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SITE INSPECTION REPORT FOR POINCIANA HOUSING BASE REALIGNMENT AND
CLOSURE PARCEL NAS KEY WEST FL
6/1/1998
BROWN AND ROOT ENVIRONMENTAL

**Site Inspection Report
for
Poinciana Housing BRAC Parcel

for

Naval Air Station
Key West, Florida**



**Southern Division
Naval Facilities Engineering Command**

Contract Number N62467-94-D-0888

Contract Task Order 0032

June 1998



Brown & Root Environmental

*Brown & Root Environmental corporate identity changing to
Tetra Tech NUS, Inc. following contract novation*

Revision 1

**SITE INSPECTION REPORT
FOR
POINCIANA HOUSING BRAC PARCEL

FOR

NAVAL AIR STATION
KEY WEST, FLORIDA**

**COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT**

**Submitted to:
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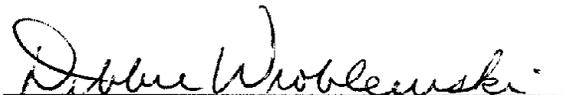
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EXECUTIVE SUMMARY

This report presents the results of a Site Inspection (SI) at Naval Air Station (NAS) Key West on behalf of the United States Navy (Navy), Naval Facilities Engineering Command, Southern Division. The report covers the inspection of a single Base Realignment and Closure (BRAC) Parcel (Poinciana Housing). Brown & Root Environmental performed this SI in accordance with a workplan for the SI of 10 Parcels approved by the United States Environmental Protection Agency (EPA) and the Florida Department of Environmental Protection (FDEP). These 10 BRAC Parcels were all categorized as "grey" during Environmental Baseline Studies. "Grey" Parcel categorization means areas that have not been evaluated or that require additional evaluation before being reclassified into a category eligible for deed transfer.

The goal of this report is to evaluate the data gathered during the SI field effort on the Poinciana Housing Parcel and determine the need for any additional remedial activities prior to reclassification into a category eligible for deed transfer. This report consists of two major sections and three appendices. Section 1 provides an introduction, the purpose and scope of the report, a parcel location description, an overview of Key West and Poinciana Housing environmental settings, an explanation of the Data Quality Objectives Process, an overview of the data quality assessment process, and a discussion of the data interpretation and presentation methods employed in this report. Section 2 characterizes the property investigated, providing additional description of individual subzones within Poinciana Housing and presenting the results of the SI for each subzone. The subsections that discuss the SI findings in each subzone present the contaminants detected and compare the detected concentrations with selected screening values. These sections are accompanied by maps that place results in a geographic frame of reference. Conclusions are presented for each subzone based on the SI findings in that particular area. These conclusions are then summarized in the final section, providing overall conclusions and recommendations for the Poinciana Housing Parcel.

As mentioned above, this report includes several appendices. Appendix A presents the responses to comments on the SI Report submitted by FDEP and EPA. Appendix B provides field documentation including a summary of all amendments to and deviations from the SI Workplan for Ten BRAC Properties, NAS Key West, Florida (B&R Environmental, 1998a); copies of all field data sheets including boring logs, sample collection forms, well development logs, and well completion logs; and survey data. Appendix C consists of a 3½-inch floppy diskette, which contains the complete Poinciana Housing SI data set used in the decision-making process.

The Navy recommends no further soil sampling because the SI results indicate that there are no unacceptable levels of metals in the soils. The Navy recommends a groundwater monitoring plan should

be developed to monitor the one permanent monitoring well where arsenic was found at a level that slightly exceeds the maximum contaminant level. The plan should include periodic sampling of the well and a strategy for the continuation or termination of groundwater sampling. The Navy also recommends that any lease of the Poinciana Housing Parcel include restrictions on groundwater use.

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LIST OF ACRONYMS

ARARs	Applicable or Relevant and Appropriate Requirements
B&R Environmental	Brown and Root Environmental
bls	below land surface
BRAC	Base Realignment and Closure
CLEAN	Comprehensive Long-Term Environmental Action - Navy
COA	Certificate of Analysis
COC	Chain of Custody
DOD	Department of Defense
DQO	Data Quality Objective
EBS	Environmental Baseline Study
EPA	United States Environmental Protection Agency
°F	Degrees Fahrenheit
FDEP	Florida Department of Environmental Protection
FKAA	Florida Keys Aqueduct Authority
ft	feet
IDW	Investigation derived waste
mg/kg	milligrams per kilogram
mg/l	milligrams per liter
mgd	million gallons per day
mm	millimeters
msl	mean sea level
NAS	Naval Air Station
NAVFACENGCOM	Naval Facilities Engineering Command
PCB	polychlorinated biphenyl
QC	quality control
SAL	Screening Action Level
SI	Site Inspection
SVOC	semivolatile organic compound
µg/kg	micrograms per kilogram
µg/l	micrograms per liter
VOC	volatile organic compound

1.0 INTRODUCTION

Brown and Root Environmental (B&R Environmental) has performed a Site Inspection (SI) of Base Realignment and Closure (BRAC) Properties at the Naval Air Station (NAS) Key West, Florida on behalf of the U.S. Navy, Naval Facilities Engineering Command, Southern Division (NAVFACENGCOM-Southern Division). This SI Report was completed under Comprehensive Long-Term Environmental Action - Navy (CLEAN) Contract Number N62467-94-D-0888, Contract Task Order 0032.

1.1 PURPOSE AND SCOPE OF REPORT

This SI was conducted under the authority of the BRAC Act of 1992 and was designed to obtain information to support a reclassification of Poinciana Housing, a BRAC Parcel designated as "grey" in the Predraft Environmental Baseline Study (EBS) (USN-NFEC, 1996). "Grey" Parcel categorization means areas that have not been evaluated or that require additional evaluation. A Parcel cannot be considered for deed transfer until necessary investigative and, if necessary, remedial actions have been determined. The Parcel can then be reclassified into a category eligible for deed transfer. The goal of this report is to evaluate the data gathered during the SI field effort on the Poinciana Housing Parcel and determine the need for any additional remedial activities prior to reclassification. The Poinciana Housing BRAC Parcel was previously referred to as "Zone G" in the BRAC SI Workplan (B&R Environmental, 1998a).

1.2 REPORT ORGANIZATION

This SI report consists of two major sections and three appendices. Section 1 provides an introduction, the purpose and scope of the report, a parcel location description, an overview of Key West and Poinciana Housing environmental settings, an explanation of the Data Quality Objectives (DQO) Process, an overview of the data quality assessment process, and a discussion of the data interpretation and presentation methods employed in this report. Section 2 characterizes the property investigated, providing additional description of individual subzones within Poinciana Housing and presenting the results of the SI for each subzone. The subsections that discuss the SI findings in each subzone present the contaminants detected and compare the detected concentrations with selected screening values. These sections are accompanied by maps that place results in a geographic frame of reference. Conclusions are presented for each subzone based on the SI findings in that particular area. These conclusions are then summarized in the final section, providing overall conclusions and recommendations for Poinciana Housing.

As mentioned above, this report includes several appendices. Appendix A presents the responses to comments on the SI Report submitted by the Florida Department of Environmental Protection (FDEP) and the United States Environmental Protection Agency (EPA). Appendix B provides field documentation including a summary of all amendments to and deviations from the SI Workplan for Ten BRAC Properties, NAS Key West, Florida (B&R Environmental, 1998a); copies of all field data sheets including boring logs, sample collection forms, well development logs, and well completion logs; and survey data. Appendix C consists of a 3½-inch floppy diskette, which contains the complete Poinciana Housing SI data set used in the decision-making process. The data is included in standard database format (Poinciana SI.dbf) and in portable document format (Poinciana SI.pdf).

1.3 PARCEL LOCATION

Several installations in various parts of the lower Florida Keys comprise NAS Key West. The U.S. Navy manages 6,323 acres of land divided into 20 separate tracts in the lower Florida Keys, concentrated around Key West and Boca Chica Keys (Figure 1-1) in southern Monroe County (B&R Environmental, 1998b). Key West, one of the two most western major islands of the Florida Keys, is approximately 150 miles southwest of Miami and 90 miles north of Havana, Cuba. Key West connects to the mainland by the Overseas Highway, commonly known as U.S. Highway No. 1.

The mission of NAS Key West dramatically changed in 1974, resulting in the relocation of several units. At present, NAS Key West is proceeding with realignment of aviation operations, a research laboratory, communications intelligence, counternarcotics operations, a weather service, and several other activities. In addition to the Naval activities and units, other Department of Defense (DOD) and Federal agencies at NAS Key West include the U.S. Air Force, U.S. Army, and U.S. Coast Guard.

The Poinciana Housing Parcel is located on the east end of Key West near the Naval Regional Medical Clinic (Figure 1-2). The Parcel has been broken into two subzones based on the physical and geographical boundaries and the previous use of the area.

1.4 KEY WEST ENVIRONMENTAL SETTING

This section includes a summary of existing conditions at Key West and, more specifically, Poinciana Housing. Key West climate and meteorology, topography, surface-water hydrology, geology and soil, hydrogeology, potable water supply, population and land use, and general area ecology are described below.

1.4.1 General Information

The island of Key West is approximately 4 miles long and 1.5 miles wide. The City of Key West is the county seat for Monroe County. The principal industry in Key West is tourism, which draws 1.5 million tourists annually (Roberts, 1998). Tourism, fishing, wholesale and retail trade, services, construction, finance, insurance, real estate, Federal government, state and local government, and transportation industries make up the major sources of employment in Key West.

1.4.2 Climate and Meteorology

Of the Florida Keys, the lower Keys have the least rainfall with an average annual rainfall of 39.4 inches. Temperature is fairly uniform across the Florida Keys with a July average temperature of 84 degrees Fahrenheit (°F), a January temperature of 64 to 70°F, and an average annual temperature of 76.3°F. Freezing temperatures are rare in the Florida Keys due to their proximity to the Gulf Stream and the Gulf of Mexico, both of which modify advancing cold fronts. Freezes, when they occur, have the long-lasting effect of killing cold-sensitive species that might otherwise become established. Easterly tradewinds and sea breezes suppress summer heat from June to September (B&R Environmental, 1998a).

Hurricanes normally form in the warm, moist air over the tropical seas around the Lesser Antilles and occasionally in the Caribbean. They tend to move in a westerly to northwesterly direction, gradually turning northward and eastward. Most hurricanes that approach Key West do so from the south and east. Severe hurricanes have struck Key West from each direction. Tidal flooding causes an estimated 75 percent of all damage that occurs during a hurricane (B&R Environmental, 1998a).

Dry and wet seasons characterize the climate of Key West. From December through May, the Keys receive approximately 20 to 25 percent of their total annual precipitation. Approximately 75 to 80 percent of the annual rainfall occur from June through November. Rainfall usually occurs in advance of a cold front in the form of a few heavy showers, with generally five to eight light showers per month. Overland flow or storm drains that drain approximately 50 percent of the island's surface area carry rainfall runoff from Key West to the tidal waters; however, much of the rainfall percolates directly into the subsurface (B&R Environmental, 1998a).

1.4.3 Topography

The Key West area lies in the southeastern Coastal Plain physiographic province. A series of ancient marine reefs, formed during the Pleistocene period when the sea level was higher than it is at present, control the topography of the Coastal Plain in southern Florida (B&R Environmental, 1998a).

Ground elevations in the Key West area average between 4 and 5 feet (ft) above mean sea level (msl), and the highest point on Key West is approximately 18 ft above msl. The Key West area is characterized by a sparse veneer of residual soil and surface vegetation overlying eroded limestone. The topography of the lower Keys, generally smooth and flat in the center of the key, slopes gently toward the shoreline. Except in the filled areas that underlie the Overseas Highway, Key West is generally flat. With the exception of central Key West, most areas are within the 100-year floodplain (B&R Environmental, 1998a).

1.4.4 Surface-water Hydrology

The surrounding saltwater bodies, the Atlantic Ocean and the Gulf of Mexico, dominate the surface-water regime in the Florida Keys. FDEP classifies surface water in the Florida Keys as Class G-III Waters - Recreational, Propagation, and Management of Fish and Wildlife. In the immediate area of Key West are the Great White Heron National Wildlife Refuge and the Key West National Wildlife Refuge, which FDEP classifies as Outstanding Florida Waters to receive the highest degree of protection by the State. The residents of Florida consider these waters of exceptional recreational and ecological significance (B&R Environmental, 1998a).

Freshwater recharge in the lower Keys occurs directly through rainfall. The nearly flat topography and porous nature of exposed limestone allows much of the rainfall to infiltrate to shallow groundwater tables, forming freshwater lenses. Overland flow or storm drains in most of the more developed areas carry remaining rainfall to tidal waters. Accelerated runoff and increased saltwater intrusion from canals, housing, dewatering (as a mosquito control measure), and marinas decrease the freshwater lens on the Florida Keys and affect water quality. During the dry season, freshwater tends to disappear quickly by seepage to the sea and evaporation. Evaporation exerts an important effect on the Florida Keys' hydrologic budget, with transpiration affecting a more localized and confined area on individual islands (B&R Environmental, 1998a).

1.4.5 Geology and Soil

The lower Keys, which are within the southern or distal geomorphic division of Florida, were formed during the Pleistocene era. Commonly referred to as the "Oolite Keys," they are underlain by the Oolitic Member (Miami Oolite) of the Miami Limestone. The Oolitic Member consists of variably sandy, fossiliferous limestone composed primarily of ooids [spherical calcareous grains 0.25 to 2.0 millimeters (mm) in diameter] that were created through eustatic elevation of the limestone. In the lower Keys, the Oolitic Member consists of the Ooid Calcareenite and the Oomoldic-recrystalline lithofacies. The Ooid Calcareenite lithofacies consists of very fine to coarse sand-size, spherical carbonate grains concentrically

laminated around a silt-size to fine-sand-size nucleus. The Oomoldic-recrystalline lithofacies consists of slightly sandy to very sandy well to moderately well-consolidated micritic calcite. The Miami Oolite overlies the Key Largo Limestone, a geologic unit consisting of light grey to light yellow coralline limestone comprised of coral heads encased in a matrix of calcarenite.

The Miami Oolite is reported to be 27 ft thick. The Key Largo limestone is greater than 270 ft thick in the western portion of Key West (B&R Environmental, 1998a). The Key Largo Limestone is generally more porous than the Miami Oolite, but it contains only saltwater. Figure 1-3 shows a geologic cross-section of the Florida Keys (ABB, 1995).

Many areas of the Florida Keys have been filled and graded. Undisturbed soil in the Keys consists of shallow marl over limestone with the substrate rock outcropping at the surface.

1.4.6 Hydrogeology

The surficial aquifer system that occurs in the lower Keys consists of the Oolitic Member, which is very porous and highly permeable due to the dissolution of carbonate by groundwater as it recharges the aquifer system. The aquifer is tidally controlled and fluctuates constantly. It is extremely porous, and solution holes and caverns are ubiquitous. The Tamiami Formation lies below the Key Largo Limestone unit, between 300 and 900 ft below land surface (bls). The formation contains mineralized water that does not meet Florida drinking water standards. Underlying the Tamiami Formation are the Hawthorn and Tampa Formations, which together act as an aquiclude confining the underlying limestone units. Below the confining units of the Hawthorn and Tampa Formations is the Suwannee Limestone, fossiliferous limestone representing the top of the water-producing zone in the Florida Keys. The Avon Park Limestone is 1,300 ft bls and, although it has a higher transmissivity than the Suwannee Limestone and supplies large quantities of drinking water in central Florida, is of poor quality in the Florida Keys (B&R Environmental, 1998a).

The surficial aquifer is the principal aquifer of concern in Key West because of its reported use as a potable water resource to a limited extent (although not at NAS Key West) and because of its groundwater-to-surface-water contaminant migration route (B&R Environmental, 1998a). The water table ranges in depths from 0.8 to 2.4 ft above msl at the center of Key West and from 0.4 to 2.2 ft above msl near the coast. The water table fluctuates diurnally because of tidal effects. Head differentials associated with tidal variations near the shore can further accelerate groundwater movement in the area. A reconnaissance water-quality sampling study completed in 1990 by the U.S. Geological Survey in cooperation with the South Florida Water Management District indicates that the freshwater lens contains nonpotable water (B&R Environmental, 1998a). The State of Florida classifies groundwater in unconfined

aquifers that have a total dissolved solids content of 10,000 milligrams per liter (mg/l) or greater as Class G-III (nonpotable water). Some domestic residences on Key West are reported to use surficial aquifer wells for nonpotable uses such as flushing water. The City Engineer of Key West also reports that water from some of these types of wells might be used for drinking after treatment such as reverse osmosis. The freshwater lens averages 5 ft in thickness below the center of the western half of Key West. The lens contains between 20 and 30 million gallons of fresh water, depending on the season. Underlying the freshwater lens is a 40-ft transition zone of brackish water (B&R Environmental, 1998a).

1.4.7 Potable Water Supply

Potable water is supplied to all the Florida Keys. The Florida Keys Aqueduct Authority (FKAA) operates and maintains the Florida Keys Aqueduct that supplies potable water throughout the Florida Keys. The water is drawn from wells near Florida City in southeastern Dade County and pumped 130 miles through a water main that parallels U.S. Highway No. 1 and terminates in Key West. Water is distributed along the length of the main. In 1984, the FKAA supplied the City of Key West with an average flow of 11.7 million gallons per day (mgd). The Navy at NAS Key West received 14.35 percent of the average flow (B&R Environmental, 1998a). In some instances, potable water is also obtained by rainwater catchment (the only source prior to the construction of the aqueduct in the 1940s).

Alternative sources of potable and nonpotable water used in the Florida Keys include private cisterns, private wells, home desalination systems, and bottled water. The Monroe County Health Department recognizes the public water supply as the only potable water source available on Key West. In addition to managing the centralized public water supply system, the FKAA has the authority to regulate all potable water supplies in the Keys, including alternative sources of water such as those mentioned above. Those residences using a dual system of private and public water are required to use a reduced-pressure valve to prevent back-flow of water into the water supply system. The FKAA does, however, report that private wells in the freshwater lens in the Surficial Aquifer may be used for both potable and nonpotable purposes (B&R Environmental, 1998a). The number of people who use water from private wells in Key West for drinking or nonpotable domestic purposes is unknown. The best estimate of the number of people using local groundwater for nonpotable domestic purposes is less than 500 people (B&R Environmental, 1998a).

1.4.8 Key West Population and Land Use

The City of Key West has a residential population of approximately 24,800 (USCBS, 1990). The principal industry is tourism with approximately 1.5 million tourists visiting the city annually (Roberts, 1998). The Monroe County population is approximately 78,000, and the average age is approximately 39 years

(USCBS, 1990). The average household size is 2.3 persons. The median cost of housing is \$164,000. Key West has five elementary schools, two parochial elementary schools, one public high school, the Florida Keys Community College, and May Sands Exceptional Center. Monroe County has 33 churches, one synagogue, and two Florida Health System Hospitals (east and west). Land use in the City of Key West consists primarily of commercial and residential areas.

1.4.9 Poinciana Housing Area Ecology

Key West includes areas that have been developed by the Navy and retain little natural resource value; however, undeveloped areas can support high-quality natural communities and provide important habitats.

Although five non-marine natural community types were identified by the Florida Natural Areas Inventory within the NAS Key West study area (FNAI, 1994), Poinciana Housing was described as an area with no natural plant communities. However, it is believed that the pond at the perimeter of the Poinciana Housing Parcel is representative of the mangrove swamp community as described in the FNAI. Four plant species dominate mangrove swamp areas: red mangrove (*Rhizophora mangle*), black mangrove (*Avicennia germinans*), white mangrove (*Laguncularia racemosa*), and buttonwood (*Conocarpus erecta*). The relative abundance of each species varies greatly from area to area as do the density, average height, degree of canopy closure, and diversity of associated herbaceous species. Mixed mosaics of mangrove species make up the majority of mangrove swamps at Key West, which vary continuously over a given area with regard to dominance.

The pond at the Poinciana Housing Parcel may support some of the same terrestrial and aquatic vertebrate species associated with mangrove swamp communities evaluated during the FNAI at NAS Key West. However, the majority of the Poinciana Housing Parcel is essentially a residential area with no natural plant communities. Only ornamental plantings and a few remnant species of native vegetation are present. Several exceptionally large buttonwood trees are present near the playground. The lack of natural vegetation and the presence of humans may limit the occurrence of many of the species that can be found at Key West as described in the BRAC SI Workplan (B&R Environmental, 1998a). The threatened and endangered species recorded at NAS Key West (FNAI, 1994) are also included in the BRAC SI Workplan (Tables 2-1 and 2-2), but also are unlikely to occur at the Poinciana Housing Parcel. Wildlife associated with developed areas at Key West, such as Poinciana Housing, is primarily limited to birds associated with urbanized areas.

1.5 POINCIANA HOUSING PARCEL DATA MANAGEMENT

The following subsections include an explanation of the DQO Process, an overview of the data quality assessment process, and a discussion of the data interpretation and presentation methods employed in this report.

1.5.1 Data Quality Objectives

In 1997, the DQO Process (EPA, 1994) was used as a tool by the NAS Key West Partnering Team to determine the type, quantity, and quality of data needed to support the development of the SI Workplan. The DQO Process was performed on the 10 BRAC Parcels categorized as "grey." In addition to the Poinciana Housing Parcel, these Parcels included East Martello Battery, Hamaca Hawk Missile Site, five Parcels on Truman Annex, and two Parcels on Trumbo Point (Figure 1-2). The NAS Key West Partnering Team is made up of the key decision makers for environmental restoration and remediation at NAS Key West. The members include representatives from the FDEP, EPA, NAVFACENCOM-Southern Division, the U.S. Navy at NAS Key West, and the U.S. Navy's remedial and investigative contractors. As a systematic planning tool based on the scientific method, the seven-step DQO Process helps establish criteria for defensible decision-making at the onset of a study, such as the SI, and develops a data-collection design based on these criteria.

The seven steps of the DQO Process identify such information as the goal of the investigation, the inputs needed to reach the goal and make a decision, the temporal and areal boundaries of the investigation, the level of confidence required to support a decision, and finally, a sampling design that is adequate to support the decision-making process. A complete discussion of each step of the DQO Process as it relates to the BRAC SI is provided in Section 3.0 of the BRAC SI Workplan. Important elements of the DQO Process include the following:

- Identification of the medium (e.g., soil, sediment, surface water, and groundwater) and parameters [e.g., volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), inorganics, etc.] of interest in each subzone
- Selection of analytical methods
- Selection of action levels
- Constraints on data collection

- Quantifying the desirable level of confidence in decisions
- Determining sample size for each medium

1.5.2 Data Quality Assessment

Maintaining and assuring data quality was a key issue in all stages of the data handling process. Accordingly, procedures were in place in each step of the process to ensure the integrity of the sample data generated during the Poinciana Housing field investigation. Each portion of the data handling process, including data generation at the laboratory, data review, and database assembly is discussed below.

1.5.2.1 Laboratory Quality Assurance

Laboratory quality control (QC) procedures are designed to ensure the consistency and continuity of the data. Standard QC analyses were performed throughout laboratory handling of the Poinciana Housing Parcel SI samples. This included the routine analysis of matrix spike and matrix duplicate samples, laboratory method blanks, and laboratory control samples. Laboratory instrument calibrations were performed and verified based on the requirements of the individual analytical methods. In order to ensure that data quality standards were met or surpassed, laboratory personnel reviewed all QC procedures and analyses prior to the completion of data packages. Appendix D (Quality Assurance Elements) of the BRAC SI Workplan provides a more detailed discussion of laboratory quality assurance requirements and procedures (B&R Environmental, 1998a).

1.5.2.2 Data Review

The data packages submitted by the laboratory for the Poinciana Housing Parcel samples underwent a formal data review that included the following elements:

- Complete verification of the electronic results against the Chain of Custody (COC) and the result reported on the Certificates of Analysis (COA)
- Review of holding times

- Review of all blank samples submitted as a routine part of the sample collection process (trip blanks, field blanks, and rinsate blanks) in order to eliminate false positives
- Review of laboratory calibration logs for gross non-compliance with QC requirements

1.5.2.3 Database Assembly

Once the preview process of the data packages was completed, the electronic data was assembled in a database in order to facilitate the interpretation and analysis of results. A series of electronic checks were performed and documented in order to ensure the integrity of the data set. This included confirming the presence of each sample in the database, demonstrating that the appropriate analytical fractions were present for each sample, verifying consistent sample and parameter nomenclature in the electronic data set, checking units for consistency, and reviewing key fields for blank or other inappropriate entries. The electronic QC process also identified duplicate samples, generated an average result for each duplicate location, and verified that only one set of results for each location was accepted into the final data set.

1.5.3 Site Inspection Methodology

An overview of the methods used to interpret and present the analytical data is provided here.

1.5.3.1 Determination of Background Levels

In 1996, a comprehensive background data set was assembled for use as a tool in the Supplemental RFI/RI Report for Eight Sites at NAS Key West (B&R Environmental, 1998c). At that time the background data set was used to characterize the nature and extent of contamination and to assist in the performance of ecological and human health risk assessments at the eight sites that were investigated. A subset of the comprehensive background data set was used in the DQO Process to statistically determine subzone sample sizes and to screen data from the BRAC SI.

For consistency and comparability, all data included in the BRAC SI background data set was collected over the same time period and was analyzed by the same laboratory. Background levels were calculated based on chemical-analytical data from background samples collected in the vicinity of Key West, Florida. The entire BRAC SI background data set is available in Appendix B of the BRAC SI Workplan (B&R Environmental, 1998a). A complete discussion of how calculations were performed and how background data was identified is provided in the Comprehensive Background Report, Appendix F of the Supplemental RFI/RI for Eight Sites at NAS Key West (B&R Environmental, 1998c).

1.5.3.2 Modifications to the Parcel Data Set

In general, the electronic data set developed for site characterization and analysis directly reflects the information presented in the laboratory data packages. A few modifications and exclusions were necessary, as follows:

- A standardized set of parameter names was used throughout the data set, and the assignment of parameters to analytical fractions was also standardized.
- As described in Section 1.5.2.2, all analytical results underwent data review which occasionally resulted in changes to the data set.

1.5.3.3 Development of Site Inspection Findings

Detected chemicals were considered at the subzone level. All of the analytes were compared to action levels for each media, and the analytes determined to exceed the selected action levels are the primary focus of the discussion. The compounds which exceeded the action levels are shown on maps within the subzone-specific discussion of contamination findings. For reference, all detected parameters are presented in the data tables that accompany the discussion.

1.5.3.3.1 Action Levels

Applicable or Relevant and Appropriate Requirements (ARARs) and Screening Action Levels (SALs) were obtained from various state agencies, Federal agencies, and research institutions. These values were all considered as potential screening criteria in evaluating the SI findings at Poinciana Housing. Twice the average background concentration (as discussed in Section 1.5.3.1) was used as an additional screen. All potential action levels considered for soil and groundwater are presented in Appendix B of the BRAC SI Workplan (B&R Environmental, 1998a). The last columns of each table identify the value selected for use in screening the parameters detected in each media.

Legally binding action levels, guidance values, and potentially applicable guidance values from other media were all evaluated as part of action level selection in the DQO Process. For inorganics and pesticide compounds, both commonly found in background samples from the vicinity of Key West, twice the average background concentration was also considered as a potential action level. The decision logic used to compare these various values and select the action levels is shown in Figure 1-4.

1.5.3.3.2 Data Tables

Data tables are included within each subzone-specific discussion under the SI findings. Each table lists only the chemicals that were detected in the specific subzone being discussed. For example, if a chemical was not detected in any sample for a given subzone, it is not listed in the table containing that subzone's data. These tables provide an inclusive list of the analytes detected at the Parcel by subzone. Data validation qualifiers are provided in these tables and are defined at the end of each table. Rejected data are not included.

As stated in the BRAC SI Workplan (B&R Environmental, 1998a), the common essential nutrients calcium, magnesium, potassium, and sodium are not addressed in the SI Report, although some samples were analyzed for these parameters.

1.5.3.3.3 Contaminant Distribution Maps

Maps were created to present the concentration and distribution of the analytes that were detected in excess of action levels by subzone. The intent of these maps is to display the distribution and extent of analytes, to identify areas of greatest impact, and to link the release and, if applicable, the migration of contaminants to the Parcel's physical features and/or environmental setting. Chemical concentrations are shown at each sampling point where an action level was exceeded. Other considerations made during the preparation of the contaminant distribution maps are discussed below:

- Non-detect data and data that fell below the action level for a given chemical are not represented on the figures.
- A data box on each figure provides the action levels that were used as a basis of comparison for each chemical shown. Appendix B of the BRAC SI Workplan (B&R Environmental, 1998a) provides an inclusive list of all the ARARs, SALs, and background values that were evaluated as potential screening criteria for the SI findings discussion.
- For soil, laboratories commonly report organic concentrations in micrograms per kilogram ($\mu\text{g}/\text{kg}$), while inorganic concentrations are reported in milligrams per kilogram (mg/kg). These standardized units are maintained throughout the text, tables, and maps.

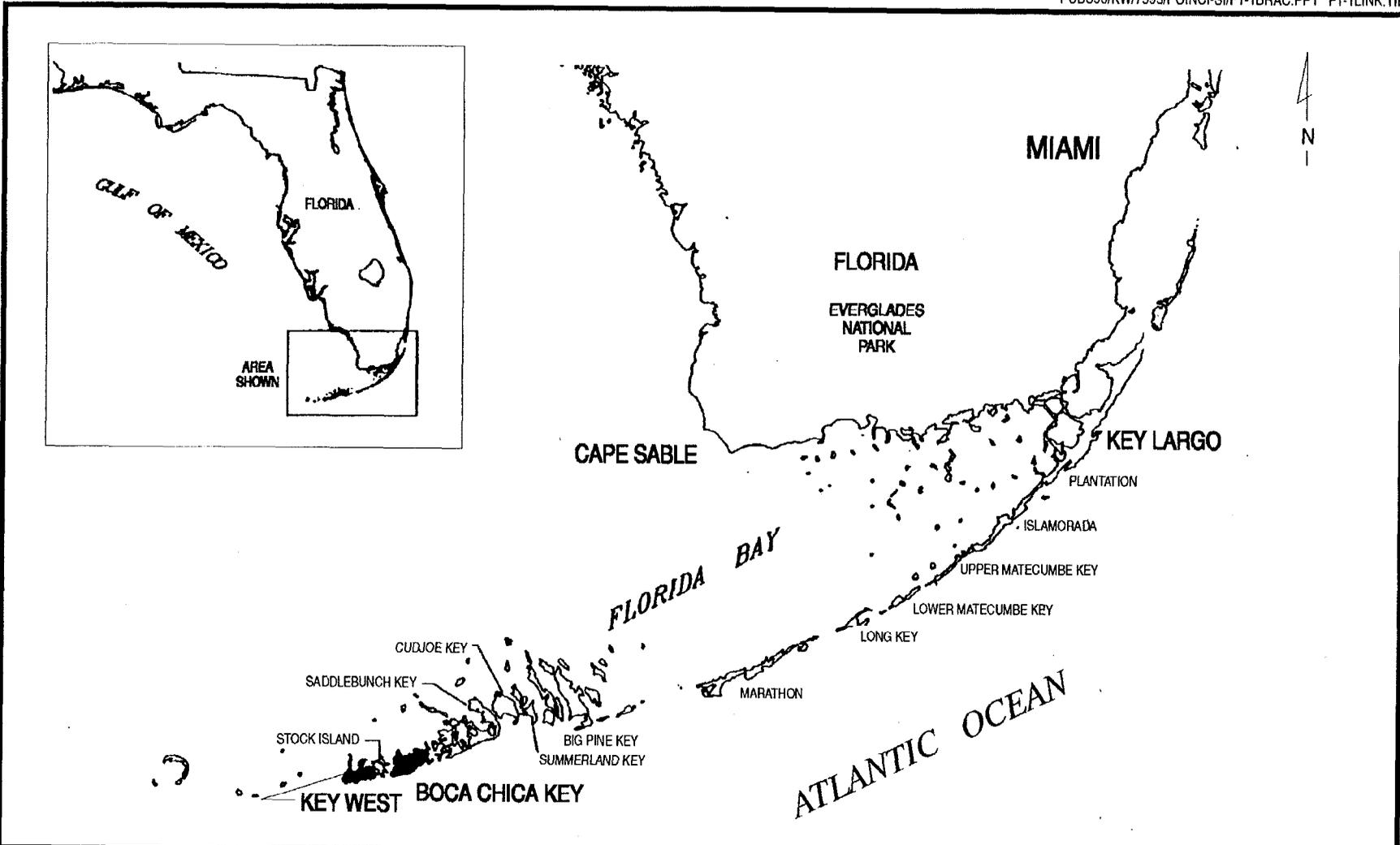
- Concentrations of contaminants in groundwater are normally reported in micrograms per liter ($\mu\text{g/l}$). These standardized units are maintained throughout the text, tables, and maps.
- The maps distinguish between organic and inorganic parameters in order to carry through the standardized units in an easily recognizable, consistent fashion.

1.5.3.3.4 Conclusions and Recommendations

Conclusions were prepared for each subzone and for the Parcel to summarize SI findings. Recommendations based on the findings were developed for the Parcel in cooperation with the NAS Key West Partnering Team and in accordance with the DQO Process (B&R Environmental, 1998a).

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CHECKED BY DSP	DATE 3/12/98
COST/SCHED-AREA	
SCALE AS NOTED	



**SITE INSPECTION REPORT FOR POINCIANA HOUSING
FIGURE 1-1. LOCATION MAP
NAVAL AIR STATION KEY WEST
SOUTHERN DIVISION
NAS KEY WEST, FLORIDA**

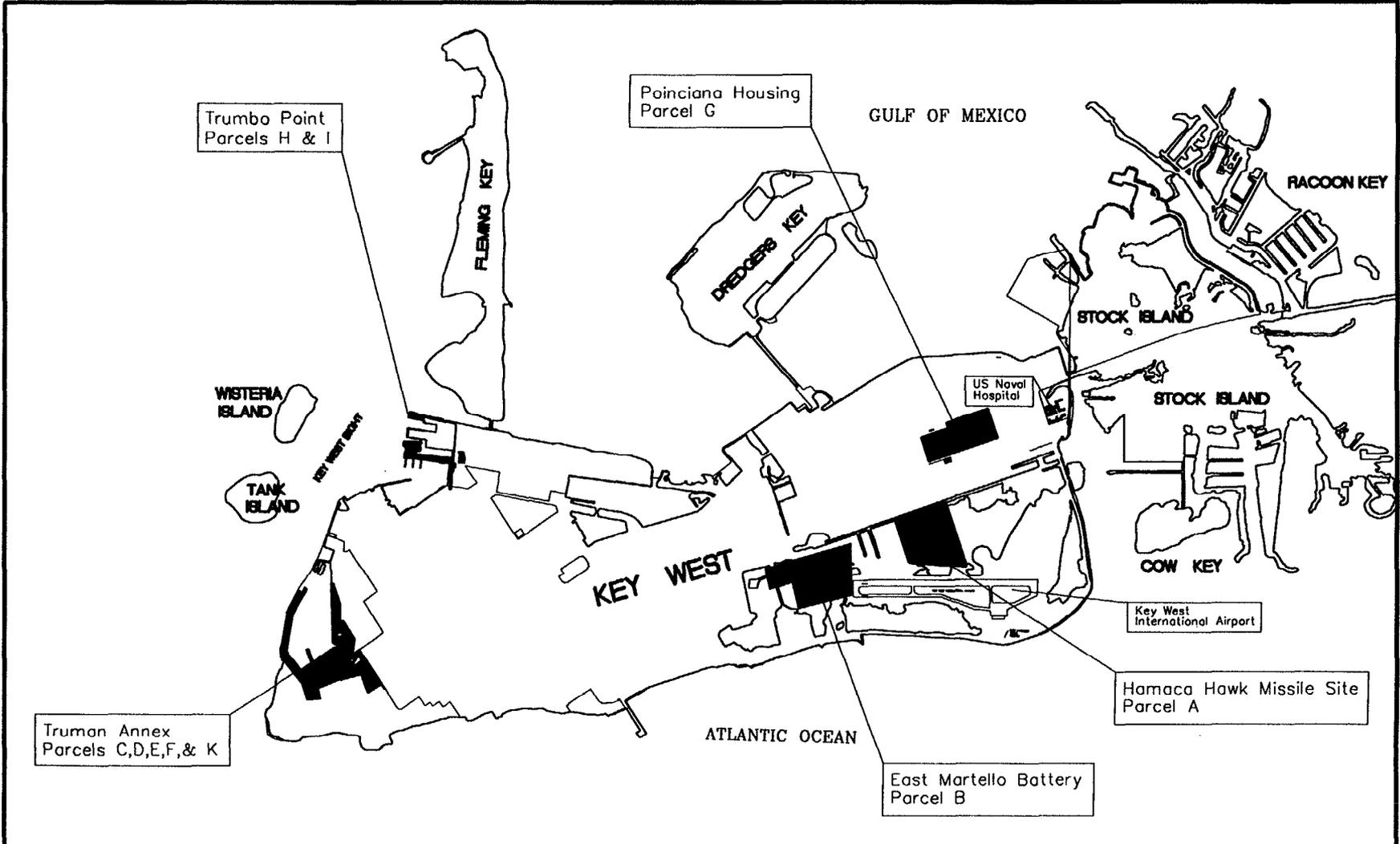
CONTRACT NO. 7593	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. F1-1BRAC.PPT**F1-1LINK.TIF	REV. 0

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Rev. 0
04/10/98

AIK-98-0154

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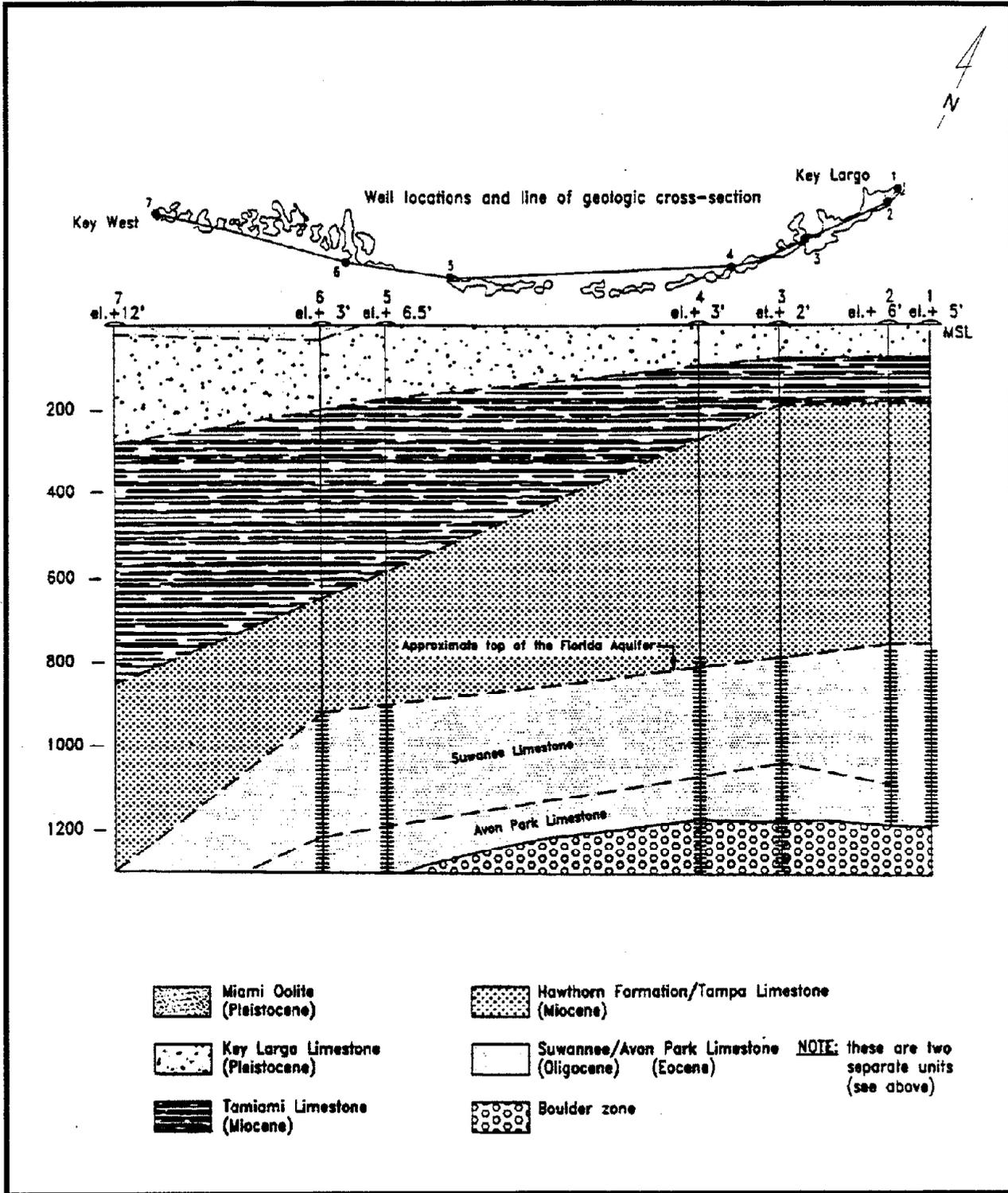


DRAWN BY MDB	DATE 3/30/98	 <p> SITE INSPECTION REPORT FOR POINCIANA HOUSING FIGURE 1-2. LOCATION MAP BRAC PROPERTIES & PARCELS NAVAL AIR STATION - NAS KEY WEST SOUTHERN DIVISION KEY WEST, FLORIDA </p>	CONTRACT NO. 7593	
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			DRAWING NO. 98031202.DWG	REV. 0

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04/10/98

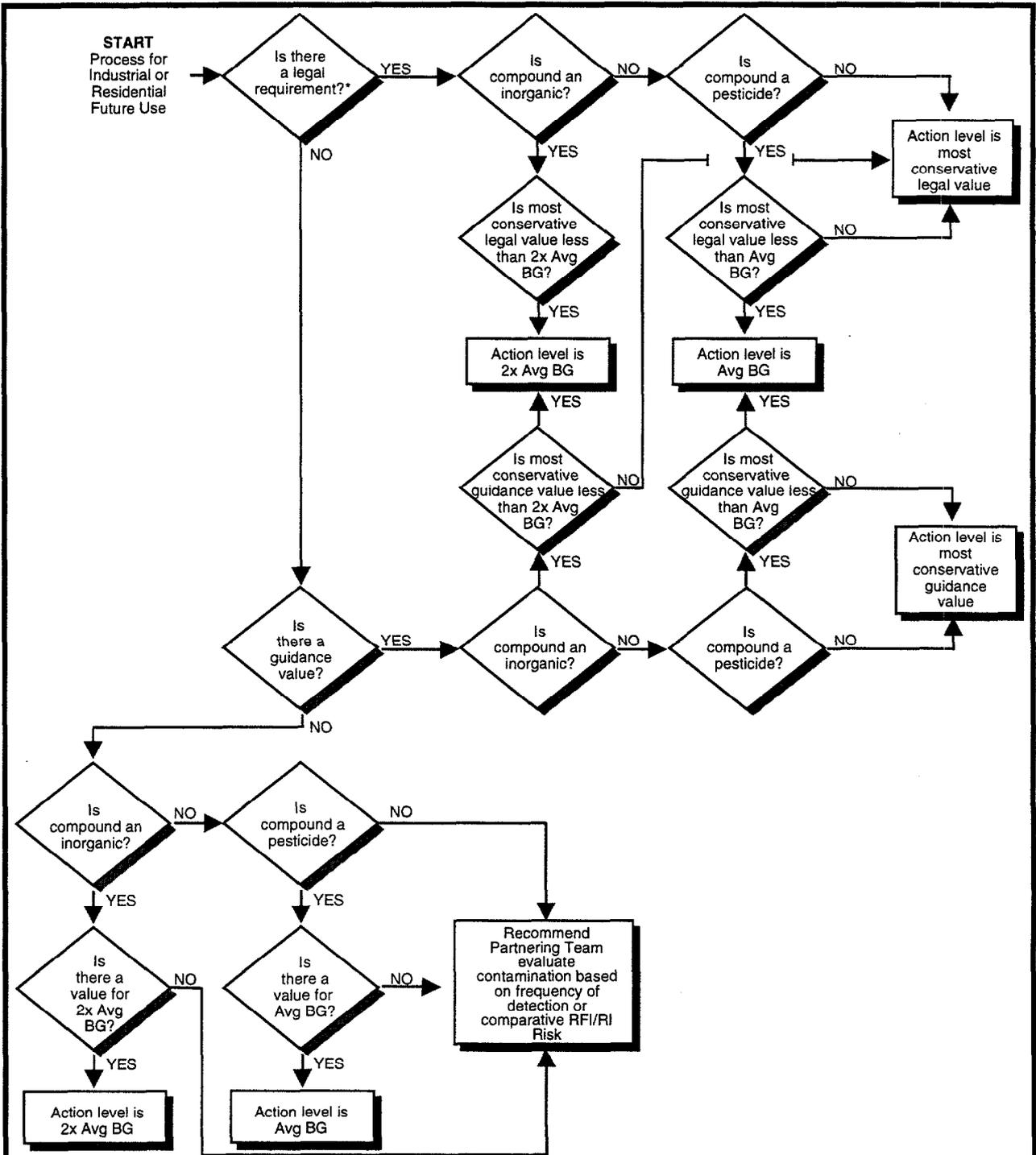
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DRAWN BY RBP	DATE ----		SITE INSPECTION REPORT FOR POINCIANA HOUSING FIGURE 1-3. GEOLOGIC CROSS-SECTION FLORIDA KEYS SOUTHERN DIVISION NAS KEY WEST, FLORIDA	CONTRACT NO. 7593
CHECKED BY	DATE		APPROVED BY	DATE
COST/SCHED-AREA			APPROVED BY	DATE
SCALE AS NOTED			DRAWING NO. F1-3GEOC.PPT**F1-3LINK.TIF	REV. 0

FORM POWERPOINT-SD_AH.PPT-REV 0-3/98

P: KEY WEST/BRACCTO/SITE/INS/P/POINCIANA/PURSONLY/GRFX/F1-4DEC.PPT



*A residential or industrial set of action levels were considered for the Parcels based on the future use determination made in the Key West Reuse Plan (BAP, 1997).

DRAWN BY RBP	DATE ----		SITE INSPECTION REPORT FOR POINCIANA HOUSING BRAC PARCEL FIGURE 1-4. DECISION LOGIC FOR ACTION LEVEL SELECTION NAVY SOUTHERN DIVISION NAS KEY WEST, FLORIDA		CONTRACT NO. 7593	
CHECKED BY	DATE				APPROVED BY	DATE
COST/SCHED-AREA					APPROVED BY	DATE
SCALE					DRAWING NO. F1-4DEC.PPT	REV. 1

FORM POWERPOINT-SD_AH.PPT-REV 0-3/98

2.0 POINCIANA HOUSING PARCEL RESULTS

This section characterizes the property investigated, providing additional descriptions of individual subzones within the Poinciana Housing Parcel and presenting the results of the SI for each subzone.

2.1 PARCEL DESCRIPTION

Poinciana Housing is situated on 36 acres on the east end of Key West bounded by Duck Avenue, 19th Street, and Donald Avenue (Figure 2-1). The Parcel is primarily surrounded by single-family residences. Since 1942, the Parcel has been used for residential purposes. No industrial activities have taken place at the site since its acquisition by the Navy in 1947. This property was being used as housing at the time the Navy acquired it in 1947. The housing consists of 212 townhouse-type units that were constructed in 1966. The Parcel is located near commercial (e.g., shopping malls) and recreational areas including boating and a sports complex (USN-NFEC, 1996).

The Poinciana Plaza Housing Predraft EBS (USN-NFEC, 1996) documented a number of other factors that are potentially helpful in characterizing the current physical condition of the site:

- Hazardous substances and petroleum products were stored and used in the housing area, but quantities and strengths were no greater than those normally found in private residences.
- No gas station was maintained on this Parcel.
- No storage tanks or oil/water separators were maintained at this site.
- No stains were observed on site grass or soils. Stains attributable to automotive oil and fluid leaks were noted in the parking area.
- There is no reason to suspect PCB contamination, as PCB transformers are not present on the site.
- Although pesticides are commonly used for mosquito and pest control throughout NAS Key West, there is no evidence of pesticide misuse at the site.

2.2 INVESTIGATION HISTORY

This section describes previous and current investigations for the Poinciana Housing Parcel.

2.2.1 Previous Investigations

Based on inspections performed by the Navy Public Works Center in 1995 and by CAPE Environmental in 1997, both lead-based paints and asbestos containing materials are present in Poinciana Housing structures. Lead was also detected in soil samples collected at the Parcel during these investigations (USN-NPWC, 1995; CAPE, 1997).

NAS Key West has received no Notices of Violation, Notices of Deficiency, or Warning Letters from the FDEP or the EPA for noncompliance with environmental laws or regulations concerning Poinciana Housing (USN-NFEC, 1996).

2.2.2 Current Investigation

Two subzones within the Poinciana Housing Parcel required sampling and analysis under the BRAC SI. The environmental medium of which each subzone consists, as well as the parameter groups selected for analysis at each subzone, are presented in Table 2-1. The soil samples in subzone 1 and the permanent monitoring well in subzone 2 are shown in Figure 2-2.

The analytical results were compared with action levels that were selected from a variety of sources including background levels as discussed in Section 1.5.2.2 and ARARs and SALs from state and Federal agencies and research institutions as discussed in Section 1.5.3.3.1.

All methods and procedures employed in the course of the field investigation are discussed in the BRAC SI Workplan (B&R Environmental, 1998a). Any change in methodology from that stated in the Workplan, usually due to unexpected field conditions, is addressed in Appendix B. Issues and procedures that are addressed by the Workplan include the following:

- Data management
- Decontamination
- Documentation
- Equipment
- Health and safety
- Investigation derived waste (IDW)
- Monitoring well installation
- Project management
- Sample collection, handling, and analysis

- Surveying
- Quality assurance

2.3 SUBZONE 1 – SURFACE SOIL

The subsections below describe subzone 1; present the contaminants detected and compare the detected concentrations with selected soil screening values; and provide conclusions on the SI findings for subzone 1 surface soil.

2.3.1 Subzone Description

This subzone included two separate areas of the Poinciana Housing Parcel. Two soil sample locations were identified in each area. The areas were to the north of Units P1616 and P1631. All of these results can be found in Appendix C.

2.3.2 Site Inspection Findings

The potential for contamination was investigated by analyzing samples from surface soil in the vicinity of two Poinciana housing units for inorganics. Table 2-2 lists chemicals that were detected in the surface soil samples. Figure 2-3 shows the occurrence of analytes that exceeded action levels and indicated possible surface soil contamination.

One inorganic parameter, arsenic, exceeded its 2.7 mg/kg surface soil action level. This exceedance (2.8 mg/kg) was in a single sample (SS-04) collected near Unit P1616. Arsenic was not detected at any of the other surface soil sample locations. Other inorganics that were detected but did not exceed their action levels included aluminum, barium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, tin, vanadium, and zinc.

2.3.3 Conclusions

Lead was considered to be a potential soil contaminant from residential structures and automobile releases. However, lead was not detected in excess of its action level. Arsenic was detected in a single sample only slightly in excess of its action level, which was based on twice the background level. The detection of arsenic may be due to data variability and may not indicate contamination. Therefore, due to the limited nature of chemicals detected in excess of action levels, subzone 1 does not appear to have significant surface soil contamination.

2.4 SUBZONE 2 –GROUNDWATER

The subsections below describe subzone 2; present the contaminants detected and compare the detected concentrations with selected groundwater screening values; and provide conclusions on the SI findings for subzone 2 groundwater.

2.4.1 Subzone Description

Nine groundwater screening samples were collected in subzone 2 for use in determining the location of a permanent well installed during the SI field effort. These samples were analyzed for VOCs, SVOCs, and inorganics. All of the results can be found in Appendix C. One permanent monitoring well was installed and sampled in the southern-most portion of the Parcel.

2.4.2 Site Inspection Findings

The potential for contamination was investigated by analyzing groundwater in monitoring well MW-01 at Poinciana Housing for VOCs, SVOCs, and inorganics. Table 2-3 lists chemicals that were detected in the groundwater monitoring well sample. Figure 2-4 shows the occurrence of analytes that exceeded action levels and indicated possible groundwater contamination.

One inorganic, arsenic, was detected at 102 µg/l. This level was in excess of its 50 µg/l groundwater action level. Other inorganics that were detected but did not exceed the action levels included barium, iron, and zinc. No VOCs or SVOCs were detected in subzone 2.

2.4.3 Conclusions

Lead and petroleum-related compounds were considered to be potential contaminants in groundwater at Parcel G from resident structures and automobile releases. Lead was not detected, and no petroleum or solvents were detected. However, the detected concentration of arsenic exceeded its action level. FDEP has classified the groundwater at Key West as Class G-III, unpotable water (ABB, 1995). Therefore, use of groundwater for human consumption is not expected to occur. Groundwater-to-surface-water migration of groundwater contaminants is possible at Poinciana Housing, especially since groundwater is shallow. However, ecological receptors are not directly exposed to groundwater, and no groundwater thresholds have been developed based on ecological concerns. Therefore, groundwater concentrations of arsenic were compared to surface-water screening values as a conservative scenario (e.g., no attenuation or dilution) in accordance with EPA (1995) Region IV and FDEP (1996) surface-water requirements.

Arsenic was detected in five of nine groundwater screening samples. One of the nine screening samples exceeded the FDEP marine criteria for total arsenic in marine surface water, which is set at 50 µg/l (FDEP, 1996). Groundwater screening samples are subject to interference from turbidity and several other factors that limit the usefulness of this data. Thus, a monitoring well was installed near the screening sample location that exceeded FDEP criteria to obtain accurate data regarding the level of arsenic in groundwater. Arsenic was detected in the confirmation sample from the monitoring well (MW-01) at 102 µg/l. The result was 2.4 times greater than the surface-water screening value. The result also exceeded the maximum arsenic concentrations detected in the BRAC SI background data set (B&R Environmental, 1998a).

The nearest surface-water body into which groundwater from the vicinity of sample MW-01 could potentially migrate is a pond approximately 460 feet to the northwest. The shoreline of Key West lies approximately 2,400 feet north. The data obtained from the remaining groundwater screening indicate that the potential for migration of arsenic from sample location MW-01 to surface water is probably negligible. This is due primarily to the fact that turbidity and salinity interferences typically result in inflated values for chemical concentrations. Arsenic detected at low values or not detected at all in groundwater screening samples are normally a good indication that the chemicals are not present or are present at low concentrations. In summary, there does not appear to be a complete migration pathway for arsenic from MW-01 to nearby surface water, and thus, ecological risks posed by arsenic in groundwater appear to be insignificant. The source of the arsenic is unknown; however, it is unlikely to have come from previous use of the Poinciana Housing Parcel as Naval housing.

2.5 CONCLUSIONS AND RECOMMENDATIONS

The Base Reuse Plan proposes Medium Density Residential Zoning for Poinciana Housing (BAP, 1997). Lead and petroleum-related compounds were considered to be potential contaminants at the Poinciana Housing Parcel due to resident structures and automobile releases. However, lead was not detected in soil or groundwater in excess of its action levels. Only a single inorganic, arsenic, was detected in excess of action levels in soil and groundwater. The soil detection may be due to data variability and not be indicative of contamination. Therefore it does not appear that there is significant surface soil contamination. FDEP has classified the groundwater at Key West as Class G-III, unpotable water. Therefore, use of groundwater is not expected to occur at the Poinciana Housing Parcel. In addition, the data indicate minimal or no ecological impacts are likely due to the levels of arsenic detected in soil and groundwater.

The Navy recommends no further soil sampling. The Navy recommends that a groundwater monitoring plan be developed for the monitoring well MW-01. The plan should include periodic groundwater

sampling of MW-01 for arsenic and a strategy for the continuation or termination of the groundwater sampling. The Navy also recommends that any lease of the Poinciana Housing Parcel includes restrictions on groundwater use.

**TABLE 2-1
PARAMETER GROUPS AND MEDIA OF INTEREST IN THE POINCIANA HOUSING PARCEL
NAS KEY WEST**

Subzone	Building/Area	Medium	Number of Samples	Parameter Group				
				VOCs	SVOCs	Inorganics	PCBs	Pesticides
Subzone 1	Poinciana Housing – Units P1616 and P1631	SO	4			X		
Subzone 2	Groundwater	GW	1	X	X	X		

SO = Soil
GW = Groundwater

TABLE 2-2

**CHEMICALS DETECTED IN SUBZONE 1 SURFACE SOIL
NAS KEY WEST**

Location	Parameter	Result	Qual ⁽¹⁾
INORGANICS (mg/kg)			
G01-SS-01	Aluminum	1,218	J
G01-SS-04	Aluminum	916	J
G01-SS-02	Aluminum	912	J
G01-SS-03	Aluminum	777	J
G01-SS-04	Arsenic	2.8	
G01-SS-03	Barium	21	J
G01-SS-04	Barium	16.1	J
G01-SS-02	Barium	10.7	J
G01-SS-01	Barium	9	J
G01-SS-04	Cadmium	1.1	
G01-SS-04	Chromium	6.5	
G01-SS-01	Chromium	437	
G01-SS-03	Chromium	3.9	
G01-SS-02	Chromium	3.2	
G01-SS-04	Copper	47.1	
G01-SS-03	Copper	2.9	
G01-SS-01	Copper	2.4	
G01-SS-02	Copper	0.83	
G01-SS-04	Iron	1,110	J
G01-SS-01	Iron	671	J
G01-SS-04	Lead	17.4	
G01-SS-03	Lead	7.8	
G01-SS-01	Lead	3.1	
G01-SS-02	Lead	0.8	
G01-SS-04	Manganese	15.9	J
G01-SS-01	Manganese	13	J
G01-SS-02	Manganese	12.8	J
G01-SS-03	Manganese	9.2	J
G01-SS-04	Mercury	0.06	J
G01-SS-01	Mercury	0.04	J
G01-SS-03	Mercury	0.02	J
G01-SS-04	Nickel	1.7	

Location	Parameter	Result	Qual ⁽¹⁾
G01-SS-01	Nickel	1.4	
G01-SS-03	Nickel	1.1	
G01-SS-02	Nickel	0.75	
G01-SS-04	Tin	2	
G01-SS-01	Vanadium	2.9	
G01-SS-04	Vanadium	2.9	
G01-SS-02	Vanadium	1.7	
G01-SS-03	Vanadium	1.3	
G01-SS-04	Zinc	383	
G01-SS-03	Zinc	19.5	

Shading indicates a concentration in excess of the selected screening value.

1 Qualifier (Qual.) Codes:

J – The associated value is an estimated quantity.

TABLE 2-3
CHEMICALS DETECTED IN SUBZONE 2 GROUNDWATER
NAS KEY WEST

Location	Parameter	Result	Qual ⁽¹⁾
INORGANICS (µg/l)			
G02-GW-01	Arsenic	102	
G02-GW-01	Barium	1,430	
G02-GW-01	Iron	742	
G02-GW-01	Zinc	44.3	

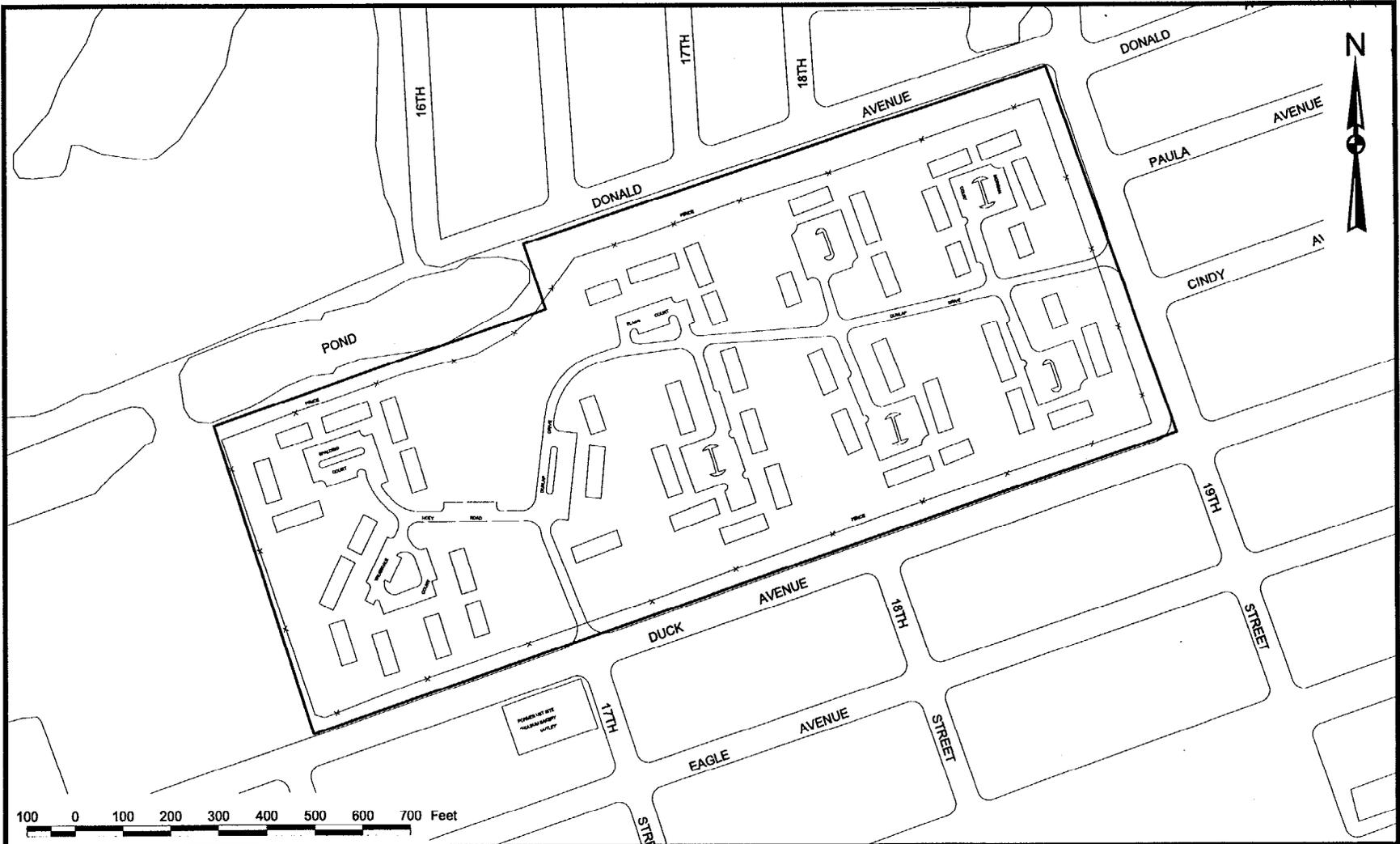
Shading indicates a concentration in excess of the selected screening value.

1 Qualifier (Qual.) Codes:
None for subzone 2.

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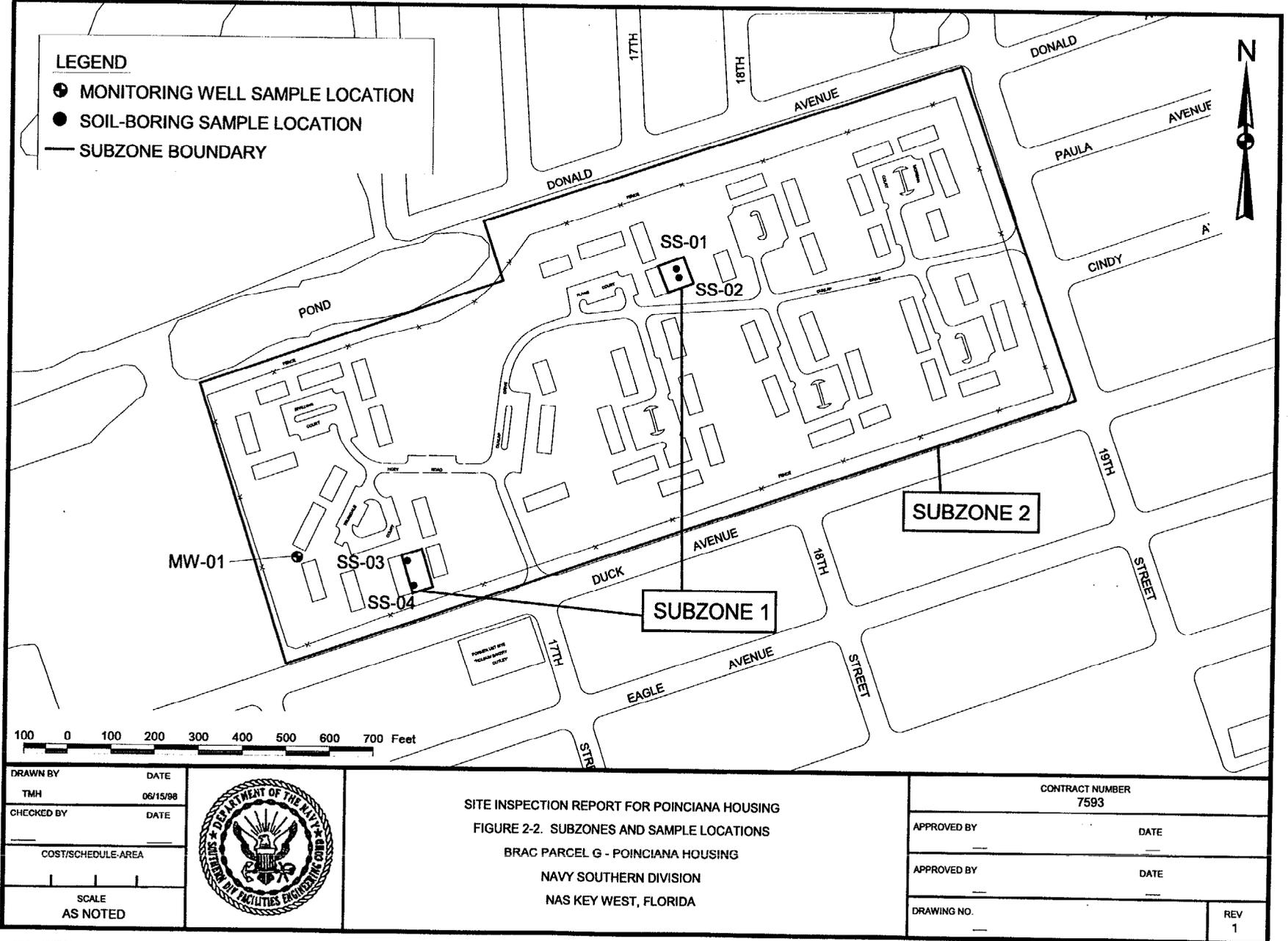
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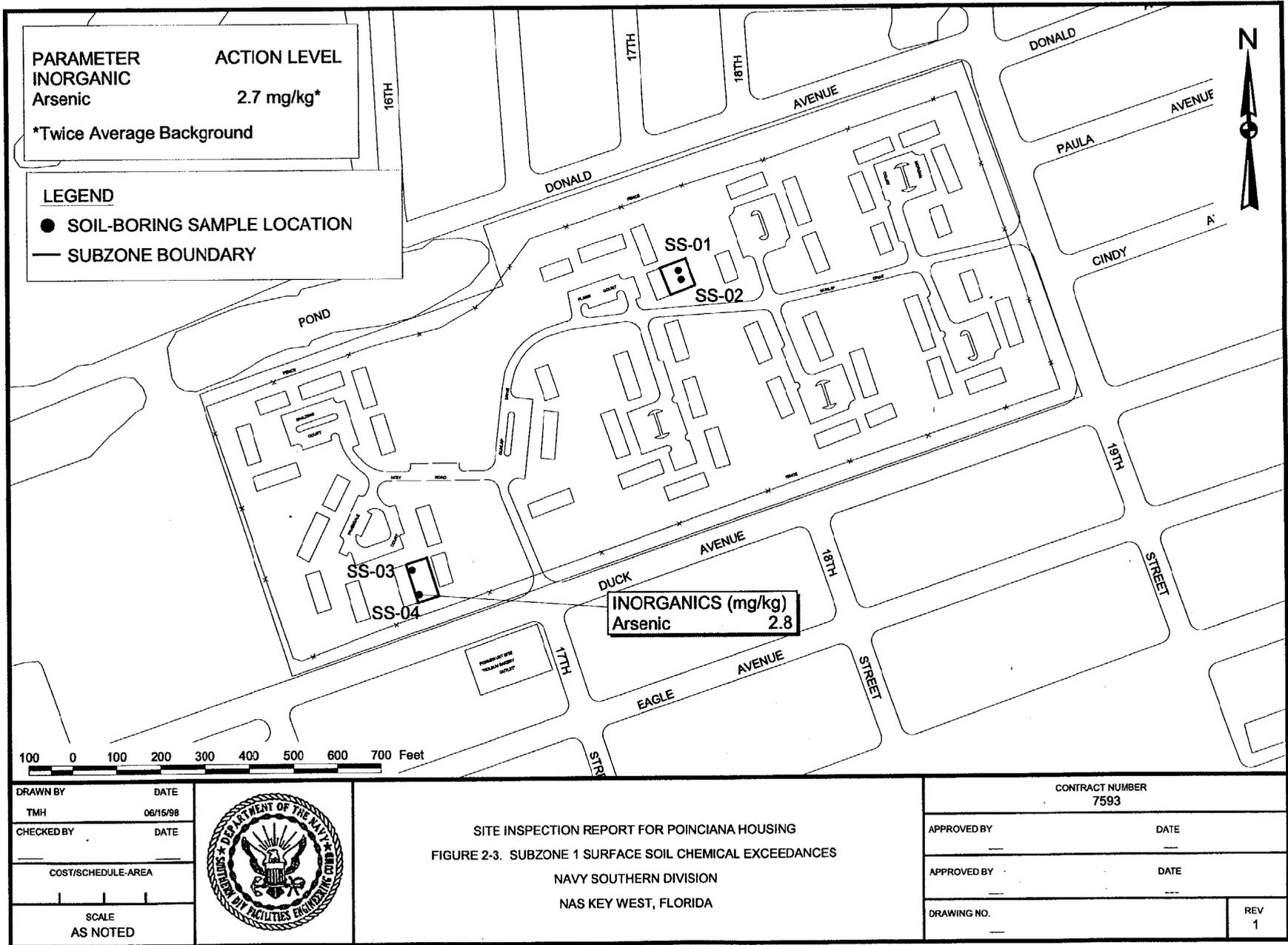
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CHECKED BY	DATE
COST/SCHEDULE-AREA	
SCALE AS NOTED	



SITE INSPECTION REPORT FOR POINCIANA HOUSING
 FIGURE 2-1. BRAC PARCEL G
 POINCIANA HOUSING
 NAVY SOUTHERN DIVISION
 NAS KEY WEST, FLORIDA

CONTRACT NUMBER 7593	
APPROVED BY	DATE
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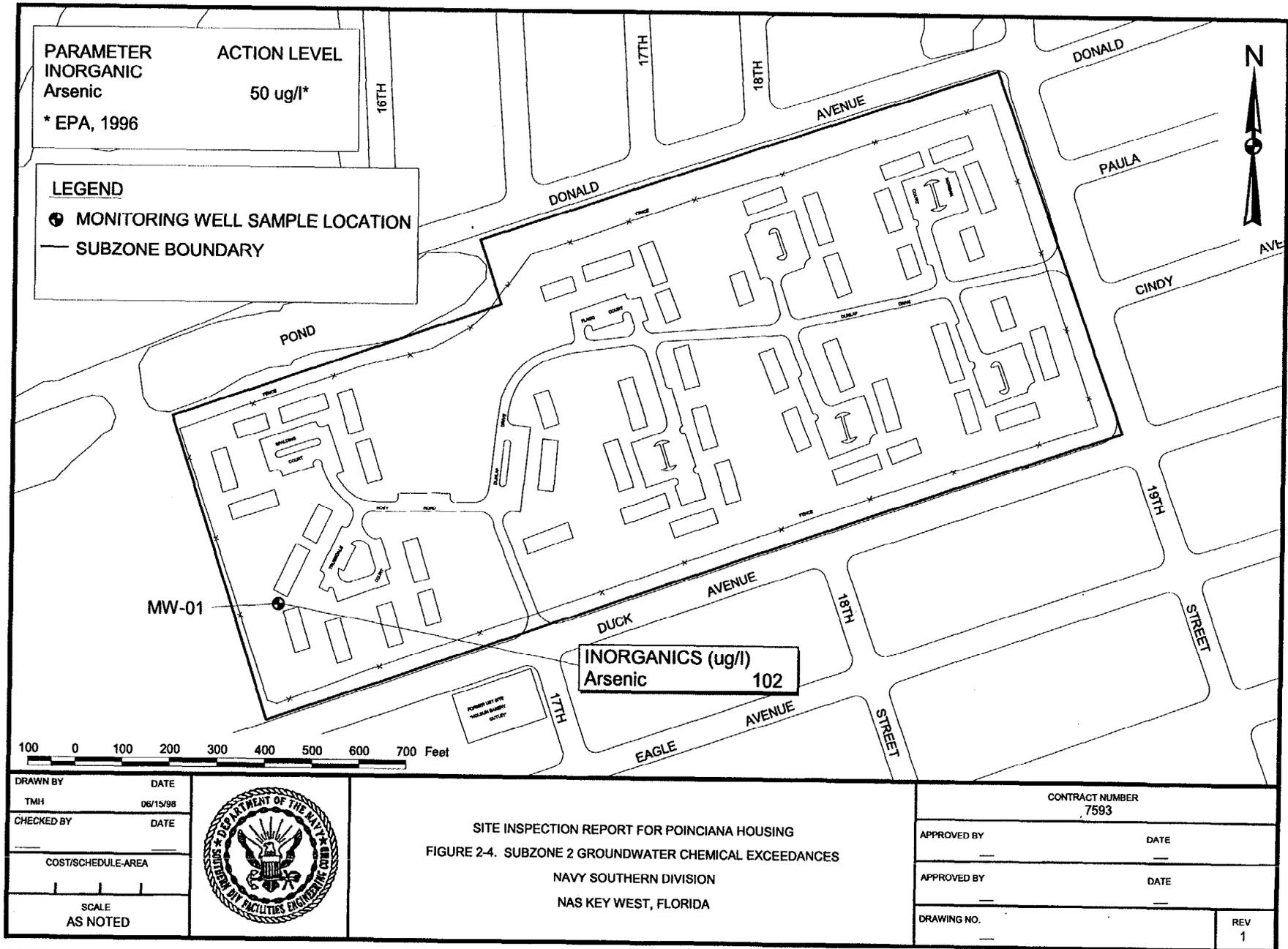




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APPENDIX A

**RESPONSE TO COMMENTS ON
THE SITE INSPECTION REPORT FOR POINCIANA HOUSING
NAVAL AIR STATION
KEY WEST, FLORIDA**

**APPENDIX A. RESPONSE TO COMMENTS ON
THE SITE INSPECTION REPORT FOR POINCIANA HOUSING
NAVAL AIR STATION
KEY WEST, FLORIDA**

This appendix provides comments from EPA, FDEP, and RAB members, along with the Navy's responses to each comment. The Navy's responses have been previously discussed with EPA and FDEP in a series of meetings and phone conversations.

Response to Comments from Martha Berry, U.S. Environmental Protection Agency, Region IV

Comment 1: The Conclusions and Recommendations section should specifically state that no further soil sampling is needed.

Response: The Navy concurs that the Conclusion and Recommendation section should specifically state that no further soil sampling is needed. Therefore, the following sentence will be added at the beginning of the second paragraph of section 2.5: "The Navy recommends no further soil sampling."

Response to Comments from Susan Loder, Restoration Advisory Board Member

Comment 1: Figure 1-4. Hard to tell how to follow lines because they cross.

Response: Lines were moved and "Start" location added as recommended by S. Loder to provide clarity in Figure 1-4.

APPENDIX B
FIELD DOCUMENTATION

APPENDIX B. FIELD DOCUMENTATION

TABLE OF CONTENTS

PART 1	WORKPLAN AMENDMENTS AND DEVIATIONS
PART 2	FIELD DATA SHEETS
PART 3	SURVEY DATA

APPENDIX B. FIELD DOCUMENTATION

PART 1 – WORKPLAN AMENDMENTS AND DEVIATIONS

The SI field effort for Poinciana Housing BRAC Parcel G at NAS Key West, Florida was conducted December, 1997 to March, 1998 in accordance with the SI Workplan for Ten BRAC Properties Naval Air Station Key West, Florida (B&R Environmental, 1998b). In one instance, the SI Workplan required a change to the sampling protocol for VOC groundwater samples based on existing field conditions/technical decisions in order to provide accurate laboratory analysis. This deviation is described below.

The VOC groundwater samples collected from G02-MW-01 located at the southwest end of the Poinciana Housing site on February 22, 1998 effervesced due to the interaction of CaCO_3 in the groundwater and the HCl preservative creating a headspace within the sample bottles. On February 23, 1998, B&R Environmental field personnel discussed this situation with the laboratory representative and it was recommended by the laboratory that the sample bottles be rinsed using groundwater from the well to be sampled prior to sample collection to remove the preservative. The effect that removing the preservatives has on the samples is the holding time is reduced from 14 to 7 days. The monitoring well G02-MW-01 was resampled on February 25, 1998 for the VOC fraction to obtain adequate samples. The contracted laboratory was able to analyze the samples within the 7 day holding period.

APPENDIX B. FIELD DOCUMENTATION

PART 2 – FIELD DATA SHEETS

SUBZONE 1
(GRYZNG -SZN1)
SURFACE SOIL

Brown & Root Environmental

900 Trail Ridge Road

Aiken, SC 29803

(803) 649-7963

Fax: (803) 642-8454

SURFACE SOIL SAMPLE LOG SHEET

Sample Name: G01-SS-01 Project: NAS Key West BRAC SI

Project Number: 7593

Zone: ZONE G- POINCIANA HOUSING

Subzone: G2Y2NG-SZN 1

Airbill No: _____

Laboratory: GEL

Sample Date: <u>12-12-97</u>
Sample Time: <u>1500</u>
Sample Depth (ft): <u>0 - 2' BGS</u>
FID Reading: <u>0 ppv</u>
Sample Color: <u>WHITE TO CREAM</u>
Sample Description: <u>ODOLITE LIMESTONE (AND SOME TOPSOIL)</u>

Sample Method:
<input checked="" type="checkbox"/> DPT
<input type="checkbox"/> Hand Auger
<input type="checkbox"/> HSA

Type of Sample:
<input type="checkbox"/> Low Concentration
<input type="checkbox"/> High Concentration
<input checked="" type="checkbox"/> Grab
<input type="checkbox"/> Composite
<input type="checkbox"/> Grab-Composite

Duplicate ID:
<u>G01-SS-D9</u>

MS/MSD: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>

If Sample Location was Changed from that Designated in the Workplan, The Rationale is Provided Here, along with a Description of the New Location:

Observations/Notes:

UNIFORM GRASS

ANALYSES:	
TCL VOCs (HCL Preservative): YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number: _____
TCL SVOCs: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number: _____
TCL PESTs: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number: _____
TCL PCBs: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number: _____
TAL Metals + Tin (HNO3 Preservative): YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	Bottle Lot Number: _____

Sampled By: BA

Signature(s): Barbara Arden

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SURFACE SOIL SAMPLE LOG SHEET

Sample Name: G02-SS-02 Project: NAS Key West BRAC SI

Project Number: 7593

Zone: ZONE G - POINCIANA HOUSING

Subzone: GRYZNG-SZNZ

Airbill No: _____ Laboratory: GEL

Sample Date:	<u>12-12-97</u>
Sample Time:	<u>1115</u>
Sample Depth (ft):	<u>0-1' BGS</u>
FID Reading:	<u>0 ppm</u>
Sample Color:	<u>WHITE TO CREAM</u>
Sample Description:	<u>ODOLITE LIMESTONE</u>

Sample Method:
<input checked="" type="checkbox"/> DPT
<input type="checkbox"/> Hand Auger
<input type="checkbox"/> HSA

Type of Sample:
<input type="checkbox"/> Low Concentration
<input type="checkbox"/> High Concentration
<input checked="" type="checkbox"/> Grab
<input type="checkbox"/> Composite
<input type="checkbox"/> Grab-Composite

Duplicate ID:

MS/MSD:	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
---------	------------------------------	--

If Sample Location was Changed from that Designated in the Workplan, The Rationale is Provided Here, along with a Description of the New Location:

Observations/Notes:

UNDER GRASS SURFACE COVER.

ANALYSES:

TCL VOCs (HCL Preservative): YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number: _____
TCL SVOCs: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number: _____
TCL PESTs: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number: _____
TCL PCBs: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number: _____
TAL Metals + Tin (HNO3 Preservative): YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	Bottle Lot Number: _____

Sampled By: BA

Signature(s): _____

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SURFACE SOIL SAMPLE LOG SHEET

Sample Name: G01-SS-03 Project: NAS Key West BRAC SI

Project Number: 7593

Zone: ZONE G - POINCIANA HOUSING

Subzone: GRZNG-SZ1

Airbill No: _____ Laboratory: GEL

Sample Date:	<u>12-12-97 10 DEC 97 2A</u>
Sample Time:	<u>1010</u>
Sample Depth (ft):	<u>0-1' BGS</u>
FID Reading:	<u>0 ppm</u>
Sample Color:	<u>WHITE TO CREAM / BROWN SILTY SAND & ODOLIC LIMESTONE</u>
Sample Description:	<u>ABOVE</u>

Sample Method:

DPT
 Hand Auger
 HSA

Type of Sample:

Low Concentration
 High Concentration
 Grab
 Composite
 Grab-Composite

Duplicate ID:

MS/MSD: YES NO

If Sample Location was Changed from that Designated in the Workplan, The Rationale is Provided Here, along with a Description of the New Location:

Observations/Notes:

UNDER GRASS SURFACE COVER.

ANALYSES:

TCL VOCs (HCL Preservative):	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number:	_____
TCL SVOCs:	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number:	_____
TCL PESTs:	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number:	_____
TCL PCBs:	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number:	_____
TAL Metals + Tin (HNO3 Preservative):	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	Bottle Lot Number:	_____

Sampled By: BA

Signature(s): [Signature]

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SURFACE SOIL SAMPLE LOG SHEET

Sample Name: G01-S-04 Project: NAS Key West BRAC SI

Project Number: 7593

Zone: ZONE G - POINCIANA HOUSING

Subzone: GRZNG-SZ I

Airbill No: _____ Laboratory: GEL

Sample Date: <u>12-12-97</u> <u>1608C97 B.A.</u>
Sample Time: <u>1020</u>
Sample Depth (ft): <u>0-1' BGS</u>
FID Reading: <u>0 B.A.</u> <u>1 ppm</u>
Sample Color: <u>BROWN/BLACK ORGANIC SILT</u> <u>WHITE/CREAM ODOLIC LIMESTONE</u>
Sample Description:

Sample Method:
<input checked="" type="checkbox"/> DPT
<input type="checkbox"/> Hand Auger
<input type="checkbox"/> HSA

Type of Sample:
<input type="checkbox"/> Low Concentration
<input type="checkbox"/> High Concentration
<input checked="" type="checkbox"/> Grab
<input type="checkbox"/> Composite
<input type="checkbox"/> Grab-Composite

Duplicate ID:

MS/MSD: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>

If Sample Location was Changed from that Designated in the Workplan, The Rationale is Provided Here, along with a Description of the New Location:

Observations/Notes:

UNDER GRASS.

ANALYSES:	
TCL VOCs (HCL Preservative): YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number: _____
TCL SVOCs: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number: _____
TCL PESTs: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number: _____
TCL PCBs: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number: _____
TAL Metals + Tin (HNO3 Preservative): YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	Bottle Lot Number: _____

Sampled By: BA

Signature(s): Paulina Ande

**SUBZONE 2
(GRYZNG -SZN2)
GROUNDWATER**

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GROUNDWATER SCREENING SAMPLE LOG SHEET

Sample Name: G02-GS-01 Project: NAS Key West BRAC SI

Project Number: 7593

Zone: ZONE G - POINCIANA HOUSING

Subzone: GRZNG52N2

Airbill No: _____

Laboratory: GEL

Total Depth (ft):	<u>11.45</u>
Stickup Height (ft):	<u>2.71</u>
Casing Diameter (ID-inches):	<u>1"</u>
Static Water Level (ft below top of casing):	<u>6.65</u>
One Casing Volume (gal):	<u>.11</u>
Start Purge (hrs.):	<u>09:35</u>
End Purge (hrs.):	<u>10:14</u>
Total Purge Time (min.):	<u>09:45 29</u>
Total Amount Purged (gal):	<u>10.14 2.5</u>
Purge Method:	<u>low flow peristaltic pump</u>
Sample Method:	<u>low flow peristaltic pump</u>
Depth Sampled:	<u>7.00 7.00</u>
Sample Date:	<u>12-16-97</u>
Sample Time:	<u>10:18</u>

Type of Screening Sample:		Type of Sample:	
<input checked="" type="checkbox"/> DPT Borehole	<input type="checkbox"/> Existing Monitoring Well	<input checked="" type="checkbox"/> Low Concentration	<input type="checkbox"/> High Concentration
<input type="checkbox"/> HSA Temporary Well		<input checked="" type="checkbox"/> Grab	<input type="checkbox"/> Composite
Duplicate ID:		<input type="checkbox"/> Grab-Composite	
<u>NA</u>			

MS/MSD: YES NO

Observations/Notes: (Any change in sample location from that designated in the Workplan should be explained and described here.)

175 ml/min = Purge rate

ANALYSES:

TCL VOCs (HCL Preservative): YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number: _____
TCL SVOCs: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number: _____
TCL PESTs: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number: _____
TCL PCBs: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number: _____
TAL Metals + Tin (HNO3 Preservative): YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number: _____

Time	Total Volume Removed (gals)	Temperature (Deg C)	pH	Conductivity (mS/cm)	DO	Turbidity (NTU)	Color
<u>09:45</u>	<u>0.5 gal</u>	<u>25.1</u>	<u>7.07</u>	<u>1.00</u>	<u>7.65</u>	<u>29</u>	<u>clear</u>
<u>09:56</u>	<u>0.75 gal</u>	<u>25.3</u>	<u>7.06</u>	<u>1.00</u>	<u>7.44</u>	<u>10</u>	<u>clear</u>
<u>10:07</u>	<u>2.25 gal</u>	<u>25.6</u>	<u>7.03</u>	<u>0.98</u>	<u>7.46</u>	<u>5</u>	<u>clear</u>
<u>10:14</u>	<u>2.5 gal</u>	<u>25.8</u>	<u>7.04</u>	<u>1.00</u>	<u>7.59</u>	<u>4</u>	<u>clear</u>

Sampled By: MR Signature(s): [Signature]

PROJECT: NAS KEY WEST BRAC 51		JOB NO.:	BORING NO.: 6702-GS-01
DRILLING CONTRACTOR: GULF ATLANTIC		LOGGED BY: B. ANDERSON	TOTAL DEPTH:
DRILLER'S NAME: BILL UNDSBY		SURFACE ELEV.:	DATUM:
DRILL RIG TYPE: GEOPROBE		START, TIME: 0800	DATE: 16 DEC 97
BORING METHOD: DIRECT PUSH		FINISH, TIME: 0630	DATE: 16 DEC 97
HOLE DIAMETER: 2" DIA.		WATER DEPTH:	
SAMPLING METHOD: CONTINUOUS CORING		DATE:	
HAMMER WGT.:		TIME:	
DROP HGT.:		BACKFILLED, TIME:	DATE:

CONDITIONS:										LOCATION OF BORING:		
SAMPLE DEPTH	SAMPLE TYPE	BLOWS / 6-INCHES	INCHES DRIVEN	INCHES RECOVERED			OVA READING (ppm)	LAB SAMPLE	DEPTH IN FEET	LITHOLOGY	UNDER GRASS SURFACE COVER	
1/4	SPW	24	20				0		2	TOPSOIL		
1/4		24	20				0		4	WHITE TO CREAM SOLID LIMESTONE, DRY		
1/4		24	24				0		6	DRY TO WET @ 4' BGS		
1/4		24	24				0		8	WET @ 6' BGS.		
1/4	J	12	12				0		10	TERMINATED BORING @ 9' BGS.		
											NOTE: INSTALLED PIEZOMETER TO 8' BGS.	

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GROUNDWATER SCREENING SAMPLE LOG SHEET

Sample Name: G02-GS-02 Project: NAS Key West BRAC SI

Project Number: 7593

Zone: ZONE G - LOUISIANA HOUSING

Subzone: GRZNG-SX

Airbill No: _____

Laboratory: GEL

Total Depth (ft):	<u>7.65'</u>
Stickup Height (ft):	<u>.40'</u>
Casing Diameter (ID-inches):	<u>1/2"</u>
Static Water Level (ft below top of casing):	<u>4.35'</u>
One Casing Volume (gal):	
Start Purge (hrs.):	<u>1330</u>
End Purge (hrs.):	<u>1430</u>
Total Purge Time (min.):	<u>60</u>
Total Amount Purged (gal):	<u>~.75</u>
Purge Method:	<u>Peristaltic pump - PE tubing, silicon in pump head</u>
Sample Method:	<u>Peristaltic Pump - SVOCs + metals. Gravity flow for VOCs</u>
Depth Sampled:	
Sample Date:	<u>12-12-97</u>
Sample Time:	<u>1430</u>

Type of Screening Sample: <input checked="" type="checkbox"/> DPT Borehole <input type="checkbox"/> Existing Monitoring Well <input type="checkbox"/> HSA Temporary Well	Type of Sample: <input type="checkbox"/> Low Concentration <input type="checkbox"/> High Concentration <input checked="" type="checkbox"/> Grab <input type="checkbox"/> Composite <input type="checkbox"/> Grab-Composite
Duplicate ID: _____	

MS/MSD: YES NO

Observations/Notes: (Any change in sample location from that designated in the Workplan should be explained and described here.)

Developed \approx .75 gal
 Purged \approx .75 gal
 Purge Flow rate \approx 50-80 $\frac{ml}{min}$

ANALYSES:

TCL VOCs (HCL Preservative): YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number: <u>B717001</u> CONT#: <u>APC1550</u>
TCL SVOCs: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number: <u>H709901K</u> CONT#: <u>APC1430</u>
TCL PESTs: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number: _____
TCL PCBs: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number: _____
TAL Metals + Tin (HNO3 Preservative): YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number: _____

Time	Total Volume Removed (gals)	Temperature (Deg C)	pH	Conductivity (mS/cm)	DO	Turbidity (NTU)	Color	Sal
1335	0	27.5	7.22	1.13	8.58	999	cloudy white	0.05
1340		27.2	7.23	0.92	8.60	336	cloudy - not really opaque	0.04
1350		27.4	7.33	0.99	8.65	606	cloudy	0.04
1400		27.4	7.30	0.91	8.59	40	clear	0.04
1415		27.0	7.24	0.92	8.57	<10	clear	0.04
1420		27.5	7.25	0.904	8.62	<10	clear	0.05
1425	~.75	27.1	7.25	0.904	8.62	<10	clear	0.04

Sampled By: RD

Signature(s): Rogers

XS

VOCs

METALS

30897089

30897085

30897413

30897410

30897263

30897003

Field Worklist

Field Worklist

Field Worklist

Field Worklist

Field Worklist

Field Worklist

PROJECT: HAS KEY WEST BRACSA		JOB NO.:	BORING NO.: G02-GS-0
DRILLING CONTRACTOR: GULF ATLANTIC		LOGGED BY: B. ANDERSON	TOTAL DEPTH: 7' BGS
DRILLER'S NAME: BILL LINDSEY		SURFACE ELEV.:	DATUM:
DRILL RIG TYPE: GEOPROBE		START, TIME: 1213	DATE: 12 DEC 0
BORING METHOD: DIRECT PUSH		FINISH, TIME: 1221	DATE: 12 DEC 0
HOLE DIAMETER: 2" DIA.		WATER DEPTH:	
SAMPLING METHOD: CONTINUOUS CORING		DATE:	
HAMMER WGT.:		TIME:	
DROP HGT:		BACKFILLED, TIME:	DATE:

CONDITIONS:

LOCATION OF BORING:
 UNDER GRASS SURFACE COVER
 HARD MUD FROM 1.5 - 4' BGS.

SAMPLE DEPTH	SAMPLE TYPE	BLOWS / 6-INCHES	INCHES DRIVEN	INCHES RECOVERED	OVA READING (ppm)	LAB SAMPLE	DEPTH IN FEET	LITHOLOGY
1	SW	12	10		0		1	BLACK/BROWN ORGANIC/SALTY SAND MIXED WITH WHITE/CREAM ODOLIC LIMESTONE; DRY
2		12	10		0		2	WHITE TO CREAM ODOLIC LIMESTONE
3		12	10		0		3	WEATHERED B.A. (NO COARSE ROCK FRAGMENTS); DAMP AT 3.5' BGS
4		12	10		0		4	
5		12	12		0		5	WET @ 4' BGS.
6		12	12		0		6	
7		12	12		0		7	
8							8	BORING TERMINATED @ 7' BGS
								NOTE: WELL SCREEN PUSHED TO 8' BGS

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GROUNDWATER SCREENING SAMPLE LOG SHEET

Sample Name: G02-GS-03 Project: NAS Key West BRAC SI

Project Number: 7593

Zone: ZONE G- POINCIANA HOUSING

Subzone: GRYNOSZ

Airbill No: _____ Laboratory: GEL

Total Depth (ft):
Stickup Height (ft):
Casing Diameter (ID-inches): <u>1"</u>
Static Water Level (ft below top of casing): <u>4.4'</u>
One Casing Volume (gal): <u>1500</u>
Start Purge (hrs.): <u>1.500</u>
End Purge (hrs.): <u>1.030</u>
Total Purge Time (min.): <u>75</u>
Total Amount Purged (gal): <u>3</u>
Purge Method: <u>DIS TOURNING PUMP HEAD SILICON FOR PERISTALTIC PUMP.</u>
Sample Method: <u>GRAVITY FLOW FOR VOC'S.</u>
Depth Sampled:
Sample Date: <u>12/15/97</u>
Sample Time:

Type of Screening Sample: <input checked="" type="checkbox"/> DPT Borehole <input type="checkbox"/> Existing Monitoring Well <input type="checkbox"/> HSA Temporary Well	Type of Sample: <input checked="" type="checkbox"/> Low Concentration <input type="checkbox"/> High Concentration <input checked="" type="checkbox"/> Grab <input type="checkbox"/> Composite <input type="checkbox"/> Grab-Composite
Duplicate ID: <u>NA</u>	

MS/MSD: YES NO

Observations/Notes: (Any change in sample location from that designated in the Workplan should be explained and described here.)

ANALYSES:

TCL VOCs (HCL Preservative): YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	Bottle Lot Number: <u>R707801</u>
TCL SVOCs: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	Bottle Lot Number: <u>H709901K</u>
TCL PESTs: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number: <u>C726601K PDP</u>
TCL PCBs: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number: _____
TAL Metals + Tin (HNO3 Preservative): YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	Bottle Lot Number: <u>C726601K</u>

Time	Total Volume Removed (gals)	Temperature (Deg C)	pH	Conductivity (mS/cm)	DO	Turbidity (NTU)	Color
1515		23.6	7.64	1.59	8.70	253	CLEAR
1530		24.0	7.52	1.87	8.68	68	CLEAR
1545		23.1	7.56	1.88	8.78	44	CLEAR
1600		22.9	7.46	1.89	8.67	30	CLEAR
1615		22.9	7.43	1.90	8.67	15	CLEAR
1630		23.2	7.45	1.90	8.45	210	CLEAR

50L
.07
.09
.08
.08
.09
.09

Sampled By: P. HALVERSON Signature(s): [Signature]

PROJECT: NAS. KEY WEST BRAC SI		JOB NO.:	BORING NO.: 402-65-03
DRILLING CONTRACTOR: GULF ATLANTIC		LOGGED BY: B. ANDERSON	TOTAL DEPTH: 8' BGS.
DRILLER'S NAME: BILL UNDERLY		SURFACE ELEV.:	DATUM:
DRILL RIG TYPE: GEOPROBE		START. TIME: 1232	DATE: 15 DEC 17
BORING METHOD: DIRECT PUSH		FINISH. TIME: 1245	DATE: 15 DEC 17
HOLE DIAMETER: 2" DIA.		WATER DEPTH:	
SAMPLING METHOD: CONTINUOUS CORING		DATE:	
HAMMER WGT.:		TIME:	
DROP HGT.:		BACKFILLED, TIME:	DATE:

CONDITIONS: LOCATION OF BORING: UNDER GRASS SURFACE COVER.

SAMPLE DEPTH	SAMPLE TYPE	BLOWS / 6-INCHES	INCHES DRIVEN	INCHES RECOVERED	OVA READING (ppm)	LAB SAMPLE	DEPTH IN FEET	LITHOLOGY
0	Soil	12	10		0		0	TOPSOIL
1		12	10		0		1	WHITE TO CREAM ODOLIC LIMESTONE W/ SOME COMB. EOLIC FRAGMENTS (1/4" dia)
2		12	12		0		2	
3		12	12		0		3	BROWN SILTY SAND AND ODOLIC LIMESTONE
4		12	12		1		4	WHITE TO CREAM ODOLIC LIMESTONE, w
5		12	12		0		5	
6		12	12		0		6	
7		12	12		0		7	
8		12	12		0		8	BORING TERMINATED @ 8' BGS.
9							9	
10							10	

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GROUNDWATER SCREENING SAMPLE LOG SHEET

Sample Name: G02-G5-04 Project: NAS Key West BRAC SI

Project Number: 7593

Zone: ZONE G - POINCIANA HOUSING

Subzone: GRVZNG-SEN

Airbill No: _____ Laboratory: GEL

Total Depth (ft):	<u>7.90</u>
Stickup Height (ft):	<u>0.30</u>
Casing Diameter (ID-inches):	<u>0.5</u>
Static Water Level (ft below top of casing):	<u>5.00</u>
One Casing Volume (gal):	
Start Purge (hrs.):	<u>1220</u>
End Purge (hrs.):	<u>1420</u>
Total Purge Time (min.):	<u>120</u>
Total Amount Purged (gal):	<u>4</u>
Purge Method:	<u>constant pump-low flow method</u>
Sample Method:	<u>pumped SVOCs + metals, gravity flow for VOCs.</u>
Depth Sampled:	
Sample Date:	<u>12-12-97</u>
Sample Time:	<u>1420</u>

Type of Screening Sample: <input checked="" type="checkbox"/> OPT Borehole <input type="checkbox"/> Existing Monitoring Well <input type="checkbox"/> HSA Temporary Well	Type of Sample: <input checked="" type="checkbox"/> Low Concentration <input type="checkbox"/> High Concentration <input checked="" type="checkbox"/> Grab <input type="checkbox"/> Composite <input type="checkbox"/> Grab-Composite
--	---

Duplicate ID: _____

MS/MSD: YES NO

Observations/Notes: (Any change in sample location from that designated in the Workplan should be explained and described here.)

ORIGINAL LOGSHEET MISSING - LOG SHEET RECREATED FROM LOG BOOK ENTRY - RCD 1/8/98

Flow rate ≈ 50 ml/min

ANALYSES:

TCL VOCs (HCL Preservative): YES NO Bottle Lot Number: _____

TCL SVOCs: YES NO Bottle Lot Number: _____

TCL PESTs: YES NO Bottle Lot Number: _____

TCL PCBs: YES NO Bottle Lot Number: _____

TAL Metals + Tin (HNO3 Preservative): YES NO Bottle Lot Number: _____

Time	Total Volume Removed (gals)	Temperature (Deg C)	pH	Conductivity (mS/cm)	DO	Turbidity (NTU)	Color
<u>1228</u>		<u>26.7</u>	<u>6.94</u>	<u>5.25</u>	<u>7.24</u>	<u>805</u>	<u>cloudy</u>
<u>1300</u>		<u>26.5</u>	<u>6.89</u>	<u>5.5</u>	<u>7.86</u>	<u>373</u>	<u>↓</u>
<u>1313</u>		<u>26.6</u>	<u>6.86</u>	<u>5.06</u>	<u>8.10</u>	<u>199</u>	<u>clear</u>
<u>1330</u>		<u>26.8</u>	<u>6.83</u>	<u>5.19</u>	<u>8.04</u>	<u>76</u>	<u>↓</u>
<u>1345</u>		<u>27.0</u>	<u>6.88</u>	<u>5.06</u>	<u>7.97</u>	<u>53</u>	<u>↓</u>
<u>1415</u>		<u>27.5</u>	<u>6.83</u>	<u>5.00</u>	<u>8.09</u>	<u>87</u>	<u>↓</u>
<u>1420</u>	<u>4</u>	<u>Collect Sample</u>					

Sampled By: TN Signature(s): _____

500

PROJECT: NAS 10BY WEST BMTAC ST		JOB NO.:		BORING NO.: 602-65-04	
DRILLING CONTRACTOR: GULF ATLANTIC		LOGGED BY: B. ANDERSON		TOTAL DEPTH: 0' BGS	
DRILLER'S NAME: BILL LINDSEY		SURFACE ELEV.:		DATUM:	
DRILL RIG TYPE: GEOPROBE		START. TIME: 1107 ^{B.A.}		DATE: 12 DEC	
BORING METHOD: DIRECT PUSH		FINISH. TIME: 1117		DATE: 12 DEC	
HOLE DIAMETER: 2" DIA		WATER DEPTH:		DATE:	
SAMPLING METHOD: CONTINUOUS CORING		TIME:		DATE:	
HAMMER WGT.:		DROP HGT.:		BACKFILLED, TIME:	
				DATE:	

CONDITIONS:

LOCATION OF BORING:
 ZONE 6
 UNDER HARD SURFACE COVER

SAMPLE DEPTH	SAMPLE TYPE	BLOWS / 6-INCHES	INCHES DRIVEN	INCHES RECOVERED		OVA READING (ppm)	LAB SAMPLE	DEPTH IN FEET	LITHOLOGY
1.5	oil	24	18			0		2	WHITE TO CREAM OOLITIC LIMESTONE, WEATHERED, WITH COARSE ROCK FRAGMENTS, DRY DAMP @ 3.5' BGS WET @ 4.0' BGS.
3.0		24	18			0		4	
4.5		24	24			0		6	
6.0		24	24			0		8	
								10	TERMINATED BORING @ 9' BGS.
								12	

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GROUNDWATER SCREENING SAMPLE LOG SHEET

Sample Name: G02-GS-05 Project: NAS Key West BRAC SI

Project Number: 7593

Zone: ZONE G - PONCIANA HOUSING

Subzone: GRIZNG-SW2

Airbill No: _____

Laboratory: GEL

Total Depth (ft):
Stickup Height (ft): <u>39'</u>
Casing Diameter (ID-inches): <u>1"</u>
Static Water Level (ft below top of casing): <u>8.52'</u>
One Casing Volume (gal):
Start Purge (hrs.): <u>0820</u>
End Purge (hrs.): <u>01020</u>
Total Purge Time (min.): <u>2 HRS</u>
Total Amount Purged (gal): <u>4.5 GAL</u>
Purge Method: <u>PERISTALTIC PUMP</u>
Sample Method: <u>PERISTALTIC PUMP, SILICON TUBIN FOR PUMP HEAD, TRING DOWNWELL</u>
Depth Sampled:
Sample Date: <u>12/14/97</u>
Sample Time:

Type of Screening Sample: <input checked="" type="checkbox"/> DPT Borehole <input type="checkbox"/> Existing Monitoring Well <input type="checkbox"/> HSA Temporary Well	Type of Sample: <input checked="" type="checkbox"/> Low Concentration <input type="checkbox"/> High Concentration <input checked="" type="checkbox"/> Grab <input type="checkbox"/> Composite <input type="checkbox"/> Grab-Composite
Duplicate ID: <u>G02-GS-D7</u>	

MS/MSD: YES NO

Observations/Notes: (Any change in sample location from that designated in the Workplan should be explained and described here.)
1025 RECALIBRATED HORIBA TO GET A BETTER TURB. READING.

ANALYSES:

TCL VOCs (HCL Preservative): YES NO Bottle Lot Number: B707801, B717801

TCL SVOCs: YES NO Bottle Lot Number: H709901K

TCL PESTs: YES NO Bottle Lot Number: _____

TCL PCBs: YES NO Bottle Lot Number: _____

TAL Metals + Tin (HNO3 Preservative): YES NO Bottle Lot Number: C726601K

Time	Total Volume Removed (gals)	Temperature (Deg C)	pH	Conductivity (mS/cm)	DO mg/L	Turbidity (NTU)	Color	SAL
0820		23.1	7.13	.092	8.02	999+	CLOUDY	.04
0835		23.5	7.34	1.22-.892	7.82	680	CLEAR	.04
0850		23.8	7.40	1.22-.892	7.86	491	CLEAR	.04
0905		23.8	7.45	1.22-.897	7.82	197	CLEAR	.04
0920		24.6	7.11	1.22-.897	7.76	504550	CLEAR	.04
0935		24.1	7.11	1.22-.897	7.82	507532	CLEAR	.04
950		24.3	7.10	1.22-.888	7.95	507529	CLEAR	.04
1005		25.0	7.09	1.22-.888	8.03	506527	CLEAR	.04
1020		25.1	7.09	1.22-.887	8.07	508024	CLEAR	.04
1025	4.5 GAL	25.2	7.08	1.22-.887	8.07	508610	CLEAR	.04

Sampled By: P. HALVERSON Signature(s): [Signature]

PROJECT: NAS KEY WEST BRAC SA		JOB NO.:	BORING NO.: G02-GS-05
DRILLING CONTRACTOR: GULF ATLANTIC		LOGGED BY: B. ANDERSON	TOTAL DEPTH: 9' BGS
DRILLER'S NAME: BILL LINDBERGH		SURFACE ELEV.:	DATUM:
DRILL RIG TYPE: GED PROBE		START. TIME: 1615	DATE: 15 DEC 92
BORING METHOD: DIRECT PUSH		FINISH. TIME: 1625	DATE: 15 DEC 92
HOLE DIAMETER: 2" DIA.		WATER DEPTH:	
SAMPLING METHOD: CONTINUOUS COREING		DATE:	
HAMMER WGT.:		TIME:	
DROP HGT.:		BACKFILLED. TIME:	DATE:

CONDITIONS:	LOCATION OF BORING: UNDER GRASS SURFACE COVER.
-------------	---

SAMPLE DEPTH	SAMPLE TYPE	BLOWS / 6-INCHES	INCHES DRIVEN	INCHES RECOVERED	OVA READING (ppm)	LAB SAMPLE	DEPTH IN FEET	LITHOLOGY
0	SOIL	12	12		0		0	TOPSOIL
1			12		0		1	WHITE TO CREAM ODOLITE LIMESTONE w SOME COARSE ROCK FRAGMENTS, ST TO MOIST
2			12		0		2	
3			12		0		3	
4			12		0		4	
5			12		0		5	WET @ 4' BGS
6			12		0		6	
7			12		0		7	
8			12		0		8	
9							9	BORING TERMINATED AT 9' BGS

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GROUNDWATER SCREENING SAMPLE LOG SHEET

Sample Name: G02-GS-060 Project: NAS Key West BRAC SI

Project Number: 7593

Zone: ZONE G - PAINCIANA HOLDING

Subzone: GRZNGSUN2

Airbill No: _____ Laboratory: GEL

Total Depth (ft):
Stickup Height (ft):
Casing Diameter (ID-inches):
Static Water Level (ft below top of casing): <u>4.3'</u>
One Casing Volume (gal):
Start Purge (hrs.): <u>0955</u>
End Purge (hrs.): <u>1110</u>
Total Purge Time (min.): <u>75</u>
Total Amount Purged (gal): <u>2 GALS.</u>
Purge Method: <u>Peristaltic pump - PE tubing, suction on pump head.</u>
Sample Method: <u>Peristaltic pump - gravity flow for VOCs</u>
Depth Sampled:
Sample Date: <u>12-15-97</u>
Sample Time:

Type of Screening Sample: <input checked="" type="checkbox"/> DPT Borehole <input type="checkbox"/> Existing Monitoring Well <input type="checkbox"/> HSA Temporary Well	Type of Sample: <input checked="" type="checkbox"/> Low Concentration <input type="checkbox"/> High Concentration <input checked="" type="checkbox"/> Grab <input type="checkbox"/> Composite <input type="checkbox"/> Grab-Composite
Duplicate ID: <u>NA</u>	

MS/MSD: YES NO

Observations/Notes: (Any change in sample location from that designated in the Workplan should be explained and described here.)

*very low flow.
flow rate = 50 ml/min or less
Development fluid = 0.5 gal.*

ANALYSES:

TCL VOCs (HCL Preservative): YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number: <u>BP70708 BP717801</u>
TCL SVOCs: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	Bottle Lot Number: <u>H709901K</u>
TCL PESTs: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number: _____
TCL PCBs: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number: _____
TAL Metals + Tin (HNO3 Preservative): YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	Bottle Lot Number: <u>C726601K</u>

Time	Total Volume Removed (gals)	Temperature (Deg C)	pH	Conductivity (mS/cm)	DO	Turbidity (NTU)	Color
1000	<u>Ø</u>	21.7	7.33	2.73	8.25	493	cloudy
1015		22.5	7.78	2.71	8.25	6	CLEAR
1030		21.8	7.84	2.68	8.45	<10	CLEAR
1045		22.5	7.84	2.68	9.20	<10	CLEAR
1110	1 GAL	22.6	7.97	2.69	9.14	<10	CLEAR

Sal
0.13
0.13
0.13
0.13
0.13

Sampled By: P. HALVERSON Signature(s): P. Hal

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GROUNDWATER SCREENING SAMPLE LOG SHEET

Sample Name: G02-GS-07 Project: NAS Key West BRAC SI

Zone: ZONE G - POINCIANA HOUSING

Project Number: 7593

Subzone: GRZNG-S21

Airbill No: _____ Laboratory: GEL

Total Depth (ft):	<u>10.87</u>
Stickup Height (ft):	<u>2.78</u>
Casing Diameter (ID-Inches):	<u>1"</u>
Static Water Level (ft below top of casing):	<u>7.69'</u>
One Casing Volume (gal):	
Start Purge (hrs.):	<u>1255</u>
End Purge (hrs.):	<u>1445</u>
Total Purge Time (min.):	<u>1 hr 50 min</u>
Total Amount Purged (gal):	
Purge Method:	<u>Peristaltic pump w/ PE tubing + silicon in pump head.</u>
Sample Method:	<u>Peristaltic pump, gravity flow for VOCs</u>
Depth Sampled:	
Sample Date:	<u>12-15-97</u>
Sample Time:	<u>1500</u>

Type of Screening Sample: <input checked="" type="checkbox"/> DPT Borehole <input type="checkbox"/> Existing Monitoring Well <input type="checkbox"/> HSA Temporary Well	Type of Sample: <input checked="" type="checkbox"/> Low Concentration <input type="checkbox"/> High Concentration <input checked="" type="checkbox"/> Grab <input type="checkbox"/> Composite <input type="checkbox"/> Grab-Composite
Duplicate ID: <u>NA</u>	
MS/MSD: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	

Observations/Notes: (Any change in sample location from that designated in the Workplan should be explained and described here.)

Permeameter - just installed at temp screen but couldn't maintain sufficient flow. Permp. installed in effort to increase flow thru larger slotted screen (avoid plugging of fines). Flow is still sporadic + so slow, not really measurable. Stop @ frequent intervals to allow recharge.

ANALYSES:

TCL VOCs (HCL Preservative): YES NO Bottle Lot Number: _____

TCL SVOCs: YES NO Bottle Lot Number: _____

TCL PESTs: YES NO Bottle Lot Number: _____

TCL PCBs: YES NO Bottle Lot Number: _____

TAL Metals + Tin (HNO3 Preservative): YES NO Bottle Lot Number: _____

Time	Total Volume Removed (gals)	Temperature (Deg C)	pH	Conductivity (mS/cm)	DO	Turbidity (NTU)	Color
<u>1310</u>	<u>~0.1 gal</u>	<u>22.2</u>	<u>6.85</u>	<u>1.73</u>	<u>8.01</u>	<u>91</u>	<u>clear</u>
<u>1330</u>		<u>21.4</u>	<u>7.05</u>	<u>1.71</u>	<u>8.99</u>	<u><10</u>	<u>clear</u>
<u>1345</u>		<u>22.9</u>	<u>7.44</u>	<u>1.72</u>	<u>7.02</u>	<u>0</u>	<u>clear</u>
<u>1400</u>		<u>21.8</u>	<u>7.51</u>	<u>1.71</u>	<u>7.76</u>	<u>0</u>	<u>↓</u>
<u>1415</u>		<u>21.8</u>	<u>7.50</u>	<u>↓</u>	<u>7.64</u>	<u>0</u>	<u>↓</u>
<u>1435</u>	<u>~0.5 gal</u>	<u>22.5</u>	<u>7.45</u>	<u>↓</u>	<u>7.41</u>	<u>0</u>	<u>↓</u>
<u>1500</u>	<u>Collect sample</u>						

Saf
0.08

Sampled By: RD Signature(s): [Signature]

PROJECT: N.A.S. KEY WEST BRAC 81		JOB NO.:	BORING NO.: 6702-65-07
		LOGGED BY: B. ANDERSON	TOTAL DEPTH: 8' BGS
DRILLING CONTRACTOR: GULF ATLANTIC		SURFACE ELEV.:	DATUM:
DRILLER'S NAME: BILL LINDSEY		START. TIME: 0955	DATE: 15 DEC 97
DRILL RIG TYPE: GEDPROBE		FINISH. TIME: 1020	DATE: 15 DEC 97
BORING METHOD: DIRECT PUSH		WATER DEPTH:	
HOLE DIAMETER: 2" DIA		DATE:	
SAMPLING METHOD: CONTINUOUS CORING		TIME:	
HAMMER WGT.:	DROP HGT.:	BACKFILLED. TIME:	DATE:

CONDITIONS:

LOCATION OF BORING:

UNDER GRASS SURFACE COVER.

SAMPLE DEPTH	SAMPLE TYPE	BLOWS / 6-INCHES	INCHES DRIVEN	INCHES RECOVERED	OVA READING (ppm)	LAB SAMPLE	DEPTH IN FEET	LITHOLOGY
							2	
							4	
							6	
							8	

SOIL CORING LOST - ACETATE SLEEVE CRUMBY - CANNOT REMOVE IT FROM STAM

WHITE TO CREAM ODOLIC LIMESTONE W/ SOME COARSE ROCK FRAGMENTS (1/4" DIA) WET; LOTS OF FINES.

BORING TERMINATED AT 8' BGS

NOTE: WELL SCREEN ADVANCED TO 9' BGS. (SCREEN @ 5-9' BGS)

PERMEAMETER INSTALLED SUBSEQUENTLY (SCREEN @ 3-8' BGS)

NOTES:

EDITED BY/DATE:

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GROUNDWATER SCREENING SAMPLE LOG SHEET

Sample Name: G02-GS-08 Project: NAS Key West BRAC SI

Project Number: 7593

Zone: ZONE G - POINCIANA HOUSING

Subzone: GRZNG-SZ NZ

Airbill No: _____

Laboratory: GEL

Total Depth (ft):
Stickup Height (ft): <u>-0</u>
Casing Diameter (ID-inches): <u>1/2"</u>
Static Water Level (ft below top of casing): <u>3.8</u>
One Casing Volume (gal):
Start Purge (hrs.): <u>1245</u>
End Purge (hrs.): <u>1406</u>
Total Purge Time (min.): <u>75</u>
Total Amount Purged (gal): <u>2.5</u>
Purge Method: <u>PERISTALTIC Pump</u>
Sample Method: <u>VOA GRAVITY FEED SVOC, METALS TO Pump</u>
Depth Sampled:
Sample Date: <u>12/16/97</u>
Sample Time: <u>1415</u>

Type of Screening Sample: <input checked="" type="checkbox"/> DPT Borehole <input type="checkbox"/> Existing Monitoring Well <input type="checkbox"/> HSA Temporary Well	Type of Sample: <input checked="" type="checkbox"/> Low Concentration <input type="checkbox"/> High Concentration <input checked="" type="checkbox"/> Grab <input type="checkbox"/> Composite <input type="checkbox"/> Grab-Composite
Duplicate ID: <u>NA</u>	

MS/MSD: YES NO

Observations/Notes: (Any change in sample location from that designated in the Workplan should be explained and described here.)

ANALYSES:

TCL VOCs (HCL Preservative): YES NO Bottle Lot Number: _____

TCL SVOCs: YES NO Bottle Lot Number: _____

TCL PESTs: YES NO Bottle Lot Number: _____

TCL PCBs: YES NO Bottle Lot Number: _____

TAL Metals + Tin (HNO3 Preservative): YES NO Bottle Lot Number: _____

Time	Total Volume Removed (gals)	Temperature (Deg C)	pH	Conductivity (mS/cm)	DO	Turbidity (NTU)	Color
1245		24.5	7.03	1.74	8.69	130	CLEAR
1300		24.7	7.01	1.74	8.33	115	↓
1315		24.3	7.02	1.72	8.42	129	
1336		24.2	7.09	1.71	8.05	410	
1345		24.0	7.10	1.68	8.06	410	
1400	2.5	23.9	7.11	1.66	8.12	410	
		24.					

3AL
.08
.08
.04
.08
.07
.07

Sampled By: R. HALVERSON Signature(s): [Signature]

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GROUNDWATER SCREENING SAMPLE LOG SHEET

Sample Name: G02-GS-09 Project: NAS Key West BRAC SI

Project Number: 7593

Zone: ZONE G-POINCIANA HOUSING

Subzone: GRVZNG-SZN

Airbill No: _____

Laboratory: GEL

Total Depth (ft):	<u>10.96</u>
Stickup Height (ft):	<u>2.82</u>
Casing Diameter (ID-inches):	<u>1"</u>
Static Water Level (ft below top of casing):	<u>7.61</u>
One Casing Volume (gal):	<u>0.022</u>
Start Purge (hrs.):	<u>07:55</u>
End Purge (hrs.):	<u>08:41</u>
Total Purge Time (min.):	<u>46</u>
Total Amount Purged (gal):	<u>2.0 gal</u>
Purge Method:	<u>low rot flow pump</u>
Sample Method:	<u>low flow pump</u>
Depth Sampled:	
Sample Date:	<u>12-16-97</u>
Sample Time:	<u>08:45</u>

Type of Screening Sample: <input checked="" type="checkbox"/> DPT Borehole <input type="checkbox"/> Existing Monitoring Well <input type="checkbox"/> HSA Temporary Well	Type of Sample: <input checked="" type="checkbox"/> Low Concentration <input type="checkbox"/> High Concentration <input checked="" type="checkbox"/> Grab <input type="checkbox"/> Composite <input type="checkbox"/> Grab-Composite
Duplicate ID: <u>NA</u>	

MS/MSD: YES NO

Observations/Notes: (Any change in sample location from that designated in the Workplan should be explained and described here.)

started purging @ 300ml/min and cut back to 150ml/min at 08:10

ANALYSES:

TCL VOCs (HCL Preservative): YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	Bottle Lot Number: _____
TCL SVOCs: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	Bottle Lot Number: _____
TCL PESTs: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number: _____
TCL PCBs: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Bottle Lot Number: _____
TAL Metals + Tin (HNO3 Preservative): YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	Bottle Lot Number: _____

Time	Total Volume Removed (gals)	Temperature (Deg C)	pH	Conductivity (mS/cm)	DO	Turbidity (NTU)	Color
<u>08:10</u>	<u>0.5 gal</u>	<u>23.9</u>	<u>6.39</u>	<u>0.92</u>	<u>7.63</u>	<u>10</u>	<u>clear</u>
<u>08:16</u>	<u>0.75 gal</u>	<u>23.7</u>	<u>6.88</u>	<u>0.95</u>	<u>7.53</u>	<u>5</u>	<u>clear</u>
<u>08:23</u>	<u>1.0 gal</u>	<u>23.8</u>	<u>6.94</u>	<u>0.95</u>	<u>7.55</u>	<u>24</u>	<u>clear</u>
<u>08:31</u>	<u>1.5 gal</u>	<u>23.8</u>	<u>6.97</u>	<u>0.95</u>	<u>7.63</u>	<u>2</u>	<u>clear</u>
<u>08:36</u>	<u>1.75 gal</u>	<u>23.4</u>	<u>6.98</u>	<u>.77</u>	<u>7.72</u>	<u>4</u>	<u>clear</u>
<u>08:41</u>	<u>2.0 gal</u>	<u>23.7</u>	<u>7.01</u>	<u>0.78</u>	<u>7.43</u>	<u>4</u>	<u>clear</u>

Sampled By: MR

Signature(s): Murphy

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GROUNDWATER SAMPLE LOG SHEET

Sample Name G02-MW-01 Project: NAS Key West BRAC SI

Project Number: 7593

Zone: G- PANCIANA HOUSING

Subzone: GRYCN G-SEN 2

Airbill No: _____ Laboratory ~~ACCUTEST~~ ACCUTEST

Total Depth (ft):	<u>10.65 ft</u>
Stickup Height (ft):	<u>0.15 ft</u>
Casing Diameter (ID-inches)	<u>2 in.</u>
Static Water Level (ft below top of casing):	<u>2.52 ft</u>
One Casing Volume (gal)	<u>1.33 gal</u>
Start Purge (hrs.):	<u>10:15</u>
End Purge (hrs.):	<u>17:30</u>
Total Purge Time (min.):	10 + 10.65 ft <u>2LD</u>
Total Amount Purged (gal)	<u>4 gallon</u>
Purge Method	<u>Peristaltic Pump at < 300 ml/min</u>
Sample Method	<u>Peristaltic Pump/RFI on tubing for SVOCs + metals Teflon tubing + gravity flow for VOCs</u>
Depth Sampled	
Sample Date	<u>22 Feb 1998</u>
Sample Time:	<u>17:30</u>

Type of Screening Sample:		Type of Sample	
<input type="checkbox"/> DPT Borehole	<input type="checkbox"/> Existing Monitoring Well	<input checked="" type="checkbox"/> Low Concentration	<input type="checkbox"/> High Concentration
<input checked="" type="checkbox"/> HSA Permanent Well		<input type="checkbox"/> Grab	<input type="checkbox"/> Composite
Duplicate ID: _____		<input type="checkbox"/> Grab-Composite	

MS/MSD YES NO

Observations/Notes: (Any change in sample location from that designated in the Workplan should be explained and described here.)

Sample @ ~ 200 ml/min

VOCs not submitted b/c of apparent reaction between HCl + CaCO₃ - this location re-sampled for VOCs on 25 Feb 98

ANALYSES:			
TCL VOCs (HCL Preservative):	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	Bottle Lot Number: _____
TCL SVOCs:	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	Bottle Lot Number: _____
TCL PESTs:	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	Bottle Lot Number: _____
TCL PCBs:	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	Bottle Lot Number: _____
AL Metals + Tin (HNO ₃ Preservative):	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	Bottle Lot Number: _____

Time	Total Volume Removed (gals)	Temperature (Deg C)	pH	Conductivity (mS/cm)	DO	Turbidity (NTU)	Color
<u>1620</u>		<u>26</u>	<u>6.93</u>	<u>0.746</u>	<u>9.00</u>	<u>96</u>	<u>clear</u>
<u>1635</u>		<u>25.9</u>	<u>6.61</u>	<u>0.742</u>	<u>8.99</u>	<u>41</u>	<u>clear</u>
<u>1650</u>		<u>25.8</u>	<u>6.66</u>	<u>0.741</u>	<u>8.91</u>	<u>16</u>	<u>clear</u>
<u>1707</u>	<u>3gal.</u>	<u>25.7</u>	<u>6.80</u>	<u>0.741</u>	<u>8.79</u>	<u>10</u>	<u>clear</u>
<u>1719</u>		<u>25.6</u>	<u>6.83</u>	<u>0.740</u>	<u>8.71</u>	<u>7</u>	<u>clear</u>
<u>1729</u>	<u>4gal</u>	<u>25.6</u>	<u>6.86</u>	<u>0.739</u>	<u>8.59</u>	<u>5</u>	<u>clear</u>

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0.04
0.03
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0.03
0.03

Sampled By RD/MR

Signature(s): Rigonda C Owen

Brown & Root Environmental

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Aiken, SC 29803

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GROUNDWATER SCREENING SAMPLE LOG SHEET

Sample Name: G02-MW-01 Project: NAS Key West BRAC SI

Project Number: 7593

Zone: G-Pennuana Housing

Subzone: GRVING SEN

Airbill No: _____

Laboratory: GEL

Total Depth (ft):	<u>11.84 ft</u>
Stickup Height (ft):	<u>0.15 ft</u>
Casing Diameter (ID-inches):	<u>2 in</u>
Static Water Level (ft below top of casing):	<u>2.89 ft</u>
One Casing Volume (gal):	<u>1.47 gal</u>
Start Purge (hrs.):	<u>11:25</u>
End Purge (hrs.):	<u>11:54</u>
Total Purge Time (min.):	<u>85 min</u>
Total Amount Purged (gal):	<u>4 gallons</u>
Purge Method:	<u>low flow with peristaltic tubing / silicon on pump & head</u>
Sample Method:	<u>gravity flow from upper tubing</u>
Depth Sampled:	<u>~ 3 ft below TOC</u>
Sample Date:	<u>25 Feb 98</u>
Sample Time:	<u>11:55</u>

Type of Screening Sample:		Type of Sample:	
<input type="checkbox"/> DPT Borehole	<input checked="" type="checkbox"/> Existing Monitoring Well	<input checked="" type="checkbox"/> Low Concentration	<input type="checkbox"/> High Concentration
<input type="checkbox"/> HSA Temporary Well		<input checked="" type="checkbox"/> Grab	<input type="checkbox"/> Composite
		<input type="checkbox"/> Composite	<input type="checkbox"/> Grab-Composite

Duplicate ID: _____

MS/MSD: YES NO

Observations/Notes: (Any change in sample location from that designated in the Workplan should be explained and described here.)

Resample of this location for VOCs because sample collected on 22 Feb 98 effervesced due to interaction of H₂ with CaCO₃.

ANALYSES:

TCL VOCs (HCL Preservative): YES NO

TCL SVOCs: YES NO

TCL PESTs: YES NO

TCL PCBs: YES NO

TAL Metals + Tin (HNO₃ Preservative): YES NO

Bottle Lot Number: unpreserved

Bottle Lot Number: _____

Bottle Lot Number: _____

Bottle Lot Number: _____

Bottle Lot Number: _____

Time	Total Volume Removed (gals)	Temperature (Deg C)	pH	Conductivity (mS/cm)	DO	Turbidity (NTU)	Color
<u>10:20</u>	<u>0.20</u>	<u>23.8</u>	<u>7.00</u>	<u>0.1045</u>	<u>8.18</u>	<u>204</u>	<u>cloudy</u>
<u>10:40</u>	<u>0.15</u>	<u>24.9</u>	<u>6.90</u>	<u>0.1049</u>	<u>8.29</u>	<u>93</u>	<u>clear</u>
<u>10:55</u>	<u>1.5</u>	<u>24.6</u>	<u>6.88</u>	<u>0.1051</u>	<u>8.54</u>	<u>104</u>	<u>cloudy</u>
<u>11:15</u>	<u>2.5</u>	<u>24.7</u>	<u>6.83</u>	<u>0.1047</u>	<u>8.52</u>	<u>21</u>	<u>clear</u>
<u>11:31</u>	<u>3.0</u>	<u>24.6</u>	<u>6.92</u>	<u>0.1052</u>	<u>8.47</u>	<u>13</u>	<u>clear</u>
<u>11:50</u>	<u>4.0</u>	<u>24.8</u>	<u>6.82</u>	<u>0.1050</u>	<u>8.30</u>	<u>7</u>	<u>clear</u>

Sal

0.03

0.42

0.02

0.03

0.02

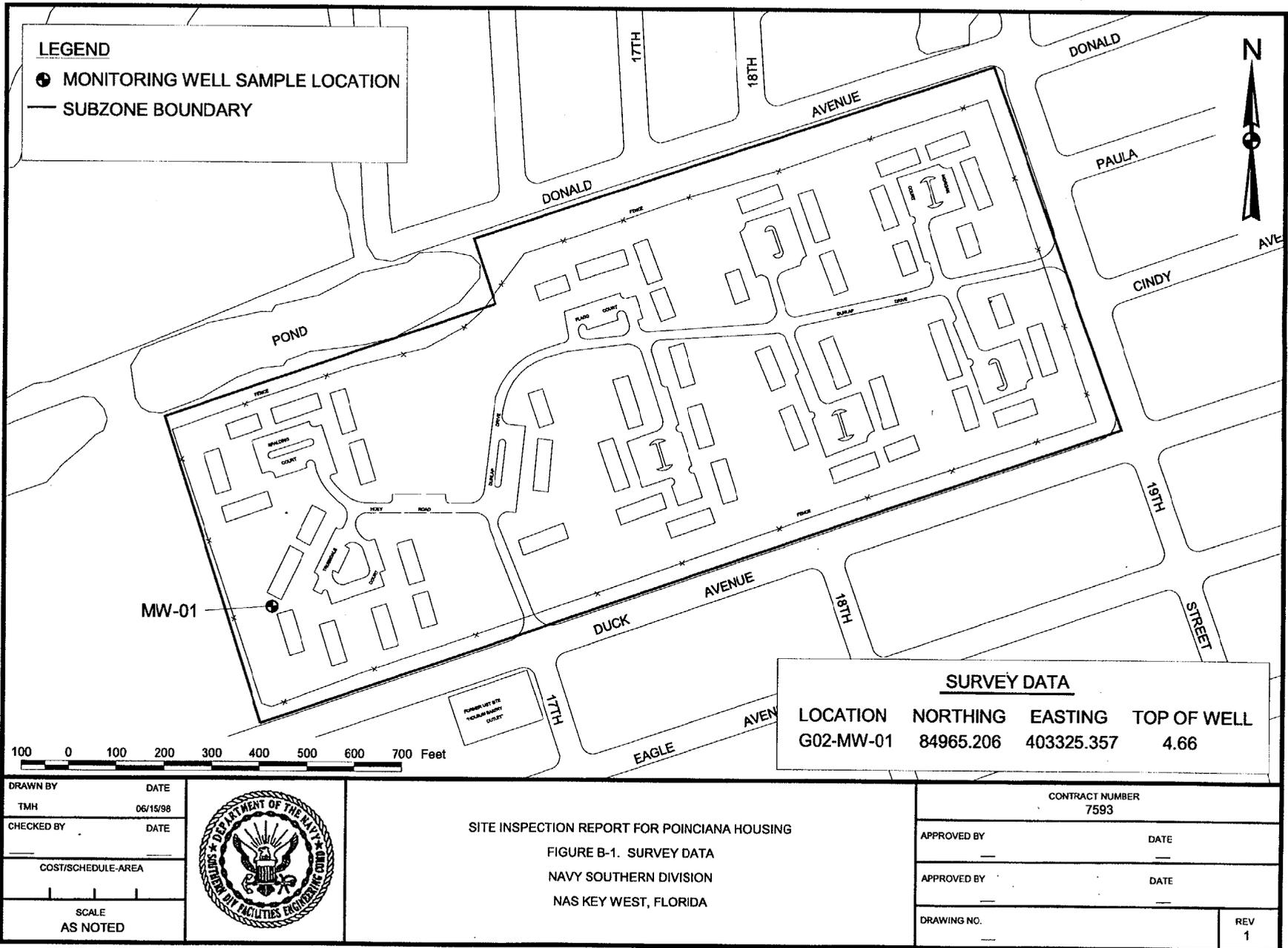
0.02

Sampled By: MR

Signature(s): _____

APPENDIX B. FIELD DOCUMENTATION
PART 3 – SURVEY DATA

AIK-98-0278



CTO-0032

APPENDIX C

POINCIANA HOUSING SITE INSPECTION ELECTRONIC DATA SET

Note: The computer file on this diskette is not guaranteed for accuracy. Computer files are subject to modifications or alterations that are beyond the control of the sender. This diskette was scanned with Norton Anti Virus for Windows 95, Version 2.0.1 (©1990-1996 Symantec) on April 9, 1998. No viruses were detected on that data.