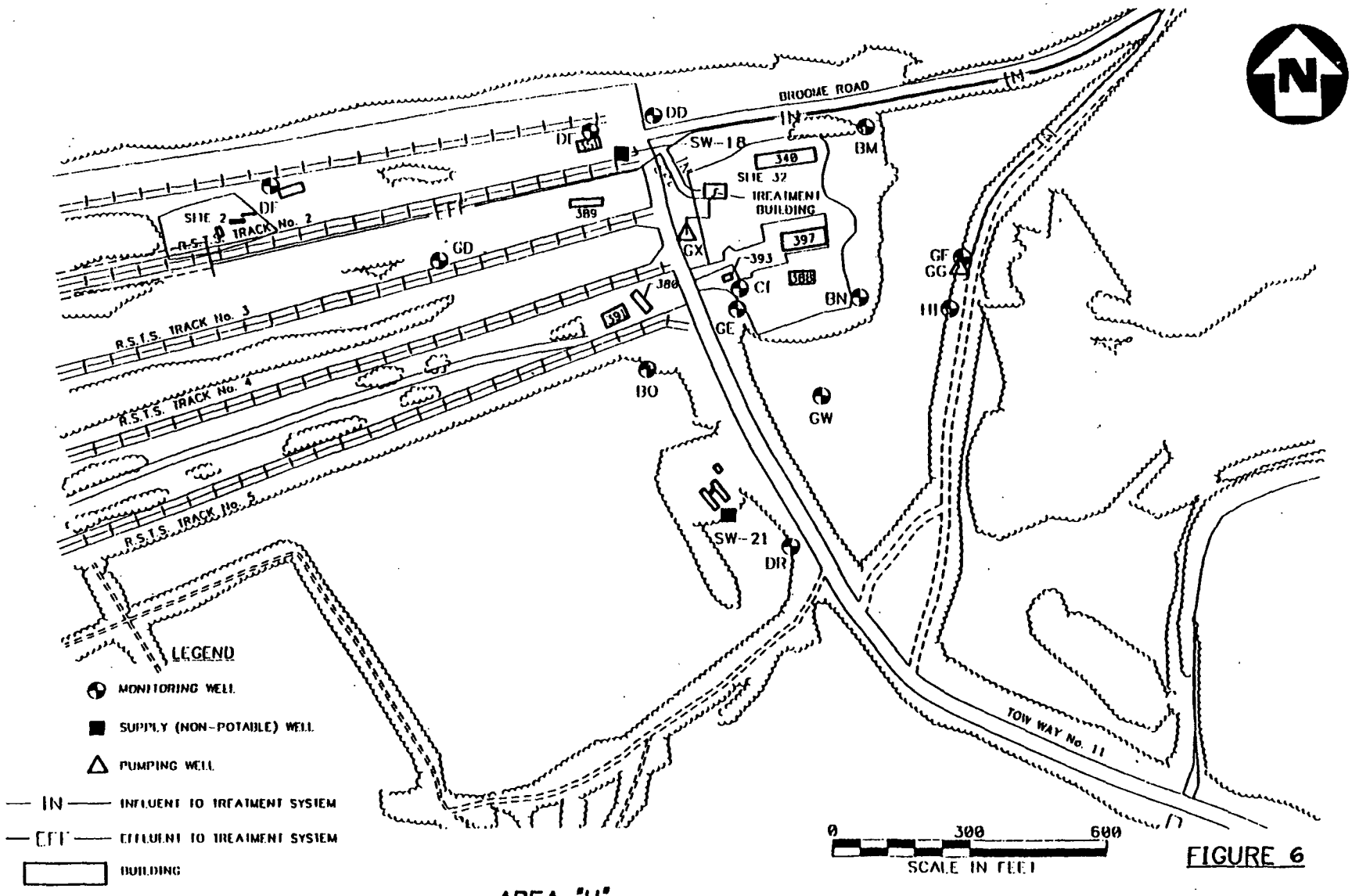


FIGURE 6

AREA "H"
GENERAL ARRANGEMENT
NAVAL AIR ENGINEERING STATION (NAES) LAKEHURST, NJ