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RCRA FACILITY INVESTIGATION/SITE INSPECTION PRELIMINARY PLAN OF ACTION SITE
11 VINYL CHLORIDE INVESTIGATION NSB KINGS BAY GA
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ABB ENVIRONMENTAL SERVICES, INC

**RCRA FACILITY INVESTIGATION/SITE INSPECTION
PRELIMINARY PLAN OF ACTION
SITE 11 - VINYL CHLORIDE INVESTIGATION**

**NAVAL SUBMARINE BASE
KINGS BAY, GEORGIA**

Prepared for:

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**Naval Submarine Base
Kings Bay, Georgia
RFI/SI Preliminary Plan of Action
Site 11 - Vinyl Chloride Investigation**

The Navy has developed an addition to the scope of work for the RCRA Facility Investigation/Site Inspection (RFI/SI) currently underway at Naval Submarine Base (NSB), Kings Bay, Georgia. The RFI/SI includes three sites, as follows:

- Site 5 - Army Reserve Disposal Area, Towhee Trail,
- Site 11 - Old Camden County Landfill, and
- Site 16 - Army Reserve Disposal Area, Motor Missile Magazines.

The additional scope of work is to be conducted at Site 11, Old Camden County Landfill, and does not affect the RFI/SI activities at the other two sites. This letter summarizes the rationale and elements of the expanded investigation at Site 11.

Analytical results for the first groundwater sampling event (February 1992) at Site 11 indicated that a sample from monitoring well KBA-11-2 contained vinyl chloride at a concentration of 18 ug/l. This monitoring well is downgradient of the disposal area. In May 1992 the second groundwater sampling event was conducted. Two replicate groundwater samples were collected from monitoring well KBA-11-2. Concentrations of vinyl chloride in these samples were considerably higher than before, being 64 ug/l and 100 ug/l for the replicate samples. These concentrations of vinyl chloride are well above the USEPA Federal Drinking Water Standard Maximum Contaminant Level (MCL) of 2 ug/l.

Several other volatile organic compounds (VOCs) have been detected in groundwater samples from monitoring well KBA-11-2, including parent compounds that decompose anaerobically to form vinyl chloride. These parent compounds include tetrachloroethene, trichloroethene, and 1,2-dichloroethene. The concentrations of the parent compounds range from an estimated 1 ug/l to 16 ug/l.

To date no other downgradient monitoring well has produced samples containing vinyl chloride. In February, a groundwater sample from monitoring well KBA-11-8, which is upgradient of the disposal area, was reported to contain an estimated concentration of vinyl chloride of 2 ug/l. This concentration is below the Contract Required Quantitation Limit (CRQL) of 10 ug/l, and is near the instrument detection limit for vinyl chloride. The report of 2 ug/l of vinyl chloride in this sample is suspect. The analytical method used was gas chromatography/mass spectroscopy (GC/MS) (SW-846 Method 8240). Low concentrations of halogenated solvents, such as vinyl chloride are not well suited for analysis by GC/MS. Analytical data for a groundwater sample collected from monitoring well KBA-11-8 in May 1992 do not confirm the presence of vinyl chloride in groundwater at this upgradient location.

Monitoring well KBA-11-2 is located on the western side of the landfill (Attachment A). Two other monitoring wells (KBA-11-1 and KBA-11-3) located on the western side of the landfill, north and south of monitoring well KBA-11-2, have not produced samples with detectable concentrations of vinyl chloride. The location of monitoring well KBA-11-2 is approximately 80 feet east of the NSB property line. Approximately 350 feet to 400 feet to the west of the landfill there is a housing development (private property). As shown on the groundwater

potentiometric surface map (Attachment A) groundwater flow is to the west, towards the NSB property line and potentially towards the housing development.

The Navy has elected to take immediate action to determine whether vinyl chloride has migrated off NSB property. The scope of work for this evaluation includes the use of Cone Penetrometer Testing (CPT) and on-site analysis of VOCs using a field laboratory equipped for purge and trap GC (SW-846 Methods 5030 and 8010).

CPT will be used for collection of groundwater samples and lithologic characterization. Initially, CPT and field analysis will begin at the location of monitoring well KBA-11-2 to confirm the viability of the technique by comparing the CPT sample data to that obtained from the monitoring well and off-site laboratory analysis. CPT sampling will then move toward the NSB property line, downgradient of monitoring well KBA-11-2. Several points, positioned perpendicular to groundwater flow direction, will be sampled near the property line. If VOC analysis indicates the presence of vinyl chloride near the property line, an effort will be made to locate the center of the contaminant plume by defining the limits of vinyl chloride contamination in the north-south direction. CPT sampling will then move off NSB property, to the western right-of-way of Spur 40. Spur 40 generally parallels the NSB property line in this vicinity.

If field analysis of CPT samples collected near the NSB property line do not indicate the presence of a VOC contaminant plume, CPT sampling will move towards the landfill. CPT sample locations will be selected to delineate the north and south limits of contamination so that the center of the plume can be located.

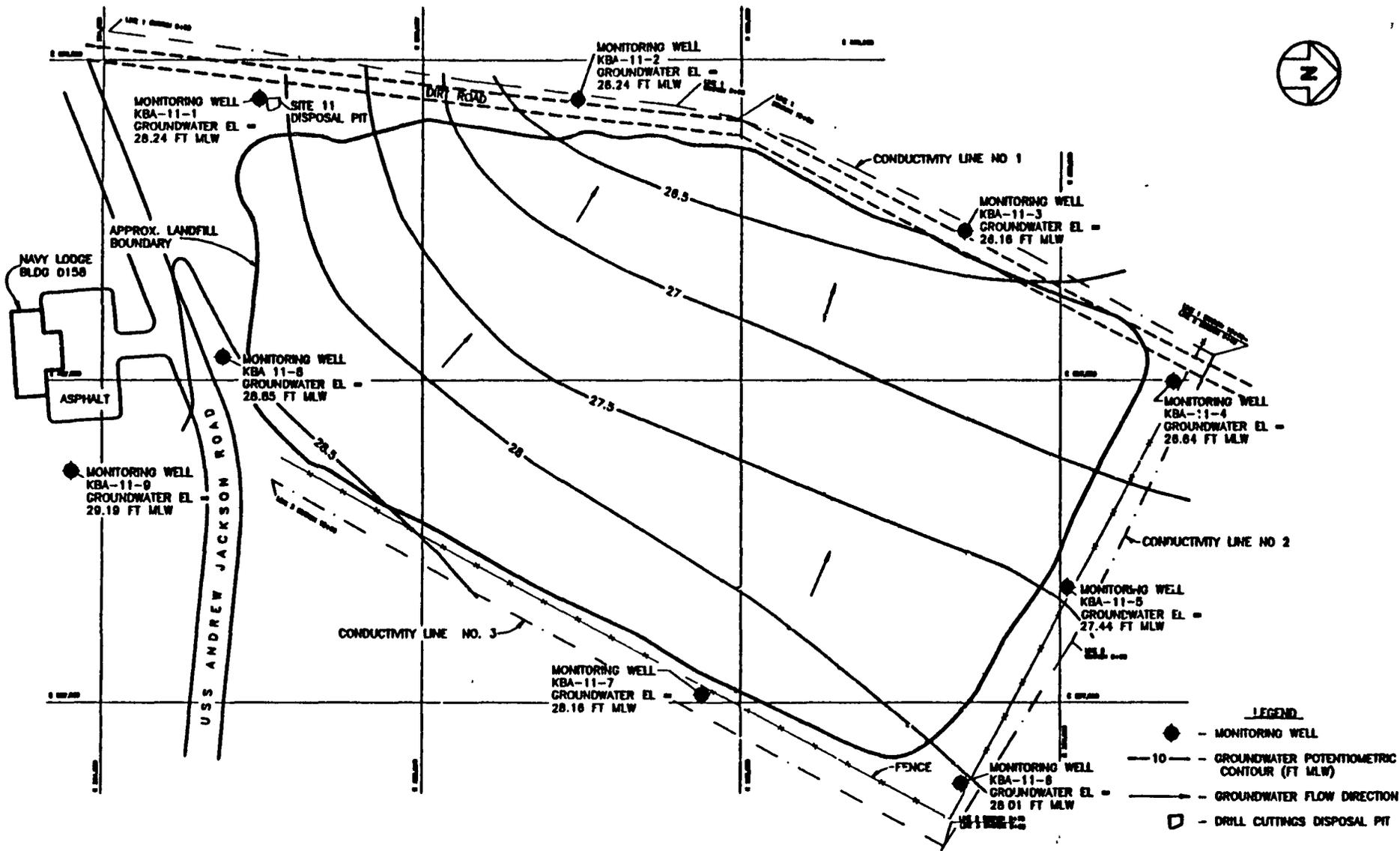
When the center of the plume has been located, locations will be selected for collection of CPT groundwater samples at depth. Several CPT penetrations will be done to locate the vertical extent of VOC contamination or any confining layers present. For purposes of scoping and budgeting the work, it is assumed that CPT penetrations will not extend beyond 100 feet below land surface (BLS). This assumption is based on reports that clay and/or limestone confining layers are present 40 to 90 feet BLS.

Quality assurance and quality control (QA/QC) procedures for this work will include collection and analysis of field QC samples and analysis of laboratory QC samples. Field QC samples will include 10 percent (%) duplicate groundwater samples, one equipment rinseate per day, and one field blank per day of each water source used in decontamination. Field laboratory QA/QC will be in accordance with the Naval Energy and Environmental Support Activity (NEESA) Level C data quality objectives. Laboratory QC samples will include reagent blanks, duplicate aliquots, matrix spike and matrix spike duplicates. An initial instrument calibration will be performed prior to sample analysis and continuing calibration check standards will be analyzed periodically to monitor instrument performance. All environmental samples and quality control samples will be spiked with a surrogate mixture during sample preparation to monitor analytical performance. Ten percent (%) of all environmental samples collected for field GC analysis will be duplicated and sent to a NEESA approved laboratory for confirmatory GC analysis.

The field analyses are expected to meet Level C data quality, but since the field laboratory is not an audited facility the data cannot truly be classified as Level C. Equipment and personnel to perform the field analyses will be provided under subcontract to ABB Environmental Services, Inc. The subcontracted laboratory providing field analytical capabilities will have NEESA approval to

perform analyses associated with site characterizations conducted under the Installation Restoration Program.

The field program discussed above and associated with investigation of vinyl chloride in groundwater at Site 11 is expected to be scheduled for early August 1992.



**SITE 11
GROUNDWATER POTENTIOMETRIC
SURFACE MAP - MAY 1992**