

32501.013  
03.04.13.0003  
N00204.AR.000286  
NAS PENSACOLA  
5090.3a

**FINAL**

**CONTAMINATION ASSESSMENT/  
REMEDIAL ACTIVITIES INVESTIGATION  
MAGAZINE POINT RUBBLE  
DISPOSAL AREA (SITE 13)  
NAVAL AIR STATION PENSACOLA  
PENSACOLA, FLORIDA  
  
INTERIM DATA REPORT**

October 1991

Contract N62467-88-C-0200

Prepared by:

Ecology and Environment, Inc.  
316 South Baylen Street, Suite 670  
Pensacola, Florida

Prepared for:

Southern Division Naval Facilities  
Engineering Command, P.O. Box 10068  
Charleston, South Carolina 29411-0068  
Suzanne Sanbom

**REPORT DOCUMENTATION PAGE**

*Form Approved  
OMB No 0704-0188*

unclassified n/a

2a. SECURITY CLASSIFICATION AUTHORITY  
n/a

3 DISTRIBUTION / AVAILABILITY OF REPORT  
"See Distribution Page"

2b. DECLASSIFICATION / DOWNGRADING SCHEDULE  
n/a

4 PERFORMING ORGANIZATION REPORT NUMBER(S)  
E & E Report No. UH 6037:T0231

5 MONITORING ORGANIZATION REPORT NUMBER(S)  
n/a

6a. NAME OF PERFORMING ORGANIZATION  
Ecology & Environment, Inc.

6b. OFFICE SYMBOL (if applicable)  
n/a

7a NAME OF MONITORING ORGANIZATION  
Naval Air Station Pensacola

7b ADDRESS (City, State, and ZIP Code)  
Pensacola, Florida

8a. NAME OF FUNDING / SPONSORING ORGANIZATION  
Southern Division Naval Facilities Engineering Command

8b OFFICE SYMBOL (if applicable)  
n/a

9 PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER  
Mod. No. 7,  
N62467-88-C-0200, Amend. No. 7

8c ADDRESS (City, State, and ZIP Code)  
2155 Eagle Drive  
P. O. Box 10068  
Charleston SC 29411

10 SOURCE OF FUNDING NUMBERS

|                    |            |         |                        |
|--------------------|------------|---------|------------------------|
| PROGRAM ELEMENT NO | PROJECT NO | TASK NO | WORK UNIT ACCESSION NO |
|                    |            |         |                        |

13a TYPE OF REPORT  
Final

13b TIME COVERED  
FROM 10/90 TO 10/91

14 DATE OF REPORT (Year, Month, Day)  
October 1991

15 PAGE COUNT  
65

| COSATI CODES |       |           |
|--------------|-------|-----------|
| FIELD        | GROUP | SUB-GROUP |
|              |       |           |

18 SUBJECT TERMS (Continue on reverse if necessary and identify by block number)

20 DISTRIBUTION / AVAILABILITY OF ABSTRACT  
 UNCLASSIFIED/UNLIMITED   
 SAME AS RPT   
 DTIC USERS

21 ABSTRACT SECURITY CLASSIFICATION  
n/a

22a NAME OF RESPONSIBLE INDIVIDUAL  
Glenn C. Bradley

22b TELEPHONE (Include Area Code)  
803-743-0582

22c OFFICE SYMBOL  
182

\*19.

activities are required on and in the vicinity of site 13.

TABU OF CONTENTS

| <u>Section</u>   | Page  |
|--|-------|
| RECORD OF DOCUMENT CHANGES .....   | xi    |
| EXECUTIVE SUMMARY .....  | 1     |
| 1 INTRODUCTION .....   | 1-1   |
| 2 METHODOLOGY .....  | 2-1   |
| 2.1 AERIAL PHOTOGRAPH AND EXISTING DATA ANALYSIS .....                     | 2-1   |
| 2.2 SITE RECONNAISSANCE .....  | 2-1   |
| 2.3 HABITAT/BIOTA SURVEY .....   | 2-3   |
| 2.4 ASBESTOS SURVEY .....  | 2-3   |
| 2.5 HNU/OVA SURFACE EMISSIONS SURVEY AND PARTICULATE<br>AIR SAMPLING ..... | 2-3   |
| 2.6 RADIATION SURVEY .....   | 2-5   |
| 2.7 UTILITIES SURVEY .....   | 2-5   |
| 2.8 DATA ANALYSIS .....  | 2-5   |
| 2.9 SOIL BORINGS AND TEMPORARY MONITORING WELL<br>INSTALLATION .....       | 2-6   |
| 2.10 GROUNDWATER SAMPLING .....  | 2-6   |
| 2.11 HYDROLOGIC ASSESSMENT .....   | 2-[8] |
| 2.12 FIELD QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) ..                    | 2-[8] |
| 2.12.1 Field QA/QC Samples .....   | 2-[8] |
| 2.12.2 Decontamination Procedures .....                                    | 2-9   |
| 2.13 INVESTIGATION-DERIVED WASTE MANAGEMENT .....                          | 2-9   |

Table of Contents (Cont.)

| <u>Section</u>   | <u>Page</u> |
|--|-------------|
| 3 RESULTS .....  | 3-1         |
| 3.1 AERIAL PHOTOGRAPH AND EXISTING DATA ANALYSIS .....         | 3-1         |
| 3.2 SITE RECONNAISSANCE .....                                  | 3-1         |
| 3.3 HABITAT/BIOTA SURVEY .....                                 | 3-2         |
| 3.4 ASBESTOS SURVEY .....                                      | 3-4         |
| 3.5 SURFACE EMISSIONS AND PARTICULATE AIR SAMPLING ...         | 3-6         |
| 3.6 RADIATION SURVEY .....                                     | 3-[8]       |
| 3.7 HYDROLOGIC ASSESSMENT .....                                | 3-a         |
| 3.7.1 Shallow Subsurface Lithology .....                       | 3-8         |
| 3.7.2 Water Levels and Groundwater/Surface Water<br>Flow ..... | 3-[9]       |
| 3.8 CHEMICAL ANALYSES .....                                    | 3-[9]       |
| 3.8.1 Soil .....   | 3-[9]       |
| 3.8.1.1 Metals .....   | 3-[15]      |
| 3.8.1.2 TRPHs .....  | 3-15        |
| 3.8.1.3 VOCs .....   | 3-15        |
| 3.8.1.4 PAHs .....   | 3-[16]      |
| 3.8.1.5 Phenols .....  | 3-[16]      |
| 3.8.1.6 Pesticides and PCBs .....                              | 3-[16]      |
| 3.8.2 Groundwater .....  | 3-[16]      |
| 3.8.2.1 Field Parameters .....                                 | 3-[16]      |
| 3.8.2.2 Analytical Screening Parameters ..                     | 3-[19]      |
| 3.9 CONTAMINATION DISTRIBUTION/SOURCE DISCUSSION .....         | 3-21        |
| 3.9.1 Soil .....   | 3-21        |
| 3.9.2 Groundwater .....  | 3-22        |
| 3.10 QA/QC .....   | 3-22        |
| 3.10.1 Field QA/QC Samples .....                               | 3-22        |
| 3.10.2 Laboratory QA/QC Samples .....                          | 3-[23]      |

Table of Contents (Cont.)

|   |   |     |
|---|---|-----|
| 4 | CONCLUSIONS .....                         | 4-1 |
| 5 | REFERENCES .....                          | 5-1 |
| 6 | FLORIDA PROFESSIONAL GEOLOGIST SEAL ..... | 6-1 |

| <u>Appendix</u> |   | Page |
|-----------------|---|------|
| A               | BIRDS OBSERVED DURING HABITAT/BIOTA SURVEY .....                            | A-1  |
| B               | ASBESTOS TESTING RESULTS .....  | B-1  |
| C               | SURFACE EMISSIONS AND RADIATION SURVEY DATA .....                           | C-1  |
| <b>[D]</b>      | TEMPORARY MONITORING WELL, SOIL BORING. AND LITHOLOGIC<br>INFORHATION ..... | E-1  |
| <b>[B]</b>      | SOIL SAMPLING ANALYTICAL SCREENING RESULTS .....                            | D-1  |
| F               | GROUNDWATER SAMPLING ANALYTICAL SCREENING RESULTS .....                     | F-1  |

LIST OF TABLES

| <u>Table</u> |   | <u>Page</u> |
|--------------|---|-------------|
| 2-1          | Photographs and Maps used in the Aerial Photograph Analysis, NAS Pensacola Site 13 .....                                    | 2-2         |
| 2-2          | Sampling and Analytical Summary, NAS Pensacola Site 13 .....  | 2-[7]       |
| 3-1          | Summary Asbestos Testing Results, NAS Pensacola Site 13 .....   | 3-5         |
| 3-2          | Temporary Monitoring Well Construction Information and Water Level Elevations, NAS Pensacola Site 13 .....                  | 3-[10]      |
| 3-3          | Summary Analytical Screening Results for Soil Samples, NAS Pensacola Site 13 .....  | 3-12        |
| 3-4          | Groundwater Field Parameters, NAS Pensacola Site 13 .....   | 3-18        |
| 3-5          | Summary Analytical Screening Results for Groundwater Samples (from Temporary Monitoring Wells), NAS Pensacola Site 13 ..... | 3-[20]      |

LIST OF ILLUSTRATIONS

| <u>Figure</u> |  | <u>Page</u> |
|---------------|--|-------------|
| 1-1           | Location Map--NAS Pensacola Site 13 .....  | 1-2         |
| 1-2           | Site Vicinity Map--NAS Pensacola Site 13 .....   | 1-3         |
| 2-1           | Asbestos Sample, Temporary Monitoring Well, and Soil<br>Boring Locations--NAS Pensacola Site 13 .....                                    | 2-4         |
| 3-1           | Sensitive Habitat/Biota Map--NAS Pensacola Site 13 ....  | 3-3         |
| 3-2           | Surface Emissions [Survey, Particulate Air Sampling<br>Locations,] Radiation Survey, and Survey Grid<br>Map--NAS Pensacola Site 13 ..... | 3-7         |
| 3-3           | Water Level Elevations--NAS Pensacola Site 13 .....  | 3-[11]      |
| 3-4           | TRPH and Total PAH and Phenol Concentrations<br>Map--NAS Pensacola Site 13 .....   | 3-[17]      |

## RECORD OF DOCUMENT CHANGES

Revisions to this document were made based on comments received from the U.S. Environmental Protection Agency, Florida Department of Environmental Regulation, Florida Department of Natural Resources, and National Oceanic and Atmospheric Administration. All revisions are in bold and enclosed in brackets to denote changes to the last version of this document.

## EXECUTIVE SUMMARY

As part of the U.S. Navy's Installation Restoration Program, Phase I of the Contamination Assessment/Remedial Activities Investigation was conducted for the Magazine Point Rubble Disposal Area (Site 13), located on the Naval Air Station in Pensacola, Florida. This work was performed by Ecology and Environment, Inc., (E & E) under contract to the U.S. Navy, Southern Division, Naval Facilities Engineering Command.

Site 13 consists of a narrow strip of land along Pensacola Bay used for disposal of building rubble and miscellaneous construction materials. The objective of the Phase I investigation at Site 13 was to identify principal areas and primary contaminants of concern at the site and to provide recommendations for subsequent phases of investigation. The recommendations for additional work at Site 13 are presented under a separate cover. The Phase I tasks included aerial photograph and existing data analysis, site reconnaissance, habitat/biota survey, surface emissions survey and particulate air sampling, radiation survey, utilities survey, the collection and analysis of soil and groundwater samples, and a hydrologic assessment.

The results of this investigation indicate that limited soil and groundwater contamination are present on and in the vicinity of Site 13. Total recoverable petroleum hydrocarbons (TRPHs), volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs), and phenols are the primary contaminants. Most of the detected contamination is clearly associated with the industrial wastewater treatment plant (IWTP) located west of the site. Contamination of soil and groundwater associated with deposited rubble appears to be minor.

Soil contamination appears to be limited primarily to clayey sands east of the IVTP. Very high levels of **TRPHs, PAHs, and phenols** were detected in this area, suggesting that the **IVTP** may contribute contaminants to the site. Soils sampled elsewhere on Site 13 (**mostly** coarse sands) generally contained only natural or nondetectable levels of these contaminants.

Groundwater contamination was detected in only one monitoring well, located northeast of the IVTP. Several **VOCs** and **PAHs** were measured in concentrations exceeding Florida standards. Elevated levels of similar **VOCs** have been detected in a permanent groundwater monitoring network on the **IVTP** sites (Site 32--**IVTP** Sludge Drying Beds, Site 33--**IVTP** Ponds, and Site 35--**Miscellaneous** **IVTP** Solid Waste Management Units), suggesting that a portion of Site 13 may be located within a contaminant groundwater plume emanating from the **IVTP**.

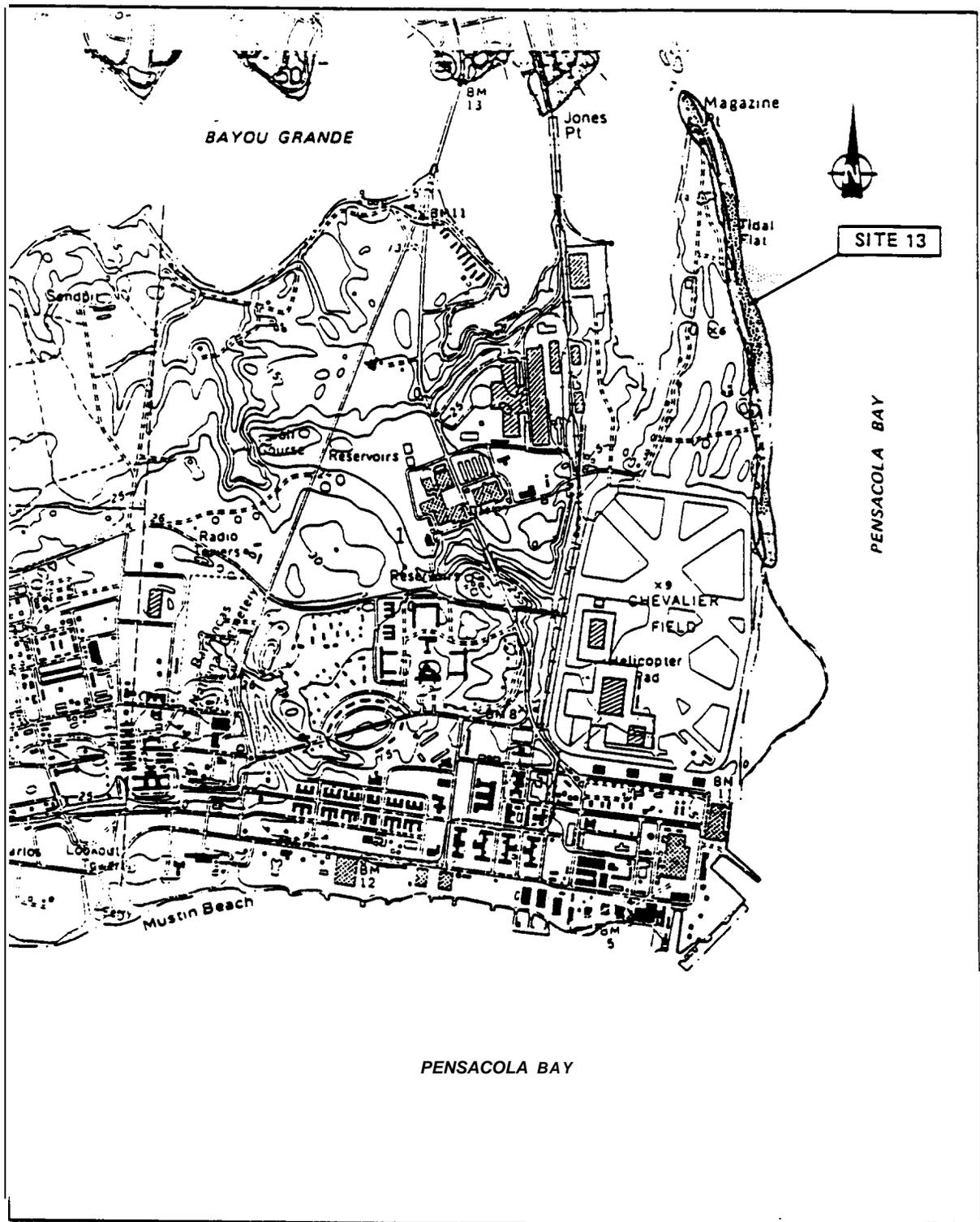
Limited further assessment activities are required at and in the vicinity of Site 13.

## 1. INTRODUCTION

This Interim Data Report presents the findings of the Phase I investigation activities performed for the Magazine Point Rubble Disposal Area (Site 13), located at the Naval Air Station (NAS) in Pensacola, Escambia County, Florida (see figures 1-1 and 1-2). This report has been prepared by Ecology and Environment, Inc., (E 6 E) for the Southern Division, U.S. Navy, Naval Facilities Engineering Command, under Contract No. N62467-88-C-0200. The information presented in this report is based on information and file documents provided by the Navy and on information gathered during the Phase I fieldwork conducted on the site from October 1990 to February 1991. This investigation was conducted in accordance with the administrative documents prepared by E 6 E for this project, which include the [June 1990) Project Management Plan, [June 1990] Site Management Plan, [July 1990) Generic Quality Assurance Project Plan (GQAPP), (July 1990) General Health and Safety Plan, and [June 1990) Contamination Assessment/Remedial Activities Investigation Work Plan--Group C with appended Site-Specific Health and Safety Plan and Site-Specific Quality Assurance Plan. **[All references to these documents in this report apply only to the 1990 versions.]**

Site 13 is located on the east side of a north to south-oriented peninsula on the eastern border of NAS Pensacola. The site extends north from the northeast corner of Chevalier Field along Pensacola Bay to Magazine Point (see figures 1-1 and 1-2) and covers approximately half of the land on the northern portion of the peninsula. The southern end of the site extends west from the shoreline to the edge of Chevalier Field.

Several sites are located in the vicinity of Site 13. Site 14--the Dredge Spoil Fill area, is located adjacent to the southern end of Site 13. The sites which are identified as part of the Industrial Wastewater



SOURCE: U.S.G.S. 7.5 Minute Series (Topographic) Quadrangle Fort Barrancas, Fla. 1970 and West Pensacola, Fla. 1970. Photorevised 1987

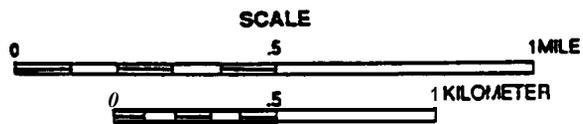


Figure 1-1 LOCATION MAP — NAS PENSACOLA SITE 13

0000301



Treatment Plant (IWTP) include: Site 32--IWTP Sludge Drying Beds, Site 33--IWTP Ponds, and Site 35--Miscellaneous IWTP Solid Waste Management Units (SWMUs), are located approximately 200 to 300 feet west of Site 13 and north of Chevalier Field.

The purpose of the Phase I investigation was to identify principal areas and primary contaminants of concern at the site and to provide recommendations for subsequent phases of investigation. The Phase I fieldwork included a site reconnaissance, habitat/biota survey, surface emissions survey and particulate air sampling, radiation survey, utilities survey, and the collection and analysis of soil and groundwater samples. In addition, a hydrologic assessment, which included the determination of groundwater elevation and groundwater flow direction and hydraulic gradient, was performed at the site. The recommendations for additional work at this site are presented with this submittal under separate cover.

## 2. INVESTIGATION METHODOLOGY

### 2.1 AERIAL PHOTOGRAPH AND EXISTING DATA ANALYSIS

Prior to the initiation of fieldwork, E & E personnel examined all available aerial photographs of NAS Pensacola for past and present conditions, features, and developments that might have had direct relevance to the fieldwork methodology. The aerial photograph analysis task involved assembling and stereoscopically analyzing historical photographic imagery and topographic maps available for the site area. Photographs were scaled to allow analysis of past and present surface conditions, drainage, and land use. The aerial photographs and maps used in the analysis are listed in Table 2-1. The photographs and maps were analyzed to obtain information regarding the evolution of site features that might have affected hydrologic conditions and to aid in the performance of such tasks as field reconnaissance and monitoring well placement .

### 2.2 SITE RECONNAISSANCE

A field reconnaissance survey was conducted on and around the site. Available aerial photographs and maps were used as guides in locating surface features. Visual inspections were made of surface conditions, stressed vegetation, surface drainage patterns, and areas of exposed site debris. These observations of surface conditions on the site were used to update the site map.

The reconnaissance survey team utilized radiation and air monitoring equipment during walkovers of site areas, in accordance with Section 6.1.1 of the GQAPP. Areas where readings above background were found were flagged and identified on a site map for future reference. All findings of the physical reconnaissance were mapped in detail and recorded in the field logbook.

Table 2-1

**PHOTOGRAPHS AND MAPS USED IN THE AERIAL PHOTOGRAPH ANALYSIS  
NAS PENSACOLA SITE 13**

| Source                                 | Photograph/Map Number | Date     | Scale    |
|--|-----------------------|----------|----------|
| NAS Pensacola Public works Department  | 1276833*              | 2/5/90   | 1:2,400  |
|  | 1276835*              | 2/5/90   | 1:2,400  |
|  | 1176836'              | 5/22/86  | 1:2,400  |
|  | 1276912*              | 9/29/86  | 1:2,400  |
| Florida Department of Transportation   | FD-3886-12-03         | 10/26/89 | 1:24,000 |
|  | FD-3886-12-04         | 10/26/89 | 1:24,000 |
|  | FD-3618-12-03         | 11/21/06 | 1:24,000 |
|  | FD-3618-12-04         | 11/21/06 | 1:24,000 |
|  | FD-3109-12-03         | 9/22/83  | 1:24,000 |
|  | FD-3109-12-04         | 9/22/03  | 1:24,000 |
|  | FD-2684-12B-04        |          | 1:24,000 |
|  | FD-2684-12B-05        | 3/9/81   | 1:24,000 |
|  | FD-1888-11-04         | 4/28/76  | 1:24,000 |
|  | FD-1331-11-03         | 5/4/73   | 1:24,000 |
|  | FD-1331-11-04         | 5/4/73   | 1:24,000 |
|  | FD-868-5-08           | 4/6/70   | 1:24,000 |
|  | FD-868-4-09           | 4/6/70   | 1:24,000 |
|  | FD-616-8-04           | 3/25/60  | 1:24,000 |
|  | FD-616-8-05           | 3/25/68  | 1:24,000 |
|  | FD-285-7-03           | 10/8/64  | 1:12,000 |
|  | FD-285-8-03           | 10/8/64  | 1:12,000 |
| FMS-7054-3-1                           | 10/12/61              | 1:24,000 |          |
| FMS-7054-3-2                           | 10/12/61              | 1:24,000 |          |
| U.S. Department of Agriculture         | CPF-4N-17             | 1/22/51  | 1:24,000 |
|  | CPF-1V-78             | 1/3/50   | 1:24,000 |
| West Florida Regional Planning Council | Po-361042-05          | 11/21/06 | 1:4,800  |

14(NASP)UR6037:T0231/332/23

\*Map.

Source: Ecology and Environment, Inc., 1991.

0000383

### 2.3 **HABITAT/BIOTA SURVEY**

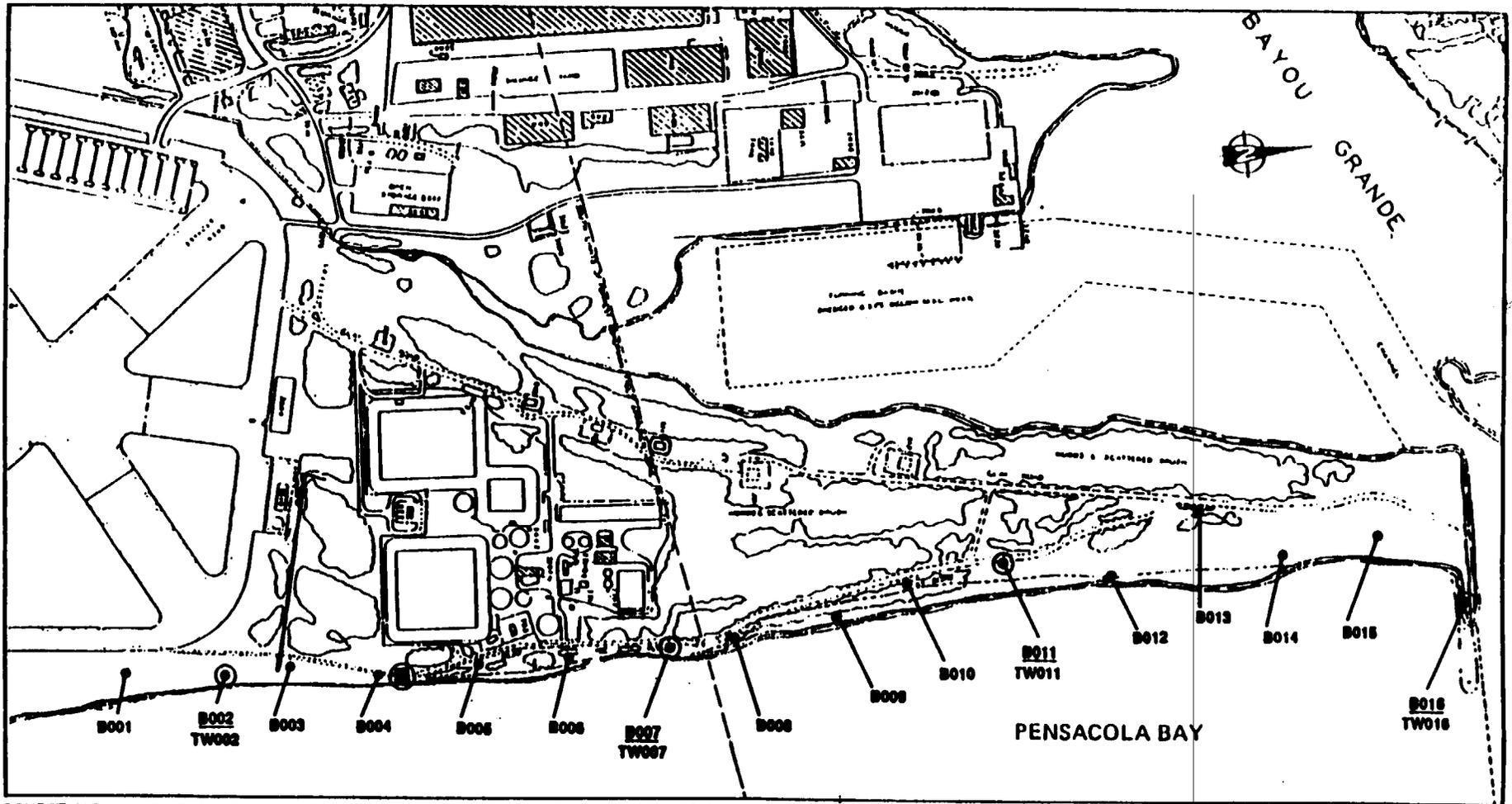
A habitat/biota survey was conducted for the site, and existing literature pertaining to NAS Pensacola was examined to identify probable on-site biota. During the physical reconnaissance, E 6 E biologists determined the on-site terrestrial and aquatic habitats and the surrounding habitats that could be affected by off-site contaminant migration. Rare, threatened, and endangered species and their potential habitats were identified, and general site conditions were evaluated regarding the site's ability to support viable populations of plants and animals.

### 2.4 **ASBESTOS SURVEY**

An asbestos survey was conducted on site during the habitat/biota survey. This survey consisted of [visually] locating and identifying suspect building materials [(i.e, insulation, tiles, and shingles)] that could potentially contain asbestos. Samples were collected for analysis in areas where suspect materials were identified (see Figure 2-1).

### 2.5 **HNU/OVA SURFACE EMISSIONS SURVEY AND PARTICULATE AIR SAMPLING**

A surface emissions survey was conducted using HNu and/or organic vapor analyzer (OVA) air monitoring equipment. The survey was conducted in accordance with Section 6.1.1 of the GQAPP. Due to the irregularity of the terrain caused by the presence of the rubble deposits, the surface emissions survey could not be conducted according to a pre-established grid. Instead, a walkover survey was conducted, and readings were mapped accordingly. After the survey was completed, a grid was laid over the survey map to establish locational coordinates for the data points (see Section 3.6; Figure 3-2). Grid coordinates were assigned as (x,y), with "x" being the coordinate north of the origin and "y" being the coordinate west of the origin. Measurements were made over the entire site and around all accessible rubble areas. Readings were not taken on the rubble jetty because of hazardous walking conditions on the sharp and jagged rubble. Readings were recorded in the field logbook. In addition, preliminary air screening was conducted with a particulate monitor to determine if the site represents a source



SOURCE: U.S. Naval Air Station, Pensacola, Florida 1987 and 1988; Ecology and Environment, Inc., 1991

KEY:

- Temporary Monitoring Well
- Soil Boring
- ◻ Asbestos Sample
- TW007 Temporary Monitoring Well 007
- B007 Soil Boring 007

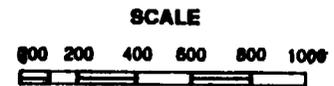


Figure 2-1 ASBESTOS SAMPLE, TEMPORARY MONITORING WELL, AND SOIL BORING LOCATIONS — NAS PENSACOLA SITE 13

of particulates in the air. The air sampling was conducted in accordance with Section 6.1.[1] of the GOAPP.

## 2.6 RADIATION SURVEY

A radiation survey of the site was conducted using a Bicron micro-R-meter in accordance with Section 6.3.[6] of the GOAPP. Again, due to the irregularity of the terrain caused by the rubble deposits, the survey was not conducted according to a pre-established grid. A walkover survey was conducted, and all readings were recorded in the field logbook.

## 2.7 UTILITIES SURVEY

Prior to conducting any augering, boring, or drilling, E & E located all underground cables, pipes, utilities, and other subsurface features that could potentially be damaged, create a safety hazard, or otherwise hinder fieldwork. The appropriate authorities (e.g., NAS Pensacola Public Works and Southern Bell) were contacted to identify the location of all underground utilities in the site area. In addition, E & E examined available maps and documents to determine the presence of any other potentially hazardous subsurface features on site. The locations of all underground utilities and other obstructing features were marked with surveyor flags, fluorescent paint, or by other methods, as appropriate.

## 2.0 DATA ANALYSIS

Information obtained from the results of the above-described physical surveys was given primary consideration in the development of placement strategies for the Phase I temporary monitoring wells and soil borings/samples. Prior to establishing the Phase I temporary monitoring well locations or other sampling points, the results of the aerial photograph analysis, site reconnaissance, surface emissions survey and particulate air sampling, radiation survey, and utilities survey were evaluated to identify areas of potential surface or subsurface contamination, areas of stressed vegetation, and boundaries of rubble disposal

areas. The proposed Phase I temporary monitoring well locations and other sampling points, shown on Figure 14-2 of the work plan, were then revised, as appropriate upon approval by Southern Division.

## 2.9 SOIL BORINGS AND TEMPORARY MONITORING WELL INSTALLATION

Sixteen soil borings were completed at Site 13 (see Figure 2-1). At each boring location, samples were collected by compositing soils over 5-foot depth intervals from the land surface to the water table. Each 5-foot depth interval was assigned a letter designation as follows: A interval = surface to 5 feet below land surface (BLS); B interval = 5 to 10 feet BLS; C interval = 10 to 15 feet BLS; and so on to the water table. Samples were collected using either hand-operated bucket augers or a solid-stem auger powered by a drill rig. Lithologic characteristics of the materials encountered in each borehole were recorded in the field logbook. All sampling, compositing, and lithologic logging activities were performed in accordance with Section 6.6 of the GQAPP. Equipment decontamination was performed in accordance with Section 6.10 of the GQAPP. All of the soil samples collected from the soil borings were shipped to E & E's Analytical Services Center (ASC) and analyzed for the screening parameters listed in Table 2-2.

Four temporary stainless-steel monitoring wells were installed at Site 13 (see Figure 2-1). Each well was constructed with 5 feet of 0.01-inch slotted screen and installed to a depth that allowed the well screen to bracket the water table. The wells were installed using solid-stem augers powered by a drill rig. Lithologic characteristics of materials encountered during installation of the wells were recorded in the field logbook. All equipment decontamination activities were performed in accordance with Section 6.10 of the GQAPP.

## 2.10 GROUNDWATER SAMPLING

Four groundwater samples and one duplicate sample were collected from the four temporary monitoring wells shown on Figure 2-1. Weather conditions; water levels; purge volumes; and groundwater pH, specific conductance, and temperature measurements were recorded in the field logbook prior to sampling. In addition, prior to purging, each well was checked for the presence of floating and/or sinking immiscible

Table 2-2

**SAMPLING AND ANALYTICAL SUMMARY  
NAS PENSACOLA SITE 13**

| Medium                   | no. of Samples | Duplicates | Total | Analytical Suite <sup>a, b</sup> |
|--------------------------|----------------|------------|-------|----------------------------------|
| Soil                     | 23             | 1          | 24    | A                                |
| Groundwater <sup>c</sup> | 4              | 1          | 5     | A                                |

14[NASP]UH6037:T0231/333/10

Key :

<sup>a</sup>Analytical suite designation is as follows:

A = Volatile organic compounds, polynuclear aromatic hydrocarbons, phenols, pesticides and total PCBs, total recoverable hydrocarbons, and metals (total, unfiltered).

<sup>b</sup>Specific constituents encompassed by the various chemical groups included within analytical suite A are identified in Tables 9-1 through 9-4 of the Generic Quality Assurance Project Plan.

<sup>c</sup>Groundwater samples and analyses shown are for temporary wells only.

Source: Ecology and Environment, Inc., 1991.

hydrocarbons using an MMC International oil-water probe. Each groundwater sample was collected immediately following well purging. All well purging and sampling activities were performed in accordance with sections 6.8 and 6.11 of the GQAPP. Equipment decontamination was performed in accordance with Section 6.10 of the GMPP. All of the groundwater samples collected from the temporary monitoring wells were shipped to E & E's ASC and analyzed for the screening parameters listed in Table 2-2.

## 2.11 **HYDROLOGIC ASSESSMENT**

The hydrologic assessment of the site and surrounding areas included the determination of water level elevations in the temporary monitoring wells. Wellhead top-of-casing (TOC) elevations and static water levels in the temporary monitoring wells were measured relative to the top of a driven reference stake located adjacent to each well using a spirit level and tape measure. Following groundwater sampling and removal of the temporary monitoring wells, the elevations of the driven reference stakes were surveyed using a transit with reference to U.S. Geological Survey (USGS) Benchmark No. A161. The static water levels in the temporary monitoring wells were used to establish groundwater flow directions and horizontal hydraulic gradients in the shallow aquifer in the site vicinity.

## 2.12 **FIELD QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)**

All field tasks performed during the investigation were documented in the field logbooks according to the procedures specified in Section 7.2 of the GQAPP.

### 2.12.1 **Field QA/QC Samples**

Field QA/QC samples were prepared in conjunction with all samples collected at the site during the Phase I investigation according to the procedures described in Section 6.12 of the GQAPP. Chain-of-custody was maintained for all samples collected, packaged, and shipped to E & E's ASC for analysis. Sample management was performed as specified in Section 7 of the GQAPP. The collected field QA/QC samples and corresponding analytical parameters are listed in Table 2-2.

### 2.12.2 Decontamination Procedures

All equipment used during field activities was decontaminated in accordance with Section 6.10 of the GQAPP.

### 2.13 INVESTIGATION-DERIVED WASTE MANAGEMENT

Excess soil material generated during soil boring and temporary monitoring well installation activities was temporarily contained adjacent to the well or boring and then backfilled into the borehole after the auger flights or temporary well casings had been removed following sample collection. Any soil material remaining after completion of borehole backfilling was placed in 55-gallon drums, sealed, labeled, and moved to a central area on the site. Each drum has a painted-on label listing the site number and the type of material contained in the drum.

All water generated during development and purging of the temporary monitoring wells was temporarily contained adjacent to the well and then poured back into the well following collection of samples.

Potentially contaminated clothing and disposable materials, wastes generated during decontamination activities, and other potentially contaminated, investigation-derived materials were placed in 55-gallon drums, labeled, and moved to a central area on the site. These drums are sealed and labeled "trash." All drummed investigation-derived materials were subsequently picked up and disposed of by NAS Pensacola.

### 3. RESULTS

#### 31 **AERIAL PHOTOGRAPH AND EXISTING DATA ANALYSIS**

Review of the aerial photographs from the period January 22, 1951, to October 26, 1989, showed that no structures existed on the site during that period. The IWTP west of the site was constructed during the period between 1970 and 1973. In the aerial photographs from 1951 to 1961, the site appeared to be an undisturbed sandy beach with scrub and trees along the western half. No rubble is discernible on site during this period.

Review of the October 8, 1964, aerial photograph indicated the presence of rubble at the north end of Magazine Point. Disposal of rubble at this location was probably intended to stabilize the narrow inlet between Bayou Grande and Pensacola Bay. Subsequent aerial photographs indicate continued armoring of the point and the formation of a jetty extending into Pensacola Bay. The jetty, presumably formed from building rubble, is much more prominent in the April 6, 1970, photograph than in the March 25, 1968, photograph.

Rubble disposal elsewhere on the site is difficult to discern because of the small scale of the aerial photographs. However, a potential rubble deposit area appears northeast of the IWTP location in the October 8, 1964, photograph and other subsequent photographs. No obvious visual evidence of stained soil, drums, or stressed vegetation on or in the vicinity of the site appears in any of the aerial photographs reviewed.

#### 3.2 **SITE RECONNAISSANCE**

During the site reconnaissance, visual inspections were made along the entirety of Magazine Point to identify the locations and types of disposed rubble. The rubble consists mainly of concrete blocks, broken

concrete slabs (some with metal rebar), asphalt, bricks and mortar, clay and concrete culverts, metal pipes, and wooden poles and lumber (some presumably treated with creosote). The jetty at the northern end of the point consists of concrete and other building rubble, including rusty pipe. Two rusty, empty, 55-gallon drums were found near the base of the jetty, where a linear pile of concrete rubble extends approximately 200 feet south along the shoreline. [There were **no markings** or labels on the **drums** identifying the **previous** contents.]

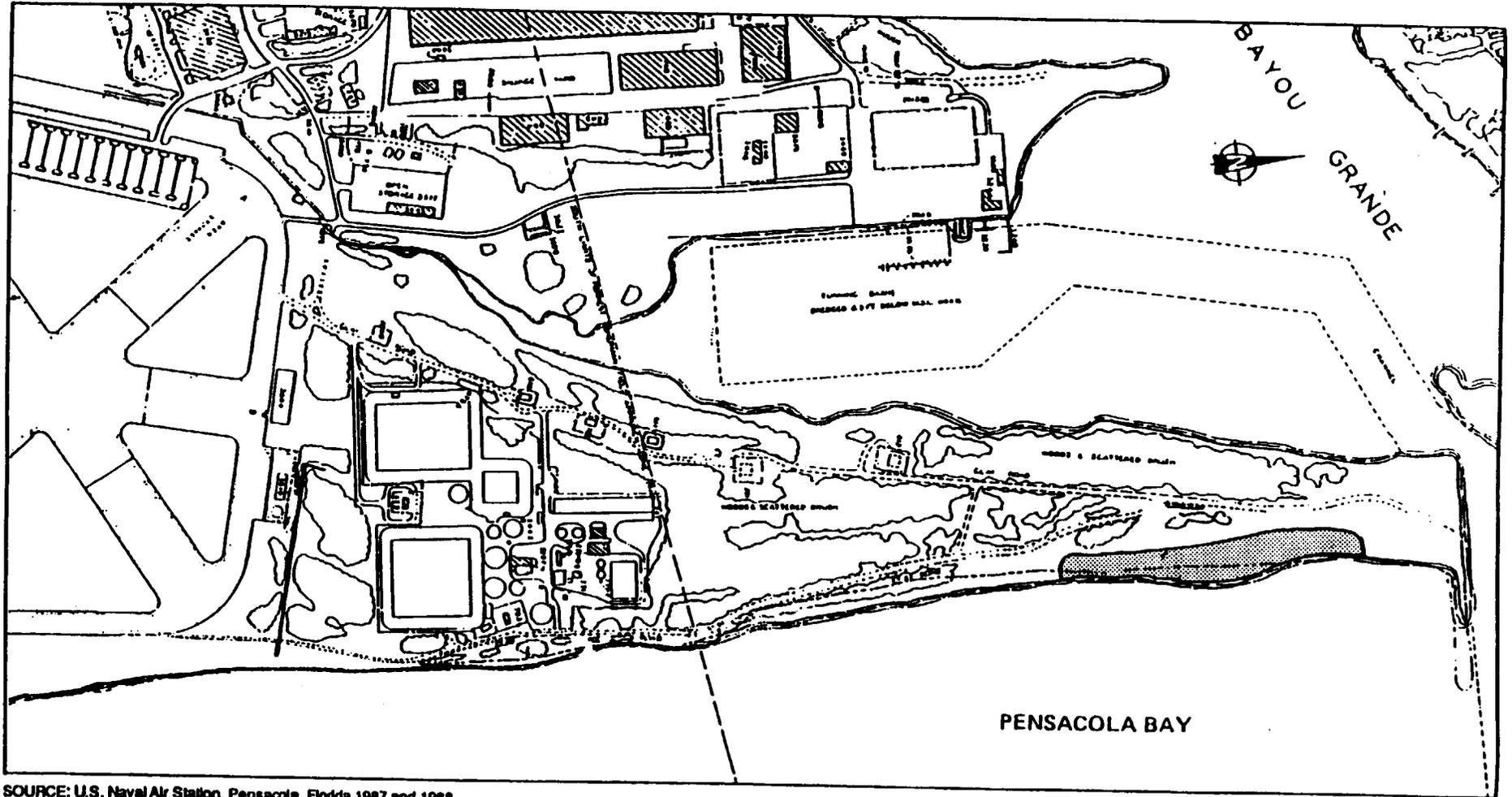
The site is generally clear of rubble for 1,000 feet south of the northern disposal area and consists of wide, sandy beach and low dunes vegetated by sea oats. Rubble deposits south of this clear area occur mainly in isolated piles between the small dunes and the eastern clay road. A pile of rusty, empty, 55-gallon **drums** was observed just east of the clay road approximately 2,000 feet south of the northern point. [There were **no markings** or **labels** on the **drums** identifying the previous contents.]

East of the IWTP, the rubble deposits (mainly massive pieces of concrete) occur on the beach within the tidal zone. This building material presumably **was** placed in this location to afford erosion protection for the clay road, which closely parallels the shoreline at this point. Approximately 500 feet south of the IWTP polishing tank, a wide drainage ditch transects the site. **The** ditch is separated from Pensacola Bay by the beach **berm**.

Rubble deposits of assorted **materials** are also concentrated on the site east of Chevalier Field as far south as the pond located on Site 14. In addition to the typical building rubble, **metal** boxes, pipes, and scraps were also present in this area.

### **3.3 HABITAT/BIOTA SURVEY**

Site 13 **encompasses** four habitat types: nearshore estuarine, beach, coastal dune, and open slash pine woodland. A stand of approximately 1,000 individuals of Godfrey's golden aster (*Chrysopsis godfreyi*), a candidate species for federal protection, is located on the beach and dune area near the middle of the site (see Figure 3-1). Sea



SOURCE: U.S. Naval Air Station, Pensacola, Florida 1987 and 1988.

KEY:


 Location of *Chrysops goddardi*

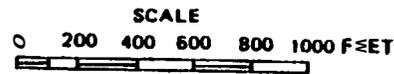


Figure 3-1 SENSITIVE HABITAT/BIOTA MAP — NAS PENSACOLA SITE 13

oats (Uniola paniculata), a species protected by state law, is also abundant in the beach/dune habitat, particularly near the north end of the site.

Vegetation at this site consists primarily of groundcover species, with the exception of the voodland habitat flora. In addition to sea oats and Godfrey's golden aster, Polygonella polygama and Schizachyrium maritimum are dominant groundcover species found in the beach habitat. Groundcover in the backdune habitat is dominated by goldenrod (Solidago sempervirens), ragweed (Ambrosia trifida), camphorweed (Heterotheca subaxillaris), and bluestem (Schizachyrium maritimum). The voodland portion of the site supports a canopy of mixed oaks (Quercus geminata, Q. virginiana and Q. chapmanii) and slash pine (Pinus elliottii); a subcanopy of young pine, wax myrtle (Myrica cerifera), and red cedar (Juniperus virginiana); and a groundcover consisting of horseweed (Conyza canadensis), rosemary (Cerateola erichoides), and camphorweed (Heterotheca subaxillaris).

Approximately 30 species of shore, wading, and diving birds were observed along the beach and nearshore waters, including several species of terns, gulls, plovers, and sandpipers (see Appendix A). The dominant beach fauna observed were ghost crabs (Oxyroda sp.). Two species of butterflies, the gulf fritillary and the buckeye, and the six-lined racerunner were observed in beach and dune habitats. Evidence of marsh rabbits and squirrels was observed in the pine forest. Although the Vest Indian manatee and four species of sea turtles (see Appendix C of the Group C Work Plan) are reported to occur in Pensacola Bay), no threatened or endangered animal species were observed. In addition, vegetation does not appear to be stressed, and no impacts to biota from hazardous waste were observed on site.

### 3.4 ASBESTOS SURVEY

[An asbestos survey was conducted at Site 13, as described in Section 2.4.] Asbestos-containing floor tiles attached to concrete building rubble were found on the shoreline east of the IWTP (see Figure 2-1). Samples from six tiles tested for asbestos were found to contain 5 to 20% chrysotile (see Table 3-1). One tile also had less than 1%

**Table E1**

**SUMMARY ASBESTOS TESTING RESULTS  
NAS PENSACOLA SITE 13  
(All results in %)**

| Asbestos Type | Sample Number |        |        |        |        |        |
|---------------|---------------|--------|--------|--------|--------|--------|
|               | P13001        | P13002 | P13003 | P13004 | P13005 | P13006 |
| Chrysotile    | 15.0          | 15.0   | 20.0   | 5.0    | 5.0    | 10.0   |
| Tremolite     | <1.0          | --     | --     | --     | --     | --     |

14[NASP]UH6037:T0231/337/20

**Key:**

Dash (--) indicator compound not detected.

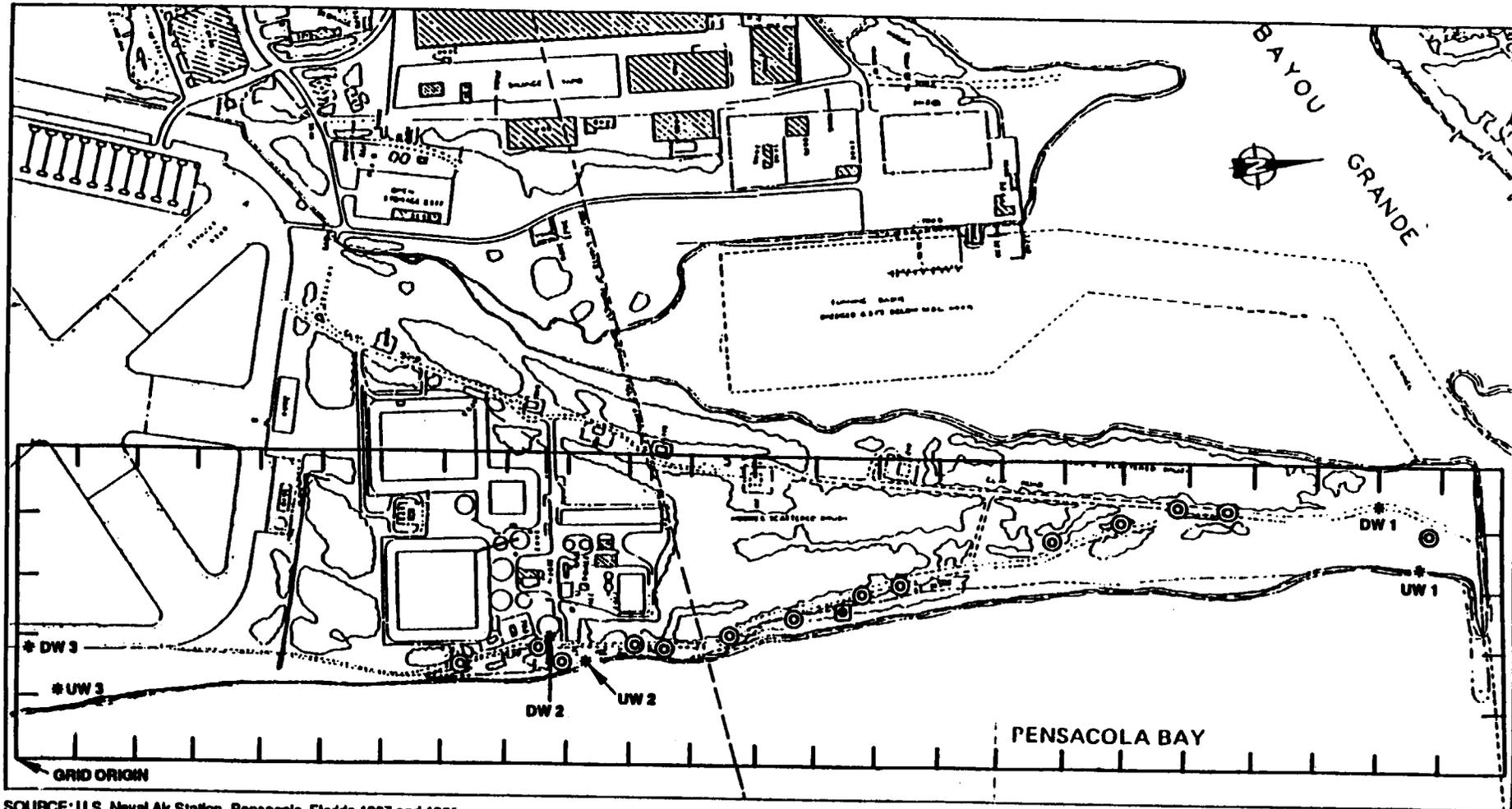
Source: Ecology and Environment, Inc., 1991.

tremolite. These results indicate that the floor tiles at this location are likely to contain both chrysotile and tremolite. Appendix B presents the complete asbestos testing results.

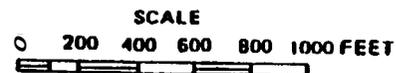
### 3.5 SURFACE EMISSIONS AND PARTICULATE AIR SAMPLING

An OVA was used to monitor surface emissions throughout Site 13. One OVA reading slightly above background (1.0 parts per million [ppm]) was noted. [Figure 3-2 illustrate8 the results of the surface emissions survey at Site 13.] Appendix C presents the grid coordinates and surface emissions survey readings for each grid point. Background readings were recorded in the field logbooks.

On November 13, 1990, a Mini-Ram particulate air monitoring device was used to determine if Site 13 could represent a source of particulates in the air. [Figure 3-2 presents the particulate air sampling locations at Site 13.] Three separate tests were conducted to adequately monitor the entire site. The first test was conducted at the northern end of the site, where the wind was blowing from the northeast at 3 to 5 miles per hour (mph). The time-weighted average (TWA) of particulates at the upwind location [(UW1)] was 0.01 milligrams per cubic meter ( $\text{mg}/\text{m}^3$ ) for a 15.0-minute period. The TWA at the downwind location [(DW1)], 300 feet southwest of the upwind location, was  $0.03 \text{ mg}/\text{m}^3$  after 15.0 minutes. The second particulate air sampling test was conducted east of the IWTP near Building 703. Wind speed was approximately 3 mph; wind direction was northeast. The reading [at the second upwind station (UW2)] for a 15.1-minute period was  $0.04 \text{ mg}/\text{m}^3$ . The TWA reading at the [second] downwind station [(DW2)], located approximately 200 feet southwest of the corresponding upwind station, was  $0.04 \text{ mg}/\text{m}^3$  after 15.0 minutes. The third test was performed at the southern end of Site 13, approximately 100 feet east of Chevalier Field and 300 feet north of the Site 14 spoil berm. The wind velocity was 3 mph northeast. The TWA of particulates at the [third] upwind station [(UW3)] was  $0.05 \text{ mg}/\text{m}^3$  after 15.0 minutes. At the [third] downwind location [(DW3)], 100 feet southwest of the upwind site, the TWA was  $0.07 \text{ mg}/\text{m}^3$  after 15.0 minutes. Based on these results, Site 13 does not appear to be a significant source of particulates.



SOURCE: U.S. Naval Air Station, Pensacola, Florida 1987 and 1988.



KEY:

- ⊙ Radiation Reading Above Background
- ⊠ OVA Reading Above Background
- \* Particulate Air Sampling Location
- DW 1/UW 1 Particulate Air Sampling Location Number (downwind/upwind)

**Figure 3-2 SURFACE EMISSIONS SURVEY, PARTICULATE AIR SAMPLING LOCATIONS, RADIATION SURVEY, AND SURVEY GRID MAP — NAS PENSACOLA SITE 13**

### 3.6 RADIATION SURVEY

[A radiation survey was performed at Site 13, as described in Section 2.6.] Background radiation levels for [~~gamma~~ radiation at] NAS Pensacola are 2 to 3 microRoentgens per hour ( $\mu\text{R/h}$ ). [Radiation levels at the site ranged from background to 100  $\mu\text{R/h}$ .] Fourteen readings above background were measured at Site 13 (see Figure 3-2). Appendix C presents the grid coordinates and radiation survey readings for each survey point.

Four of the readings occurred at rubble deposits east of the Building 771 complex along the shore. Readings of 20 to 25  $\mu\text{R/h}$  and 15 to 20  $\mu\text{R/h}$  were attributed to granite blocks and clay pipes, respectively, northeast of Building 771-F. A mass of melted-down metal and ship parts 200 feet east of Building 771-P had a reading of 100  $\mu\text{R/h}$ . Eighty feet south of this point, a pile of asphalt measured 10  $\mu\text{R/h}$ .

Ten other readings of 2 to 25  $\mu\text{R/h}$  above background were recorded at the site. The source of these slightly elevated readings is unknown.

### 3.7 HYDROLOGIC ASSESSMENT

#### 3.7.1 Shallow Subsurface Lithology

Appendix D presents the lithologic logs for the 16 soil borings taken at Site 13. Based on information collected during the borings, the shallow subsurface lithology of Site 13 generally can be characterized as light tan or light gray to white, coarse-grained sand. Boring B002, located east of the northern end of Chevalier Field, also contained a large amount of shell fragments.

Three borings had fine- or medium-grained soils in the A interval. Borings B004 and B005, located near the clay road, had red to orange, medium-grained, clayey sand in the upper layers that trended to white, coarse-grained sand near the water table. Black, fine-grained, clayey sand also occurred in the upper 1.5 feet of boring B005. Boring B006 had light brown, medium-grained sand in the upper 1.8 feet.

[OVA readings taken in the open borehole during drilling ranged from 0 to 10 ppm. OVA readings from the boreholes are presented in Appendix D.)

### 3.7.2 Water Levels and Groundwater Flow

Table 3-2 lists the water level elevations measured in the temporary monitoring wells at Site 13. Based on the measurements taken from the soil borings and temporary monitoring wells, the depth to the water table across the site ranges from 9.5 feet BLS in topographically high areas, such as the dunes and the western portion of the site, to less than 4 feet BLS at the northern end of the site (TW016).

Figure 3-3 illustrates the water level elevations on Site 13. Because of the alignment of the four temporary monitoring wells along a north-south axis, an accurate determination of a two-dimensional direction of shallow groundwater flow is difficult. Based on the groundwater elevations, the prediction of groundwater flow would be to the north. However, because of the proximity of Pensacola Bay and the height of the groundwater elevations above mean sea level (MSL), an easterly flow direction is expected. Easterly groundwater flow has been documented by well information from a monitoring well network surrounding the adjacent IWTP facility.

## 3.8 CHEMICAL ANALYSES

[The following section presents the results of the laboratory analyses of the soil and **groundwater** samples. The specific analytical **parameters** and **parameter** groups are listed or referenced in Table 2-2.]

### 3.8.1 Soil

Table 3-3 summarizes the analytical screening results for soil samples collected at Site 13, and Figure 2-1 shows the boring locations at Site 13. The complete analytical screening results for soil samples are presented in Appendix [E].

In general, one or more of the soil samples collected at Site 13 exhibited elevated levels of **TRPHs**, **PAHs**, and phenols. The highest contaminant concentrations were usually detected in the A sampling interval. Low levels of metals were detected in most of the soil samples. **VOCs**, pesticides, and PCBs were not detected in any of the soil samples.

Table 3-2

**TEMPORARY MONITORING WELL CONSTRUCTION INFORMATION  
AND WATER LEVEL ELEVATIONS  
NAS PENSACOLA SITE 13**

| <b>Well Number</b> | <b>Total Depth (BLS)</b> | <b>Depth to Water (BLS)</b> | <b>Depth to Water STOC</b> | <b>TOC Elevation</b> | <b>Water Level Elevation</b> | <b>Date Measured</b> |
|--------------------|--------------------------|-----------------------------|----------------------------|----------------------|------------------------------|----------------------|
| <b>TW002</b>       | 1.25                     | 4.21                        | 5.96                       | 6.74                 | 0.71                         | 1/9/91               |
| <b>TW007</b>       | 9.11                     | 4.16                        | 9.91                       | 10.57                | 0.59                         | 1/9/91               |
| <b>TW011</b>       | <b>8.28</b>              | 4.31                        | 6.03                       | 6.39                 | 0.36                         | <b>1/9/91</b>        |
| <b>TW016</b>       | 7.91                     | 3.75                        | 5.14                       | 6.03                 | 0.19                         | 1/9/91               |

14 [NASP] UM6037: T0231/357/22

**Notes:**

All depths are in feet.

All elevations are la LooT referenced to mean sea level (MSL).

All wells were constructed of 2-inch diameter stainless steel with 5 feet of 0.01-inch screen.

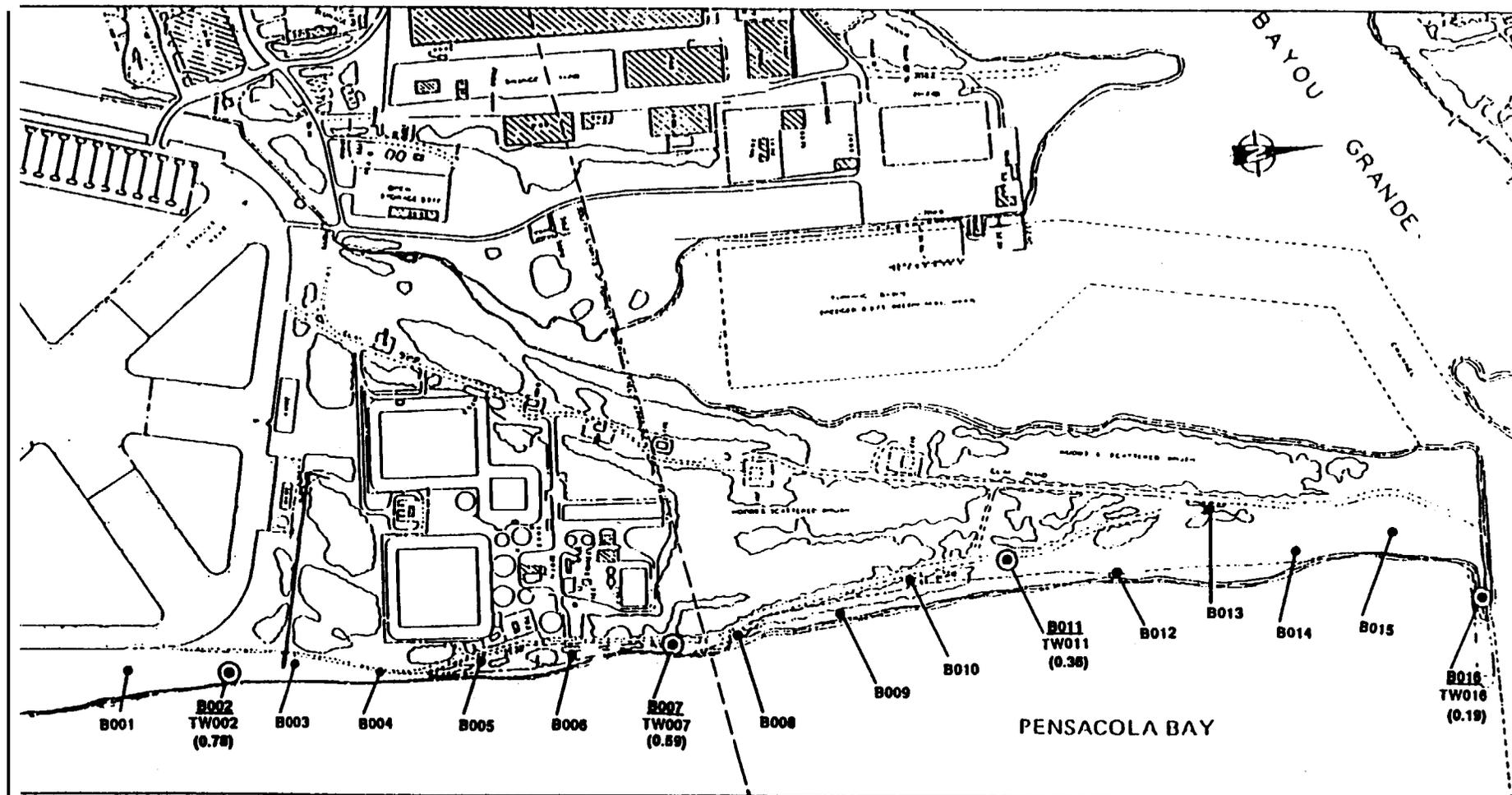
**Key:**

**BLS** = Below land surface.

**TOC** = Top of casing.

**STOC** = Below top of casing.

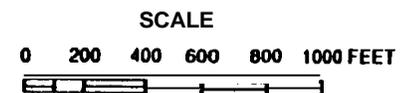
Source: Ecology and Environment, Inc., 1991.



SOURCE: U.S. Naval Air Station, Pensacola, Florida 1887 and 1988; Ecology and Environment, Inc., 1991

**KEY:**

- Temporary Monitoring Well
- Soil Boring
- TW007 Temporary Monitoring Well 007
- B007 Boring 007
- (0.59) Water Level Elevation (feet above MSL)



**Figure 3-3 WATER LEVEL ELEVATIONS — NAS PENSACOLA SITE 13**

00000000

Table 3-3

**SUMMARY ANALYTICAL SCREENING RESULTS FOR SOIL SAMPLES  
NAS PENSACOLA SITE 13  
(All results in  $\mu\text{g}/\text{kg}$ , unless noted)**

| Parameter                       | [Detection<br>Limit | Sample Number (location) |                     |                                    |                     |                     |                     |                     |                     |
|---------------------------------|---------------------|--------------------------|---------------------|------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|                                 |                     | P138001A<br>(B001A)      | P138002A<br>(B002A) | P138002AD <sup>a</sup><br>(B002AD) | P138003A<br>(B003A) | P138004A<br>(B004A) | P138004B<br>(B004B) | P138005A<br>(B005A) | P138005B<br>(B005B) |
| Chromium (mg/kg)                | 1                   | 1.3                      | --                  | --                                 | --                  | 5.8                 | --                  | 12                  | --                  |
| Zinc (mg/kg)                    | 2                   | --                       | --                  | 2.0                                | 2.5                 | 7.9                 | --                  | 16                  | 7.3                 |
| Lead (mg/kg)                    | 4                   | --                       | --                  | 12                                 | --                  | --                  | --                  | --                  | --                  |
| Cadmium (mg/kg)                 | 0.5                 | --                       | --                  | 0.92                               | 0.72                | 1.2                 | --                  | 1.6                 | --                  |
| Copper (mg/kg)                  | 2.5                 | --                       | --                  | --                                 | --                  | 2.7                 | --                  | 6.1                 | --                  |
| TRPHs (mg/kg)                   | 5                   | 22                       | 31                  | 16                                 | 10                  | <b>570</b>          | 61                  | 2,800               | 110                 |
| Methylene Chloride              | <b>1,000</b>        | --                       | <b>12,000(B)</b>    | <b>4,300(B)</b>                    | --                  | <b>5,300</b>        | 3,900               | 3,700               | 3,300               |
| Total PAHs as<br>Benzo-a-pyrene | <b>1,000</b>        | (L)                      | 1,600               | 2,200                              | (L)                 | 28,000              | --                  | 12,000              | --                  |
| Phenols a<br>Trichlorophenol    | <b>2,000</b>        | --                       | --                  | =                                  | --                  | <b>50,000</b>       | --                  | 24,000              | (L)                 |

14[NASP]UN6037:T0231/273/5

Key at end of table.

Table 3-3 (Cont.)

| Parameter                       | (Detection Limit | Sample Number (Location) |                     |                     |                     |                     |                     |                     |                     |
|---------------------------------|------------------|--------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|                                 |                  | P13S006A<br>(B006A)      | P13S006B<br>(80068) | P13S007A<br>(B007A) | P13S007B<br>(B007B) | P13S008A<br>(B008A) | P13S009A<br>(B009A) | P13S010A<br>(B010A) | P13S011A<br>(B011A) |
| Chromium (mg/kg)                | 1                | 0.0                      | 3.6                 | 1.4                 | --                  | --                  | --                  | --                  | --                  |
| Zinc (mg/kg)                    | 2                | 0.5                      | --                  | --                  | --                  | --                  | --                  | --                  | 3.1                 |
| Lead (mg/kg)                    | 4                | --                       | 8.7                 | --                  | --                  | --                  | --                  | --                  | --                  |
| Cadmium (mg/kg)                 | 0.5              | --                       | --                  | --                  | --                  | --                  | --                  | --                  | --                  |
| Copper (mg/kg)                  | 2.5              | --                       | --                  | --                  | --                  | --                  | --                  | --                  | --                  |
| TRPHs (mg/kg)                   | 5                | 480                      | 92                  | 8.1                 | 13                  | 12                  | 7.7                 | b.4                 | 17                  |
| Methylene Chloride              | 1,000            | --                       | --                  | --                  | --                  | --                  | --                  | 1,000               | 4,300(B)            |
| Total PAHs as<br>Benzo-a-pyrene | 1,000            | 17,000                   | (L)                 | (L)                 | --                  | (L)                 | --                  | --                  | --                  |
| Phenols as<br>Trichlorophenol   | 2,000}           | --                       | --                  | --                  | --                  | --                  | --                  | --                  | --                  |

Key at and of tabla.

14[NASP]UH6037:T0231/273/5

3-13

0000004

Table 3-3 (Cont.)

| Parameter                           | [Detection Limit | Sample Number (Location) |                     |                     |                     |                     |                     |                     |                     |
|-------------------------------------|------------------|--------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|                                     |                  | P13S012A<br>(B012A)      | P13S012B<br>(B012B) | P13S013A<br>(B013A) | P13S013B<br>(B013B) | P13S014A<br>(B014A) | P13S015A<br>(B015A) | P13S015B<br>(B015B) | P13S016A<br>(B016A) |
| Chromium (mg/kg)                    | 1                | ---                      | ---                 | ---                 | ---                 | ---                 | 1.6                 | ---                 | 15                  |
| Zinc (mg/kg)                        | 2                | ---                      | ---                 | ---                 | ---                 | ---                 | ---                 | ---                 | ---                 |
| Lead (mg/kg)                        | 4                | 7.6                      | ---                 | 5.6                 | ---                 | 4.5                 | 4.2                 | ---                 | ---                 |
| Cadmium (mg/kg)                     | 0.5              | ---                      | ---                 | 0.79                | ---                 | ---                 | ---                 | ---                 | ---                 |
| Copper (mg/kg)                      | 2.5              | ---                      | ---                 | ---                 | ---                 | ---                 | ---                 | ---                 | ---                 |
| TRPMo (mg/kg)                       | 5                | 13                       | 14                  | 13                  | 8.0                 | 19                  | 19                  | 26                  | 20                  |
| Methylene Chloride                  | 1,000            | 1,000                    | ---                 | 1,100               | 1,000               | ---                 | ---                 | ---                 | ---                 |
| Total PAHs as<br>Benzo-a-pyrene     | 1,000            | ---                      | ---                 | ---                 | ---                 | ---                 | ---                 | ---                 | ---                 |
| Phenols $\Sigma$<br>Trichlorophenol | 2,000            | ---                      | ---                 | ---                 | ---                 | ---                 | ---                 | ---                 | ---                 |

14[WASF]UH0037:T0231/273/5

Note: These results were reported on a wet-weight basis

Key:

\* Duplicate of sample P13S002A.

Qualifiers:

(B) = Compound also present in method blank.

(L) = Present below stated detection limit.

Dash (---) indicates compound not detected.

P000001 Ecology and Environment Inc 1001

3-14

### 3.8.1.1 Metals

The only significant levels of metals contamination detected at Site 13 occurred in three soil borings (B004, B005, and B006), which were located near the IUTP. The highest concentrations of Chromium, zinc, cadmium, and copper were detected in samples collected from the boring closest to the IUTP polishing tank, B005. Concentrations of these metals at boring B005 ranged from 2.5 times the detection level for copper to 12 times the detection level for chromium. Most metals were detected in samples from the A interval. Measurable levels of metals were detected in only two (S005B and S006B) of the seven soil samples from the B interval. Lead was present in soil samples S002B and S012B at relatively low concentrations (8.7 milligrams per kilogram [mg/kg] and 7.6 mg/kg, respectively). All other soil samples contained very low to nondetectable levels of metals. Arsenic, nickel, and silver were not detected in any soil samples collected at Site 13.

### 3.8.1.2 TRPHs

Relative TRPH concentrations occurred in a pattern similar to the pattern of metals concentrations at Site 13 (see Figure 3-4). The highest concentrations of TRPHs, ranging from 480 mg/kg to 2,800 mg/kg, were detected in samples collected from the A interval of borings B004, B005, and B006, all of which were located east of the IWTP. These three borings also had elevated TRPH concentrations (61 mg/kg to 210 mg/kg) in the B interval. Low levels of TRPHs, ranging between 7.7 mg/kg and 31 mg/kg, were present in all other soil samples collected at Site 13.

### 3.8.1.3 VOCs

Methylene chloride was detected in many of the soil samples at concentrations as high as 12,000 micrograms per kilogram ( $\mu\text{g}/\text{kg}$ ). This common laboratory solvent was also detected at similar levels in the laboratory method blanks (see Section 3.10.2); therefore, the presence of this contaminant in the soil samples is attributable to laboratory-derived contamination. No other VOCs were detected in any of the soil samples at Site 13.

### 3.8.1.4 PAHs

PAHs were present only in borings south of and including B008 (see Figure 3-4). Similar to the concentration patterns of metals and TRPHs, PAH compounds were highest in samples collected from soil borings B004, B005, and B006. Concentrations in the A intervals of these three borings ranged from 3,700  $\mu\text{g}/\text{kg}$  at B005 to 17,000  $\mu\text{g}/\text{kg}$  at B006. The B intervals of these borings also showed evidence of PAH contamination at lower levels than in the A intervals.

### 3.8.1.5 Phenols

Phenols were detected in samples collected from two soil borings at Site 13 (see Figure 3-4). Borings B004 and B005, located adjacent to the IWTP, exhibited phenol concentrations in the A interval of 58,000  $\mu\text{g}/\text{kg}$  and 24,000  $\mu\text{g}/\text{kg}$ , respectively. Phenols were also present below the detection limit of 2,000  $\mu\text{g}/\text{kg}$  in sample S005B.

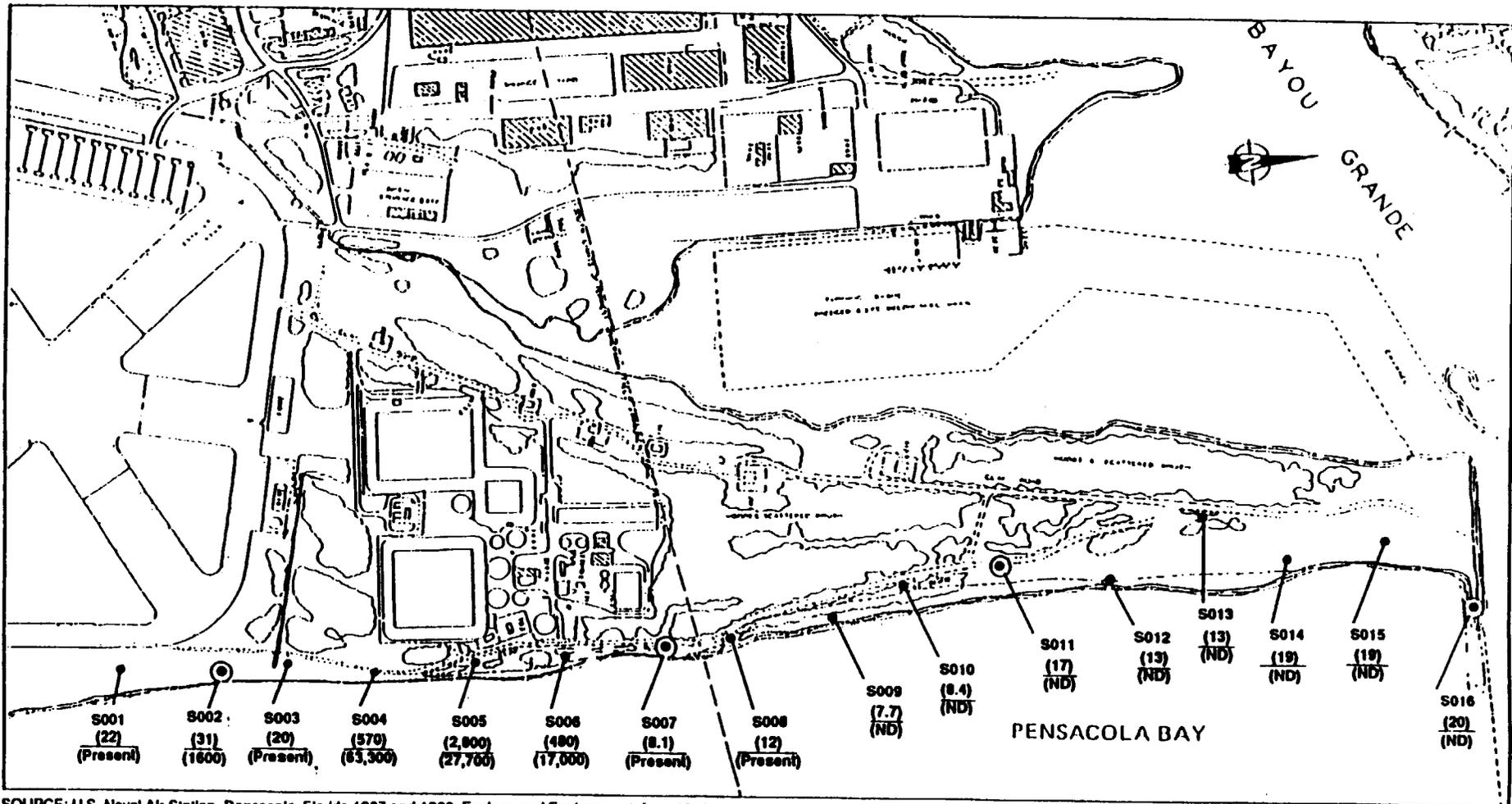
### 3.8.1.6 Pesticides and PCBs

Pesticides and PCBs were not detected in any of the soil samples collected at Site 13.

## 3.8.2 Groundwater

### 3.8.2.1 Field Parameters

Table 3-4 lists the groundwater temperature, pH, and specific conductance values measured for the samples collected from the temporary monitoring wells. Except for specific conductance at wells TW007 and TW016, the field parameter measurements for each well are within the reported range of values for ambient groundwater in Escambia County (Clemens et al. 1989). [The range of pH values is 4.12 to 7.3.] Specific conductance measurements at wells TW007 and TW016 were higher than the reported range of values for ambient groundwater in this area. These elevated measurements are probably due to saltwater intrusion from Pensacola Bay. No floating or [sinking] immiscible hydrocarbons were observed in any of the wells. Appendix E presents the temporary monitoring well information including field parameter and groundwater elevation data.



SOURCE: U.S. Naval Air Station, Pensacola, Florida 1967 and 1988; Ecology and Environment, Inc., 1991

KEY:

- Temporary Monitoring Well
- Soil Boring

(480) TRPH Concentration (mg/kg)  
 (17,000) Total PAH and Phenol Concentration (ug/kg)  
 ND Not Detected

SCALE

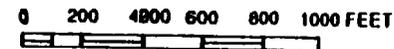


Figure 3-4 TRPH AND TOTAL PAH AND PHENOL CONCENTRATIONS IN A INTERVAL SOIL SAMPLES — NAS PENSACOLA SITE 13

Table 3-4  
**GROUNDWATER FIELD PARAMETERS  
 HAS FERRACOLA SITE 13**

| Wall Number  | Temperature (°C) | pH (units) | Specific Conductance (umhos) | Date Measured |
|--------------|------------------|------------|------------------------------|---------------|
| <b>TW002</b> | 20               | 7.3        | 112                          | 1/9/91        |
| TW007        | 20               | 6.11       | 1,100                        | 1/9/91        |
| <b>TW011</b> | 19               | 4.12       | 76                           | 1/9/91        |
| <b>TW016</b> | 19               | 6.5        | 1,600                        | 1/9/91        |

14[**NASP**]UR6037:T0231/242/26

Source: Ecology and Environment, Inc., 1991.

### 3.8.2.2 Analytical Screening Parameters

Table 3-5 summarizes the analytical screening results for the groundwater samples collected from the four temporary monitoring wells installed on Site 13, and Figure 2-1 shows the temporary monitoring well locations. The complete analytical screening results for the groundwater samples are presented in Appendix F.

In general, all the groundwater samples collected at Site 13 exhibited detectable levels of one or more metals. Elevated concentrations of VOCs and PAHs were detected in only one groundwater sample. TRPHs, pesticides, phenols, and PCBs were not detected in any of the groundwater samples.

**Metals.** Chromium and zinc were detected in all of the groundwater samples; lead, cadmium, and copper were present in only one or two samples. Arsenic, nickel, and silver were not detected in any of the groundwater samples at Site 13.

Chromium was detected at a level exceeding the Florida Primary Drinking Water Standard (FPDWS) of 50 micrograms per liter ( $\mu\text{g/L}$ ) (Chapter 17-550 Florida Administrative Code [FAC]) in only one sample, collected from well TW016 near the northern end of Site 13. Zinc was detected in all groundwater samples at concentrations below the Florida Secondary Drinking Water Standard (FSDUS) of 5,000  $\mu\text{g/L}$  (Chapter 17-550 FAC). Lead was detected in only one sample, collected from temporary monitoring well TU002 near the northeast corner of Chevalier Field, at a concentration of 53  $\mu\text{g/L}$ , which slightly exceeds the FPDWS of 50  $\mu\text{g/L}$  (Chapter 17-550 FAC). Relatively low levels of cadmium (5.6  $\mu\text{g/L}$ ) and copper (170  $\mu\text{g/L}$ ) were also present in this groundwater sample.

Although all groundwater samples collected at Site 13 contained detectable concentrations of at least one metal, only two samples had contraindications of the FPDWS. Metals concentrations detected in these samples, GW002 and GW016, slightly exceeded the standards for chromium and lead, respectively. Given that these samples were very turbid and not filtered, the elevated concentrations might have been caused by leaching and/or dissolution of suspended sediments by the acid used as a

00000007

3-Z0

Table 3-5

**SUMMARY ANALYTICAL SCREENING RESULTS FOR GROUNDWATER SAMPLES  
(FROM TEMPORARY MONITORING WELLS)  
NAS PENSACOLA SITE 13  
(All results in  $\mu\text{g/L}$ , unless noted)**

| Parameter                       | [Detection<br>Limit | Sample Number (Location) |                     |                     |                     |                                  | [FPDWS/<br>PSDWS |
|---------------------------------|---------------------|--------------------------|---------------------|---------------------|---------------------|----------------------------------|------------------|
|                                 |                     | P13GW002<br>(TW002)      | P13GW007<br>(TW007) | P13GW011<br>(TW011) | P13GW016<br>(TW016) | P13GW016 <sup>a</sup><br>(TW016) |                  |
| Chromium                        | 10                  | 30                       | 10                  | 30                  | 57                  | 37                               | 5a               |
| Zinc                            | 2a                  | 510                      | 30                  | 85                  | 40                  | 24                               | 5,000            |
| Lead                            | 40                  | 53                       | --                  | --                  | --                  | --                               | 50               |
| Cadmium                         | 5                   | 5.6                      | --                  | 5.6                 | --                  | --                               | 1a               |
| Copper                          | 25                  | 170                      | --                  | --                  | --                  | --                               | 1.000            |
| 1,2-Dichlorobenzene             | 10                  | --                       | 22                  | --                  | --                  | --                               |                  |
| 1,4-Dichlorobenzene             | 10                  | --                       | 14                  | --                  | --                  | --                               | 7s               |
| 1,1-Dichloroethene              | 10                  | --                       | 140                 | --                  | --                  | --                               | 71               |
| 1,1-Dichloroethane              | 10                  | --                       | 110                 | --                  | --                  | --                               |                  |
| total PAHs as<br>Benzo-a-pyrene | 100)                | --                       | 110                 | --                  | --                  | --                               |                  |

14[NASP]UN6037:T0231/275/19

**Key:****[FPDWS = Florida Primary Drinking Water Standard.****PSDWS = Florida Secondary Drinking Water Standard.]**<sup>a</sup>Duplicate of sample P13GW016.

Dash (--) indicates compound not detected.

Source: Ecology and Environment, Inc., 1991.

preservative. Thus, these elevated levels may be an artifact of sample collection and preparation rather than an indication of actual groundwater contamination.

**VOCs and PAHs.** VOCs and PAHs were detected in only one groundwater sample, collected from temporary monitoring well TW007 northeast of the IWTP. The VOC, 1,1-dichloroethene, was detected at a concentration of 140 µg/L, which greatly exceeds the FPDWS of 7 µg/L (Chapter 17-550 FAC). This groundwater sample also exhibited 1,2-dichlorobenzene at a concentration of 22 µg/L, which exceeds the Florida Groundwater Guidance Concentration of 10 µg/L (Florida Department of Environmental Regulation [FDER] 1989). Two other volatile halocarbons, 1,4-dichlorobenzene and 1,1-dichloroethane, were also present in the sample at low levels.

Elevated levels of PAHs were also present in the groundwater sample from TW007. The PAH concentration of 110 µg/L greatly exceeds the total PAH cleanup standard of 10 µg/L as designated by the State of Florida (Chapter 17-770 FAC).

**TRPHs, Pesticides, Phenols, and PCBs.** TRPHs, pesticides, phenols, and PCBs were not detected in any groundwater samples at Site 13.

### 3.9 CONTAMINATION **DISTRIBUTION/SOURCE** DISCUSSION

Both media (soil and groundwater) sampled on Site 13 exhibit at least trace levels of contamination by several contaminant groups (metals, TRPHs, VOCs, PAHs, and phenols) included in the Phase I analytical screening investigation. The Phase I results appear to indicate that off-site sources of contamination may have more of an impact on Site 13 than the deposited rubble. In the following sections, each of the sampled media will be discussed separately regarding the nature, distribution, and potential source(s) of contamination.

#### 3.9.1 Soil

Elevated levels of TRPHs, PAHs, and phenols were detected only in two or three soil borings at Site 13 (see Figure 3-4). The highest

contaminant concentrations were usually detected in the A intervals. Pesticides and PCBs were not detected in any of the soil samples. Metals were detected in most samples, but only at low levels.

The highest concentrations of all detected contaminants occurred at the three soil borings located closest to the IWTP, suggesting that this facility may be the source of multiple contaminants to Site 13. However, these three borings consisted of clay and fine-grained sands, which characteristically bind metals and organic contaminants and inhibit flushing from the soil. Because all the other borings were uniformly composed of coarse-grained sands, the contaminant concentrations of the three borings containing smaller-grained soils may appear comparatively high.

Slightly elevated concentrations of lead, **TRPHs**, and **PAHs** were detected at soil boring B002 near Chevalier Field, suggesting that contaminants from the runway may impact this area of Site 13. No significant contamination of any type was found in soil samples collected north of the IWTP.

### 3.9.2 Groundwater

Elevated levels of VOCs and PAHs were detected in one groundwater sample collected at Site 13. TRPHs, pesticides, and phenols were not detected in any of the groundwater samples. Metals were detected in all samples at low levels.

Significant levels of VOC and PAH contamination were detected in the groundwater sample from temporary monitoring well **TW007** northeast of the IWTP. Elevated concentrations of the chlorinated hydrocarbons have also been documented in groundwater samples from a permanent monitoring well network surrounding the IWTP but not located on Site 13. Thus, based on the probable direction of shallow groundwater flow to the east or northeast, groundwater contamination on Site 13 is probably caused by off-site contaminant migration from the IWTP.

### 3.10 QA/QC

#### 3.10.1 Field QA/QC Samples

One field duplicate sample was collected per sampling medium for Site 13 screening samples. The analytical results for the duplicate

samples are presented in the summary tables for the respective media (see tables 3-3 and 3-5). The soil and groundwater duplicate samples (S002D and GW016D, respectively) were in agreement, within acceptable limits, with the results of the original samples.

### 3.10.2 Laboratory **QA/QC** Samples

Methylene chloride is a common laboratory-derived contaminant (U.S. Environmental Protection Agency [EPA] 1988) and was present in several of the soil method blanks analyzed at E 6 E's ASC. Methylene chloride was not present in the groundwater method blank or in any of the groundwater samples.

#### 4. CONCLUSIONS

Limited soil and groundwater contamination are present on and in the vicinity of Site 13. TRPHs, **VOCs**, PAHs, and phenols are the primary contaminants. Most of the detected contamination is clearly associated with the adjacent IWTP. On-site contamination due to rubble disposal appears to be minimal.

The area of soil and groundwater contamination appears to be limited to the vicinity of Site 13 adjacent to and east of the IWTP. Soils east of the plant have been impacted by elevated levels of TRPHs, PAHs, and phenols. Groundwater northeast of the plant shows evidence of **VOC** and PAH contamination, with several compounds exceeding Florida standards. The extent of this contaminant plume is unknown.

Limited further assessment activities are required at and in the vicinity of Site 13.

## 5. REFERENCES

- Barraclough, J. T. and O. T. Marsh, 1962, Aquifers and Quality of Ground Water along the Gulf Coast of Western Florida: Florida Bureau of Geology, Report of Investigations 29.
- Barraclough, J. T., 1967, Ground-water Features in Escambia and Santa Rosa Counties, Florida: Florida Geological Survey, Map Series No. 26.
- Brooks, H. K., 1981, Physiographic Divisions of Florida: Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, Gainesville, Florida.
- Carlisle, V. W., 1960, Soil Survey of Escambia County, Florida: Series 1955, No. 8, U.S. Department of Agriculture, Washington, D.C.
- Clemens, L., J. B. Dalton, and R. D. Fendick, 1989, Ambient Groundwater Quality in Northwest Florida: Northwest Florida Water Management District, Water Resources Special Report 87-1, Revised Edition October, 1989.
- Coe, C. J., 1979, Geology of the Plio-Pleistocene Sediments in Escambia and Santa Rosa Counties, Florida: Florida State University, Master Thesis.
- Coffin, J. E., 1982, Summary of Ground-water and Surface-water Data for City of Pensacola and Escambia County, Florida: U. S. Geological Survey Open-file Report 82-361.
- Cooke, C. W., 1939, Scenery of Florida Interpreted by a Geologist: Florida Geological Survey, Bulletin No. 17.
- \_\_\_\_\_, 1945, Geology of Florida: Florida Geological Survey, Bulletin No. 29.
- Cooley, N. R., 1978, An Inventory of Estuarine Fauna in the Vicinity of Pensacola, Florida: Florida Marine Research Publications No. 31. Florida Department of Natural Resources, Marine Research Laboratory, St. Petersburg, Florida.
- Driscoll, P. G., 1986, Groundwater and Wells, Second Edition: Johnson Division, St. Paul, Minnesota.

- Ecology and Environment, Inc. (E & E), 19[90]a, General Health and Safety Plan, Contamination Assessments and Remedial Activities, Naval Air Station Pensacola, Pensacola, Florida.
- \_\_\_\_\_, 19[90]b, Generic Project Management Plan, Contamination Assessments and Remedial Activities, Naval Air Station Pensacola, Pensacola, Florida.
- \_\_\_\_\_, 19[90]c, Generic Quality Assurance and Project Plan, Contamination Assessments and Remedial Activities, Naval Air Station Pensacola, Pensacola, Florida.
- \_\_\_\_\_, 19[90]d, Generic Site Management Plan, Contamination Assessments and Remedial Activities, Naval Air Station Pensacola, Pensacola, Florida.
- \_\_\_\_\_, 1990[e], Contamination Assessment/Remedial Activities Investigation Work Plan--Group B, Naval Air Station Pensacola, Pensacola, Florida.
- ERM-Southeast, Inc. (ERM), 1988, Draft Site Investigation Report NIRP Site 31 at Building 649, Naval Air Station Pensacola, Pensacola, Florida.
- Flood and Associates, Inc, 1978, South Escambia and Santa Rosa Counties, 201 Facilities Plan, City of Pensacola, Escambia and Santa Rosa Counties, City of Gulf Breeze, Santa Rosa Island Authority, and Santa Rosa County Beach Administration.
- Florida Department of Environmental Regulation, 1988, Unpublished Marine Sediment Data from Pensacola Bay Sediment Study, 1985 to 1987, Tallahassee, Florida.
- Florida Natural Areas Inventory, 1988a, Special Plants and Animals List, Escambia County, Florida, Tallahassee, Florida.
- \_\_\_\_\_, 1988b, Survey of Pensacola Naval Air Station and Outlying Bronson Field for Rare and Endangered Plants, Tallahassee, Florida.
- Geraghty and Hiller, Inc. (G & M), 1984, Verification Study, Assessment of Potential Ground-water Pollution at Naval Air Station Pensacola, Pensacola, Florida.
- \_\_\_\_\_, 1986, Characterization Study, Assessment of Potential Ground-water Pollution at Naval Air Station Pensacola, Pensacola, Florida.
- \_\_\_\_\_, 1987a, Quarterly Report, Corrective Action Program, Wastewater Treatment Plant, Naval Air Station Pensacola, Pensacola, Florida.
- \_\_\_\_\_, 1987b, Lithologic Logs, Naval Air Station Pensacola Wastewater Treatment Facility, Pensacola, Florida.

- \_\_\_\_\_, 1988, Semi-Annual Report, Corrective-Action and Compliance-Monitoring Programs, Surge Pond Operation Permit, Wastewater Treatment Facility, Naval Air Station Pensacola, Pensacola, Florida.
- Green, K. Michael, 1989, personal communication, Navy EIC.
- Heil, D. C., 1989, personal communication, Florida Department of Natural Resources, Tallahassee, Florida.
- Jacob, C. E. and H. H. Cooper Jr., 1940, Report on the Ground-water Resources of the Pensacola Area in Escambia County, Florida: U. S. Geological Survey, Open-file Report 400001.
- Kennedy, L. R., 1982, Rainfall Summary for the Northwest Florida Water Management District: Water Resources Special Report 82-3.
- Ketchen, H. G. and R. C. Staley, 1979, A Hydrographic Survey in Pensacola Bay, Florida State University, Department of Oceanography, Tallahassee, Florida.
- Lohman, S. W., 1972, Ground-Water Hydraulics: U. S. Geological Survey Professional Paper 708, Washington, D.C.
- Luckenbach, M. W., R. J. Diay, and L. C. Schaffner, 1988, Scientific Consultation and Analytical Services: Benthic Assessment Procedures, Project 5, Virginia Water Control Board, Gloucester Point, Virginia.
- Harsh, O. T., 1966, Geology of Escambia and Santa Rosa Counties, Western Florida Panhandle: Florida Geological Survey, Bulletin 46, 140 p.
- Husgrove, R. E., J. T. Barraclough, and O. T. Harsh, 1961, Interim Report on the Water Resources of Escambia and Santa Rosa Counties, Florida: Florida Geological Survey, Information Circular No. 30.
- Husgrove, R. E., J. T. Barraclough, and R. G. Grantham, 1965, Water Resources of Escambia and Santa Rosa Counties, Florida: Florida Geological Survey, Report of Investigations No. 40.
- \_\_\_\_\_, 1966, Water Resources Records of Escambia and Santa Rosa Counties, Florida: Florida Geological Survey, Information Circular No. 50.
- Naval Energy and Environmental Support Activity (NEESA), 1983, Initial Assessment Study of Naval Air Station Pensacola, Pensacola, Florida, NEESA 13-015.
- National Institute for Occupational Safety and Health Association, 1985, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities.

Northwest Florida Water Management District, 1981, Public Water Supply Systems in the Coastal Areas of Escambia, Santa Rosa, Bay, Okaloosa and Walton Counties: Northwest Florida Water Management District, Water Resources Special Report 81-3.

Pike, E., 1989, personal communication, NAS Pensacola Public Works Department.

Prickett, T. A., T. G. Naymik, and C. G. Lonquist, 1981, A Random Walk Solute Transport Model for Selected Groundwater Quality Evaluations, Bulletin 654, Illinois State Water Survey, Champaign, Illinois.

Schropp, S. J., and H. L. Windom, 1988, A Guide to the Interpretation of Metals Concentrations in Estuarine Sediments, Florida Department of Environmental Regulation, Coastal Zone Management Section, Tallahassee, Florida.

SEGS, 1986, Florida Hydrogeologic Units: Southeastern Geological Society Ad Hoc Committee on Florida Hydrostratigraphic Unit Definition (SEGS), Florida Geologic Survey, Special Publication No. 28.

Trapp, E., Jr., 1972, Availability of Ground Water for Public-Water Supply in the Pensacola Area, Florida - Interim Report, June 1971: U. S. Geological Survey, Open-File Report FL72002.

\_\_\_\_\_, 1973, Availability of Ground Water for Public-Water Supply in Central and Southern Escambia County, Florida - Interim Report, July 1973: U. S. Geological Survey, Open-File Report FL72029.

\_\_\_\_\_, 1975, Hydrology of the Sand-and-Gravel Aquifer in Central and Southern Escambia County, Florida - Preliminary Report - November 1973: U. S. Geological Survey, Open-File Report FL74027.

\_\_\_\_\_, 1978, Preliminary Hydrologic Budget of the Sand-and-Gravel Aquifer under Unstressed Conditions, with a Section on Water Quality Monitoring, Pensacola, Florida: U. S. Geological Survey, Water-Resources Investigations 77-96.

U.S. Environmental Protection Agency, 1984, Standard Operating Safety Guidelines.

\_\_\_\_\_, 1985, Guidance on Remedial Investigations under CERCLA, EPA, OSWER, HWERL, EPA report #540/6-85/002, NTIS ref #PB-85-268616, OSWER Directive 9355.0-06B, U.S. EPA, Cincinnati, Ohio.

\_\_\_\_\_, 1985, Guidance on Feasibility Studies under CERCLA, EPA, OSWER, OWPE, EPA report #540/G-85/003, NTIS ref #PB-85-238-590, OSWER Directive 9355.0-05c, U.S. EPA, Washington, DC.

\_\_\_\_\_, 1987, Data Quality Objectives for Remedial Response Activities, OSWER Directive 9335.0-78, U.S. EPA, Washington, DC.

- \_\_\_\_\_, 1987, Compendium of Superfund Field Operations Methods, OSWER Directive 9355.0-14, EPA/540/P-87/00/a.
- \_\_\_\_\_, 1988, CERCLA Compliance with Other Laws Manual, Draft, OSWER Directive 9234.1-01, U.S. EPA, Washington, D.C.
- \_\_\_\_\_, 1988, Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA Draft, OSWER Directive 9355.3-01 OERR # 68-01-7090 and 68-W8-0098, U.S. EPA, Washington, D.C.
- U.S. Fish and Wildlife Service, 1987, Long Range Fish and Wildlife Section, Naval Air Station Pensacola and Outlying Field Bronson, Pensacola, Florida, U.S.F.W.S. Field Office, Panama City, Florida.
- U.S. Geological Survey, 1970a, 7 1/2 Minute Topographic Map, Fort Barrancas, Florida, Quadrangle.
- \_\_\_\_\_, 1970b, 7 1/2 Minute Topographic Map, West Pensacola, Florida Quadrangle, Photorevised 1987.
- U.S. Navy, 1986, U.S. Navy Gulf Coast Strategic Homeporting Environmental Impact Statement, Appendix IV, Pensacola, Florida, Southern Division, Naval Facilities Engineering Command, Charleston, South Carolina.
- \_\_\_\_\_, 1987, General Development Map Nos. 1276829 to 1276839, U.S. Naval Air Station Pensacola, Pensacola, Florida, Southern Division Naval Facilities Engineering Command, Charleston, South Carolina.
- Wagner, J. R., 1982, Hydrogeology of the Northwest Florida Water Management District: in Ground Water in Florida - Proceedings of the First Annual Symposium on Florida Hydrogeology: Northwest Florida Water Management District, Public Information Bulletin 82-2.
- Wagner, J. R., 1989, Hydrogeologic Framework of the Northwest Florida Water Management District.
- Wagner, J. R., T. W. Allen, L. A. Clemens, and J. B. Dalton, 1984, Ambient Ground Water Monitoring Program - Phase 1: Northwest Florida Water Management District, DER Contract Number WM65.
- Walton, W.C., 1970, Ground Water Resource Evaluation: McGraw-Hill Book Co., New York.
- Water and Air Research, Inc. (WAR), 1986, Report of Collection and Analyses of Sediment, Water, and Elutriate Samples for Navy Gulf Coast Strategic Homeporting Project, Pensacola, Florida.

Wilkins, K. T., J. R. Vagner, and T. V. Allen, 1985, Hydrogeologic Data for the Sand-and-Gravel Aquifer in Southern Escambia County, Florida: Northvest Florida Uater Management District, Technical File Report 85-2.

Uolfe, S. E., J. A. Rtidenauer, and D. B. Means, 1988, *An Ecological Characterization of the Florida Panhandle*, U.S. Fish and Wildlife Service Biological Report 88(12); Minerals Management Service OCS Study/MMS 88-0063.

0000403

6. FLORIDA PROFESSIONAL GEOLOGIST SEAL

I hereby affix my seal to the Interim Data Report for the Magazine Point Rubble Disposal Area (Site 13), located at the Naval Air Station in Pensacola, Escambia County, Florida, in accordance with Chapter 492 of the Florida Statutes and applicable rules and regulations developed pursuant thereto:

Name : Richard J. Rudy  
License Number: P.G. No. 97 .  
State: Florida  
Expiration Date: July 31, 1992

  
\_\_\_\_\_  
Richard J. Rudy  
  
10-10-91  
\_\_\_\_\_  
Date

DISTRIBUTION

SOUTH NAVFACENGCOM--SUZANNE SANBORN (2)

NAS PENSACOLA--RON JOYNER (6)

FDER--ERIC NUZIE (2)

EPA--ALLISON DREW (4)

TRC MEMBERS (7)

APPENDIX A  
BIRDS OBSERVED DURING HABITAT/BIOTA SURVEY

Table A-1

BIRDS OBSERVED DURING HABITAT/BIOTA SURVEY  
OCTOBER 1990

Mature pine forest, including grassy margins along dirt roads and thickets bordering forests.

|                       |                                 |
|-----------------------|---------------------------------|
| Gray Catbird          | <u>Dumetella carolinensis</u>   |
| Rufous-sided Towhee   | <u>Pipilo erythrophthalmus</u>  |
| Yellow-throated Vireo | <u>Vireo flavifrons</u>         |
| House Wren            | <u>Troglodytes aedon</u>        |
| Bluejay               | <u>Cyanocitta cristata</u>      |
| Eastern Phoebe        | <u>Sayornis phoebe</u>          |
| Mourning Dove         | <u>Zenaida macroura</u>         |
| Common Grackle        | <u>Quiscalus quiscula</u>       |
| White-eyed Vireo      | <u>Vireo griseus</u>            |
| Northern Hockingbird  | <u>Mimus polyglottos</u>        |
| Cardinal              | <u>Cardinalis cardinalis</u>    |
| Carolina Wren         | <u>Thryothorus ludovicianus</u> |
| Boat-tailed Grackle   | <u>Quiscalus major</u>          |
| Brown Thrasher        | <u>Toxostoma rufum</u>          |

Upland mature **hardwood** forest with **some** mix of pines.

|                        |                                 |
|------------------------|---------------------------------|
| Prairie Warbler        | <u>Dendroica discolor</u>       |
| Northern Mockingbird   | <u>Mimus polyglottos</u>        |
| Mississippi Kite       | <u>Ictinia mississippiensis</u> |
| Red-tailed Hawk        | <u>Buteo jamaicensis</u>        |
| Mourning Dove          | <u>Zenaida macroura</u>         |
| Ovenbird               | <u>Seiurus aurocapillus</u>     |
| Tufted Titmouse        | <u>Parus bicolor</u>            |
| Carolina Chickadee     | <u>Parus carolinensis</u>       |
| Golden Crowned Kinglet | <u>Regulus satrapa</u>          |
| Ruby Crowned Kinglet   | <u>Regulus calendula</u>        |
| Nashville Warbler      | <u>Vermivora ruficapilla</u>    |
| Bluejay                | <u>Cyanocitta cristata</u>      |

0000407

Beachfront, including shoreline along waterfront apron; Pensacola Bay open water; Bayou Grande open water; shoreline along dredge spoil fill area; interior mudflats of dredge spoil fill area; and primary dune/scrubby areas of beach.

|                          |                                    |
|--------------------------|------------------------------------|
| Forester's Tern          | <u>Sterna forsteri</u>             |
| Herring Gull             | <u>Larus argentatus</u>            |
| Semi-palmated Plover     | <u>Charadrius semipalmatus</u>     |
| <b>Great Blue Heron</b>  | <u>Ardea herodias</u>              |
| Semi-palmated Sandpiper  | <u>Calidris pusilla</u>            |
| Willet                   | <u>Catoptrophorus semipalmatus</u> |
| Ruddy Turnstone          | <u>Arenaria interpres</u>          |
| Royal Tern               | <u>Sterna maxima</u>               |
| Sandwich Tern            | <u>Sterna sandircensis</u>         |
| Roseate Tern             | <u>Sterna dougallii</u>            |
| Common Tern              | <u>Sterna hirundo</u>              |
| Brown Pelican            | <u>Pelecanus occidentalis</u>      |
| Killdeer                 | <u>Charadrius vociferus</u>        |
| Chipping Sparrow         | <u>Spizella passerina</u>          |
| Eastern Wood Pewee       | <u>Contopus borealis</u>           |
| Bluejay                  | <u>Cyanocitta cristata</u>         |
| Osprey                   | <u>Pandion haliaetus</u>           |
| Belted Kingfisher        | <u>Ceryle alcyon</u>               |
| Fish Crow                | <u>Corvus ossifragus</u>           |
| Mourning Dove            | <u>Zenaidura macroura</u>          |
| Double Crested Cormorant | <u>Phalacrocorax auritus</u>       |
| Northern Mockingbird     | <u>Mimus polyglottos</u>           |
| Sanderling               | <u>Calidris alba</u>               |
| Least Sandpiper          | <u>Calidris minutilla</u>          |
| Little Blue Heron        | <u>Egretta caerulea</u>            |
| Short-billed Dowitcher   | <u>Limnodromus griseus</u>         |
| Laughing Gull            | <u>Larus atricilla</u>             |
| Black-bellied Plover     | <u>Pluvialis squatarola</u>        |
| Tree Swallow             | <u>Tachycineta bicolor</u>         |
| Acadian Flycatcher       | <u>Empidonax virescens</u>         |
| House Wren               | <u>Troglodytes aedon</u>           |

Marshland, including emergent vegetation found along Bayou Grande, Pensacola Bay, and brackish-water ponds.

|                       |                                |
|-----------------------|--------------------------------|
| Pied-billed Grebe     | <u>Podilymbus podiceps</u>     |
| Great Blue Heron      | <u>Ardea herodias</u>          |
| Great Egret           | <u>Casmerodius albus</u>       |
| Snowy Egret           | <u>Egretta thula</u>           |
| Little Blue Heron     | <u>Egretta caerulea</u>        |
| Tricolored Heron      | <u>Egretta tricolor</u>        |
| Green-winged Teal     | <u>Anas crecea</u>             |
| Mottled Duck          | <u>Anas fulvigula</u>          |
| Blue-winged Teal      | <u>Anas discors</u>            |
| Northern Shoveler     | <u>Anas clypeata</u>           |
| Lesser Scaup          | <u>Aythya affinis</u>          |
| American Coot         | <u>Fulica americana</u>        |
| Mourning Dove         | <u>Zenaida macroura</u>        |
| Northern Flicker      | <u>Colaptes auratus</u>        |
| Bluejay               | <u>Cyanocitta cristata</u>     |
| Red-winged Blackbird  | <u>Agelaius phoeniceus</u>     |
| Belted Kingfisher     | <u>Ceryle alcyon</u>           |
| Rufous-sided Towhee   | <u>Pipilo erythrophthalmus</u> |
| Cardinal              | <u>Cardinalis cardinalis</u>   |
| Yellowthroat          | <u>Geothlypis trichas</u>      |
| Forester's Tern       | <u>Sterna forsteri</u>         |
| Osprey                | <u>Pandion haliaetus</u>       |
| House Wren            | <u>Troglodytes aedon</u>       |
| Yellow-rumped Warbler | <u>Dendroica coronata</u>      |
| 'Northern Mockingbird | <u>Mimus polyglottos</u>       |

0000400

Forested wetland area, including mature hardwoods and thick undergrowth mixed with emergent vegetation such as cattails.

|                          |                              |
|--------------------------|------------------------------|
| Yellow-bellied Sapsucker | <u>Sphyrapicus varius</u>    |
| Brown Thrasher           | <u>Toxostoma rufum</u>       |
| Marsh Wren               | <u>Cistothorus palustris</u> |
| American Goldfinch       | <u>Carduelis tristis</u>     |
| Prairie Warbler          | <u>Dendroica discolor</u>    |
| Northern Flicker         | <u>Colaptes auratus</u>      |
| Cardinal                 | <u>Cardinalis cardinalis</u> |
| Bluejay                  | <u>Cyanocitta cristata</u>   |
| Northern Mockingbird     | <u>Mimus polyglottos</u>     |
| Wood Thrush              | <u>Hylocichla mustelina</u>  |

14[NASP]UH6037:T0230/tab-A1/303

**APPENDIX B**  
**ASBESTOS TESTING RESULTS**

ecology and environment, Inc.  
QUALITY ASSURANCE PROTOCOL REVIEW

Job No.: 9100.289

Date: 2-14-91

Report Title:

Client: NASP Phase I Groups A-E

Laboratory Data Review

Supervisor

Date

Metals

Gen. Chem.

GC

GC/MS

Micro, Asbestos

Other

*[Handwritten signature]*

2-15-91

Signature

Date

Report Written by:

*YC*

2/14/91

1st Draft Reviewed by:

2nd Draft Reviewed by: (If needed)

Final Review by Author:

*[Handwritten signature]*

2/18/91

ASC Manager:

*[Handwritten signature]*

2-16-91

QA Officer:

Corp. Project Manager: John Barksdale  
(Internal Job)

All QA Protocol Review Forms  
Signed and in File  
(to be signed by report writer)

Copies of Report Sent to: *Chert via John Carbone*

Invoices Sent to Accounting

*[Handwritten signature]*

2/18/91

2/18/91

Comments/Notes:

Copy Distribution: White - Report to Project File; Canary - Project Manager;  
Pink - Project File.

407064

M E M O R A N D U M

To: John Barksdale  
FROM: Gary Hahn *dahn / sc*  
DATE: February 14, 1991  
SUBJECT: NASP PEASE I GROUPS A-E Report  
REF: 9100.289  
CC: Lab File

Attached is the laboratory report of the analysis conducted on six samples received at the Analytical Services Center on February 19, 1991.

The samples were analyzed by polarized light microscopy for asbestos content according to 'Interim Method for the Determination of Asbestos in Bulk Insulation Samples', EPA 600/M4-82-020 (40 CFR 763, Subpt.F, App.A).

All samples, on which this report is based, will be retained by E & E for a period of 30 days from the date of this report, unless otherwise instructed by the client. If additional storage of samples is requested by the client, a storage fee of \$1.00 per sample container per month will be charged for each sample, with such charges accruing until destruction of the sample is authorized by the client.

GH:tlc  
Enclosure

0000412

Job # 9100.289

**ecology and environment, inc.**  
 388 PLEASANTVIEW DRIVE, LANCASTER, NEW YORK 14086, TEL. 716/684 8088  
 International Specialists in the Environment

CHAIN-OF-CUSTODY RECORD

| Project No.: <b>WV6030</b>                       |          | Project Name: <b>NAS Phasc 1 A-E</b> |             |      | Project Manager: <b>John Barksdale</b> |   | REMARKS          |                      |               |  |  |  |  |  |
|--|----------|--------------------------------------|-------------|------|--|---|------------------|----------------------|---------------|--|--|--|--|--|
| Signatories (Signatures):<br><b>[Signatures]</b> |          |                                      |             |      | Field Team Leader: <b>Ann TWitt</b>    |   |                  |                      |               |  |  |  |  |  |
| STATION NUMBER                                   | DATE '91 | TIME                                 | SAMPLE TYPE |      |  | SAMPLE INFORMATION<br>EXPECTED COMPOUNDS (Concentration)* | STATION LOCATION | NUMBER OF CONTAINERS | OSED-0505-PUM |  |  |  |  |  |
|  |          |                                      | COND        | GRAB | AIR                                    |   |                  |                      |               |  |  |  |  |  |
| 3 A xstos - 001                                  | 2/11     | 1010                                 |             | X    |  | low level   | Site 13 - 001    | 1                    | X             |  |  |  |  |  |
| 3 A xstos - 002                                  | 2/11     | 1011                                 |             | X    |  |   | 002              | 1                    | X             |  |  |  |  |  |
| 3 A xstos - 003                                  | 2/11     | 1017                                 |             | X    |  |   | 003              | 1                    | X             |  |  |  |  |  |
| 3 A xstos - 004                                  | 2/11     | 1018                                 |             | X    |  |   | 004              | 1                    | X             |  |  |  |  |  |
| 3 A xstos - 005                                  | 2/11     | 1021                                 |             | X    |  |   | 005              | 1                    | X             |  |  |  |  |  |
| 3 A xstos - 006                                  | 2/11     | 1022                                 |             | X    |  |   | 006              | 1                    | X             |  |  |  |  |  |

|   |                                 |  |                              |            |   |                                  |
|---|---------------------------------|--|------------------------------|------------|---|----------------------------------|
| Relinquished By (Signature): <b>[Signature]</b> | Date/Time: <b>2/11/91 17:30</b> | Received By (Signature): <b>[Signature]</b>                | Relinquished By (Signature): | Date/Time: | Received By (Signature):                | Ship Via: <b>Federal Express</b> |
| Relinquished By (Signature):                    | Date/Time:                      | Received By (Signature):                                   | Relinquished By (Signature): | Date/Time: | Received By (Signature):                | BL/Airbill Number:               |
| Relinquished By (Signature): <b>[Signature]</b> | Date/Time: <b>2-12-91</b>       | Received For Laboratory By (Signature): <b>[Signature]</b> | Relinquished By (Signature): | Date/Time: | Received For Laboratory By (Signature): | Date: <b>2-11-91</b>             |

Distribution: Original Accompanies Shipment; Copy to Coordinator; Field File  
 \*See CONCEN\* RANGE on back of form.

Ecology and Environment, Inc.

CLIENT : UH-6000 NASP PEASE I GROUPS A-E  
JOB NUMBER: 9100.289

| Sample ID | Client Sample ID | Asbestos Type | Results | Units |
|-----------|------------------|---------------|---------|-------|
| 2446.01   | P13-001          | Actinolite    | ND      | %     |
|           |                  | Amosite       | ND      | %     |
|           |                  | Anthophyllite | ND      | %     |
|           |                  | Chrysotile    | 15.00   | %     |
|           |                  | Crocidolite   | ND      | %     |
|           |                  | Tremolite     | < 1.0   | %     |

Date Analyzed : 02/13/91  
Location : Site 13 - 001  
Description: blue, green, non-fibrous, homogeneous

|         |         |               |       |   |
|---------|---------|---------------|-------|---|
| 2447.01 | P13-002 | Actinolite    | ND    | % |
|         |         | Amosite       | ND    | % |
|         |         | Anthophyllite | ND    | % |
|         |         | Chrysotile    | 15.00 | % |
|         |         | Crocidolite   | ND    | % |
|         |         | Truolite      | ND    | % |

Date Analyzed : 02/13/91  
Location : Site 13 - 002  
Description: green, black, non-fibrous, heterogeneous

|         |         |               |       |   |
|---------|---------|---------------|-------|---|
| 2448.01 | P13-003 | Actinolite    | ND    | % |
|         |         | Amosite       | ND    | % |
|         |         | Anthophyllite | ND    | % |
|         |         | Chrysotile    | 20.00 | % |
|         |         | Crocidolite   | ND    | % |
|         |         | Tremolite     | ND    | % |

Date Analyzed : 02/13/91  
Location : Site 13 - 003  
Description: blue, green, black, non-fibrous, heterogeneous

|         |         |               |      |   |
|---------|---------|---------------|------|---|
| 2449.01 | P13-004 | Actinolite    | ND   | % |
|         |         | Amosite       | ND   | % |
|         |         | Anthophyllite | ND   | % |
|         |         | Chrysotile    | 5.00 | % |
|         |         | Crocidolite   | ND   | % |
|         |         | Tremolite     | ND   | % |

Date Analyzed : 02/13/91  
Location : Site 13 - 004  
Description: brown, non-fibrous, homogeneous

Supervising Analyst *L. J. Smith*  
Date Approved 2-14-91

Explanation of data flags:  
ND - Not Detected

Ecology and Environment, Inc.

CLIENT : UH-6000 NASP PHASE I GROUPS A-E  
JOB NUMBER: 9100.289

| Sample ID | Client Sample ID | Asbestos Type | Results | Units |
|-----------|------------------|---------------|---------|-------|
| 2450.01   | P13-005          | Actinolite    | ND      | %     |
|           |                  | Amosite       | ND      | %     |
|           |                  | Anthophyllite | ND      | %     |
|           |                  | Chrysotile    | 5.00    | %     |
|           |                  | Crocidolite   | ND      | %     |
|           |                  | Tremolite     | ND      | %     |

Date Analyzed : 02/13/91

Location : Site 13 - 005

Description: blue, green, black, non-fibrous, heterogeneous

|         |         |               |       |   |
|---------|---------|---------------|-------|---|
| 2451.01 | P13-006 | Actinolite    | ND    | % |
|         |         | Amosite       | ND    | % |
|         |         | Anthophyllite | ND    | % |
|         |         | Chrysotile    | 10.00 | % |
|         |         | Crocidolite   | ND    | % |
|         |         | Tremolite     | ND    | % |

Date Analyzed : 02/13/91

Location : Site 13 - 006

Description: green, non-fibrous, homogeneous

Supervising Analyst *Tennille*

Date Approved 2-13-91

Explanation of data flags:

ND - Not Detected

APPENDIX C  
SURFACE EMISSIONS DATA

SITE 13

| GRID COORDINATES | OVA READINGS*<br>(ppm) | RADIATION READING*<br>(uR/h) |
|------------------|------------------------|------------------------------|
| 0.3, 1.2         | 0                      | 0                            |
| 0.3, 1.7         | 0                      | 0                            |
| 0.7, 1.2         | 0                      | 0                            |
| 0.7, 1.7         | 0                      | 0                            |
| 1.1, 1.2         | 0                      | 0                            |
| 1.1, 1.7         | 0                      | 0                            |
| 1.5, 1.3         | 0                      | 0                            |
| 1.5, 1.8         | 0                      | 0                            |
| 1.9, 1.4         | 0                      | 0                            |
| 1.9, 1.8         | 0                      | 0                            |
| 2.3, 1.4         | 0                      | 0                            |
| 2.3, 1.8         | 0                      | 0                            |
| 2.7, 1.4         | 0                      | 0                            |
| 2.7, 1.8         | 0                      | 0                            |
| 3.0, 1.4         | 0                      | 0                            |
| 3.0, 1.8         | 0                      | 0                            |
| 3.0, 2.0         | 0                      | 0                            |
| 3.4, 1.4         | 0                      | 0                            |
| 3.4, 1.8         | 0                      | 0                            |
| 3.4, 2.2         | 0                      | 0                            |
| 3.9, 1.4         | 0                      | 0                            |
| 3.9, 1.8         | 0                      | 0                            |
| 3.99, 2.2        | 0                      | 0                            |
| 4.2, 1.4         | 0                      | 0                            |
| 4.2, 1.8         | 0                      | 0                            |
| 4.2, 2.1         | 0                      | 0                            |
| 4.5, 1.4         | 0                      | 0                            |
| 4.5, 1.7         | 0                      | 0                            |
| 4.5, 2.1         | 0                      | 0                            |
| 4.9, 1.3         | 0                      | 0                            |
| 4.9, 1.7         | 0                      | 0                            |
| 4.9, 2.1         | 0                      | 0                            |
| 5.3, 2.0         | 0                      | 0                            |
| 5.3, 1.6         | 0                      | 0                            |
| 5.4, 1.3         | 0                      | 0                            |
| 5.6, 1.6         | 0                      | 0                            |
| 5.6, 1.9         | 0                      | 0                            |
| 6.1, 1.4         | 0                      | 0                            |
| 6.1, 1.5         | 0                      | 0                            |
| 6.1, 1.9         | 0                      | 0                            |
| 6.5, 1.3         | 0                      | 0                            |
| 6.5, 1.4         | 0                      | 0                            |
| 6.6, 1.7         | 0                      | 0                            |
| 6.6, 2.0         | 0                      | 0                            |
| 6.9, 1.4         | 0                      | 0                            |
| 6.9, 1.6         | 0                      | 0                            |
| 6.9, 1.8         | 0                      | 0                            |
| 7.2, 1.5         | 0                      | 10                           |
| 7.2, 1.7         | 0                      | 0                            |

SITE 13

| GRID COORDINATES | OVA READINGS*<br>(ppm) | RADIATION READING*<br>(uR/h) |
|------------------|------------------------|------------------------------|
| 7.2, 2.0         | 0                      | 0                            |
| 7.6, 1.4         | 0                      | 0                            |
| 7.6, 1.6         | 0                      | 0                            |
| 7.6, 1.9         | 0                      | 0                            |
| 7.9, 1.5         | 0                      | 0                            |
| 7.9, 1.7         | 0                      | 0                            |
| 7.9, 1.9         | 0                      | 0                            |
| 8.5, 1.8         | 0                      | 25                           |
| 8.9, 1.6         | 0                      | 10                           |
| 8.9, 1.9         | 0                      | 0                            |
| 9.2, 1.9         | 0                      | 0                            |
| 9.3, 2.1         | 0                      | 0                            |
| 9.7, 1.9         | 0                      | 0                            |
| 10.0, 2.0        | 0                      | 0                            |
| 10.19, 1.9       | 0                      | 10                           |
| 10.2, 2.4        | 0                      | 0                            |
| 10.3, 1.9        | 0                      | 0                            |
| 10.5, 1.9        | 0                      | 100                          |
| 11.2, 2.4        | 0                      | 0                            |
| 11.3, 1.8        | 0                      | 0                            |
| 11.5, 2.0        | 0                      | 0                            |
| 11.5, 2.3        | 0                      | 0                            |
| 11.5, 2.7        | 0                      | 0                            |
| 11.5, 3.2        | 0                      | 0                            |
| 11.5, 3.7        | 0                      | 0                            |
| 11.5, 4.2        | 0                      | 0                            |
| 11.6, 2.1        | 0                      | 20                           |
| 11.9, 2.4        | 0                      | 0                            |
| 11.9, 2.8        | 0                      | 0                            |
| 11.9, 3.2        | 0                      | 0                            |
| 11.9, 3.7        | 0                      | 0                            |
| 11.9, 4.3        | 0                      | 0                            |
| 11.6, 4.7        | 0                      | 0                            |
| 12.1, 2.3        | 0                      | 0                            |
| 12.1, 2.6        | 0                      | 0                            |
| 12.4, 2.9        | 0                      | 0                            |
| 12.4, 3.3        | 0                      | 0                            |
| 12.1, 4.0        | 0                      | 0                            |
| 12.4, 4.3        | 0                      | 0                            |
| 12.6, 2.4        | 0                      | 25                           |
| 12.8, 2.4        | 0                      | 0                            |
| 12.8, 2.8        | 0                      | 0                            |
| 12.8, 3.2        | 0                      | 0                            |
| 12.8, 4.0        | 0                      | 0                            |
| 12.8, 4.4        | 0                      | 0                            |
| 13.2, 2.6        | 0                      | 0                            |
| 13.2, 3.6        | 0                      | 0                            |
| 13.2, 3.9        | 0                      | 0                            |

13.2 recycled paper

0000017

ecology and environment

SITE 13

\*  
GRID COORDISATES OVA READINGS RADIATION READING\*  
(ppm) (uR/h)

---

|           |     |   |
|-----------|-----|---|
| 13.2, 4.5 | 0   | 0 |
| 13.4, 2.5 | 0.4 | 0 |
| 13.7, 2.8 | 0   | 3 |
| 13.7, 3.2 | 0   | 0 |
| 13.7, 3.6 | 0   | 0 |
| 13.7, 4.1 | 0   | 0 |
| 13.7, 4.4 | 0   | 0 |
| 14.1, 2.6 | 0   | 0 |
| 14.1, 3.1 | 0   | 0 |
| 14.1, 3.6 | 0   | 0 |
| 13.1, 3.9 | 0   | 0 |
| 14.1, 4.3 | 0   | 0 |
| 14.1, 4.7 | 0   | 0 |
| 14.3, 3.0 | 0   | 4 |
| 14.5, 2.9 | 0   | 0 |
| 14.5, 3.3 | 0   | 0 |
| 14.5, 3.8 | 0   | 0 |
| 14.5, 4.2 | 0   | 0 |
| 14.8, 3.1 | 0   | 0 |
| 14.8, 3.6 | 0   | 0 |
| 14.8, 4.0 | 0   | 0 |
| 14.8, 1.4 | 0   | 0 |
| 15.2, 2.8 | 0   | 0 |
| 15.2, 3.2 | 0   | 0 |
| 15.2, 3.7 | 0   | 0 |
| 15.2, 4.1 | 0   | 0 |
| 15.2, 4.6 | 0   | 0 |
| 15.6, 2.9 | 0   | 0 |
| 15.6, 3.5 | 0   | 0 |
| 15.6, 3.9 | 0   | 0 |
| 15.6, 4.2 | 0   | 0 |
| 15.6, 4.6 | 0   | 0 |
| 16.1, 3.2 | 0   | 0 |
| 16.1, 3.5 | 0   | 0 |
| 16.1, 4.0 | 0   | 0 |
| 16.1, 4.5 | 0   | 0 |
| 16.5, 3.2 | 0   | 0 |
| 16.5, 3.6 | 0   | 0 |
| 16.5, 4.2 | 0   | 0 |
| 16.3, 4.7 | 0   | 0 |
| 16.7, 3.3 | 0   | 0 |
| 16.7, 3.8 | 0   | 0 |
| 16.7, 4.2 | 0   | 0 |
| 16.7, 4.7 | 0   | 5 |
| 16.8, 3.7 | 0   | 0 |
| 16.9, 3.8 | 0   | 0 |
| 17.1, 3.4 | 0   | 0 |
| 17.1, 3.6 | 0   | 0 |
| 17.1, 4.0 | 0   | 0 |

SITE 13

GRID COORDINATES OVA READINGS\* RADIATION READING\*  
(ppm) (uR/h)

---

|            |   |   |
|------------|---|---|
| 17.1, 4.4  | 0 | 0 |
| 17.5, 3.2  | 0 | 0 |
| 17.5, 3.5  | 0 | 0 |
| 17.5, 3.9  | 0 | 0 |
| 17.5, 4.3  | 0 | 0 |
| 17.9, 3.3  | 0 | 0 |
| 17.9, 3.7  | 0 | 0 |
| 17.9, 4.0  | 0 | 5 |
| 17.9, 4.3  | 0 | 0 |
| 18.1, 3.1  | 0 | 0 |
| 18.4, 3.5  | 0 | 0 |
| 18.4, 3.9  | 0 | 0 |
| 18.4, 4.2  | 0 | 0 |
| 18.8, 3.2  | 0 | 0 |
| 18.8, 3.5  | 0 | 0 |
| 18.8, 3.8  | 0 | 0 |
| 18.8, 1.3  | 0 | 5 |
| 18.8, 4.6  | 0 | 0 |
| 19.2, 3.0  | 0 | 0 |
| 19.2, 3.3  | 0 | 0 |
| 19.2, 3.7  | 0 | 0 |
| 19.2, 1.2  | 0 | 0 |
| 19.2, 4.5  | 0 | 0 |
| 19.6, 3.1  | 0 | 0 |
| 19.6, 3.3  | 0 | 0 |
| 19.6, 3.9  | 0 | 0 |
| 19.6, 1.3  | 0 | 2 |
| 20.1, 3.4  | 0 | 0 |
| 20.1, 3.7  | 0 | 0 |
| 20.1, 4.1  | 0 | 0 |
| 20.1, 4.5  | 0 | 0 |
| 20.5, 3.4  | 0 | 0 |
| 20.5, 3.1) | 0 | 0 |
| 20.5, 4.3  | 0 | 0 |
| 20.8, 3.5  | 0 | 0 |
| 20.8, 3.9  | 0 | 0 |
| 20.8, 4.3  | 0 | 0 |
| 21.3, 3.5  | 0 | 0 |
| 21.3, 4.0  | 0 | 0 |
| 21.3, 4.5  | 0 | 0 |
| 21.7, 3.5  | 0 | 0 |
| 21.7, 3.9  | 0 | 0 |
| 21.7, 4.5  | 0 | 0 |
| 22.1, 3.6  | 0 | 0 |
| 22.1, 4.0  | 0 | 0 |
| 22.1, 4.4  | 0 | 0 |
| 22.4, 4.0  | 0 | 0 |
| 22.4, 4.4  | 0 | 0 |
| 22.5, 3.5  | 0 | 0 |

0000418

recycling and environment

SITE 13

| GRID COORDINATES | OVA READINGS*<br>(ppm) | RADIATION READING*<br>(uR/h) |
|------------------|------------------------|------------------------------|
| 22.8, 4.1        | 0                      | 3                            |
| 22.8, 4.3        | 0                      | 0                            |
| 22.8, 4.7        | 0                      | 0                            |
| 22.8, 5.0        | 0                      | 0                            |
| 22.9, 3.5        | 0                      | 0                            |
| 23.2, 3.1        | 0                      | 0                            |
| 23.3, 4.8        | 0                      | 0                            |
| 23.4, 4.4        | 0                      | 0                            |
| 23.5, 4.1        | 0                      | 0                            |

\* Above background.

**APPENDIX D**  
**SOIL SAMPLING ANALYTICAL SCREENING RESULTS**

ecology and environment, inc.

QUALITY ASSURANCE PROTOCOL REVIEW

Job No.: 9100.026

Date: 1/17/91

Report Title:

Client: Pensacola

| Laboratory Data Review | Supervisor | Date    |
|------------------------|------------|---------|
| Metals                 | RON        | 1-18-91 |
| Gen. Chem.             | DAVID      | 1-18-91 |
| GC                     | DAVID      | 1-18-91 |
| GC/MS                  |            |         |
| Micro, Asbestos        |            |         |
| Other                  |            |         |

Report Written by:

Signature

Date

1/17/91

1st Draft Reviewed by:

2nd Draft Reviewed by: (IF needed)

Final Review by Author:

ASC Manager:

QA Officer:

Corp. Project Manager:

(Internal Job)

All QA Protocol Review Forms

Signed and in File

(to be signed by report writer)

Copies of Report Sent to Client via Gladstone

Invoices Sent to Accounting

Comments/Notes:

GET SOME HOLLER GC GC

REPORT ITI VOK 1/22/91

Copy Distribution: White - Report to Project File; Canary - Project Manager; Pink - Project File.

407064



M E M O R A N D U M

TO : John Barksdale  
FROM : Gary Hahn *GHahn/jk*  
DATE : January 17, 1991  
SUBJECT: UH-6000 Pensacola Report  
REF : 9100.026  
CC : Lab File

Attached is the laboratory report of the analysis conducted on twenty-seven samples received at the Analytical Services Center on January 5, 1991. Analysis was performed according to the screening procedures set forth in "Generic Quality Assurance Project Plan, Contamination Assessments and Remedial Activities, Naval Air Station Pensacola, Pensacola, Florida," July 1990.

All samples on which this report is based will be retained by E & E for a period of 30 days from the date of this report, unless otherwise instructed by the client. If additional storage of samples is requested by the client, a storage fee of \$1.00 per sample container per month will be charged for each sample, with such charges accruing until destruction of the samples is authorized by the client.

GH: tms  
enclosure

Ecology and Environment, Inc.  
SAMPLE TRACKING REPORT

| LAB<br>SAUPLE<br>ID | CLIENT<br>SAUPLE<br>ID | TEST<br>CODE | DATE<br>SAMPLED | DATE<br>EXTRACTED | DATE<br>ANALYZED |
|---------------------|------------------------|--------------|-----------------|-------------------|------------------|
| 115.01              | P13S001A               | SPNPRG1      | 01/04/91        |                   | 01/08/91         |
| 115.02              | P13S001A               | SPNTPH1      | 01/04/91        |                   | 01/07/91         |
| 115.03              | P13S001A               | SPNMET1      | 01/04/91        |                   | 01/08/91         |
|                     |                        | SPNPLP1      | 01/04/91        |                   | 01/09/91         |
|                     |                        | SPNPAH1      | 01/04/91        |                   | 01/10/91         |
|                     |                        | SPNPHL1      | 01/04/91        |                   | 01/10/91         |
| 116.01              | P13S003A               | SPNPRG1      | 01/04/91        |                   | 01/08/91         |
| 116.02              | P13S003A               | SPNTPH1      | 01/06/91        |                   | 01/07/91         |
| 116.03              | P13S003A               | SPNMET1      | 01/04/91        |                   | 01/08/91         |
|                     |                        | SPNP&P1      | 01/04/91        |                   | 01/09/91         |
|                     |                        | SPNPAH1      | 01/06/91        |                   | 01/10/91         |
|                     |                        | SPNPHL1      | 01/04/91        |                   | 01/10/91         |
| 117.01              | P13S006A               | SPNPRG1      | 01/01/91        |                   | 01/08/91         |
| 117.02              | P13S006A               | SPNTPH1      | 01/04/91        |                   | 01/07/91         |
| 117.03              | P13S006A               | SPNMET1      | 01/04/91        |                   | 01/08/91         |
|                     |                        | SPNPdP1      | 01/06/91        |                   | 01/09/91         |
|                     |                        | SPNPAH1      | 01/04/31        |                   | 01/10/91         |
|                     |                        | SPNPHL1      | 01/04/91        |                   | 01/10/91         |
| 118.01              | P13S006B               | SPNPRG1      | 01/04/91        |                   | 01/08/91         |
| 118.02              | P13S006B               | SPNTPH1      | 01/04/91        |                   | 01/07/91         |
| 118.03              | P13S006B               | SPNMET1      | 01/04/91        |                   | 01/08/91         |
|                     |                        | SPNPdP1      | 01/04/91        |                   | 01/09/91         |
|                     |                        | SPNPAH1      | 01/04/31        |                   | 01/10/91         |
|                     |                        | SPNPHL1      | 01/06/91        |                   | 01/10/91         |
| 119.01              | P13S007A               | SPNPRG1      | 01/04/31        |                   | 01/08/91         |
| 119.02              | P13S007A               | SPNTPH1      | 01/04/91        |                   | 01/07/91         |
| 119.03              | P13S007A               | SPNMET1      | 01/04/91        |                   | 01/08/91         |
|                     |                        | SPNP&P1      | 01/04/91        |                   | 01/09/91         |
|                     |                        | SPNPAH1      | 01/04/91        |                   | 01/10/91         |
|                     |                        | SPNPHL1      | 01/04/91        |                   | 01/10/91         |
| 120.01              | P13S007B               | SPNPRG1      | 01/04/91        |                   | 01/08/91         |
| 120.02              | P13S007B               | SPNTPH1      | 01/06/91        |                   | 01/07/91         |
| 120.03              | P13S007B               | SPNMET1      | 01/04/91        |                   | 01/08/91         |
|                     |                        | SPNP&P1      | 01/04/91        |                   | 01/09/91         |
|                     |                        | SPNPAH1      | 01/04/91        |                   | 01/10/91         |
|                     |                        | SPNPHL1      | 01/04/91        |                   | 01/10/91         |
| 121.01              | P13S008A               | SPNPRG1      | 01/06/91        |                   | 01/08/91         |
| 121.02              | P13S008A               | SPNTPH1      | 01/04/91        |                   | 01/07/91         |
| 121.03              | P13S008A               | SPNMET1      | 01/04/91        |                   | 01/08/91         |
|                     |                        | SPNP&P1      | 01/04/91        |                   | 01/09/91         |
|                     |                        | SPNPAH1      | 01/04/91        |                   | 01/10/91         |
|                     |                        | SPNPHL1      | 01/04/91        |                   | 01/10/91         |
| 122.01              | P13S009A               | SPNPRG1      | 01/04/91        |                   | 01/08/91         |
| 122.02              | P13S009A               | SPNTPH1      | 01/04/91        |                   | 01/07/91         |
| 122.03              | P13S009A               | SPNMET1      | 01/06/91        |                   | 01/08/91         |
|                     |                        | SPNP&P1      | 01/04/91        |                   | 01/09/91         |
|                     |                        | SPNPAH1      | 01/04/91        |                   | 01/10/91         |

Ecology and Environment, Inc.  
SAMPLE TRACKING REPORT

| LAB<br>SAMPLE<br>ID | CLIENT<br>SAMPLE<br>ID | TEST<br>CODE | DATE<br>SAMPLED | DATE<br>EXTRACTED | DATE<br>ANALYZED |
|---------------------|------------------------|--------------|-----------------|-------------------|------------------|
| 122.03              | P13S009A               | SPNPHL1      | 01/04/91        |                   | 01/10/91         |
| 123.01              | P13S010A               | SPNPRG1      | 01/04/91        |                   | 01/08/91         |
| 123.02              | P13S010A               | SPNTPH1      | 01/04/91        |                   | 01/07/91         |
| 123.03              | P13S010A               | SPNMET1      | 01/04/91        |                   | 01/08/91         |
|                     |                        | SPNP&P1      | 01/04/91        |                   | 01/09/91         |
|                     |                        | SPNPAH1      | 01/04/01        |                   | 01/11/91         |
|                     |                        | SPNPHL1      | 01/04/91        |                   | 01/10/91         |
| 124.01              | P13S012A               | SPNPRG1      | 01/04/91        |                   | 01/08/91         |
| 124.02              | P13S012A               | SPNTPH1      | 01/04/91        |                   | 01/07/91         |
| 124.03              | P13S012A               | SPNMET1      | 01/04/91        |                   | 01/08/91         |
|                     |                        | SPNP&P1      | 01/04/91        |                   | 01/09/91         |
|                     |                        | SPNPAH1      | 01/04/91        |                   | 01/11/91         |
|                     |                        | SPNPHL1      | 01/04/91        |                   | 01/10/91         |
| 125.01              | P13S012B               | SPNPRG1      | 01/04/91        |                   | 01/08/91         |
| 125.02              | P13S012B               | SPNTPH1      | 01/04/91        |                   | 01/07/91         |
| 125.03              | P13S012B               | SPNMET1      | 01/04/91        |                   | 01/08/91         |
|                     |                        | SPNP&P1      | 01/04/91        |                   | 01/09/91         |
|                     |                        | SPNPAH1      | 01/04/91        |                   | 01/11/91         |
|                     |                        | SPNPHL1      | 01/04/91        |                   | 01/10/91         |
| 126.01              | P13S013A               | SPNPRG1      | 01/04/91        |                   | 01/08/91         |
| 126.02              | P13S013A               | SPNTPH1      | 01/04/91        |                   | 01/07/91         |
| 126.03              | P13S013A               | SPNHET1      | 01/04/91        |                   | 01/08/91         |
|                     |                        | SPNP&P1      | 01/04/91        |                   | 01/09/91         |
|                     |                        | SPNPAH1      | 01/04/91        |                   | 01/11/91         |
|                     |                        | SPNPHL1      | 01/04/91        |                   | 01/10/91         |
| 127.01              | P13S013B               | SPNPRG1      | 01/04/91        |                   | 01/08/91         |
| 127.02              | P13S013B               | SPNTPH1      | 01/04/01        |                   | 01/07/91         |
| 127.03              | P13S013B               | SPNMET1      | 01/04/91        |                   | 01/08/91         |
|                     |                        | SPNP&P1      | 01/04/91        |                   | 01/09/91         |
|                     |                        | SPNPAH1      | 01/04/91        |                   | 01/11/91         |
|                     |                        | SPNPHL1      | 01/04/91        |                   | 01/10/91         |
| 128.01              | P14S005A               | SPNPRG1      | 01/04/91        |                   | 01/08/91         |
| 128.02              | P14S005A               | SPNTPH1      | 01/04/91        |                   | 01/07/91         |
| 128.03              | P14S005A               | SPNMET1      | 01/04/91        |                   | 01/08/91         |
|                     |                        | SPNP&P1      | 01/04/91        |                   | 01/09/91         |
|                     |                        | SPNPAH1      | 01/04/91        |                   | 01/11/91         |
|                     |                        | SPNPHL1      | 01/04/91        |                   | 01/10/91         |
| 129.01              | P14S005AD              | SPNPRG1      | 01/04/91        |                   | 01/08/91         |
| 129.02              | P14S005AD              | SPNTPH1      | 01/04/91        |                   | 01/07/91         |
| 129.03              | P14S005AD              | SPNHET1      | 01/04/91        |                   | 01/08/91         |
|                     |                        | SPNP&P1      | 01/04/91        |                   | 01/09/91         |
|                     |                        | SPNPAH1      | 01/04/91        |                   | 01/11/91         |
|                     |                        | SPNPHL1      | 01/04/91        |                   | 01/10/91         |
| 130.01              | P14S006A               | SPNPRG1      | 01/94/91        |                   | 01/08/91         |
| 130.02              | P14S006A               | SPNTPH1      | 01/04/91        |                   | 01/07/91         |
| 130.03              | P14S006A               | SPNMET1      | 01/04/91        |                   | 01/08/91         |
|                     |                        | SPNP&P1      | 01/04/91        |                   | 01/09/91         |

Ecology and Environment, Inc.  
SAMPLE TRACKING REPORT

| LAB<br>SAMPLE<br>ID | CLIENT<br>SAMPLE<br>ID | TEST<br>CODE | DATE<br>SAMPLED | DATE<br>EXTRACTED | DATE<br>ANALYZED |
|---------------------|------------------------|--------------|-----------------|-------------------|------------------|
| 130.03              | P14S006A               | SPNPAHI      | 01/04/91        |                   | 01/11/91         |
|                     |                        | SPNPHL1      | 01/04/91        |                   | 01/10/91         |
| 131.01              | P14S007A               | SPNPRG1      | 01/04/91        |                   | 01/08/91         |
| 131.02              | P14S007A               | SPNTPHI      | 01/04/91        |                   | 01/07/91         |
| 131.03              | P14S007A               | SPNMET1      | 01/04/91        |                   | 01/08/91         |
|                     |                        | SPNP&P1      | 01/04/91        |                   | 01/09/91         |
|                     |                        | SPNPAHI      | 01/04/91        |                   | 01/11/91         |
|                     |                        | SPNPHL1      | 01/06/91        |                   | 01/10/91         |
| 132.01              | P14S008A               | SPNPRG1      | 01/04/91        |                   | 01/08/91         |
| 132.02              | P14S008A               | SPNTPHI      | 01/04/91        |                   | 01/07/91         |
| 132.03              | P14S008A               | SPNMET1      | 01/04/91        |                   | 01/08/91         |
|                     |                        | SPNP&P1      | 01/04/91        |                   | 01/09/91         |
|                     |                        | SPNPAHI      | 01/04/91        |                   | 01/11/91         |
|                     |                        | SPNPHL1      | 01/01/91        |                   | 01/10/91         |
| 133.01              | P14S009A               | SPNPRG1      | 01/06/91        |                   | 01/08/91         |
| 133.02              | P14S009A               | SPNTPHI      | 01/04/91        |                   | 01/08/91         |
| 133.03              | P14S009A               | SPNMET1      | 01/04/91        |                   | 01/08/91         |
|                     |                        | SPNP&P1      | 01/04/91        |                   | 01/09/91         |
|                     |                        | SPNPAHI      | 01/96/91        |                   | 01/11/91         |
|                     |                        | SPNPHL1      | 01/04/91        |                   | 01/11/91         |
| 134.01              | P13S004A               | SPNPRG1      | 01/03/01        |                   | 01/08/91         |
| 134.02              | P13S004A               | SPNMET1      | 01/03/01        |                   | 01/08/91         |
|                     |                        | SPNPLPI      | 01/03/91        |                   | 01/09/91         |
|                     |                        | SPNPAHI      | 01/03/91        |                   | 01/11/91         |
|                     |                        | SPNPHL1      | 01/03/01        |                   | 01/11/91         |
|                     |                        | SPNTPHI      | 01/03/91        |                   | 01/08/91         |
| 135.01              | P13S004B               | SPNPRG1      | 01/03/91        |                   | 01/08/91         |
| 135.02              | P13S004B               | SPNMET1      | 01/03/91        |                   | 01/08/91         |
|                     |                        | SPNP&P1      | 01/03/91        |                   | 01/09/91         |
|                     |                        | SPNPAHI      | 01/03/91        |                   | 01/11/91         |
|                     |                        | SPNPHL1      | 01/03/01        |                   | 01/11/91         |
|                     |                        | SPNTPHI      | 01/03/91        |                   | 01/08/91         |
| 136.01              | P13S005A               | SPNPRG1      | 01/03/91        |                   | 01/08/91         |
| 136.02              | P13S005A               | SPNMET1      | 01/03/91        |                   | 01/08/91         |
|                     |                        | SPNP&P1      | 01/93/91        |                   | 01/09/91         |
|                     |                        | SPNPAHI      | 01/03/91        |                   | 01/11/91         |
|                     |                        | SPNPHL1      | 01/03/01        |                   | 01/11/91         |
|                     |                        | SPNTPHI      | 03/93/91        |                   | 01/08/91         |
| 137.01              | P13S005B               | SPNPRG1      | 91/03/91        |                   | 01/08/91         |
| 137.02              | P13S005B               | SPNMET1      | 01/03/01        |                   | 01/08/91         |
|                     |                        | SPNP&P1      | 01/03/91        |                   | 01/09/91         |
|                     |                        | SPNPAHI      | 01/03/91        |                   | 01/11/91         |
|                     |                        | SPNPHL1      | 01/03/91        |                   | 01/11/91         |
|                     |                        | SPNTPHI      | 01/03/01        |                   | 01/08/91         |
| 138.01              | P14S001A               | SPNPRCI      | 01/03/91        |                   | 01/08/91         |
| 138.02              | P14S001A               | SPNMET1      | 01/03/91        |                   | 01/08/91         |
|                     |                        | SPNP&P1      | 01/03/91        |                   | 01/09/91         |

0000424

Ecology and Environment , Inc.  
SAHPLE TRACKING REPORT

| LAB<br>SANPLE<br>ID<br>----- | CLIENT<br>SAHPLE<br>ID<br>----- | TEST<br>CODE<br>----- | DATE<br>SAHPLED<br>----- | DATE<br>EXTRACTED<br>----- | DATE<br>ANALYZED<br>----- |
|------------------------------|---------------------------------|-----------------------|--------------------------|----------------------------|---------------------------|
| 138.02                       | P14S001A                        | SPNPAH 1              | 01/03/91                 |                            | 01/11/91                  |
|                              |                                 | SPNPHL1               | 01/03/91                 |                            | 01/11/91                  |
|                              |                                 | SPNTPHI               | 01/03/91                 |                            | 01/08/91                  |
| 139.01                       | P14S002A                        | SPNPRG1               | 01/03/91                 |                            | 01/08/91                  |
| 139.02                       | P14S002A                        | SPNMET1               | 01/03/91                 |                            | 01/08/91                  |
|                              |                                 | <b>SPNP&amp;P1</b>    | 01/03/91                 |                            | 01/09/91                  |
|                              |                                 | SPNPAH1               | 01/03/91                 |                            | 01/11/91                  |
|                              |                                 | SPNPHL1               | 01/03/91                 |                            | 01/11/91                  |
|                              |                                 | SPNTPHL               | 01/03/91                 |                            | 01/08/91                  |
| 140.01                       | P14S003A                        | SPNPRG1               | 01/03/91                 |                            | 01/08/91                  |
| 140.02                       | P14S003A                        | SPNMET1               | 01/03/91                 |                            | 01/08/91                  |
|                              |                                 | SPNP&P1               | 01/03/91                 |                            | 01/09/91                  |
|                              |                                 | SPNPAH1               | 01/03/91                 |                            | 01/11/91                  |
|                              |                                 | SPNPHL1               | 01/03/91                 |                            | 01/11/91                  |
|                              |                                 | SPNTPHI               | 01/03/91                 |                            | 01/08/91                  |
| 141.01                       | P14S004A                        | SPNPRG1               | 01/03/91                 |                            | 01/08/91                  |
| 141.02                       | P14S004A                        | SPNMET1               | 01/03/91                 |                            | 01/08/91                  |
|                              |                                 | SPNP&P1               | 01/03/91                 |                            | 01/09/91                  |
|                              |                                 | SPNPAH1               | 01/03/91                 |                            | 01/11/91                  |
|                              |                                 | SPNPHL1               | 01/03/91                 |                            | 01/11/91                  |
|                              |                                 | SPNTPHI               | 01/03/91                 |                            | 01/08/91                  |

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E  
TEST NAME : PNC TRPH UNITS : MG/KG  
PARAMETER : TRPH

| SAMPLE ID               | RESULTS | Q | DET. LIMIT |
|-------------------------|---------|---|------------|
| EE-91-00115<br>P13S001A | 22      |   | 5.0        |
| EE-91-00116<br>P13S003A | 20      |   | 5.0        |
| EE-91-00117<br>P13S006A | 480     |   | 5.0        |
| EE-91-00118<br>P13S006B | 92      |   | 5.0        |
| EE-91-00119<br>P13S007A | 8.1     |   | 5.0        |
| EE-91-00120<br>P13S007B | 13      |   | 5.0        |
| EE-91-00121<br>P13S008A | 12      |   | 5.0        |
| EE-91-00122<br>P13S009A | 7.7     |   | 5.0        |
| EE-91-00123<br>P13S010A | 8.4     |   | 5.0        |
| EE-91-00124<br>P13S012A | 13      |   | 5.0        |
| EE-91-00125<br>P13S012B | 14      |   | 5.0        |
| EE-91-00126<br>P13S013A | 13      |   | 5.0        |
| EE-91-00127<br>P13S013B | 8.0     |   | 5.0        |

QUALIFIERS: C = COMMENT ND = NOT DETECTED  
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
L = PRESENT BELOW STATED DETECTION LIMIT  
NA = NOT APPLICABLE

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH 6000 NASP PHASE I GROUPS A-E  
TEST NAME- : PNC TRPH UNITS : MG/KG  
PARAMETER : TRPH

| SAHPLE ID                | RESULTS | Q | DET. LIHIT |
|--------------------------|---------|---|------------|
| EE-91-00128<br>P14S005A  | 91      |   | 5.0        |
| EE-91-00129<br>P14S005AD | 81      |   | 5.0        |
| EE-91-00130<br>P14S006A  | 300     |   | 5.0        |
| EE-91-00131<br>P14S007A  | 200     |   | 5.0        |
| EE-91-00132<br>P14S008A  | 1800    |   | 5.0        |
| EE-91-00133<br>P14S009A  | 240     |   | 5.0        |
| EE-91-00134<br>P13S004A  | 570     |   | 5.0        |
| EE-91-00135<br>P13S004B  | 61      |   | 5.0        |
| EE-91-00136<br>P13S005A  | 2800    |   | 5.0        |
| EE-91-00137<br>P13S005B  | 210     |   | 5.0        |
| EE-91-00138<br>P14S001A  | ND      |   | 5.0        |
| EE-91-00139<br>P14S002A  | 25      |   | 5.0        |

QUALIFIERS: C = COMMENT NO = NOT DETECTED  
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
L = PRESENT BELOW STATED DETECTION LIMIT  
NA = NOT APPLICABLE

a.

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT - : UH-6000 NASP PHASE I GROUPS A-E  
TEST NAME : PNC TRPH UNITS : MG/KG  
PARAMETER : TRPH

| SAMPLE ID               | RESULTS | Q | DET. LIMIT |
|-------------------------|---------|---|------------|
| EE-91-00140<br>P14S003A | 9.2     | - | 5.0        |
| EE-91-00141<br>P14S004A | 6.6     | - | 5.0        |

QUALIFIERS: C = COMMENT ND = NOT DETECTED  
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
L = PRESENT BELOW STATED DETECTION LIMIT  
NA = NOT APPLICABLE

QUALITY CONTROL FOR PRECISION  
RESULTS OF ANALYSIS OF REPLICATE  
ANALYSES OF SOIL SAMPLES

9100.026

---

(mg/kg)

---

| Parameter                    | E & E<br>Laboratory<br>No. 91- | Original<br>Analysis | Replicate<br>Analysis | Relative<br>Percent<br>Difference<br>(RPD) |
|------------------------------|--------------------------------|----------------------|-----------------------|--|
| T. Petroleum<br>Hydrocarbons | 00126                          | 13                   | 13                    | 0  |
|                              | 00141                          | 6.6                  | ND                    | --   |

---

QUALITY CONTROL FOR ACCURACY: PERCENT RECOVERY  
FOR SPIKED SOIL SAMPLES

9100.026

(mg/kg)

| Parameter                    | E & E<br>Laboratory<br>No. 91- | Original<br>Value | Amount<br>Added | Amount<br>Determined | Percent<br>Recovery |
|------------------------------|--------------------------------|-------------------|-----------------|----------------------|---------------------|
| T. Petroleum<br>Hydrocarbons | 00133                          | 240               | 780             | 720                  | 62                  |

0000427

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

SAMPLE ID LAB : EE-91-00115

MATRIX: SOLID

SAMPLE ID CLIENT: P13S001A

| PARAMETER | RESULTS | Q | DET. LIMIT | UNITS        |
|-----------|---------|---|------------|--------------|
| -----     | -----   | - | -----      | -----        |
| Arsenic   | ND      |   | 6.9        | MG/KG        |
| Chromium  | 1.3     |   | 1.0        | <b>MG/KG</b> |
| Zinc      | ND      |   | <b>2.0</b> | MG/KG        |
| Lead      | ND      |   | <b>4.0</b> | MG/KG        |
| Cadmium   | ND      |   | 0.50       | MG/KG        |
| Nickel    | ND      |   | <b>4.0</b> | MG/KG        |
| Copper    | ND      |   | <b>2.5</b> | MG/KG        |
| Silver    | ND      |   | 1.0        | MG/KG        |

.....

QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
 J \* ESTIMATED VALUE            B \* ALSO PRESENT IN BLANK  
 L \* PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

SAMPLE ID LAB : EE-91-00116

MATRIX: SOLID

SAMPLE ID CLIENT: P13S003A

| <u>PARAMETER</u> | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> | <u>UNITS</u> |
|------------------|----------------|----------|-------------------|--------------|
| Arsenic          | ND             |          | 6.9               | MG/KG        |
| Chromium         | ND             |          | 1.0               | MG/KG        |
| Zinc             | 2.5            |          | 2.0               | MG/KG        |
| Lead             | ND             |          | 4.0               | MG/KG        |
| Cadmium          | 0.72           |          | 0.50              | MG/KG        |
| Nickel           | ND             |          | 4.0               | MG/KG        |
| Copper           | ND             |          | 2.5               | MG/KG        |
| Silver           | ND             |          | 1.0               | MG/KG        |

-----

QUALIFIERS: C = COMMENT                      ND = NOT DETECTED  
 J = ESTIMATED VALUE                      B = ALSO PRESENT IN BLANK  
 L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

SAMPLE ID LAB : EE-91-00117

MATRIX: SOLID

SAMPLE ID CLIENT: P13S006A

| PARAMETER | RESULTS | Q | DET. LIMIT | UNITS |
|-----------|---------|---|------------|-------|
| Arsenic   | ND      |   | 6.9        | MG/KG |
| Chromium  | 2.0     |   | 1.0        | MG/KG |
| Zinc      | 4.5     |   | 2.0        | MG/KG |
| Lead      | ND      |   | 4.0        | MG/KG |
| Cadmium   | ND      |   | 0.50       | MG/KG |
| Nickel    | ND      |   | 4.0        | MG/KG |
| Copper    | ND      |   | 2.5        | MG/KG |
| Silver    | ND      |   | 1.0        | MG/KG |

-----  
QUALIFIERS: C = COMMENT                      ND = NOT DETECTED  
              J = ESTIMATED VALUE            B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PRASE I GROUPS A-E

## RESULTS IN WET WEIGHT

SAHPLE ID LAB : EE-91-00118

MATRIX: SOLID

SAHPLE ID CLIENT: P13S006B

| <u>PARAMETER</u> | <u>RESULTS</u> | <u>Q</u> | <u>DET. UHIT</u> | <u>UNITS</u> |
|------------------|----------------|----------|------------------|--------------|
| Arsenic          | ND             | -        | 6.9              | MG/KG        |
| Chromium         | 3.6            |          | 1.0              | MG/KG        |
| Zinc             | ND             |          | 2.0              | MG/KG        |
| Lead             | 8.7            |          | 4.0              | MG/KG        |
| Cadmium          | ND             |          | 0.50             | MG/KG        |
| Nickel           | ND             |          | 4.0              | MG/KG        |
| Copper           | ND             |          | 2.5              | MG/KG        |
| Silver           | ND             |          | 1.0              | MG/KG        |

-----  
QUALIFIERS: C = COMMENT                      ND = NOT DETECTED  
              J = ESTIMATED VALUE            B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOV STATED DETECTION LIMIT

0000429

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : OH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

SAMPLE ID LAB : EE-91-00119

MATRIX : SO'LID

SAMPLE ID CLIENT: P13S007A

| PARAMETER<br>----- | RESULTS | Q | DET. LIMIT | UNITS |
|--------------------|---------|---|------------|-------|
| Arsenic            | ND      |   | 6.9        | MG/KG |
| Chromium           | 1.4     |   | 1.0        | MG/KG |
| Zinc               | ND      |   | 2.0        | MG/KG |
| Lead               | ND      |   | 4.0        | MG/KG |
| Cadmium            | ND      |   | 0.50       | MG/KG |
| Nickel             | ND      |   | 4.0        | MG/KG |
| Copper             | ND      |   | 2.5        | MG/KG |
| Silver             | ND      |   | 1.0        | MG/KG |

-----  
QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
              J = ESTIHATED VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PRASE I GROUPS A-E

RESULTS IN VET WEIGHT

SAHPLE ID LAB : EE-91-00120

MATRIX: SOLID

SAMPLE ID CLIENT: P13S007B

| PARAMETER | RESULTS | Q | DET. LIMIT | UNITS |
|-----------|---------|---|------------|-------|
| Arsenic   | ND      | - | 6.9        | MG/KG |
| Chromium  | ND      | - | 1.0        | MG/KG |
| Zinc      | ND      | - | 2.0        | MG/KG |
| Lead      | ND      | - | 4.0        | MG/KG |
| Cadmium   | ND      | - | 0.50       | MG/KG |
| Nickel    | ND      | - | 4.0        | MG/KG |
| Copper    | ND      | - | 2.5        | MG/KG |
| Silver    | ND      | - | 1.0        | MG/KG |

-----  
QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
              J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

0000430

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PBASE I GROUPS A-E

RESULTS IN WET WEIGHT

SAMPLE ID LAB : EE-91-00121

MATRIX: SOLID

SAMPLE ID CLIENT: P13S008A

| <u>PARAMETER</u> | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> | <u>UNITS</u> |
|------------------|----------------|----------|-------------------|--------------|
| Arsenic          | ND             |          | 6.9               | MG/KG        |
| Chromium         | ND             |          | 1.0               | MG/KG        |
| Zinc             | ND             |          | 2.0               | MG/KG        |
| Lead             | ND             |          | 4.0               | MG/KG        |
| Cadmium          | ND             |          | 0.50              | MG/KG        |
| Nickel           | ND             |          | 4.0               | MG/KG        |
| Copper           | ND             |          | 2.5               | MG/KG        |
| Silver           | ND             |          | 1.0               | MG/KG        |

-----  
QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
              J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN-VET WEIGHT

SAMPLE ID LAB : EE-91-00122

MATRIX: SOLID

SAMPLE ID CLIENT: P13S009A

| <u>PARAMETER</u> | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> | <u>UNITS</u> |
|------------------|----------------|----------|-------------------|--------------|
| Arsenic          | ND             |          | 6.9               | MG/KG        |
| Chroaium         | ND             |          | 1.0               | MG/KG        |
| Zinc             | ND             |          | 2.0               | MG/KG        |
| Lead             | ND             |          | 4.0               | MG/KG        |
| Cadmium          | ND             |          | 0.50              | MG/KG        |
| Nickel           | ND             |          | 4.0               | MG/KG        |
| Copper           | ND             |          | 2.5               | MG/KG        |
| Silver           | ND             |          | 1.0               | MG/KG        |

-----  
 QUALIFIERS: C = COMMENT                      ND = NOT DETECTED  
 J = ESTIMATED VALUE                      B = ALSO PRESENT IN BLANK  
 L = PRESENT BELOW STATED DETECTION LIMIT

0000431

Ecology and Environment, Inc.  
Analytical Services **Center**

**CLIENT** : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

SAMPLE ID LAB : EE-91-00123

MATRIX: **SOLID**

SAMPLE ID CLIENT: P13S010A

| PARAMETER | RESULTS   | Q | DET. LIMIT  | UNITS |
|-----------|-----------|---|-------------|-------|
| -----     | -----     | - | -----       | ----- |
| Arsenic   | ND        |   | 6.9         | MG/KG |
| Chromium  | ND        |   | 1.0         | MG/KG |
| Zinc      | ND        |   | 2.0         | MG/KG |
| Lead      | ND        |   | <b>4.0</b>  | MG/KG |
| Cadmium   | ND        |   | <b>0.50</b> | MG/KG |
| Nickel    | ND        |   | <b>4.0</b>  | MG/KG |
| Copper    | ND        |   | <b>2.5</b>  | MG/KG |
| Silver    | <b>ND</b> |   | <b>1.0</b>  | MG/KG |

-----  
 QUALIFIERS: C \* COMMENT                    ND \* NOT DETECTED  
               J \* ESTIMATED VALUE        B \* ALSO PRESENT IN BLANK  
               L \* PRESENT BELOW STATED DETECTION LIHIT

Ecology and Environment, Inc.  
 Analytical Services Center

CLIENT : UH-6000 NASP PEASE I GROUPS A-E  
 RESULTS IN WET WEIGHT

SAMPLE ID LAB : EE-91-00124  
 SAMPLE ID CLIENT: P13S012A

MATRIX: SOLID

| PARAMETER | RESULTS | Q | DET. LIMIT | UNITS |
|-----------|---------|---|------------|-------|
| Arsenic   | ND      |   | 6.9        | MG/KG |
| Chromium  | ND      |   | 1.0        | MG/KG |
| Zinc      | ND      |   | 2.0        | MG/KG |
| Lead      | 7.6     |   | 4.0        | MG/KG |
| Cadmium   | ND      |   | 0.50       | MG/KG |
| Nickel    | ND      |   | 4.0        | MG/KG |
| Copper    | ND      |   | 2.5        | MG/KG |
| Silver    | ND      |   | 1.0        | MG/KG |

-----  
 QUALIFIERS: C = COMMENT                      ND = NOT DETECTED  
               J = ESTIMATED VALUE            B = ALSO PRESENT IN BLANK  
               L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET VEIGHT

SAHPLE ID LAB : EE-91-00125

MATRIX: SOLID

SAMPLE ID CLIENT: ?13S012B

| <u>PARAMETER</u> | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> | <u>UNITS</u> |
|------------------|----------------|----------|-------------------|--------------|
| Arsenic          | ND             |          | 6.9               | MG/KG        |
| Chromium         | ND             |          | 1.0               | MG/KG        |
| Zinc             | ND             |          | 2.0               | MG/KG        |
| Lead             | ND             |          | 4.0               | MG/KG        |
| Cadmium          | ND             |          | 0.50              | MG/KG        |
| Nickel           | ND             |          | 4.0               | MG/KG        |
| Copper           | ND             |          | 2.5               | MG/KG        |
| silver           | ND             |          | 1.0               | MG/KG        |

-----  
 QUALIFIERS: C = COMMENT                      ND = NOT DETECTED  
                   J = ESTIMATED VALUE            B = ALSO PRESENT IN BLANK  
                   L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

SAHPLA ID LAB : EE-91-00126

MATRIX: SOLID

SAHPLA ID CLIENT: P13S013A

| <u>PARAMETER</u> | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> | <u>UNITS</u> |
|------------------|----------------|----------|-------------------|--------------|
| Arsenic          | ND             |          | 6.9               | MG/KG        |
| Chromium         | ND             |          | 1.0               | MG/KG        |
| Zinc             | ND             |          | 2.0               | MG/KG        |
| Lead             | 5.6            |          | 4.0               | MG/KG        |
| Cadmium          | 0.79           |          | 0.50              | MG/KG        |
| Nickel           | ND             |          | 4.0               | MG/KG        |
| Copper           | ND             |          | 2.5               | MG/KG        |
| Silver           | ND             |          | 1.0               | MG/KG        |

-----  
 QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
 J = ESTIMATED VALUE                    B = ALSO PRESENT IN BLANK  
 L = PRESENT BELOW STATED DETECTION LIMIT

0000433

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN-WET WEIGHT

SAMPLE ID LAB : EE-91-00127

MATRIX: SOLID

SAMPLE ID CLIENT: P13S0138

| PARAMETER       | RESULTS | Q | DET. LIMIT | UNITS |
|-----------------|---------|---|------------|-------|
| -----           | -----   | - | -----      | ----- |
| Arsenic         | ND      |   | 6.9        | MG/KG |
| <b>Chromium</b> | ND      |   | 1.0        | MG/KG |
| Zinc            | ND      |   | 2.0        | MG/KG |
| Lead            | ND      |   | 4.0        | MG/KG |
| Cadmium         | ND      |   | 0.50       | MG/KG |
| Nickel          | ND      |   | 4.0        | MG/KG |
| Copper          | ND      |   | 2.5        | MG/KG |
| Silver          | ND      |   | 1.0        | MG/KG |

-----  
QUALIFIERS: C : COMMENT

ND : NOT DETECTED

J : ESTIHATED VALUE

B : ALSO PRESENT IN BLANK

L : PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN-VET WEIGHT

SAMPLE ID LAB : EE-91-00134

MATRIX: SOLID

SAMPLE ID CLIENT: P13S004A

| <u>PARAMETER</u> | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> | <u>UNITS</u> |
|------------------|----------------|----------|-------------------|--------------|
| Arsenic          | ND             |          | 6.9               | UG/KG        |
| Chromium         | 5.8            |          | 1.0               | UG/KG        |
| Zinc             | 7.9            |          | 2.0               | UG/KG        |
| Lead             | ND             |          | 4.0               | UG/KG        |
| Cadmium          | 1.2            |          | 0.50              | MG/KG        |
| Nickel           | ND             |          | 4.0               | UG/KG        |
| Copper           | 2.7            |          | 2.5               | MG/KG        |
| Silver           | ND             |          | 1.0               | MG/KG        |

-----  
QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
              J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

0000434

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

SAMPLE ID LAB : EE-91-00135

MATRIX: SOLID

SAMPLE ID CLIENT: P13S004B

| <u>PARAHETER</u> | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> | <u>UNITS</u> |
|------------------|----------------|----------|-------------------|--------------|
| Arsenic          | ND             |          | 6.9               | MG/KG        |
| Chromium         | <b>ND</b>      |          | 1.0               | <b>MG/KG</b> |
| Zinc             | ND             |          | 2.0               | MG/KG        |
| Lead             | ND             |          | 4.0               | MG/KG        |
| Cadmium          | ND             |          | <b>0.50</b>       | MG/KG        |
| Nickel           | ND             |          | 6.0               | MG/KG        |
| Copper           | ND             |          | 2.5               | MG/KG        |
| Silver           | ND             |          | 1.0               | MG/KG        |

-----  
 QUALIFIERS: C = COMMENT                      ND = NOT DETECTED  
               J = ESTIMATED VALUE            B = ALSO PRESENT IN BLANK  
               L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

SAMPLE ID LAB : EE-91-00136

MATRIX: SOLID

SAMPLE ID CLIENT: P13S005A

| <u>PARAMETER</u> | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> | <u>UNITS</u> |
|------------------|----------------|----------|-------------------|--------------|
| Arsenic          | ND             | -        | 6.9               | MG/KG        |
| Chromium         | 12             |          | 1.0               | MG/KG        |
| Zinc             | 16             |          | 2.0               | MG/KG        |
| Lead             | ND             |          | 4.0               | MG/KG        |
| Cadmium          | 1.6            |          | 0.50              | MG/KG        |
| Nickel           | ND             |          | 4.0               | MG/KG        |
| Copper           | 6.1            |          | 2.5               | MG/KG        |
| Silver           | ND             |          | 1.0               | MG/KG        |

-----  
QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
              J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

0000435

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

SAMPLE ID LAB : EE-91-00137

MATRIX: SOLID

SAMPLE ID CLIENT: P13S0058

| PARAMETER       | RESULTS   | Q | DET. LIMIT | UNITS        |
|-----------------|-----------|---|------------|--------------|
| -----           | -----     | - | -----      | -----        |
| Arsenic         | ND        |   | 6.9        | MG/KG        |
| <b>Chromium</b> | <b>ND</b> |   | 1.0        | <b>MG/KG</b> |
| Zinc            | 7.3       |   | 2.0        | MG/KG        |
| <b>Lead</b>     | <b>ND</b> |   | 4.0        | MG/KG        |
| Cadmium         | ND        |   | 0.50       | MG/KG        |
| Nickel          | ND        |   | 4.0        | MG/KG        |
| Copper          | ND        |   | 2.5        | MG/KG        |
| Silver          | ND        |   | 1.0        | MG/KG        |

.....

QUALIFIERS: C \* COMMENT                    ND \* NOT DETECTED  
 J \* ESTIHATED VALUE            B \* ALSO PRESENT IN BLANK  
 L \* PRESENT BELOW STATED DETECTION LIMIT

QUALITY CONTROL FOR PRECISION  
RESULTS OF ANALYSIS OF REPLICATE  
ANALYSES OF SOIL SAMPLES

9100.026

---

(mg/kg)

---

| Parameter | E & E<br>Laboratory<br>No. 91-<br>00125 | Original<br>Analysis | Replicate<br>Analysis | Relative<br>Percent<br>Difference<br>(RPD) |
|-----------|---|----------------------|-----------------------|--|
| Arsenic   |   | ND                   | ND                    | --   |
| Chromium  |   | ND                   | ND                    | --   |
| Zinc      |   | ND                   | ND                    | --   |
| Lead      |   | ND                   | ND                    | --   |
| Cadmium   |   | ND                   | ND                    | --   |
| Nickel    |   | ND                   | ND                    | --   |
| Copper    |   | ND                   | ND                    | --   |
| Silver    |   | ND                   | ND                    | --   |

---

0000436

QUALITY CONTROL FOR ACCURACY: PERCENT RECOVERY  
FOR SPIKED SOIL SAMPLES

9100.026

(mg/kg)

| <b>Parameter</b> | <b>E &amp; E<br/>Laboratory<br/>No. 91-<br/>00125</b> | <b>Original<br/>Value</b> | <b>Amount<br/>Added</b> | <b>Amount<br/>Determined</b> | <b>Percent<br/>Recovery</b> |
|------------------|---|---------------------------|-------------------------|------------------------------|-----------------------------|
| Arsenic          |   | ND                        | 200                     | 140                          | 70                          |
| Chromium         |   | ND                        | 20                      | 20                           | 100                         |
| Zinc             |   | ND                        | 50                      | 38                           | 76                          |
| Lead             |   | ND                        | 50                      | 50                           | 100                         |
| Cadmium          |   | ND                        | 5.0                     | 1.2                          | 84                          |
| Nickel           |   | ND                        | 50                      | 35                           | 79                          |
| Copper           |   | ND                        | 25                      | 22                           | 88                          |
| Silver           |   | ND                        | 5.0                     | 4.5                          | 90                          |

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN-VET WEIGHT

SAMPLE ID LAB : METHOD BLANK

MATRIX: SOLID

| <u>PARAMETER</u> | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIHIT</u> | <u>UNITS</u> |
|------------------|----------------|----------|-------------------|--------------|
| Arsenic          | ND             | -        | 6.9               | MG/KG        |
| Chroaium         | ND             | -        | 1.0               | MG/KG        |
| Zinc             | ND             | -        | 2.0               | MG/KG        |
| Lead             | ND             | -        | 4.0               | MG/KG        |
| <b>Cadmium</b>   | <b>ND</b>      | -        | <b>0.50</b>       | <b>MG/KG</b> |
| Nickel           | ND             | -        | 4.0               | MG/KG        |
| <b>Copper</b>    | <b>ND</b>      | -        | <b>2.5</b>        | <b>MG/KG</b> |
| Silver           | ND             | -        | 1.0               | MG/KG        |

-----  
 QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
               J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
               L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PEST./PCB

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00115

MATRIX : SOLID

SAMPLE ID CLIENT: P13S001A

| PARAMETER            | RESULTS | Q | DET. LIMIT |
|----------------------|---------|---|------------|
| -----                | -----   | - | -----      |
| Heptachlor           | ND      |   | 1000       |
| Lindane              | ND      |   | 1000       |
| Aldrin               | ND      |   | 1000       |
| 4,4 - DDT            | ND      |   | 1000       |
| Dieldrin / 4,4 - DDE | ND      |   | 1000       |
| Endrin               | ND      |   | 1000       |
| Chlordane            | ND      |   | 1000       |
| Total PCBS           | ND      |   | 5000       |

-----

QUALIFIERS: C \* COMMENT                    ND \* NOT DETECTED  
               J = ESTIMATED VALUE        B \* ALSO PRESENT IN BLANK  
               L \* PRESENT BELOW STATED DETECTION LIMIT

TEST CODE : SPNP&P1

JOB NUMBER : 9100.026

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PEST./PCB

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00116

MATRIX : SOLID

SAMPLE ID CLIENT: P13S003A

| PARAMETER            | RESULTS | Q | DET. LIHIT |
|----------------------|---------|---|------------|
| Heptachlor           | ND      | - | 1000       |
| Lindane              | ND      | - | 1000       |
| Aldrin               | ND      | - | 1000       |
| 4,4 - DDT            | ND      | - | 1000       |
| Dieldrin / 4,4 - DDE | ND      | - | 1000       |
| Endrin               | ND      | - | 1000       |
| Chlordane            | ND      | - | 1000       |
| Total PCBS           | ND      | - | 5000       |

-----  
QUALIFIERS: C = COMMENT            ND = NOT DETECTED  
              J = ESTIMATED VALUE    B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

0000438

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PAASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PEST./PCB

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00117

MATRIX : SOLID

SAMPLE ID CLIENT: P13S006A

| <u>PARAMETER</u>     | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|----------------------|----------------|----------|-------------------|
| Heptachlor           | ND             | -        | 1000              |
| Lindane              | ND             | -        | 1000              |
| Aldrin               | ND             | -        | 1000              |
| 4,4 - DDT            | ND             | -        | 1000              |
| Dieldrin / 4,4 - DDE | ND             | -        | 1000              |
| Endrin               | ND             | -        | 1000              |
| Chlordane            | ND             | -        | 1000              |
| Total PCBS           | ND             | -        | 5000              |

.....

QUALIFIERS: C = COMMENT                      ND = NOT DETECTED  
              J = ESTIMATED VALUE            B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PEASE I GROUPS A-E

RESULTS IN-VET WEIGHT

TEST NAME : PNC PEST./PCB

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00118

MATRIX : SOLID

SAHPLE ID CLIENT: P13S006B

| <u>PARAMETER</u>     | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|----------------------|----------------|----------|-------------------|
| Heptachlor           | ND             | -        | 1000              |
| Lindane              | ND             | -        | 1000              |
| Aldrin               | ND             | -        | 1000              |
| 4,4 - DDT            | ND             | -        | 1000              |
| Dieldrin / 4,4 - DDE | ND             | -        | 1000              |
| Endrin               | ND             | -        | 1000              |
| Chlordanes           | ND             | -        | 1000              |
| Total PCBs           | ND             | -        | 5000              |

-----  
**QUALIFIERS:** C = COMMENT                      ND = NOT DETECTED  
 J = ESTIMATED VALUE                      B = ALSO PRESENT IN BLANK  
 L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLXENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN- WET WEIGHT

TEST NAME : PNC PEST. / PCB

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00119

MATRIX : SOLID

SAMPLE ID CLIENT: P13S007A

| PARAMETER<br>-----   | RESULTS   | Q | DET. LIMIT<br>----- |
|----------------------|-----------|---|---------------------|
| -                    |           | - |                     |
| Heptachlor           | ND        |   | 1000                |
| Lindane              | <b>ND</b> |   | 1000                |
| Aldrin               | ND        |   | 1000                |
| 4,4 - DDT            | ND        |   | 1000                |
| Dieldrin / 4,4 - DDE | ND        |   | 1000                |
| Endrin               | ND        |   | 1000                |
| Chlordane            | ND        |   | 1000                |
| Total PCBs           | ND        |   | 5000                |

-----  
QUALIFIERS: C : COMMENT                   ND : NOT DETECTED  
              J : ESTIMATED VALUE        B : ALSO PRESENT IN BLANK  
              L : PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PEASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PEST./PCB  
SAMPLE ID LAB : E&-91-00120  
SAMPLE ID CLIENT: P13S007B

UNITS : UG/KG  
MATRIX : SOLID

| PARAMETER            | RESULTS | Q | DET. LIMIT |
|----------------------|---------|---|------------|
| heptachlor           | ND      |   | 1000       |
| Lindane              | ND      |   | 1000       |
| Aldrin               | ND      |   | 1000       |
| 4,4 - DDT            | ND      |   | 1000       |
| Dieldrin / 4,4 - DDE | ND      |   | 1000       |
| Endrin               | ND      |   | 1000       |
| Chlordane            | ND      |   | 1000       |
| Total PCBs           | ND      |   | 5000       |

-----  
 QUALIFIERS: C = COMMENT            ND = NOT DETECTED  
               J = ESTIMATED VALUE    B = ALSO PRESENT IN BLANK  
               L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN-WET WEIGHT

TEST NAME : PNC PEST./PCB

UNITS : UG/KG

SAMPLE ID LAB : E€-91-00121

MATRIX : SOLID

SAMPLE ID CLIENT: P13S008A

| <u>PARAMETER</u>     | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|----------------------|----------------|----------|-------------------|
| Heptachlor           | NO             |          | 1000              |
| Lindane              | ND             |          | 1000              |
| Aldrin               | ND             |          | 1000              |
| 4,4 - DDT            | ND             |          | 1000              |
| Dieldrin / 4,4 - DDE | ND             |          | 1000              |
| Endrin               | ND             |          | 1000              |
| Chlordane            | ND             |          | 1000              |
| Total PCBS           | ND             |          | 5000              |

-----  
QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
              J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

TEST CODE :SPNP&P1

JOB NUMBER :9100.026

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PEST./PCB

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00122

MATRIX : SOLID

SAMPLE ID CLIENT: P13S009A

| PARAMETER            | RESULTS | Q | DET. LIMIT |
|----------------------|---------|---|------------|
| Heptachlor           | ND      |   | 1000       |
| Lindane              | ND      |   | 1000       |
| Aldrin               | ND      |   | 1000       |
| 4,4 - DDT            | ND      |   | 1000       |
| Dieldrin / 4,4 - DDE | ND      |   | 1000       |
| Endrin               | ND      |   | 1000       |
| Chlordane            | ND      |   | 1000       |
| Total PCBS           | ND      |   | 5000       |

-----  
QUALIFIERS: C = COMMENT            ND = NOT DETECTED  
              J = ESTIMATED VALUE    B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

000001

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : III-6000 NASP PRASE I GROUPS A-E

RESULTS IN VET VEIGHT

TEST NAME : PNC PEST./PCB

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00123

MATRIX : SOLID

SAMPLE ID CLIENT: P13S010A

| PARAMETER            | RESULTS   | Q | DET. LIMIT |
|----------------------|-----------|---|------------|
| -----                | -----     | - | -----      |
| -                    |           |   |            |
| Heptachlor           | ND        |   | 1000       |
| Lindane              | <b>ND</b> |   | 1000       |
| Aldrin               | ND        |   | 1000       |
| 4,4 - DDT            | <b>ND</b> |   | 1000       |
| Dieldrin / 4,4 - DDE | ND        |   | 1000       |
| Endrin               | ND        |   | 1000       |
| Chlordane            | ND        |   | 1000       |
| Total PCBS           | ND        |   | 5000       |

-----

QUALIFIERS: C : CONCENT                    ND : NOT DETECTED  
 J : ESTIMATED VALUE                    B : ALSO PRESENT IN BLANK  
 L : PRESENT BELOW STATED DETECTION LIMIT

TEST CODE :SPNP&P1

JOB NUMBER :9100.026

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PMSE I GROUPS A-E

RESULTS IN-VET WEIGHT

TEST NAME : PNC PEST./PCB

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00124

MATRIX : SOLID

SAMPLE ID CLIENT: P13S012A

| PARAMETER            | RESULTS | Q | DET. LIMIT |
|----------------------|---------|---|------------|
| Heptachlor           | No      | - | 1000       |
| Lindane              | ND      |   | 1000       |
| Aldrin               | ND      |   | 1000       |
| 4,4 - DDT            | ND      |   | 1000       |
| Dieldrin / 4,4 - DDE | ND      |   | 1000       |
| Endrin               | ND      |   | 1000       |
| Chlordane            | ND      |   | 1000       |
| Total PCBS           | ND      |   | 5000       |

-----  
QUALIFIERS: C = COMMENT            ND = NOT DETECTED  
              J = ESTIMATED VALUE    B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

0000442

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN VET WEIGHT

TEST NAME : PNC PEST./PCB

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00125

MATRIX : SOLID

SAMPLE ID CLIENT: P13S012B

| <u>PARAMETER</u>     | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|----------------------|----------------|----------|-------------------|
| Heptachlor           | NO             |          | 1000              |
| Lindane              | ND             |          | 1000              |
| Aldrin               | ND             |          | 1000              |
| 4,4' - DDT           | ND             |          | 1000              |
| Dieldrin / 4,4 - DDE | ND             |          | 1000              |
| Endrin               | ND             |          | 1000              |
| Chlordane            | ND             |          | 1000              |
| Total PCBS           | ND             |          | 5000              |

-----  
**QUALIFIERS:** C = COMMENT                    ND = NOT DETECTED  
                   J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
                   L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN VET WEIGHT

TEST NAME : PNC PEST./PCB

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00126

MATRIX : SOLID

SAMPLE ID CLIENT: P13S013A

| <u>PARAMETER</u>     | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|----------------------|----------------|----------|-------------------|
| -                    | -              | -        | -                 |
| Heptachlor           | NO             |          | 1000              |
| Lindane              | ND             |          | 1000              |
| Aldrin               | ND             |          | 1000              |
| 4,4 - DDT            | ND             |          | 1000              |
| Dieldrin / 4,4 - DDE | ND             |          | 1000              |
| Endrin               | ND             |          | 1000              |
| Chlordane            | ND             |          | 1000              |
| Total PCBS           | ND             |          | 5000              |

-----  
 QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
               J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
               L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UR-6000 NASP PHASE I GROUPS A-E

RESULTS IN VET WEIGHT

TEST NAME : PNC PEST./PCB

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00127

MATRIX : SOLID

SAMPLE ID CLIENT: P13S0138

| PARAMETER            | RESULTS | Q | DET. LIMIT |
|----------------------|---------|---|------------|
| Heptachlor           | NO      |   | 1000       |
| Lindane              | ND      |   | 1000       |
| Aldrin               | ND      |   | 1000       |
| 4,4 - DDT            | ND      |   | 1000       |
| Dieldrin / 4,4 - DDE | ND      |   | 1000       |
| Endrin               | ND      |   | 1000       |
| Chlordane            | ND      |   | 1000       |
| Total PCBS           | ND      |   | 5000       |

-----

QUALIFIERS: C \* COMMENT                    ND \* NOT DETECTED  
 J = ESTIMATED VALUE            B = ALSO PRESENT IN BLANK  
 L \* PRESENT BELOW STATED DETECTION LIMIT

TEST CODE : SPNP&P1

JOB NUMBER : 9100.026

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PEST./PCB

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00134

MATRIX : SOLID

SAMPLE ID CLIENT: P13S004A

| PARAMETER            | RESULTS | Q | DET. LIMIT |
|----------------------|---------|---|------------|
| Bcptachlor           | ND      |   | 1000       |
| Lindane              | ND      |   | 1000       |
| Aldrin               | ND      |   | 1000       |
| 4,4 - DDT            | ND      |   | 1000       |
| Dieldrin / 4,4 - DDE | ND      |   | 1000       |
| Endrin               | ND      |   | 1000       |
| Chlordane            | ND      |   | 1000       |
| Total PCBS           | ND      |   | 5000       |

-----  
QUALIFIERS: C = COMMENT                   ND = NOT DETECTED  
              J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

0000444

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS ~~IN~~ WET WEIGHT

TEST NAME : PNC PEST. / PCB

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00135

HATRIX : SOLID

SAMPLE ID CLIENT: P13S004B

| PARAMETER            | RESULTS | Q | DET. LIHIT |
|----------------------|---------|---|------------|
| -----                | -----   | - | -----      |
| <b>Heptachlor</b>    | ND      |   | 1000       |
| Lindane              | ND      |   | 1000       |
| Aldrin               | ND      |   | 1000       |
| 4,4 - DDT            | ND      |   | 1000       |
| Dieldrin / 4,4 - DDE | ND      |   | 1000       |
| Endrin               | ND      |   | 1000       |
| Chlordane            | ND      |   | 1000       |
| Total PCBS           | ND      |   | 5000       |

-----

QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
 J = ESTIMATED VALUE                    B = ALSO PRESENT IN BLANK  
 L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I CROUPS A-E

RESULTS IN-WET WEIGHT

TEST NAME : PNC PEST./PCB

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00136

MATRIX : SOLID

SAHPLE ID CLIENT: P13S005A

| PARAMETER            | RESULTS | Q | DET. LIMIT |
|----------------------|---------|---|------------|
| -----                | -----   | - | -----      |
| Heptachlor           | ND      |   | 1000       |
| Lindane              | ND      |   | 1000       |
| Aldrin               | ND      |   | 1000       |
| 4,4 - DDT            | ND      |   | 1000       |
| Dieldrin / 4,4 - DDE | ND      |   | 1000       |
| Endrin               | ND      |   | 1000       |
| Chlordane            | ND      |   | 1000       |
| Total PCBS           | ND      |   | 5000       |

-----

QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
               J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
               L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PEST./PCB

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00137

MATRIX : SOLID

SAMPLE ID CLIENT: P13S005B

| PARAMETER            | RESULTS | Q | DET. LIMIT |
|----------------------|---------|---|------------|
| Heptachlor           | ND      |   | 1000       |
| Lindane              | ND      |   | 1000       |
| Aldrin               | ND      |   | 1000       |
| 4,4 - DDT            | ND      |   | 1000       |
| Dieldrin / 4,4 - DDE | ND      |   | 1000       |
| Endrin               | ND      |   | 1000       |
| Chlordane            | ND      |   | 1000       |
| Total PCBS           | ND      |   | 5000       |

-----

QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
 J = ESTIMATED VALUE                    B = ALSO PRESENT IN BLANK  
 L = PRESENT BELOW STATED DETECTION LIMIT

**QUALITY CONTROL FOR ACCURACY AND PRECISION:**  
**PERCENT RECOVERY AND RELATIVE PERCENT DIFFERENCE (RPD)**  
**OF SOIL MATRIX SPIKE (MS) FOR PENSACOLA SCREENING**  
 (Sample # 00115)

9100.026

(ug/kg)

| Coapound   | Original<br>Result | Amount<br>Added | Amount<br>Determined | Percent<br>Recovery |
|------------|--------------------|-----------------|----------------------|---------------------|
|            |                    | NS              | MS                   | MS                  |
| Lindane    | ND                 | 2000            | 2100                 | 105                 |
| Heptachlor | ND                 | 2000            | 2000                 | 100                 |
| Aldrin     | ND                 | 2000            | 2100                 | 105                 |
| Dieldrin   | ND                 | 5000            | 5400                 | 108                 |
| Endrin     | ND                 | 5000            | 5200                 | 104                 |
| 4,4'-DDT   | ND                 | 5000            | 5000                 | 100                 |

0000446

QUALITY CONTROL FOR ACCURACY AND PRECISION:  
PERCENT RECOVERY AND RELATIVE PERCENT DIFFERENCE (RPD)  
OF SOIL MATRIX SPIKE (MS) FOR PENSACOLA SCREENING  
(Sample # 00125)

9100.026

(ug/kg)

| Compound   | Original<br>Result | Amount<br>Added<br>MS | Amount<br>Determined<br>MS | Percent<br>Recovery<br>NS |
|------------|--------------------|-----------------------|----------------------------|---------------------------|
| Lindane    | ND                 | 2000                  | 2100                       | 105                       |
| Heptachlor | ND                 | 2000                  | 2000                       | 100                       |
| Aldrin     | ND                 | 2000                  | 2100                       | 105                       |
| Dieldrin   | ND                 | 5000                  | 5400                       | 108                       |
| Endrin     | ND                 | 5000                  | 5100                       | 102                       |
| 4,4'-DDT   | ND                 | 5000                  | 5000                       | 100                       |

QUALITY CONTROL FOR ACCURACY AND PRECISION:  
PERCENT RECOVERY AND RELATIVE PERCENT DIFFERENCE (RPD)  
OF SOIL MATRIX SPIKE (MS) FOR PENSACOLA SCREENING  
(Sample # 00141)

9100.026

(ug/kg)

| Compound   | Original<br>Result | Amount<br>Added | Amount<br>Determined | Percent<br>Recovery |
|------------|--------------------|-----------------|----------------------|---------------------|
|            |                    | MS              | IS                   | MS                  |
| Lindane    | ND                 | 2000            | 3000                 | 150*                |
| Heptachlor | ND                 | 2000            | 1800                 | 90                  |
| Aldrin     | ND                 | 2000            | 1900                 | 95                  |
| Dieldrin   | ND                 | 5000            | 5300                 | 106                 |
| Endrin     | ND                 | 5000            | 5700                 | 114                 |
| 4,4'-DDT   | ND                 | 5000            | 3800                 | 76                  |

\* Coelution with sulfur.

0000447

TEST CODE :SPNP&P1

JOB NUMBER :9100.026

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PEST./PCB

UNITS : UG/KG

SAMPLE ID LAB : METHOD BLANK

MATRIX : SOLID

| PARAMETER            | RESULTS | Q | DET. LIHIT |
|----------------------|---------|---|------------|
| Heptachlor           | NO      | - | 1000       |
| Lindane              | ND      |   | 1000       |
| Aldrin               | ND      |   | 1000       |
| 4,4 - DDT            | ND      |   | 1000       |
| Dieldrin / 4,4 - DDE | ND      |   | 1000       |
| Endrin               | ND      |   | 1000       |
| Chlordane            | ND      |   | 1000       |
| Total PCBS           | ND      |   | 5000       |

-----  
QUALIFIERS: C = COMMENT                   ND = NOT DETECTED  
              J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I CROUPS A-E

RESULTS IN-VET WEIGHT

TEST NAME : PNC PAH - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00115

MATRIX : SOLID

SAMPLE ID CLIENT: P13S001A

| PARAMETER               | RESULTS | Q | DET. LIMIT |
|-------------------------|---------|---|------------|
| -----                   | -----   | - | -----      |
| Total as Benzo-a-pyrene | PRESENT | L | 1000       |

-----  
QUALIFIERS: C = COMMENT           ND = NOT DETECTED  
          J = ESTIMATED VALUE    B = ALSO PRESENT IN BLANK  
          L = PRESENT BELOW STATED DETECTION LIMIT

TEST CODE :SRNFAM1

JOB NUMBER :9100.026

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : OH-6000 NASP PHASE I GROUPS A-E

RESULTS IN. VET WEIGHT

TEST NAME : PNC PAH - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00116

MATRIX : SOLID

SAMPLE ID CLIENT: P13S003A

| <u>PARAMETER</u>        | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|-------------------------|----------------|----------|-------------------|
| Total as Benzo-a-pyrene | PRESENT        | L        | 1000              |

.....  
QUALIFIERS: C = COMMENT                   ND = NOT DETECTED  
          J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
          L = PRESENT BELOW STATED DETECTION LIMIT

TEST CODE : SPNPAH1

JOB NUMBER : 9100.026

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PAH - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00117

MATRIX : SOLID

SAMPLE ID CLIENT: P13S006A

| PARAMETER               | RESULTS | Q | DET. LIMIT |
|-------------------------|---------|---|------------|
| Total as Benzo-a-pyrene | 17000   | - | 1000       |

-----  
QUALIFIERS: C = COMMENT            ND = NOT DETECTED  
              J = ESTIMATED VALUE    B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

0000449

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PAH - LC

UNITS : UG/KG

SAMPLE ID LAB : &amp;E-91-00118

MATRIX : SOLID

SAHPLE ID CLIENT: P13S006B

| PARAMETER               | RESULTS | Q | DET. LIMIT |
|-------------------------|---------|---|------------|
| -----                   | -----   | - | -----      |
| Total as Benzo-a-pyrene | PRESENT | L | 1000       |

-----  
QUALIFIERS: C = COMMENT

ND = NOT DETECTED

J = ESTIMATED VALUE

B = ALSO PRESENT IN BLANK

L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PAE - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00119

MATRIX : SOLID

SAMPLE ID CLIENT: P13S007A

| <u>PARAMETER</u>        | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|-------------------------|----------------|----------|-------------------|
| Total as Benzo-a-pyrene | PRESENT        | L        | 1000              |

-----  
QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
              J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOV STATED DETECTION LIMIT

TEST CODE :SPNPAH1

JOB NUMBER :9100.026

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET VEIGHT

TEST NAHE : PNC PAH - LC

UNITS : UG/KG

SAHPLE ID LAB : EE-91-00120

MATRIX : SOLID

SAMPLE ID CLIENT: P13S007B

| PARAMETER               | RESULTS | Q | DET. LIMIT |
|-------------------------|---------|---|------------|
| Total as Benzo-a-pyrene | ND      | - | 1000       |

-----  
QUALIFIERS: C = COMMENT                   ND = NOT DETECTED  
              J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I CROUPS A-E

RESULTS IN-WET WEIGHT

TEST NAME : PNC PAH - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00121

MATRIX : SOLID

SAMPLE ID CLIENT: P13S008A

| PARAMETER               | RESULTS | Q | DET. LIMIT |
|-------------------------|---------|---|------------|
| Total as Benzo-a-pyrene | PRESENT | L | 1000       |

-----  
QUALIFIERS: C = COMMENT

ND = NOT DETECTED

J = ESTIMATED VALUE

B = ALSO PRESENT IN BLANK

L = PRESENT BELOW STATED DETECTION LIMIT

TEST CODE : SPNPAH1

JOB NUMBER : 9100.026

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PAH - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00122

MATRIX : SOLID

SAMPLE ID CLIENT: P13S009A

| PARAMETER               | RESULTS | Q | DET. LIMIT |
|-------------------------|---------|---|------------|
| -----                   | -----   | - | -----      |
| Total as Benzo-a-pyrene | ND      |   | 1000       |

-----  
QUALIFIERS: C = COMMENT                      ND = NOT DETECTED  
              J = ESTIMATED VALUE            B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN-VET WEIGHT

TEST NAME : PNC PAH - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00123

MATRIX : SOLID

SAMPLE ID CLIENT: P13S010A

| PARAMETER               | RESULTS | Q | DET. LIMIT |
|-------------------------|---------|---|------------|
| Total as Benzo-a-pyrene | ND      | - | 1000       |

-----

QUALIFIERS: C = COMMENT                      ND = NOT DETECTED  
 J = ESTIMATED VALUE                      B = ALSO PRESENT IN BLANK  
 L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN-VET WEIGHT

TEST NAME : PNC PAH - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00124

MATRIX : SOLID

SAMPLE ID CLIENT: P13S012A

| <u>PARAMETER</u>        | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|-------------------------|----------------|----------|-------------------|
| Total as Benzo-a-pyrene | ND             | -        | 1000              |

-----  
QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
              J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

TEST CODE : SPNPAH1

JOB NUHBER : 9100.026

Ecology and Environment, Inc..  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN VET WEIGHT

TEST NAME : PNC PAH - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00125

MATRIX : SOLID

SAMPLE ID CLIENT: P13S012B

| PARAMETER               | RESULTS | Q | DET. LIMIT |
|-------------------------|---------|---|------------|
| Total as Benzo-a-pyrene | ND      | - | 1000       |

-----  
QUALIFIERS: C = COMMENT                    ID = NOT DETECTED  
              J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

0000453

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UR-6000 NASP PHASE I GROUPS A-E

RESULTS IN-VET VEIGHT

TEST NAME : PNC PAH - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00126

MATRIX : SOLID

SAMPLE ID CLIENT: P13S013A

| PARAMETER               | RESULTS | Q | DET. LIMIT |
|-------------------------|---------|---|------------|
| Total as Benzo-a-pyrene | ND      | - | 1000       |

-----  
QUALIFIERS: C = COMMENT

ND = NOT DETECTED

J = ESTIMATED VALUE

B = ALSO PRESENT IN BLANK

L = PRESENT BELOW STATED DETECTION LIMIT

TEST CODE : SPNPAH1

JOB NUMBER : 9100.026

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PAH - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00127

MATRIX : SOLID

SAMPLE ID CLIENT: P13S013B

| <u>PARAMETER</u>        | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|-------------------------|----------------|----------|-------------------|
| Total as Benzo-a-pyrene | ND             | -        | 1000              |

-----  
QUALIFIERS: C = COMMENT

ND = NOT DETECTED

J = ESTIMATED VALUE

B = ALSO PRESENT IN BLANK

L = PRESENT BELOW STATED DETECTION LIMIT

000000

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

## RESULTS IN WET WEIGHT

TEST NAME : PNC PAH - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00134

MATRIX : SOLID

SAMPLE ID CLIENT: P13S004A

| PARAMETER               | RESULTS | Q | DET. LIMIT |
|-------------------------|---------|---|------------|
| Total as Benzo-a-pyrene | 28000   | - | 1000       |

-----  
QUALIFIERS: C = COMMENT

ND = NOT DETECTED

J = ESTIMATED VALUE

B = ALSO PRESENT IN BLANK

L = PRESENT BELOW STATED DETECTION LIMIT

TEST CODE : SPNPAH1

JOB NUMBER : 9100.026

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PRASE I GROUPS A-E

RESULTS IN VET WEIGHT

TEST NAME : PNC PAH - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00135

MATRIX : SOLID

SAMPLE ID CLIENT: P13S004B

| <u>PARAMETER</u>        | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|-------------------------|----------------|----------|-------------------|
| Total as Benzo-a-pyrene | ND             | -        | 1000              |

-----  
QUALIFIERS: C = COMMENT                      ND = NOT DETECTED  
              J = ESTIMATED VALUE            B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

0000455

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PAH - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00136

MATRIX : SOLID

SAMPLE ID CLIENT: P13S005A

| PARAMETER               | RESULTS | Q | DET. LIMIT |
|-------------------------|---------|---|------------|
| Total as Benzo-a-pyrene | 12000   | - | 1000       |

-----  
QUALIFIERS: C = COMMENT                      ND = NOT DETECTED  
              J = ESTIMATED VALUE            B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS Id WET WEIGHT

TEST NAME : PNC PAR - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00137

MATRIX : SOLID

SAMPLE ID CLIENT: P13S005B

| PARAMETER               | RESULTS | Q | DET. LIMIT |
|-------------------------|---------|---|------------|
| Total as Benzo-a-pyrene | ND      | - | 1000       |

-----  
QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
              J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

0000456

QUALITY CONTROL FOR ACCURACY: PERCENT RECOVERY  
FOR SPIKED SOIL SAMPLES

9100.026

---

(ug)

---

| Parameter             | E & E<br>Laboratory<br>No. 91- | Original<br>Value | Amount<br>Added | Amount<br>Determined | Percent<br>Recovery |
|-----------------------|--------------------------------|-------------------|-----------------|----------------------|---------------------|
| <b>Benzo(a)pyrene</b> |                                |                   |                 |                      |                     |
|                       | 132.03                         | ND                | 50              | 45                   | 90                  |

---

QUALITY CONTROL FOR ACCURACY: PERCENT RECOVERY  
FOR SPIKED SOIL SAMPLES

9100.026

---

(ug)

---

| Parameter             | E & E<br>Laboratory<br>No. 91- | Original<br>Value | Amount<br>Added | Amount<br>Determined | Percent<br>Recovery |
|-----------------------|--------------------------------|-------------------|-----------------|----------------------|---------------------|
| <b>Benzo(a)pyrene</b> |                                |                   |                 |                      |                     |
|                       | Method Blank                   | ND                | 50              | 39.7                 | 79                  |

---

0000457

TEST CODE : SPNPAH1

JOB NUMBER : 9100.026

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET VEIGHT

TEST NAME : PNC PAH - LC

UNITS : UG/KG

SAMPLE ID LAB : METHOD BLANK

MATRIX : SOLID

| PARAMETER               | RESULTS | Q | DET. LIMIT |
|-------------------------|---------|---|------------|
| Total as Benzo-a-pyrene | ND      | - | 1000       |

-----  
QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
              J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOV STATED DETECTION LIHIT

TEST CODE :SPNPHL1

JOB NUMBER :9100.026

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PEASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PHENOL - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00115

MATRIX : SOLID

SAMPLE ID CLIENT: P13S001A

| <u>PARAMETER</u>         | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|--------------------------|----------------|----------|-------------------|
| Total as Trichlorophenol | ND             | -        | 2000              |

-----  
QUALIFIERS: C = COMMENT                   ND = NOT DETECTED  
              J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

0000458

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN VET WEIGHT

TEST NAME : PNC PHENOL - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00116

MATRIX : SOLID

SAMPLE ID CLIENT: P13S003A

| PARAMETER                | RESULTS | Q | DET. LIMIT |
|--------------------------|---------|---|------------|
| -----                    | -----   | - | -----      |
| Total as Trichlorophenol | ND      |   | 2000       |

-----  
QUALIFIERS: C = COMMENT                   ND = NOT DETECTED  
              J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PEASE I GROUPS A-E

RESULTS IN-VET WEIGHT

TEST NAME : PNC PHENOL - LC

UNITS : UG/KG

SAHPLE ID LAB : EE-91-00117

MATRIX : SOLID

SAMPLE ID CLIENT: P13S006A

| PARAMETER                | RESULTS | Q | DET. LIMIT |
|--------------------------|---------|---|------------|
| Total as Trichlorophenol | ND      | - | 2000       |

-----  
QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
              J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIHIT

0000459

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I CROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PHENOL - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00118

MATRIX : SOLID

SAMPLE ID CLIENT: P13S0068

| PARAMETER                | RESULTS | Q | DET. LIMIT |
|--------------------------|---------|---|------------|
| -----                    | -----   | - | -----      |
| Total as Trichlorophenol | ND      |   | 2000       |

-----  
QUALIFIERS: C \* COHENT ND \* NOT DETECTED  
J \* ESTIMATED VALUE B \* ALSO PRESENT IN BLANK  
L \* PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PEASE I CROUPS A-E

RESULTS IN- WET WEIGHT

TEST NAME : PNC PHENOL - LC

UNITS : UG/KG

SAMPLE ID LAB : &amp;E-91-00119

MATRIX : SOLID

SAMPLE ID CLIENT: P13S007A

| PARAMETER                | RESULTS | Q | DET. LIMIT |
|--------------------------|---------|---|------------|
| -----                    | -----   | - | -----      |
| Total as Trichlorophenol | ND      |   | 2000       |

-----  
QUALIFIERS: C \* COMMENT           ND \* NOT DETECTED  
          J \* ESTIMATED VALUE    B \* ALSO PRESENT IN BLANK  
          L \* PRESENT BELOW STATED DETECTION LIHIT

0000000

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E  
RESULTS IN WET WEIGHT  
TEST NAME : PNC PHENOL - LC  
SAMPLE ID LAB : EE-91-00120  
SAMPLE ID CLIENT: P13S007B

UNITS : UG/KG  
MATRIX : SOLID

| <u>PARAMETER</u>         | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|--------------------------|----------------|----------|-------------------|
| Total as Trichlorophenol | ND             | -        | 2000              |

-----  
QUALIFIERS: C = COMMENT                   ND = NOT DETECTED  
              J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

TEST CODE : SPNPHL1

JOB NUMBER : 9100.026

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT - : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PHENOL - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00121

MATRIX : SOLID

SAMPLE ID CLIENT: P13SOC8A

| <u>PARAMETER</u>         | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|--------------------------|----------------|----------|-------------------|
| Total as Trichlorophenol | ND             | -        | 2000              |

-----  
QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
              J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

0000461

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN VET VEIGHT

TEST NAME : PNC PHENOL - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00122

MATRIX : SOLID

SAMPLE ID CLIENT: P13S009A

| <u>PARAMETER</u>         | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|--------------------------|----------------|----------|-------------------|
| Total as Trichlorophenol | ND             | -        | 2000              |

-----  
QUALIFIERS: C = COMMENT

ND = NOT DETECTED

J = ESTIMATED VALUE

B = ALSO PRESENT IN BLANK

L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN-VET WEIGHT

TEST NAME : PNC PHENOL - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00123

MATRIX : SOLID

SAMPLE ID CLIENT: P13S010A

| PARAMETER                | RESULTS | Q | DET. LIMIT |
|--------------------------|---------|---|------------|
| Total as Trichlorophenol | ND      | - | 2000       |

-----  
QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
              J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

0000462

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN-WET WEIGHT

TEST NAME : PNC PHENOL - LC UNITS : UG/KG

SAHPLE ID LAB : EE-91-00124 MATRIX : SOLID

SAMPLE ID CLIENT: P135012A

| PARAMETER                | RESULTS | Q | DET. LIMIT |
|--------------------------|---------|---|------------|
| -----                    | -----   | - | -----      |
| Total as Trichlorophenol | ND      |   | 2000       |

-----  
QUALIFIERS: C = COMMENT ND = NOT DETECTED  
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
L = PRESENT BELOW STATED DETECTION LIMIT

TEST CODE :SPNPHL1

JOB NUMBER :9100.026

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PHENOL - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00125

MATRIX : SOLID

SAMPLE ID CLIENT: P13S012B

| <u>PARAMETER</u>         | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|--------------------------|----------------|----------|-------------------|
| Total as Trichlorophenol | ND             | -        | 2000              |

-----  
QUALIFIERS: C = COMMENT            ND = NOT DETECTED  
              J = ESTIMATED VALUE    B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

0000400

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN- WET WEIGHT

TEST NAME : PNC PHENOL - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00126

MATRIX : SOLID

SAHPLE I D CLIENT: ?13S013A

| <u>PARAMETER</u>         | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|--------------------------|----------------|----------|-------------------|
| Total as Trichlorophenol | ND             | -        | 2000              |

-----  
QUALIFIERS: C : COMMENT                   ND : NOT DETECTED  
          J : ESTIMATED VALUE        B : ALSO PRESENT IN BLANK  
          L : PRESENT BELOW STATED DETECTION LIMIT

TEST CODE :SPNPHL1

JOB NUMBER :9100.026

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN-WET WEIGHT

TEST NAME : PNC PHENOL - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00127

MATRIX : SOLID

SAMPLE ID CLIENT: P13S013B

| <u>PARAMETER</u>         | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|--------------------------|----------------|----------|-------------------|
| Total as Trichlorophenol | ND             | -        | 2000              |

-----  
QUALIFIERS: C = COMMENT                      ND = NOT DETECTED  
              J = ESTIMATED VALUE            B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

0000464

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN- WET WEIGHT

TEST NAME : PNC PHENOL - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00134

MATRIX : SOLID

SAMPLE ID CLIENT: P13S004A

| PARAMETER                | RESULTS | Q | DET. LIMIT |
|--------------------------|---------|---|------------|
| -----                    | -----   | - | -----      |
| Total as Trichlorophenol | 58000   |   | 2000       |

-----  
QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
              J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

TEST CODE :SPNPHL1

JOB NUMBER :9100.026

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PRASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PHENOL - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00135

MATRIX : SOLID

SAMPLE ID CLIENT: P13S004B

| PARAMETER                | RESULTS | Q | DET. LIMIT |
|--------------------------|---------|---|------------|
| Total as Trichlorophenol | ND      | - | 2000       |

-----  
QUALIFIERS: C = COMMENT                      ND = NOT DETECTED  
              J = ESTIMATED VALUE            B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

0000485

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN-VET VEIGHT

TEST NAME : PNC PHENOL - LC

UNITS : UG/KG

SAHPLE ID LAB : EE-91-00136

MATRIX : SOLID

SAMPLE ID CLIENT: P13S005A

| PARAMETER                | RESULTS | Q | DET. LIMIT |
|--------------------------|---------|---|------------|
| Total as Trichlorophenol | 24000   | - | 2000       |

-----  
QUALIFIERS: C = COMMENT

ND = NOT DETECTED

J = ESTIMATED VALUE

B = ALSO PRESENT IN BLANK

L = PRESENT BELOW STATED DETECTION LIMIT

TEST CODE :SPNPHL1

JOB NUHBER :9100.026

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PEASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PHENOL - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00137

MATRIX : SOLID

SAHPLE ID CLIENT: P13S005B

| PARAMETER                | RESULTS | Q | DET. LIMIT |
|--------------------------|---------|---|------------|
| Total as Trichlorophenol | PRESENT | L | 2000       |

-----  
QUALIFIERS: C = COMMENT

ND = NOT DETECTED

J = ESTIMATED VALUE

B = ALSO PRESENT IN BLANK

L = PRESENT BELOW STATED DETECTION LIMIT

0000466

QUALITY CONTROL FOR ACCURACY: PERCENT RECOVERY  
FOR SPIKED SOIL SAMPLES

9100.026

---

(ug)

---

| Parameter       | E & E<br>Laboratory<br>No. 91- | Original<br>Value | Amount<br>Added | Amount<br>Determined | Percent<br>Recovery |
|-----------------|--------------------------------|-------------------|-----------------|----------------------|---------------------|
| Trichlorophenol |                                |                   |                 |                      |                     |
|                 | Blank Spike #1                 | ND                | 50              | 43.6                 | 87                  |
|                 | Blank Spike #2                 | ND                | 50              | 45.0                 | 90                  |
|                 | Blank Spike #3                 | ND                | 50              | 37.0                 | 73                  |

---

TEST CODE : SPNPHL1

JOB NUMBER : 9100.026

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I CROUPS A-E

RESULTS IN-WET WEIGHT

TEST NAME : PNC PHENOL - LC

UNITS : UG/KG

SAMPLE ID LAB : METHOD BLANK

MATRIX : SOLID

| <u>PARAMETER</u>         | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|--------------------------|----------------|----------|-------------------|
| Total as Trichlorophenol | ND             | -        | 2000              |

-----  
QUALIFIERS: C = COMMENT            ND = NOT DETECTED  
              J = ESTIMATED VALUE    B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

0101187

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E  
RESULTS IN WET WEIGHT  
TEST NAME : PNC PURGABLES - GC UNITS : UG/KG  
SAMPLE ID LAB : EE-91-00115 MATRIX : SOLID  
SAMPLE ID CLIENT: P13S001A

| PARAMETER                   | RESULTS | Q | DEF. LIMIT |
|-----------------------------|---------|---|------------|
| Benzene                     | ND      |   | 1000       |
| Toluene                     | ND      |   | 1000       |
| Ethylbenzene                | ND      |   | 1000       |
| Total Xylenes               | ND      |   | 1000       |
| 1,2 - Dichlorobenzene       | ND      |   | 1000       |
| 1,3 - Dichlorobenzene       | ND      |   | 1000       |
| 1,4 - Dichlorobenzene       | ND      |   | 1000       |
| 1,1 - dichloroethene        | ND      |   | 1000       |
| Methylene Chloride          | ND      |   | 1000       |
| Trans-1,2, - Dichloroethene | ND      |   | 1000       |
| 1,1 - dichlorooctane        | ND      |   | 1000       |
| 1,1,1 - Trichloroethane     | ND      |   | 1000       |
| 1,2 - Dichloroethane        | ND      |   | 1000       |
| Trichloroethene             | ND      |   | 1000       |
| Tetrachloroethene           | ND      |   | 1000       |

-----  
 QUALIFIERS: C - COMMENT ND - NOT DETECTED  
 J - ESTIMATED VALUE B - ALSO PRESENT IN BLANK  
 L - PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PURGABLES- GC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00116

MATRIX : SOLID

SAMPLE ID CLIENT: P13S003A

| PARAMETER                   | RESULTS | Q | DET. LIMIT |
|-----------------------------|---------|---|------------|
| -----                       | -----   | - | -----      |
| Benzene                     | ND      |   | 1000       |
| Toluene                     | ND      |   | 1000       |
| Ethylbenzene                | ND      |   | 1000       |
| Total Xylenes               | ND      |   | 1000       |
| 1,2 - Dichlorobenzene       | ND      |   | 1000       |
| 1,3 - Dichlorobenzene       | ND      |   | 1000       |
| 1,4 - Dichlorobenzene       | ND      |   | 1000       |
| 1,1 - dichloroethane        | ND      |   | 1000       |
| Methylene Chloride          | ND      |   | 1000       |
| Trans-1,2, - Dichloroethane | ND      |   | 1000       |
| 1,1 - dichloroethane        | ND      |   | 1000       |
| 1,1,1 - Trichloroethane     | ND      |   | 1000       |
| 1,2 - Dichloroethane        | ND      |   | 1000       |
| Trichloroethane             | ND      |   | 1000       |
| Tetrachloroethane           | ND      |   | 1000       |

.....  
 QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
               J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
               L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAUE : PNC PURGABLES- GC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00117

MATRIX : SOLID

SAMPLE ID CLIENT: P13S006A

| <u>PARAMETER</u>            | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|-----------------------------|----------------|----------|-------------------|
| Benzene                     | ND             |          | 1000              |
| Toluene                     | ND             |          | 1000              |
| Ethylbenzene                | ND             |          | 1000              |
| Total Xylenes               | ND             |          | 1000              |
| 1,2 - Dichlorobenzene       | ND             |          | 1000              |
| 1,3 - Dichlorobenzene       | ND             |          | 1000              |
| 1,4 - Dichlorobenzene       | ND             |          | 1000              |
| 1,1 - dichloroethene        | ND             |          | 1000              |
| Methylene Chloride          | ND             |          | 1000              |
| Trans-1,2, - Dichloroethene | ND             |          | 1000              |
| 1,1 - dichloroethane        | ND             |          | 1000              |
| 1,1,1 - Trichloroethane     | ND             |          | 1000              |
| 1,2 - Dichloroethane        | ND             |          | 1000              |
| Trichloroethene             | ND             |          | 1000              |
| Tetrachloroethene           | ND             |          | 1000              |

-----  
 QUALIFIERS: C = COMMENT            ND = NOT DETECTED  
               J = ESTIMATED VALUE    B = ALSO PRESENT IN BLANK  
               L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PURGABLES- GC UNITS : UG/KG  
SAHPLE ID LAB : EE-91-00118 MATRIX : SOLID  
SAMPLE ID CLIENT: P13S006B

| PARAMETER                   | RESULTS | Q | DET. LIMIT |
|-----------------------------|---------|---|------------|
| Benzene                     | ND      |   | 1000       |
| Toluene                     | ND      |   | 1000       |
| Ethylbenzenc                | ND      |   | 1000       |
| Total Xylenes               | ND      |   | 1000       |
| 1,2 - Dichlorobenzene       | ND      |   | 1000       |
| 1,3 - Dichlorobenzene       | ND      |   | 1000       |
| 1,4 - Dichlorobenzene       | ND      |   | 1000       |
| 1,1 - dichloroethene        | ND      |   | 1000       |
| Methylene Chloride          | ND      |   | 1000       |
| Trans-1,2, - Dichloroethene | ND      |   | 1000       |
| 1,1 - dichloroethanc        | ND      |   | 1000       |
| 1,1,1 - Trichloroethane     | ND      |   | 1000       |
| 1,2 - Dichloroethane        | ID      |   | 1000       |
| Trichloroethene             | ND      |   | 1000       |
| Tetrachloroethene           | ND      |   | 1000       |

-----  
 QUALIFIERS: C = COMMENT ND = NOT DETECTED  
 J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
 L = PRESENT BELOW STATED DETECTION LIMIT

0000400

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PURGABLES- CC UNITS : UG/KG  
SAMPLE ID LAB : EE-91-00119 MATRIX : SOLID  
SAMPLE ID CLIENT: P13S007A

| PARAMETER                   | RESULTS | Q | DET. LIHIT  |
|-----------------------------|---------|---|-------------|
| -----                       | -----   | - | -----       |
| Benzene                     | ND      |   | 1000        |
| Toluene                     | ND      |   | <b>1000</b> |
| Ethylbenzene                | ND      |   | 1000        |
| Total Xylenes               | ND      |   | 1000        |
| 1,2 - Dichlorobenzene       | ND      |   | 1000        |
| 1,3 - Dichlorobenzene       | ND      |   | 1000        |
| 1,4 - Dichlorobenzene       | ND      |   | 1000        |
| 1,1 - dichloroethene        | ND      |   | 1000        |
| Methylene Chloride          | ND      |   | 1000        |
| Trans-1,2, - Dichloroethene | ND      |   | 1000        |
| 1,1 - dichloroethane        | ND      |   | 1000        |
| 1,1,1 - Trichloroethane     | ND      |   | 1000        |
| 1,2 - Dichloroethane        | ND      |   | 1000        |
| Trichloroethene             | ND      |   | 1000        |
| Tetrachloroethene           | ND      |   | 1000        |

-----  
 QUALIFIERS: C = COMMENT ND = NOT DETECTED  
 J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
 L = PRESENT BELOW STATED DETECTION LIHIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PURGABLES- GC

UNITS : UG/KG

SAMPLE ID LAB : EC-91-00120

MATRIX : SOLID

SAMPLE ID CLIENT: P13S007B

| PARAMETER                   | RESULTS | Q | DET. LIMIT |
|-----------------------------|---------|---|------------|
| Benzene                     | ND      |   | 1000       |
| Toluene                     | ND      |   | 1000       |
| Ethylbenzene                | ND      |   | 1000       |
| Total Xylenes               | ND      |   | 1000       |
| 1,2 - Dichlorobenzene       | ND      |   | 1000       |
| 1,3 - Dichlorobenzene       | ND      |   | 1000       |
| 1,4 - Dichlorobenzene       | ND      |   | 1000       |
| 1,1 - dichloroethane        | ND      |   | 1000       |
| Methylene Chloride          | ND      |   | 1000       |
| Trans-1,2, - Dichloroethane | ND      |   | 1000       |
| 1,1 - dichloroethane        | ND      |   | 1000       |
| 1,1,1 - Trichloroethane     | ND      |   | 1000       |
| 1,2 - Dichloroethane        | ND      |   | 1000       |
| Trichloroethene             | ND      |   | 1000       |
| Tetrachloroethane           | ND      |   | 1000       |

QUALIFIERS: C = COMMENT

ND = NOT DETECTED

J = ESTIMATED VALUE

B = ALSO PRESENT IN BLANK

L = PRESENT BELOW STATED DETECTION LIMIT

0000476

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN-VET WEIGHT

TEST NAME : PNC PURGABLES- GC

UNITS : UG/KG

SAHPLE ID LAB : EE-91-00121

HATRIX : SOLID

SAHPLE ID CLIENT: P13S008A

| PARAMETER                   | RESULTS | Q | DET. LIMIT |
|-----------------------------|---------|---|------------|
| -----                       | -----   | - | -----      |
| Benzene                     | ND      |   | 1000       |
| Toluene                     | ND      |   | 1000       |
| Ethylbenzene                | ND      |   | 1000       |
| Total Xylenes               | ND      |   | 1000       |
| 1,2 - Dichlorobenzene       | ND      |   | 1000       |
| 1,3 - Dichlorobenzene       | ND      |   | 1000       |
| 1,4 - Dichlorobenzene       | ND      |   | 1000       |
| 1,1 - dichloroethene        | ND      |   | 1000       |
| Methylene Chloride          | ND      |   | 1000       |
| Trans-1,2, - Dichloroethene | ND      |   | 1000       |
| 1,1 - dichloroethane        | ND      |   | 1000       |
| 1,1,1 - Trichloroethane     | ND      |   | 1000       |
| 1,2 - Dichloroethane        | ND      |   | 1000       |
| Trichloroethene             | ND      |   | 1000       |
| Tetrachloroethene           | ND      |   | 1000       |

-----  
 QUALIFIERS: C = COMMENT            ND = NOT DETECTED  
               J = ESTIMATED VALUE    B = ALSO PRESENT IN BLANK  
               L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PEASE I GROUPS A-E

RESULTS IN VET WEIGHT

TEST NAME : PNC PURGABLES- GC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00122

MATRIX : SOLID

SAMPLE ID CLIENT: P13S009A

| <u>PARAMETER</u>            | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|-----------------------------|----------------|----------|-------------------|
| -----                       | -----          | -        | -----             |
| Benzene                     | ND             |          | 1000              |
| Toluene                     | ND             |          | 1000              |
| Ethylbenzene                | ND             |          | 1000              |
| Total Xylenes               | ND             |          | 1000              |
| 1,2 - Dichlorobenzene       | ND             |          | 1000              |
| 1,3 - Dichlorobenzene       | ND             |          | 1000              |
| 1,4 - Dichlorobenzene       | ND             |          | 1000              |
| 1,1 - dichloroethne         | ND             |          | 1000              |
| Methylene Chloride          | ND             |          | 1000              |
| Trans-1,2, - Dichloroethene | ND             |          | 1000              |
| 1,1 - dichloroethane        | ND             |          | 1000              |
| 1,1,1 - Trichloroethane     | ND             |          | 1000              |
| 1,2 - Dichloroethane        | ND             |          | 1000              |
| Trichloroethcne             | ND             |          | 1000              |
| Tetrachloroethene           | ND             |          | 1000              |

-----

QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
 J = ESTIMATED VALUE                    B = ALSO PRESENT IN BLANK  
 L = PRESENT BELOW STATED DETECTION LIMIT

0000471

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN-VET VEIGHT

TEST NAME : PNC PURGABLES- GC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00123

MATRIX : SOLID

SAMPLE ID CLIENT: P13S010A

| PARAMETER                   | RESULTS | Q | DET. LIMIT |
|-----------------------------|---------|---|------------|
| -----                       | -----   | - | -----      |
| Benzene                     | ND      |   | 1000       |
| Toluene                     | ND      |   | 1000       |
| Ethylbenzene                | ND      |   | 1000       |
| Total Xylenes               | ND      |   | 1000       |
| 1,2 - Dichlorobenzene       | ND      |   | 1000       |
| 1,3 - Dichlorobenzene       | ND      |   | 1000       |
| 1,4 - Dichlorobenzene       | ND      |   | 1000       |
| 1,1 - dichloroethene        | ND      |   | 1000       |
| Methylene Chloride          | 1000    |   | 1000       |
| Trans-1,2, - Dichloroethene | ND      |   | 1000       |
| 1,1 - dichloroethane        | ND      |   | 1000       |
| 1,1,1 - Trichloroethane     | ND      |   | 1000       |
| 1,2 - Dichloroethane        | ND      |   | 1000       |
| Trichloroethene             | ND      |   | 1000       |
| Tetrachloroethene           | ND      |   | 1000       |

-----

QUALIFIERS: C = COMMENT            ND = NOT DETECTED  
 J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
 L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PURGABLES- GC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00124

MATRIX : SOLID

SAMPLE ID CLIENT: P13S012A

| PARAMETER<br>-----          | RESULTS<br>----- | Q<br>- | DET. LIMIT<br>----- |
|-----------------------------|------------------|--------|---------------------|
| Benzene                     | ND               |        | 1000                |
| Toluene                     | ND               |        | 1000                |
| Ethylbenzene                | ND               |        | 1000                |
| Total Xylenes               | ND               |        | 1000                |
| 1,Z - Dichlorobenzene       | ND               |        | 1000                |
| 1,3 - Dichlorobenzene       | ND               |        | 1000                |
| 1,4 - Dichlorobenzene       | ND               |        | 1000                |
| 1,1 - dichloroethene        | ND               |        | 1000                |
| Hexylenc Chloride           | 1000             |        | 1000                |
| Trans-1,2, - Dichloroethene | ND               |        | 1000                |
| 1,1 - dichloroethane        | ND               |        | 1000                |
| 1,1,1 - Trichloroethane     | ND               |        | 1000                |
| 1,2 - Dichloroethane        | ND               |        | 1000                |
| Trichloroethene             | ND               |        | 1000                |
| Tetrachloroethene           | ND               |        | 1000                |

-----  
 QUALIFIERS: C = COMMENT            ND = NOT DETECTED  
               J = ESTIMATED VALUE    B = ALSO PRESENT IN BLANK  
               L = PRESENT BELOW STATED DETECTION LIMIT

0000472

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN-WET WEIGHT

TEST NAME : PNC PURGABLES- GC

UNITS : UG/KG

SAHPLE ID LAB : EE-91-00125

MATRIX : SOLID

SAHPLE ID CLIENT: P13S012B

| <u>PARAHETER</u>            | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|-----------------------------|----------------|----------|-------------------|
| Benzene                     | ND             |          | 1000              |
| Toluene                     | ND             |          | 1000              |
| Ethylbenzene                | ND             |          | 1000              |
| Total Xylenes               | ND             |          | 1000              |
| 1,2 - Dichlorobenzene       | ND             |          | 1000              |
| 1,3 - Dichlorobenzene       | ND             |          | 1000              |
| 1,4 - Dichlorobenzene       | ND             |          | 1000              |
| 1,1 - dichloroethcne        | ND             |          | 1000              |
| Hethylene Chloride          | ND             |          | 1000              |
| Trans-1,2, - Dichloroethene | ND             |          | 1000              |
| 1,1 - dichlorooctane        | ND             |          | 1000              |
| 1,1,1 - Trichloroethane     | ND             |          | 1000              |
| 1,2 - Dichloroethane        | ND             |          | 1000              |
| Trichloroethene             | ND             |          | 1000              |
| Tetrachloroethene           | ND             |          | 1000              |

-----  
**QUALIFIERS:** C = COMMENT                    ND = NOT DETECTED  
 J = ESTIMATED VALUE                    B = ALSO PRESENT IN BLANK  
 L = PRESENT BELOW STATED DETECTION LIMIT

Ecology' and Environment , Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PURGABLES- GC

UNITS : UG/KG

SAHPLE ID LAB : EE-91-00126

MATRIX : SOLID

SAMPLE ID CLIENT: P13S013A

| <u>PARAMETER</u>            | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|-----------------------------|----------------|----------|-------------------|
| Benzene                     | ID             |          | 1000              |
| Toluene                     | ND             |          | 1000              |
| Ethylbcnzene                | ND             |          | 1000              |
| Total Xylenes               | ND             |          | 1000              |
| 1,2 - Dichlorobenzene       | ND             |          | 1000              |
| 1,3 - Dichlorobenzene       | ND             |          | 1000              |
| 1,4 - Dichlorobenzene       | ND             |          | 1000              |
| 1,1 - dichloroethene        | ND             |          | 1000              |
| Methylene Chloride          | 1100           |          | 1000              |
| Trans-1,2, " Dichloroethene | ND             |          | 1000              |
| 1,1 - dichloroethane        | ND             |          | 1000              |
| 1,1,1 - Trichloroethane     | ND             |          | 1000              |
| 1,2 - Dichloroethane        | ID             |          | 1000              |
| Trichloroethene             | ND             |          | 1000              |
| Tetrachloroethene           | ND             |          | 1000              |

-----  
 QUALIFIERS: C = COMMENT                      ND = NOT DETECTED  
                   J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
                   L = PRESENT BELOW STATED DETECTION LIMIT

0000473

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PURGABLES- GC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00127

MATRIX : SOLID

SAMPLE ID CLIENT: P13S013B

| PARAMETER                   | RESULTS | Q | DET. LIMIT |
|-----------------------------|---------|---|------------|
| -----                       | -----   | - | -----      |
| Benzene                     | ND      |   | 1000       |
| Toluene                     | ND      |   | 1000       |
| Ethylbenzene                | ND      |   | 1000       |
| Total Xylenes               | ND      |   | 1000       |
| 1,2 - Dichlorobenzene       | ND      |   | 1000       |
| 1,3 - Dichlorobenzene       | ND      |   | 1000       |
| 1,4 - Dichlorobenzene       | ND      |   | 1000       |
| 1,1 - dichloroethene        | ND      |   | 1000       |
| Methylene Chloride          | 1000    |   | 1000       |
| Trans-1,2, - Dichloroethene | ND      |   | 1000       |
| 1,1 - dichloroethane        | ND      |   | 1000       |
| 1,1,1 - Trichloroethane     | ND      |   | 1000       |
| 1,2 - Dichloroethane        | ND      |   | 1000       |
| Trichloroethene             | ND      |   | 1000       |
| Tetrachloroethene           | ND      |   | 1000       |

-----

QUALIFIERS: C = COMMENT            ND = NOT DETECTED  
 J = ESTIHATED VALUE        B = ALSO PRESENT IN BLANK  
 L = PRESENT BELOW STATED DETECTION LIHIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAHE : PNC PURGABLES- GC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00134

MATRIX : SOLID

SAHPLE ID CLIENT: P13S004A

| PARAMETER<br>-----          | RESULTS<br>----- | Q<br>- | DET. LIHIT<br>----- |
|-----------------------------|------------------|--------|---------------------|
| Benzene                     | No               |        | 1000                |
| Toluene                     | ND               |        | 1000                |
| Ethylbenzene                | ND               |        | 1000                |
| Total Xylenes               | ND               |        | 1000                |
| 1,2 - Dichlorobenzene       | ND               |        | 1000                |
| 1,3 - Dichlorobenzene       | No               |        | 1000                |
| 1,4 - Dichlorobenzene       | ND               |        | 1000                |
| 1,1 - dichloroethene        | ND               |        | 1000                |
| Methylene Chloride          | 5300             |        | 1000                |
| Trans-1,2, - Dichloroethcnc | ND               |        | 1000                |
| 1,1 - dichloroethane        | ND               |        | 1000                |
| 1,1,1 - Trichloroethane     | ND               |        | 1000                |
| 1,2 - Dichloroethane        | ND               |        | 1000                |
| Trichloroethcne             | ND               |        | 1000                |
| Tetrachloroethene           | ND               |        | 1000                |

-----  
 QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
               J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
               L = PRESENT BELOW STATED DETECTION LIMIT

0000474

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PURGABLES- GC UNITS : UG/KG

SAMPLE ID LAB : EE-91-00135 MATRIX : SOLID

SAMPLE ID CLIENT: P13S004B

| <u>PARAMETER</u>            | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|-----------------------------|----------------|----------|-------------------|
| Benzene                     | ND             |          | 1000              |
| Toluene                     | ND             |          | 1000              |
| Ethylbenzene                | ND             |          | 1000              |
| Total Xylenes               | ND             |          | 1000              |
| 1,2 - Dichlorobenzene       | ND             |          | 1000              |
| 1,3 - Dichlorobenzene       | ND             |          | 1000              |
| 1,4 - Dichlorobenzene       | ND             |          | 1000              |
| 1,1 - dichloroethene        | ND             |          | 1000              |
| Methylene Chloride          | 3900           |          | 1000              |
| Trans-1,2, - Dichloroethene | ND             |          | 1000              |
| 1,1 - dichloroethane        | ND             |          | 1000              |
| 1,1,1 - Trichloroethane     | ND             |          | 1000              |
| 1,2 - Dichloroethane        | ND             |          | 1000              |
| Trichloroethane             | ND             |          | 1000              |
| Tetrachloroethane           | ND             |          | 1000              |

-----

QUALIFIERS: C = COMMENT                      ND = NOT DETECTED  
 J = ESTIMATED VALUE                      B = ALSO PRESENT IN BLANK  
 L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E  
RESULTS IN WET VEIGHT

TEST NAME : PNC PURGABLES- GC UNITS : UG/KG  
SAHPLE ID LAB : EE-91-00136 MATRIX : SOLID  
SAMPLE ID CLIENT: P13S005A

| <u>PARAMETER</u>            | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|-----------------------------|----------------|----------|-------------------|
| Benzene                     | ND             |          | 1000              |
| Toluene                     | ND             |          | 1000              |
| Ethylbenzene                | ND             |          | 1000              |
| Total Xylenes               | ND             |          | 1000              |
| 1,2 - Dichlorobenzene       | ND             |          | 1000              |
| 1,3 - Dichlorobenzene       | ND             |          | 1000              |
| 1,4 - Dichlorobenzene       | ND             |          | 1000              |
| 1,1 - dichloroethene        | ND             |          | 1000              |
| Methylene Chloride          | 3700           |          | 1000              |
| Trans-1,2, - Dichloroethene | ND             |          | 1000              |
| 1,1 - dichloroethane        | ND             |          | 1000              |
| 1,1,1 - Trichloroethane     | ND             |          | 1000              |
| 1,2 - Dichloroethane        | ND             |          | 1000              |
| Trichloroethene             | ND             |          | 1000              |
| Tetrachloroethene           | ND             |          | 1000              |

-----  
**QUALIFIERS:** C = COMMENT                      ND = NOT DETECTED  
 J = ESTIMATED VALUE                      B = ALSO PRESENT IN BLANK  
 L = PRESENT BELOW STATED DETECTION LIMIT

0000475

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN .VET VEIGHT

TEST NAME : PNC PURGABLES- GC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00137

MATRIX : SOLID

SAMPLE ID CLIENT: P13S005B

| <u>PARAMETER</u>            | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|-----------------------------|----------------|----------|-------------------|
| -----                       | -----          | -        | -----             |
| Benzene                     | ND             |          | 1000              |
| Toluene                     | ND             |          | 1000              |
| Ethylbenzene                | ND             |          | 1000              |
| Total Xylenes               | ND             |          | 1000              |
| 1,2 - Dichlorobenzene       | ND             |          | 1000              |
| 1,3 - Dichlorobenzene       | ND             |          | 1000              |
| 1,4 - Dichlorobenzene       | ND             |          | 1000              |
| 1,1 - dichloroethene        | ND             |          | 1000              |
| Methylene Chloride          | 3300           |          | 1000              |
| Trans-1,2, - Dichloroethene | ND             |          | 1000              |
| 1,1 - dichloroethane        | ND             |          | 1000              |
| 1,1,1 - Trichloroethane     | ND             |          | 1000              |
| 1,Z - Dichloroethane        | ND             |          | 1000              |
| Trichloroethene             | ND             |          | 1000              |
| Tetrachloroethene           | ND             |          | 1000              |

-----

QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
               J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
               L = PRESENT BELOW STATED DETECTION LIMIT

QUALITY CONTROL FOR ACCURACY: PERCENT  
RECOVERY OF SURROGATE SPIKES

9100.026

---

| Compound | E & E<br>Laboratory<br>No. 91- | Percent<br>Recovery |
|----------|--------------------------------|---------------------|
| TFT      | 115                            | 90                  |
|          | 116                            | 94                  |
|          | 117                            | 101                 |
|          | 118                            | 89                  |
|          | 119                            | 98                  |
|          | 120                            | 96                  |
|          | 121                            | 81                  |
|          | 122                            | 88                  |
|          | 123                            | 79                  |
|          | 124                            | 81                  |
|          | 125                            | 78                  |
|          | 126                            | 69                  |
|          | 127                            | 82                  |
|          | 128                            | 81                  |
|          | 129                            | 68                  |
|          | 130                            | 68                  |
|          | 131                            | 80                  |
|          | 132                            | 88                  |
|          | 133                            | 90                  |
|          | 134                            | 104                 |
|          | 1-15                           | 88                  |
|          | 136                            | 99                  |
|          | 137                            | 97                  |
|          | 138                            | 89                  |
|          | 139                            | 94                  |
|          | 140                            | 91                  |
|          | 141                            | 85                  |
|          | Method Blank                   | 100                 |

---

0000476

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E  
RESULTS IN-WET WEIGHT

TEST NAHE : PNC PURGABLES- GC UNITS : UG/KG  
SAMPLE ID LAB : HETHOD BLANK 1 MATRIX : SOLID

| PARAMETER                          | RESULTS   | Q | DET. LIHIT |
|------------------------------------|-----------|---|------------|
| -----                              | -----     | - | -----      |
| - -                                |           |   |            |
| Benzene                            | ND        |   | 1000       |
| <b>Toluene</b>                     | ND        |   | 1000       |
| Ethylbenzene                       | ND        |   | 1000       |
| Total Xylenes                      | ND        |   | 1000       |
| 1,2 - Dichlorobenzene              | NO        |   | 1000       |
| 1,3 - Dichlorobenzene              | <b>ND</b> |   | 1000       |
| 1,4 - Dichlorobenzene              | ND        |   | 1000       |
| I,1 - dichloroethene               | ND        |   | 1000       |
| Hethylene Chloride                 | ND        |   | 1000       |
| <b>Trans-1,2, - Dichloroethene</b> | ND        |   | 1000       |
| 1,1 - dichloroethane               | ND        |   | 1000       |
| 1,1,1 - Trichloroethane            | ND        |   | 1000       |
| 1,2 - Dichloroethane               | ND        |   | 1000       |
| Trichloroethene                    | ND        |   | 1000       |
| <b>Tetrachloroethene</b>           | ND        |   | 1000       |

-----  
**QUALIFIERS:** C = COMMENT                    ND = NOT DETECTED  
                   J = ESTIMATED VALUE            B = ALSO PRESENT IN BLANK  
                   L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PUASE I GROUPS A-E

RESULTS IN VET WEIGHT

TEST NAME : PNC PURGABLES- CC

UNITS : UG/KG

SAHPLE ID LAB : METHOD BLANK 2

HATRIX : SOLID

| <u>PARAMETER</u>            | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|-----------------------------|----------------|----------|-------------------|
| Benzene                     | ND             |          | 1000              |
| Toluene                     | ND             |          | 1000              |
| Ethylbenzene                | ND             |          | 1000              |
| Total Xylenes               | ND             |          | 1000              |
| 1,2 - Dichlorobenzene       | ND             |          | 1000              |
| 1,3 - Dichlorobenzene       | ND             |          | 1000              |
| 1,4 - Dichlorobenzene       | ND             |          | 1000              |
| 1,1 - dichloroethane        | ND             |          | 1000              |
| Methylene Chloride          | 12000          |          | 1000              |
| Trans-1,2. - Dichloroethene | ND             |          | 1000              |
| 1,1 - dichloroethane        | ND             |          | 1000              |
| 1,1,1 - Trichloroethane     | ND             |          | 1000              |
| 1,2 - Dichloroethane        | ND             |          | 1000              |
| Trichloroethene             | ND             |          | 1000              |
| Tetrachloroethene           | ND             |          | 1000              |

-----  
 QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
               J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
               L = PRESENT BELOW STATED DETECTION LIMIT

0000477

**ecology and environment, inc.**  
**'QUALITY ASSURANCE PROTOCOL REVIEW'**

Job No.: 9100.038 *of* Date: 1/18/91  
 Report Title: \_\_\_\_\_  
 Client: Leasco

| Laboratory Data Review | Supervisor | Date           |
|------------------------|------------|----------------|
| <u>Metals</u>          | <u>EW</u>  | <u>1-18-91</u> |
| <u>Gen. Chem.</u>      | <u>JP</u>  | <u>1-18-91</u> |
| <u>EC</u>              | <u>EW</u>  | <u>1-18-91</u> |
| <u>GC/MS</u>           |            |                |
| <u>Micro, Asbestos</u> |            |                |
| <u>Other</u>           |            |                |

|   | Signature | Date           |
|---|-----------|----------------|
| Report Written by:  | <u>B</u>  | <u>1/18/91</u> |
| 1st Draft Reviewed by:  |           |                |
| 2nd Draft Reviewed by: (If needed)  |           |                |
| Final Review by Author:   |           |                |
| ASC Manager:  | <u>JK</u> | <u>1/25/91</u> |
| QA Officer:   | <u>JK</u> | <u>1-24-91</u> |
| Corp. Project Manager:<br>(Internal Job) <i>J. Barkdale review, and return to ASC</i> |           |                |
| All QA Protocol Review Forms<br>Signed and in File<br>(to be signed by report writer) |           |                |
| <u>1</u> Copies of Report Sent to Client via <i>J. Barkdale</i>                       | <u>JK</u> | <u>1/25/91</u> |
| <u>1</u> Invoices Sent to Accounting  | <u>JK</u> | <u>1/25/91</u> |

Comments/Notes: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Distribution: White - Report to Project File; Canary - Project Manager; 407064  
 Pink - Project file.

M E M O R A N D U M

TO : John Barksdale  
FROM: Gary Hahn  
DATE: January 18, 1991  
SUBJECT: UH-6000 Pensacola Report  
REF : 9100.038  
CC: Lab File

Attached is the laboratory report of the analysis conducted on seven samples received at the Analytical Services Center on January 9, 1991. Analysis was performed according to the screening procedures set forth in "Generic Quality Assurance Project Plan, Contamination Assessments and Remedial Activities, Naval Air Station Pensacola, Pensacola, Florida," July 1990.

All samples on which this report is based will be retained by E 6 E for a period of 30 days from the date of this report, unless otherwise instructed by the client. If additional storage of samples is requested by the client, a storage fee of \$1.00 per sample container per month will be charged for each sample, with such charges accruing until destruction of the samples is authorized by the client.

GH:tms  
enclosure

0000478



Ecology and Environment, Inc.  
SAMPLE TRACKING REPORT

| LAB<br>SAMPLE<br>ID | CLIENT<br>SAMPLE<br>ID | TEST<br>CODE | DATE<br>SAMPLED | DATE<br>EXTRACTED | DATE<br>ANALYZED |
|---------------------|------------------------|--------------|-----------------|-------------------|------------------|
| 355.01              | P13-S002A              | SPNPRGL      | 01/08/91        |                   | 01/09/91         |
| 355.02              | P13-S002A              | SPNTPH1      | 01/08/91        |                   | 01/10/91         |
| 355.03              | P13-S002A              | SPNMET1      | 01/08/91        |                   | 01/10/91         |
|                     |                        | SPNP&P1      | 01/08/91        |                   | 01/10/91         |
|                     |                        | SPNPAEI      | 01/08/91        |                   | 01/17/91         |
|                     |                        | SPNPELL      | 01/08/91        |                   | 01/17/91         |
| 356.01              | P13-S002A DUP          | SPNPRGL      | 01/08/91        |                   | 01/09/91         |
| 356.02              | P13-S002A DUP          | SPNTPH1      | 01/08/91        |                   | 01/10/91         |
| 356.03              | P13-S002A DUP          | SPNMET1      | 01/08/91        |                   | 01/10/91         |
|                     |                        | SPNPLPI      | 01/08/91        |                   | 01/10/91         |
|                     |                        | SPNPAH1      | 01/08/91        |                   | 01/17/91         |
|                     |                        | SPNPHL1      | 01/08/91        |                   | 01/17/91         |
| 357.01              | P13-S011A              | SPNPRGL      | 01/07/91        |                   | 01/09/91         |
| 357.02              | P13-S011A              | SPNTPH1      | 01/07/91        |                   | 01/10/91         |
| 357.03              | P13-S011A              | SPNMET1      | 01/07/91        |                   | 01/10/91         |
|                     |                        | SPNPLPI      | 01/07/91        |                   | 01/10/31         |
|                     |                        | SPNPAH1      | 01/07/91        |                   | 01/17/91         |
|                     |                        | SPNPHL1      | 01/07/91        |                   | 01/17/91         |
| 358.01              | P13-S014A              | SPNPRGL      | 01/07/91        |                   | 01/09/91         |
| 358.02              | P13-S014A              | SPNTPH1      | 01/07/91        |                   | 01/10/91         |
| 358.03              | P13-S014A              | SPNMET1      | 01/07/91        |                   | 01/10/91         |
|                     |                        | SPNP&P1      | 01/07/91        |                   | 01/10/91         |
|                     |                        | SPNPAH1      | 01/07/91        |                   | 01/17/91         |
|                     |                        | SPNPELL      | 01/07/91        |                   | 01/17/91         |
| 359.01              | P13-S015A              | SPNPRGL      | 01/07/91        |                   | 01/09/91         |
| 359.02              | P13-S015A              | SPNTPH1      | 01/07/91        |                   | 01/10/91         |
| 359.03              | P13-S015A              | SPNMET1      | 01/07/91        |                   | 01/10/91         |
|                     |                        | SPNP&P1      | 01/07/91        |                   | 01/10/91         |
|                     |                        | SPNPAH1      | 01/07/91        |                   | 01/17/91         |
|                     |                        | SPNPELL      | 01/07/91        |                   | 01/17/91         |
| 360.01              | P13-S015B              | SPNPRGL      | 01/07/91        |                   | 01/09/91         |
| 360.02              | P13-S015B              | SPNTPH1      | 01/07/91        |                   | 01/10/91         |
| 360.03              | P13-S015B              | SPNMET1      | 01/07/91        |                   | 01/10/91         |
|                     |                        | SPNP&P1      | 01/07/91        |                   | 01/10/91         |
|                     |                        | SPNPAH1      | 01/07/91        |                   | 01/17/91         |
|                     |                        | SPNPHL1      | 01/07/91        |                   | 01/17/91         |
| 361.01              | P13-S016A              | SPNPRGL      | 01/07/91        |                   | 01/10/91         |
| 361.02              | P13-S016A              | SPNTPH1      | 01/07/91        |                   | 01/10/91         |
| 361.03              | P13-S016A              | SPNMET1      | 01/07/91        |                   | 01/10/91         |
|                     |                        | SPNPLPI      | 01/07/91        |                   | 01/10/91         |
|                     |                        | SPNPAH1      | 01/07/91        |                   | 01/17/91         |
|                     |                        | SPNPELL      | 01/07/91        |                   | 01/17/91         |

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E  
TEST NAME : PNC TRPH UNITS : MG/KG  
PARAMETER : TRPH

| SAMPLE ID                    | RESULTS | Q | DET. LIMIT |
|------------------------------|---------|---|------------|
| EE-91-00355<br>P13-S002A     | 31      | - | 5.0        |
| EE-91-00356<br>P13-S002A DUP | 26      | - | 5.0        |
| EE-91-00357<br>P13-S011A     | 17      | - | 5.0        |
| EE-91-00358<br>P13-S014A     | 19      | - | 5.0        |
| EE-91-00359<br>P13-S015A     | 19      | - | 5.0        |
| EE-91-00360<br>P13-S015B     | 26      | - | 5.0        |
| EE-91-00361<br>P13-S016A     | 20      | - | 5.0        |

QUALIFIERS: C = COMMENT ND = NOT DETECTED  
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
L = PRESENT BELOW STATED DETECTION LIMIT  
NA = NOT APPLICABLE

Ecology and Environment, Inc.  
 Analytical Services Center

CLIENT : UH-6000 NASP PEASE I GROUPS A-E

RESULTS IN VET WEIGHT

SAMPLE ID LAB : EE-91-00355

UATRIX: SOLID

SAMPLE ID CLIENT: P13-S002A

| <u>PARAMETER</u> | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> | <u>UNITS</u> |
|------------------|----------------|----------|-------------------|--------------|
| Arsenic          | ND             |          | 6.9               | MG/KG        |
| Chromium         | ND             |          | 1.0               | MG/KG        |
| Zinc             | ND             |          | 2.0               | MG/KG        |
| Lead             | ND             |          | 4.0               | MG/KG        |
| Cadmium          | ND             |          | 0.50              | MG/KG        |
| Nickel           | ND             |          | 4.0               | MG/KG        |
| Copper           | ND             |          | 2.5               | MG/KG        |
| Silver           | ND             |          | 1.0               | MG/KG        |

-----  
**QUALIFIERS: C = COMMENT                      ND = NOT DETECTED**  
**J = ESTIMATED VALUE                      B = ALSO PRESENT IN BLANK**  
**L = PRESENT BELOW STATED DETECTION LIMIT**

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN-WET WEIGHT

SAMPLE ID LAB : EE-91-00356

MATRIX: SOLID

SAMPLE ID CLIENT: P13-5002A DUP

| <u>PARAMETER</u> | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> | <u>UNITS</u> |
|------------------|----------------|----------|-------------------|--------------|
| Arsenic          | ND             |          | 6.9               | MG/KG        |
| Chromium         | ND             |          | 1.0               | MG/KG        |
| Zinc             | 2.0            |          | 2.0               | MG/KG        |
| Lead             | 12             |          | 4.0               | MG/KG        |
| Cadmium          | 0.92           |          | 0.50              | MG/KG        |
| Nickel           | ND             |          | 4.0               | MG/KG        |
| Copper           | ND             |          | 2.5               | MG/KG        |
| Silver           | ND             |          | 1.0               | MG/KG        |

QUALIFIERS: C = COMMENT                      ND = NOT DETECTED  
 J = ESTIMATED VALUE                      B = ALSO PRESENT IN BLANK  
 L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PRASE I GROUPS A-E

RESULTS IN WET WEIGHT

SAMPLE ID LAB : EE-91-00357

MATRIX: SOLID

SAMPLE ID CLIENT: P13-S011A

| PARAHETER | RESULTS | Q | DET. LIMIT | UNITS |
|-----------|---------|---|------------|-------|
| Arsenic   | ND      |   | 6.9        | MG/KG |
| Chromium  | ND      |   | 1.0        | MG/KG |
| Zinc      | 3.1     |   | 2.0        | MG/KG |
| Lead      | ND      |   | 4.0        | MG/KG |
| Cadmium   | ND      |   | 0.50       | MG/KG |
| Nickel    | ND      |   | 4.0        | MG/KG |
| Copper    | ND      |   | 2.5        | MG/KG |
| Silver    | ND      |   | 1.0        | MG/KG |

-----  
 QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
               J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
               L = PRESENT BELOW STATED DETECTION LIMIT

0000481

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN VET WEIGHT

SAMPLE ID LAB : EE-91-00358

MATRIX: SOLID

SAMPLE ID CLIENT: P13-S014A

| PARAMETER<br>----- | RESULTS<br>----- | Q<br>- | DET. LIMIT<br>----- | UNITS<br>----- |
|--------------------|------------------|--------|---------------------|----------------|
| Arsenic            | ND               |        | 6.9                 | MG/KG          |
| Chromium           | ND               |        | 1.0                 | MG/KG          |
| Zinc               | ND               |        | 2.0                 | MG/KG          |
| Lead               | 4.5              |        | 4.0                 | MG/KG          |
| Cadmium            | ND               |        | 0.50                | MG/KG          |
| Nickel             | ND               |        | 4.0                 | MG/KG          |
| Copper             | ND               |        | 2.5                 | MG/KG          |
| Silver             | ND               |        | 1.0                 | MG/KG          |

.....  
QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
              J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : WH-6000 NASP PHASE I GROUPS A-E

RESULTS IN VET WEIGHT

SAMPLE ID LAB : EE-91-00359

MATRIX: SOLID

SAMPLE ID CLIENT: P13-S015A

| PARAMETER | RESULTS | Q | DET. LIHIT | UNITS |
|-----------|---------|---|------------|-------|
| Arsenic   | ND      |   | 6.9        | MG/KG |
| Chromium  | 1.6     |   | 1.0        | MG/KG |
| Zinc      | ND      |   | 2.0        | MG/KG |
| Lead      | 4.2     |   | 4.0        | MG/KG |
| Cadmium   | ND      |   | 0.50       | MG/KG |
| Nickel    | ND      |   | 4.0        | MG/KG |
| Copper    | ND      |   | 2.5        | MG/KG |
| Silver    | ND      |   | 1.0        | MG/KG |

-----  
QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
              J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

0000482

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

SAMPLE ID LAB : EE-91-00360

MATRIX: SOLID

SAMPLE ID CLIENT: P13-S015B

| <u>PARAMETER</u> | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> | <u>UNITS</u> |
|------------------|----------------|----------|-------------------|--------------|
| Arsenic          | ND             |          | 6.9               | MG/KG        |
| Chromium         | ND             |          | 1.0               | MG/KG        |
| Zinc             | ND             |          | 2.0               | MG/KG        |
| Lead             | ND             |          | 4.0               | MG/KG        |
| Cadmium          | ND             |          | 0.50              | MG/KG        |
| Nickel           | ND             |          | 4.0               | MG/KG        |
| Copper           | ND             |          | 2.5               | MG/KG        |
| Silver           | ND             |          | 1.0               | MG/KG        |

-----  
QUALIFIERS: C = COMMENT                      ND = NOT DETECTED  
              J = ESTIMATED VALUE            B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PMSE I GROUPS A-E

RESULTS IN VET WEIGHT

SAMPLE ID LAB : EE-91-00361

MATRIX: SOLID

SAMPLE ID CLIENT: P13-S016A

| <u>PARAMETER</u> | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> | <u>UNITS</u> |
|------------------|----------------|----------|-------------------|--------------|
| Arsenic          | ND             |          | 6.9               | MG/KG        |
| Chromium         | 1.5            |          | 1.0               | MG/KG        |
| Zinc             | ND             |          | 2.0               | MG/KG        |
| Lead             | ND             |          | 4.0               | MG/KG        |
| Cadmium          | ND             |          | 0.50              | MG/KG        |
| Nickel           | ND             |          | 4.0               | MG/KG        |
| Copper           | ND             |          | 2.5               | MG/KG        |
| Silver           | ND             |          | 1.0               | MG/KG        |

-----  
QUALIFIERS: C = COMMENT                      ND = NOT DETECTED  
              J = **ESTIMATED** VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

0000483

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

SAMPLE ID LAB : METHOD BLANK

MATRIX: SOLID

| <u>PARAMETER</u> | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> | <u>UNITS</u> |
|------------------|----------------|----------|-------------------|--------------|
| Arsenic          | ND             |          | 6.9               | MG/KG        |
| Chromium         | ND             |          | 1.0               | MG/KG        |
| Zinc             | ND             |          | 2.0               | MG/KG        |
| Lead             | ND             |          | 4.0               | MG/KG        |
| Cadmium          | ND             |          | 0.50              | MG/KG        |
| Nickel           | ND             |          | 4.0               | MG/KG        |
| Copper           | ND             |          | 2.5               | MG/KG        |
| Silver           | ND             |          | 1.0               | MG/KG        |

-----  
QUALIFIERS: C = COMMENT

ND = NOT DETECTED

J = ESTIHATED VALUE

B = ALSO PRESENT IN BLANK

L = PRESENT BELOW STATED DETECTION LIHIT

TEST CODE : SPNP&P1

JOB NUMBER : 9100.038

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E  
RESULTS IN WET WEIGHT  
TEST NAME : PNC PEST./PCB  
SAMPLE ID LAB : EE-91-00355  
SAMPLE ID CLIENT: P13-S002A

UNITS : UG/KG  
MATRIX : SOLID

| PARAMETER            | RESULTS | Q | DET. LIMIT |
|----------------------|---------|---|------------|
| Eeptachlor           | ND      |   | 1000       |
| Lindane              | ND      |   | 1000       |
| Aldrin               | ND      |   | 1000       |
| 4,4 - DDT            | ND      |   | 1000       |
| Dieldrin / 4,4 - DDE | ND      |   | 1000       |
| Endrin               | ND      |   | 1000       |
| Chlordane            | ND      |   | 1000       |
| Total PCBS           | ND      |   | 5000       |

QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
J = ESTIMATED VALUE                    B = ALSO PRESENT IN BLANK  
L = PRESENT BELOW STATED DETECTION LIMIT

0000484

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PEST./PCB

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00357

MATRIX : SOLID

SAMPLE ID CLIENT: P13-S011A

| <u>PARAMETER</u>     | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|----------------------|----------------|----------|-------------------|
| Heptachlor           | ND             | -        | 1000              |
| Lindane              | ND             | -        | 1000              |
| Aldrin               | ND             | -        | 1000              |
| 4,4 - DDT            | ND             | -        | 1000              |
| Dieldrin / 4,4 - DDE | ND             | -        | 1000              |
| Endrin               | ND             | -        | 1000              |
| Chlordane            | ND             | -        | 1000              |
| Total PCBS           | ND             | -        | 5000              |

.....  
QUALIFIERS: C = COMMENT                   ND = NOT DETECTED  
              J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PEST./PCB

UNITS : UG/KG

SAHPLE ID LAB : EE-91-00358

MATRIX : SOLID

SAMPLE ID CLIENT: P13-S014A

| PARAMETER            | RESULTS | Q | DE". LIHIT |
|----------------------|---------|---|------------|
| -----                | -----   | - | -----      |
| Heptachlor           | ND      |   | 1000       |
| Lindane              | ND      |   | 1000       |
| Aldrin               | ND      |   | 1000       |
| 4,4 - DDT            | ND      |   | 1000       |
| Dieldrin / 4,4 - DDE | ND      |   | 1000       |
| Endrin               | ND      |   | 1000       |
| Chlordanc            | ND      |   | 1000       |
| Total PCBS           | ND      |   | 5000       |

-----  
QUALIFIERS: C = COMMENT

ND = NOT DETECTED

J = ESTIMATED VALUE

B = ALSO PRESENT IN BLANK

L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PEST./PCB

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00361

MATRIX : SOLID

SAMPLE ID CLIENT: P13-S016A

| PARAMETER            | RESULTS | Q | DET. LIMIT |
|----------------------|---------|---|------------|
| Heptachlor           | ND      | - | 1000       |
| Lindane              | ND      |   | 1000       |
| Aldrin               | ND      |   | 1000       |
| 4,4 - DDT            | ND      |   | 1000       |
| Dieldrin / 4,4 - DDE | ND      |   | 1000       |
| Endrin               | ND      |   | 1000       |
| Chlordane            | ND      |   | 1000       |
| Total PCBS           | ND      |   | 5000       |

-----  
QUALIFIERS: C = COMMENT            ND = NOT DETECTED  
              J = ESTIMATED VALUE    B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

QUALITY CONTROL FOR ACCURACY AND PRECISION:  
PERCENT RECOVERY AND RELATIVE PERCENT DIFFERENCE (RPD)  
OF SOIL MATRIX SPIKE (MS) FOR PENSACOLA SCREENING  
(Sample # 00355)

9100.038

---

(ug/kg)

---

| Compound      | Original<br>Result | Amount<br>Added | Amount<br>Determined | Percent<br>Recovery |
|---------------|--------------------|-----------------|----------------------|---------------------|
|               |                    | IS              | IS                   | IS                  |
| Arochlor 1254 | ND                 | 25000           | 27500                | 110                 |

---

0000486

TEST CODE :SPNP&P1

JOB NUMBER :9100.038

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PEST./PCB

UNITS : UG/KG

SAMPLE ID LAB : METHOD BLANK

MATRIX : SOLID

| <u>PARAMETER</u>     | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|----------------------|----------------|----------|-------------------|
| Heptachlor           | ND             | -        | 1000              |
| Lindane              | ND             |          | 1000              |
| Aldrin               | ND             |          | 1000              |
| 494 - DDT            | ND             |          | 1000              |
| Dieldrin / 494 - DDE | ND             |          | 1000              |
| Endrin               | ND             |          | 1000              |
| Chlordane            | ND             |          | 1000              |
| Total PCBs           | ND             |          | 5000              |

.....

QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
              J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

TEST CODE : SPNPAH1

JOB NUMBER : 9100.038

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN VET WEIGHT

TEST NAME : PNC PAH - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00355

MATRIX : SOLID

SAMPLE ID CLIENT: P13-S002A

| <u>PARAMETER</u>        | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|-------------------------|----------------|----------|-------------------|
| Total as Benzo-a-pyrene | 1600           | -        | 1000              |

-----  
QUALIFIERS: C = COMMENT

ND = NOT DETECTED

J = ESTIMATED VALUE

B = ALSO PRESENT IN BLANK

L = PRESENT BELOW STATED DETECTION LIMIT

0000487

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PAH - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00356

MATRIX : SOLID

SAMPLE ID CLIENT: P13-S002A DUP

| PARAMETER               | RESULTS | Q | DET. LIMIT |
|-------------------------|---------|---|------------|
| -----                   | -----   | - | -----      |
| Total as Benzo-a-pyrene | 2200    |   | 1000       |

.....  
QUALIFIERS: C = COMMENT

ND = NOT DETECTED

J = ESTIMATED VALUE

B = ALSO PRESENT IN BLANK

L = PRESENT BELOW STATED DETECTION LIMIT

TEST CODE :SPNPAH1

JOB NUMBER :9100.038

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UM-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PAH - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00357

MATRIX : SOLID

SAMPLE ID CLIENT: P13-S011A

| <u>PARAMETER</u>        | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|-------------------------|----------------|----------|-------------------|
| Total as Benzo-a-pyrene | ND             | -        | 1000              |

-----  
QUALIFIERS: C = COMMENT            ND = NOT DETECTED  
              J = ESTIMATED VALUE    B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

0000488

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UM-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PAH - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00358

MATRIX : SOLID

SAMPLE ID CLIENT: P13-S014A

| <u>PARAMETER</u>        | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|-------------------------|----------------|----------|-------------------|
| Total as Benzo-a-pyrene | ND             |          | 1000              |

.....  
QUALIFIERS: C \* COMMENT

ND = NOT DETECTED

J \* ESTIMATED VALUE

B = ALSO PRESENT IN BLANK

L \* PRESENT **BELOW** STATED DETECTION LIMIT

TEST CODE : SPNPAH1

JOB NUMBER : 9100.038

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PAE - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00359

MATRIX : SOLID

SAHPLE ID CLIENT: P13-S015A

| <u>PARAMETER</u>        | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|-------------------------|----------------|----------|-------------------|
| Total as Benzo-a-pyrene | ND             | -        | 1000              |

-----  
QUALIFIERS: C = COMMENT

ND = NOT DETECTED

J = ESTIMATED VALUE

B = ALSO PRESENT IN BLANK

L = PRESENT BELOW STATED DETECTION LIMIT

0000489

Ecology and Environment, Inc.  
Analytical Services Center

**CLIENT : UH-6000 NASP PHASE I GROUPS A-E**

RESULTS IN WET WEIGHT

TEST NAME : PNC PAH - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00360

MATRIX : SOLID

SAMPLE ID CLIENT: P13-S0158

| <u>PARAMETER</u>               | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|--------------------------------|----------------|----------|-------------------|
| <b>Total as Benzo-a-pyrene</b> | <b>ND</b>      | <b>-</b> | <b>1000</b>       |

-----  
QUALIFIERS: C = COMMENT

ND = NOT DETECTED

J = ESTIMATED VALUE

B = ALSO PRESENT IN BLANK

L = PRESENT BELOW STATED DETECTION LIMIT

TEST CODE :SPNPAH1

JOB NUMBER :9100.038

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PAH - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00361

MATRIX : SOLID

SAMPLE ID CLIENT: P13-S016A

| PARAMETER               | RESULTS | Q | DET. LIMIT |
|-------------------------|---------|---|------------|
| -----                   | -----   | - | -----      |
| Total as Benzo-a-pyrene | ND      |   | 1000       |

-----  
QUALIFIERS: C = COMMENT           ND = NOT DETECTED  
          J = ESTIMATED VALUE    B = ALSO PRESENT IN BLANK  
          L = PRESENT BELOW STATED DETECTION LIMIT

0000400

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PHENOL - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00355

MATRIX : SOLID

SAMPLE ID CLIENT: P13-S002A

| <u>PARAMETER</u>                | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|---------------------------------|----------------|----------|-------------------|
| Total <b>as</b> Trichlorophenol | ND             | -        | 2000              |

-----  
QUALIFIERS: C = COMMENT                      ND = NOT DETECTED  
              J = ESTIMATED VALUE          B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

TEST CODE :SPNPHL1

JOB NUHBER :9100.038

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PHENOL - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00356

MATRIX : SOLID

SAMPLE ID CLIENT: P13-S002A DUP

| <u>PARAMETER</u>         | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|--------------------------|----------------|----------|-------------------|
| Total as Trichlorophenol | ND             | -        | 2000              |

-----  
QUALIFIERS: C = COMMENT            ND = NOT DETECTED  
              J = ESTIMATED VALUE    B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

0000491

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PHENOL - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00357

MATRIX : SOLID

SAMPLE ID CLIENT: P13-S011A

| <u>PARAMETER</u>         | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|--------------------------|----------------|----------|-------------------|
| Total as Trichlorophenol | ND             | -        | 2000              |

-----  
QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
              J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIHIT

TEST CODE :SPNPHL1

JOB NUMBER :9100.038

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN VET WEIGHT

TEST NME : PNC PHENOL - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00358

MATRIX : SOLID

SAMPLE ID CLIENT: P13-S014A

| PARAMETER                | RESULTS | Q | DET. LIMIT |
|--------------------------|---------|---|------------|
| -----                    | -----   | - | -----      |
| Total as Trichlorophenol | ND      |   | 2000       |

QUALIFIERS: C = COMMENT ND = NOT DETECTED  
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
L = PRESENT BELOW STATED DETECTION LIMIT

0000482

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UR-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PHENOL - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00359

MATRIX : SOLID

SAMPLE ID CLIENT: P13-S015A

| PARAMETER                | RESULTS | Q | DET. LIMIT |
|--------------------------|---------|---|------------|
| Total as Trichlorophenol | ND      | - | 2000       |

-----  
QUALIFIERS: C = COMMENT            ND = NOT DETECTED  
              J = ESTIMATED VALUE    B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

TEST CODE : SPNPHL1

JOB NUMBER : 9100.038

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN VET WEIGHT

TEST NAME : PNC PHENOL - LC

UNITS : UG/KG

SAHPLE ID LAB : EE-91-00360

MATRIX : SOLID

SAMPLE ID CLIENT: P13-S015B

| <u>PARAMETER</u>         | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|--------------------------|----------------|----------|-------------------|
| Total as Trichlorophenol | ND             | -        | 2000              |

-----  
QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
              J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

0000490

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PHENOL - LC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00361

MATRIX : SOLID

SAMPLE ID CLIENT: P13-S016A

| <u>PARAMETER</u>         | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|--------------------------|----------------|----------|-------------------|
| Total as Trichlorophenol | ND             | -        | 2000              |

.....  
QUALIFIERS: C : COMMENT                   ND : NOT DETECTED  
              J : ESTIMATED VALUE        B : ALSO PRESENT IN BLANK  
              L : PRESENT BELOW STATED DETECTION LIMIT

TEST CODE :SPNPHL1

JOB NUMBER :9100.038

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E  
RESULTS IN VET WEIGHT

TEST NAME : PNC PHENOL - LC  
SAMPLE ID LAB : HETHOD BLANK

UNITS : UG/KG  
MATRIX : SOLID

| <u>PARAMETER</u>         | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|--------------------------|----------------|----------|-------------------|
| Total as Trichlorophenol | ND             | -        | 2000              |

-----  
QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
              J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

0000404

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET VEIGHT

TEST NAME : PNC PURGABLES- GC UNITS : UG/KG  
SAMPLE ID LAB : EE-91-00355 MATRIX : SOLID  
SAMPLE ID CLIENT: P13-S002A

| <u>PARAMETER</u>            | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|-----------------------------|----------------|----------|-------------------|
| Benzene                     | UD             |          | 1000              |
| Toluene                     | ND             |          | 1000              |
| Ethylbenzene                | ND             |          | 1000              |
| Total Xylenes               | ND             |          | 1000              |
| 1,2 - Dichlorobenzene       | ND             |          | 1000              |
| 1,3 - Dichlorobenzene       | ND             |          | 1000              |
| 1,4 - Dichlorobenzene       | ND             |          | 1000              |
| 1,1 - dichloroethene        | ND             |          | 1000              |
| Hethylene Chloride          | 12000          | B        | 1000              |
| Trans-1,2, - Dichloroethene | ND             |          | 1000              |
| 1,1 - dichloroethane        | ND             |          | 1000              |
| 1,1,1 - Trichloroethane     | ND             |          | 1000              |
| 1,2 - Dichloroethane        | ND             |          | 1000              |
| Trichloroethene             | ND             |          | 1000              |
| Tetrachloroethene           | ND             |          | 1000              |

.....  
 QUALIFIERS: C = COMMENT ND = NOT DETECTED  
 J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
 L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UM-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PURGABLES- GC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00356

MATRIX : SOLID

SAHPLE ID CLIENT: P13-S002A DUP

| <u>PARAMETER</u>            | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIHIT</u> |
|-----------------------------|----------------|----------|-------------------|
| Benzene                     | ND             |          | 1000              |
| Toluene                     | ND             |          | 1000              |
| Ethylbenzene                | ND             |          | 1000              |
| Total Xylenes               | ND             |          | 1000              |
| 1,2 - Dichlorobenzene       | ND             |          | 1000              |
| 1,3 - Dichlorobenzene       | ND             |          | 1000              |
| 1,4 - Dichlorobenzene       | ND             |          | 1000              |
| 1,1 - dichloroethenc        | ND             |          | 1000              |
| Hethylene Chloride          | 4300           | B        | 1000              |
| Trans-1,2, - Dichloroethcne | ND             |          | 1000              |
| 1,1 - dichloroethane        | ND             |          | 1000              |
| 1,1,1 - Trichloroethanc     | ND             |          | 1000              |
| 1,2 - Dichloroethane        | ND             |          | 1000              |
| Trichloroethene             | ND             |          | 1000              |
| Tctrachloroethcne           | ND             |          | 1000              |

-----

QUALIFIERS: C = COMMENT            ND = NOT DETECTED  
 J = ESTIMATED VALUE            B = ALSO PRESENT IN BLANK  
 L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E  
RESULTS IN WET WEIGHT  
TEST NAME : PNC PURGABLES- GC  
SAMPLE ID LAB : EE-91-00357  
SAMPLE ID CLIENT: P13-S011A

UNITS : UG/KG  
MATRIX : SOLID

| PARAMETER                   | RESULTS | Q | DET. LIMIT |
|-----------------------------|---------|---|------------|
| -----                       | -----   | - | -----      |
| Benzene                     | ND      |   | 1000       |
| Toluene                     | ND      |   | 1000       |
| Ethylbenzene                | ND      |   | 1000       |
| Total Xylenes               | ND      |   | 1000       |
| 1,2 - Dichlorobenzene       | ND      |   | 1000       |
| 1,3 - Dichlorobenzene       | ND      |   | 1000       |
| 1,4 - Dichlorobenzene       | ND      |   | 1000       |
| 1,1 - dichloroethene        | ND      |   | 1000       |
| Methylene Chloride          | 4300    | B | 1000       |
| Trans-1,2, - Dichloroethene | ND      |   | 1000       |
| 1,1 - dichloroethane        | ND      |   | 1000       |
| 1,1,1 - Trichloroethane     | ND      |   | 1000       |
| 1,2 - Dichloroethane        | ND      |   | 1000       |
| Trichloroethene             | ND      |   | 1000       |
| Tetrachloroethene           | ND      |   | 1000       |

-----

QUALIFIERS: C = COMMENT                   ND = NOT DETECTED  
              J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

## RESULTS IN WET WEIGHT

TEST NAME : PNC PURGABLES- GC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00358

MATRIX : SOLID

SAMPLE ID CLIENT: P13-S014A

| <u>PARAMETER</u>            | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|-----------------------------|----------------|----------|-------------------|
| Benzene                     | ND             |          | 1000              |
| Toluene                     | ND             |          | 1000              |
| Ethylbenzene                | ND             |          | 1000              |
| Total Xylenes               | ND             |          | 1000              |
| 1,2 - Dichlorobenzene       | ND             |          | 1000              |
| 1,3 - Dichlorobenzene       | ND             |          | 1000              |
| 1,4 - Dichlorobenzene       | ND             |          | 1000              |
| 1,1 - dichloroethene        | ND             |          | 1000              |
| Methylene Chloride          | ND             |          | 1000              |
| Trans-1,2, - Dichloroethene | ND             |          | 1000              |
| 1,1 - dichloroethane        | ND             |          | 1000              |
| 1,1,1 - Trichloroethane     | ND             |          | 1000              |
| 1,2 - Dichloroethane        | ND             |          | 1000              |
| Trichloroethene             | ND             |          | 1000              |
| Tetrachloroethene           | ND             |          | 1000              |

-----  
**QUALIFIERS: C = COMMENT**                      **ND = NOT DETECTED**  
**J = ESTIMATED VALUE**                      **B = ALSO PRESENT IN BLANK**  
**L = PRESENT BELOW STATED DETECTION LIMIT**

0000496

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E

RESULTS IN WET WEIGHT

TEST NAME : PNC PURGABLES- GC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00359

MATRIX : SOLID

SAMPLE ID CLIENT: P13-S015A

| PARAMETER<br>-----          | RESULTS<br>----- | Q<br>- | DET. LIMIT<br>----- |
|-----------------------------|------------------|--------|---------------------|
| Benzene                     | ND               |        | 1000                |
| Toluene                     | ND               |        | 1000                |
| Ethylbenzene                | ND               |        | 1000                |
| Total Xylenes               | ND               |        | 1000                |
| 1,2 - Dichlorobenzene       | ND               |        | 1000                |
| 1,3 - Dichlorobenzene       | ND               |        | 1000                |
| 1,4 - Dichlorobenzene       | ND               |        | 1000                |
| 1,1 - dichloroethene        | ND               |        | 1000                |
| Methylene Chloride          | ND               |        | 1000                |
| Trans-1,2, - Dichloroethene | ND               |        | 1000                |
| 1,1 - dichloroethane        | ND               |        | 1000                |
| 1,1,1 - Trichloroethane     | ND               |        | 1000                |
| 1,2 - Dichloroethane        | ND               |        | 1000                |
| Trichloroethene             | ND               |        | 1000                |
| Tetrachloroethene           | ND               |        | 1000                |

.....  
 QUALIFIERS: C = COMMENT                   ND = NOT DETECTED  
               J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
               L = PRESENT BELOW STATED DETECTION LIMIT

TEST CODE : SPNPRG1

JOB NUMBER : 9100.038

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PEASE I GROUPS A-E

RESULTS IN WEI WEIGHT

TEST NAME : PNC PURGABLES- GC

UNITS : UG/KG

SAMPLE ID LAB : EE-91-00360

MATRIX : SOLID

SAHPLE ID CLIENT: P13-S015B

| PARAMETER                   | RESULTS | Q | DET. LIMIT |
|-----------------------------|---------|---|------------|
| Benzene                     | ND      |   | 1000       |
| Toluene                     | ND      |   | 1000       |
| Ethylbenzene                | ND      |   | 1000       |
| Total Xylenes               | ND      |   | 1000       |
| 1,2 - Dichlorobenzene       | ND      |   | 1000       |
| 1,3 - Dichlorobenzene       | ND      |   | 1000       |
| 1,4 - Dichlorobenzene       | ND      |   | 1000       |
| 1,1 - dichloroethene        | ND      |   | 1000       |
| Methylene Chloride          | ND      |   | 1000       |
| Trans-1.2, - Dichloroethenc | ND      |   | 1000       |
| 1,1 - dichloroethane        | ND      |   | 1000       |
| 1,1,1 - Trichloroethane     | ND      |   | 1000       |
| 1,2 - Dichloroethanc        | ND      |   | 1000       |
| Trichloroethenc             | ND      |   | 1000       |
| Tetrachloroethene           | ND      |   | 1000       |

-----  
QUALIFIERS: C = COMMENT                      ND = NOT DETECTED  
              J = ESTIMATED VALUE            B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

0000487

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E  
RESULTS IN WET WEIGHT

TEST NAME : PNC PURGABLES- GC UNITS : UG/KG  
SAMPLE ID LAB : EE-91-00361 MATRIX : SOLID  
SAMPLE ID CLIENT: P13-S016A

| PARAMETER<br>-----          | RESULTS<br>----- | Q<br>- | DET. LIMIT<br>----- |
|-----------------------------|------------------|--------|---------------------|
| Benzene                     | ND               |        | 1000                |
| Toluene                     | ND               |        | 1000                |
| Ethylbenzene                | ND               |        | 1000                |
| Total Xylenes               | ND               |        | 1000                |
| 1,2 - Dichlorobenzene       | ND               |        | 1000                |
| 1,3 - Dichlorobenzene       | ND               |        | 1000                |
| 1,4 - Dichlorobenzene       | ND               |        | 1000                |
| 1,1 - dichloroethene        | ND               |        | 1000                |
| Methylene Chloride          | ID               |        | 1000                |
| Trans-1,2, - Dichloroethene | ND               |        | 1000                |
| 1,1 - dichloroethane        | ND               |        | 1000                |
| 1,1,1 - Trichloroethane     | ND               |        | 1000                |
| 1,2 - Dichloroethane        | ND               |        | 1000                |
| Trichloroethcne             | ND               |        | 1000                |
| Tetrachloroethene           | ND               |        | 1000                |

.....  
 QUALIFIERS: C = COMMENT ND = NOT DETECTED  
 J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
 L = PRESENT BELOW STATED DETECTION LIMIT

QUALITY CONTROL FOR ACCURACY: PERCENT  
RECOVERY OF SURROGATE SPIKES

9100.038

---

| Compound | E & E<br>Laboratory<br>No. 91- | Percent<br>Recovery |
|----------|--------------------------------|---------------------|
| TFT      | 355                            | 86                  |
|          | 356                            | 89                  |
|          | 357                            | 89                  |
|          | 358                            | 82                  |
|          | 359                            | 85                  |
|          | 360                            | 81                  |
|          | 361                            | 85                  |

---

0000498

Ecology and Environment , Inc .  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E  
RESULTS IN WET WEIGHT

TEST NAME : PNC PURGABLES- GC UNITS : UG/KG  
SAMPLE ID LAB : METHOD BLANK MATRIX : SOLID

| PARAMETER                   | RESULTS | Q | DET. LIMIT |
|-----------------------------|---------|---|------------|
| -----                       | -----   | - | -----      |
| Benzene                     | ND      |   | 1000       |
| Toluene                     | ND      |   | 1000       |
| Ethylbenzene                | ND      |   | 1000       |
| Total Xylenes               | ND      |   | 1000       |
| 1,2 - Dichlorobenzene       | ND      |   | 1000       |
| 1,3 - Dichlorobenzene       | ND      |   | 1000       |
| 1,4 - Dichlorobenzene       | ND      |   | 1000       |
| 1,1 - dichloroethene        | ND      |   | 1000       |
| Methylene Chloride          | 2000    |   | 1000       |
| Trans-1,2, - Dichloroethene | ND      |   | 1000       |
| 1,1 - dichloroethane        | ND      |   | 1000       |
| 1,1,1 - Trichloroethane     | ND      |   | 1000       |
| 1,2 - Dichloroethane        | ND      |   | 1000       |
| Trichloroethene             | ND      |   | 1000       |
| Tetrachloroethene           | ND      |   | 1000       |

.....  
QUALIFIERS: C = COMMENT ND = NOT DETECTED  
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
L = PRESENT BELOW STATED DETECTION LIHIT

APPENDIX E

TEMPORARY MONITORING WELL, SOIL BORING,  
AND LITHOLOGIC INFORMATION

SOIL BORING/TEMPORARY MONITORING WELL INFORMATION

- 1) Site no.: 13
- 2) Boring no./Well no.: P13B001
- 3) Drilling firm: Thomason Drilling Service
- 4) Drilling method: SSA
- 5) Date drilled/installed: 01/04/91
- 6) Geologist: M. Grecu
- 7) Depth of boring (BLS): 5.0
- 8) Depth to water in borehole (BLS): 5.0
- 9) Highest open-borehole OVA/HnU reading (ppm): 0
- 10) Depth of well (BLS): NA
- 11) Length of well screen: NA
- 12) Length of casing (BLS): NA
- 13) Aprox. height of casing above land surface: NA
- 14) Depth to water in well (BTOC): NA
- 15) Elevation of TOC: NA
- 16) Water level elevation: NA
- 17) Date groundwater sampled: / /
- 18) pH (units): NA
- 19) Temperature (degrees C): NA
- 20) Specific conductance (umhos/cm): NA
- 21) Borehole/Well abandonment method:
- 22) Comments:

---

BOREHOLE LITHOLOGIC LOG

| Sample<br>Depth (BLS) | Sample<br>Description  |
|-----------------------|--|
| 0-5                   | <b>Sand, white coarse grained, speckled throughout interval is zircon or tourmaline.</b> |

---

Notes: All depths, lengths, heights, and elevations are measured in feet. All boreholes are 4 inches in diameter. All well casings and screens are 2-inch-diameter; well screen slot sizes are .010 inches. No annular material (i.e. filter pack, seal or grout) was used in well installation. Unless otherwise noted, all sand grains are quartz.

|                        |                            |
|------------------------|----------------------------|
| NA = not applicable    | BLS = below land surface   |
| SSA = solid stem auger | TOC = top of casing        |
| EA = hand auger        | BTOC = below top of casing |

**SOIL BORING/TEMPORARY MONITORING WELL INFORMATION**

- 1) Site no.: 13
- 2) Boring no./Well no. : P13B002/P13TW002
- 3) Drilling firm: Thomason Drilling Service
- 4) Drilling method: SSA and EA
- 5) Date drilled/installed: 01/08/91
- 6) Geologist: M. Grecu
- 7) Depth of boring (BLS): 5.0
- 8) Depth to water in borehole (ELS): 5.0
- 9) Highest open-borehole OVA/HnU reading (ppm): 0
- 10) Depth of well (BLS): 8.35
- 11) Length of well screen: 5
- 12) Length of casing (BLS): 3.25
- 13) Aprox. height of casing above land surface: 1.75
- 14) Depth to water in well (BTWC): 5.96
- 15) Elevation of TOC: 6.74
- 16) Water level fluctuation: 0.78
- 17) Date groundwater sampled: 01/09/91
- 18) pH (units): 7.30
- 19) Temperature (degrees C): 20.0
- 20) Specific conductance (umhos/cm): 112
- 21) Borehole/Well abandonment method: Backfilled with cuttings.
- 22) Comments:

**BOREHOLE LITHOLOGIC LOG**

| Sample<br>Depth (BLS) | Sample<br>Description   |
|-----------------------|---|
| 0-2                   | Sand, tan, coarse grained, minor amount of shale fragments, interval is speckled with zircon, mica, and tourmaline. |
| 2-3                   | Sand, light tan, coarse grained, large amounts of shell fragments.  |
| 3-4                   | Sand, light tan, coarse grained, huge amounts of shell fragments.   |
| 4-4.5                 | Sand, white, coarse grained, large amounts of shell fragments.  |

Notes: All depths, lengths, heights, and elevations are measured in feet. All boreholes are 4 inches in diameter. All well casings and screens are 2-inch-diameter; well screen slot sizes are .010 inches. No annular material (i.e. filter pack, seal or grout) was used in well installation. Unless otherwise noted, all sand grains are quartz.

NA = not applicable  
 SSA = solid stem auger  
 EA = hand auger

BLS = below land surface  
 TOC = top of casing  
 BTWC = below top of casing

0000502

SOIL BORING/TEMPORARY MONITORING WELL INFORMATION

- 1) Site no.: 13
- 2) Boring no./Well no.: P13B003
- 3) Drilling firm: Thomason Drilling Service
- 4) Drilling method: SSA
- 5) Date drilled/installed: 01/04/91
- 6) Geologist: M. Grecu
- 7) Depth of boring (BLS): 5.0
- 8) Depth to water in borehole (BLS): 5.0
- 9) Highest open-borehole OVA/HnU reading (ppm): 0
- 10) Depth of well (BLS): NA
- 11) Length of well screen: NA
- 12) Length of casing (BLS): NA
- 13) Aprox. height of casing above land surface: NA
- 14) Depth to water in well (BTOC): NA
- 15) Elevation of TOC: NA
- 16) Water level elevation: NA
- 17) Date groundwater sampled: / /
- 18) pH (units): NA
- 19) Temperature (degrees C): NA
- 20) Specific conductance (umhos/cm): NA
- 21) Borehole/Well abandonment method:
- 22) comments:

BOREHOLE LITHOLOGIC LOG

| Sample<br>Depth (BLS) | Sample<br>Description   |
|-----------------------|---|
| 0-1                   | Sand, light tan to dark, coarse grained, minor shale lag < 5%.    |
| 1-5                   | Sand, light gray, coarse grained, minor amount of shale lag, <5%. |

Notes: All depths, lengths, heights, and elevations are measured in feet. All boreholes are 4 inches in diameter. All well casings and screens are 2-inch-diameter; well screen slot sizes are .010 inches. No annular material (i.e. filter pack, seal or grout) was used in well installation. Unless otherwise noted, all sand grains are quartz.

|                        |                            |
|------------------------|----------------------------|
| NA = not applicable    | BLS = below land surface   |
| SSA = solid stem auger | TOC = top of casing        |
| HA = hand auger        | BTOC = below top of casing |

SOIL BORING/TEMPORARY MONITORING WELL INFORMATION

- 1) Site no.: 13
- 2) Boring no./Well no. : P13B004
- 3) Drilling firm: Thomason Drilling Service
- 4) Drilling method: SSA
- 5) Date drilled/installed: 01/03/91
- 6) Geologist: B. Caldwell
- 7) Depth of boring (BLS): 9.0
- 8) Depth to water in borehole (ELS): 9.0
- 9) Highest open-borehole OVA/HnU reading (ppm): 2
- 10) Depth of well (ELS): NA
- 11) Length of well screen: NA
- 12) Length of casing (ELS): NA
- 13) Aprox. height of casing above land surface: NA
- 14) Depth to water in well (BTOC): NA
- 15) Elevation of TOC: NA
- 16) Water level elevation: NA
- 17) Date groundwater sampled: / /
- 18) pH (units): NA
- 19) Temperature (degrees C): NA
- 20) Specific conductance (umhos/cm): NA
- 21) Borehole/Well abandonment method:
- 22) Comments:

---

BOREHOLE LITHOLOGIC LOG

| Sample<br>Depth (BLS) | Sample<br>Description                       |
|-----------------------|---|
| 0-1.5                 | Clayey sand, black, fine grained.           |
| 1.5-4.5               | Clayey sand, red, medium grained.           |
| 4.5-5                 | Clayey sand, white to red, coarse grained.  |
| 5-10                  | Sand, white, coarse to very coarse grained. |

Notes: All depths, lengths, heights, and elevations are measured in feet. All boreholes are 4 inches in diameter. 5/8" well casings and screens are 2-inch-diameter; well screen slot sizes are .010 inches. No annular material (i.e. filter pack, seal or grout) was used in well installation. Unless otherwise noted, all sand grains are quartz.

NA = not applicable  
 SSA = solid stem auger  
 EA = hand auger

BLS = below land surface  
 TOC = top of casing  
 BTOC = below top of casing

0000503

SOIL BORING/TEMPORARY MONITORING WELL INFORMATION

- 1) Site no.: 13
- 2) Boring no./Well no.: P13B005
- 3) Drilling firm: Thomason Drilling Service
- 4) Drilling method: SSA
- 5) Date drilled/installed: 01/03/91
- 6) Geologist: B. Caldwell
- 7) Depth of boring (BLS): 10.0
- 8) Depth to water in borehole (BLS): 9.0
- 9) Highest open-borehole OVA/HnU reading (ppm): 0
- 10) Depth of well (BLS): NA
- 11) Length of well screen: NA
- 12) Length of casing (BLS): NA
- 13) Aprox. height of casing above land surface: NA
- 14) Depth to water in well (BTOC): NA
- 15) Elevation of TOC: NA
- 16) Water level elevation: NA
- 17) Date groundwater sampled: / /
- 18) pH (units): NA
- 19) Temperature (degrees C): NA
- 20) Specific conductance (umhos/cm): NA
- 21) Borehole/Well abandonment method:
- 22) Comments:

---

BOREHOLE LITHOLOGIC LOG

| Sample<br>Depth (BLS) | Sample<br>Description                       |
|-----------------------|---|
| 0-5                   | Clayey sand, red to orange, medium grained. |
| 5-10                  | Sand, white, coarse grained.                |

Notes: All depths, lengths, heights, and elevations are measured in feet. All boreholes are 4 inches in diameter. All well casings and screens are 2-inch-diameter; well screen slot sizes are .010 inches. No annular material (i.e. filter pack, seal or grout) was used in well installation. Unless otherwise noted, all sand grains are quartz.

NA = not applicable  
 SSA = solid stem auger  
 HA = hand auger

BLS = below land surface  
 TOC = top of casing  
 BTOC = below top of casing

SOIL BORING/TEMPORARY MONITORING WELL INFORMATION

- 1) Site no.: 13
- 2) Boring no./Well no.: P13B006
- 3) Drilling firm: Thomason Drilling Service
- 4) Drilling method: SSA
- 5) Date drilled/installed: 01/04/91
- 6) Geologist: H. Grecu
- 7) Depth of boring (BLS): 6.0
- 8) Depth to water in borehole (BLS): 6.0
- 9) Highest open-borehole OVA/HnU reading (ppm): 0
- 10) Depth of well (BLS): NA
- 11) Length of well screen: NA
- 12) Length of casing (BLS): NA
- 13) Approx. height of casing above land surface: NA
- 14) Depth to water in well (BTOC): NA
- 15) Elevation of TOC: NA
- 16) Water level elevation: NA
- 17) Date groundwater sampled: / /
- 18) pH (units): NA
- 19) Temperature (degrees C): NA
- 20) Specific conductance (umhos/cm): NA
- 21) Borehole/Well abandonment method:
- 22) Comments:

BOREHOLE LITHOLOGIC LOG

| Sample Depth (BLS) | Sample Description  |
|--------------------|---|
| 6-0.5              | Sand, light brown, medium grained.  |
| 0.5-1.8            | Sand, light brown, medium grained, large accumulation of shale lag, >75%. |
| 1.8-5              | Sand, white, coarse grained, minor amount of shale lag <10%.              |
| 5-7.4              | Sand, white, coarse grained.  |

Notes: All depths, lengths, heights, and elevations are measured in feet. All boreholes are 4 inches in diameter. All well casings and screens are 2-inch-diameter; well screen slot sizes are .010 inches. No annular material (i.e. filter pack, seal or grout) was used in well installation. Unless otherwise noted, all sand grains are quartz.

NA = not applicable  
 SSA = solid stem auger  
 HA = hand auger

BLS = below land surface  
 TOC = top of casing  
 BTOC = below top of wing

0000504

SOIL BORING/TEMPORARY MONITORING WELL INFORMATION

- 1) Site no.: 13 -
- 2) Boring no./Well no. : P13B007/P13TW007
- 3) Drilling firm: Thomason Drilling Service
- 4) Drilling method: SSA
- 5) Date drilled/installed: 01/08/91
- 6) Geologist: H. Grecu
- 7) Depth of boring (BLS): 6.5
- 8) Depth to water in borehole (BLS): 6.5
- 9) Highest open-borehole OVA/HnU reading (ppm) : 0
- 10) Depth of well (BLS): 9.88
- 11) Length of well screen: 5
- 12) Length of casing (BLS): 4.88
- 13) Approx. height of casing above land surface: 5.12
- 14) Depth to water in well (BTOC): 9.98
- 15) Elevation of TOC: 10.57
- 16) Water level elevation: 0.59
- 17) Date groundwater sampled: 01/09/91
- 18) pH (units): 6.11
- 19) Temperature (degrees C) : 20.0
- 20) Specific conductance (umhos/cm): 1100
- 21) Borehole/Well abandonment method: Backfilled with cuttings.
- 22) Comments :

---

BOREHOLE LITHOLOGIC LOG

| Sample<br>Depth (BLS) | Sample<br>Description        |
|-----------------------|------------------------------|
| 0-5                   | Sand, white, coarse grained. |
| 5-6.5                 | Sand, white, coarse grained. |

---

Notes: All depths, lengths, heights, and elevations are measured in feet. All boreholes are 4 inches in diameter. All well casings and screens are 2-inch-diameter; well screen slot sizes are .010 inches. No annular material (i.e. filter pack, seal or grout) was used in well installation. Unless otherwise noted, all sand grains are quartz.

NA = not applicable  
 SSA = solid stem auger  
 HA = hand auger

BLS = below land surface  
 TOC = top of casing  
 BTOC = below top of casing

**SOIL BORING/TEMPORARY MONITORING WELL INFORMATION**

- 1) Site no.: 13
- 2) Boring no./Well no.: P13B008
- 3) Drilling firm: Thomason Drilling Service
- 4) Drilling method: SSA
- 5) Date drilled/installed: 01/04/91
- 6) Geologist: M. Grecu
- 7) Depth of boring (ELS): 5.0
- 8) Depth to water in borehole (ELS): 5.0
- 9) Highest open-borehole OVA/EnU reading (ppm): 0
- 10) Depth of well (BLS): NA
- 11) Length of well screen: NA
- 12) Length of casing (BLS): NA
- 13) Approx. height of casing above land surface: NA
- 14) Depth to water in well (BTOC): NA
- 15) Elevation of TOC: NA
- 16) Water level elevation: NA
- 17) Date groundwater sampled: / /
- 18) pH (units): NA
- 19) Temperature (degrees C): NA
- 20) Specific conductance (umhos/cm): NA
- 21) Borehole/Well abandonment method:
- 22) Comments:

**BOREHOLE LITHOLOGIC LOG**

| Sample<br>Depth (BLS) | Sample<br>Description                     |
|-----------------------|---|
| 0-5                   | Sand, light tan to white, coarse grained. |

Notes: All depths, lengths, heights, and elevations are measured in feet. All boreholes are 4 inches in diameter. All well casings and screens are 2-inch-diameter; well screen slot sizes are .010 inches. No annular material (i.e. filter pack, seal or grout) was used in well installation. Unless otherwise noted, all sand grains are quartz.

NA = not applicable  
 SSA = solid stem auger  
 EA = hand auger

BLS = below land surface  
 TOC = top of casing  
 BTOC = below top of casing

0000505

SOIL BORING/TEMPORARY MONITORING WELL INFORMATION

- 1) Site no.: 13
- 2) Boring no./Well no.: P13B009
- 3) Drilling firm: Thomason Drilling Service
- 4) Drilling method: SSA
- 5) Date drilled/installed: 01/04/91
- 6) Geologist: M. Grecu
- 7) Depth of boring (BLS): 5.0
- 8) Depth to water in borehole (BLS): 5.0
- 9) Highest open-borehole OVA/HnU reading (ppm): 10
- 10) Depth of well (BLS) : NA
- 11) Length of well screen: NA
- 12) Length of casing (BLS): NA
- 13) Aprox. height of casing above land surface: NA
- 14) Depth to water in well (BTOC): NA
- 15) Elevation of TOC: NA
- 16) Water level elevation: NA
- 17) Date groundwater sampled: / /
- 18) pH (units): NA
- 19) Temperature (degrees C): NA
- 20) Specific conductance (umhos/cm): NA
- 21) Borehole/Well abandonment method:
- 22) Comments:

---

BOREHOLE LITHOLOGIC LOG

| Sample<br>Depth (BLS) | Sample<br>Description  |
|-----------------------|--|
| 0-5                   | Sand, white to slightly gray, coarse grained. Hydrogen sulfide odor. |

---

Notes: All depths, lengths, heights, and elevations are measured in feet. All boreholes are 4 inches in diameter. All well casings and screens are 2-inch-diameter; well screen slot sizes are .010 inches. No annular material (i.e. filter pack, seal or grout) was used in well installation. Unless otherwise noted, all sand grains are quartz.

NA = not applicable  
 SSA = solid stem auger  
 HA = hand auger

BLS = below land surface  
 TOC = top of casing  
 BTOC = below top of casing

SOIL BORING/TEMPORARY MONITORING WELL INFORMATION

- 1) Site no.: 13
- 2) Boring no./Well no.: P13B010
- 3) Drilling firm: Thomason Drilling Service
- 4) Drilling method: SSA
- 5) Date drilled/installed: 01/04/91
- 6) Geologist: M. Grecu
- 7) Depth of boring (BLS): 5.0
- 8) Depth to water in borehole (BLS): 5.0
- 9) Highest open-borehole OVA/HnU reading (ppm): 0.8
- 10) Depth of well (BLS): NA
- 11) Length of well screen: NA
- 12) Length of casing (BLS): NA
- 13) Aprox. height of casing above land surface: NA
- 14) Depth to water in well (BTOC): NA
- 15) Elevation of TOC: NA
- 16) Water level elevation: NA
- 17) Date groundwater sampled: / /
- 18) pH (units): NA
- 19) Temperature (degrees C): NA
- 20) Specific conductance (umhos/cm): NA
- 21) Borehole/Well abandonment method:
- 22) Comments:

BOREHOLE LITHOLOGIC LOG

| Sample<br>Depth (BLS) | Sample<br>Description        |
|-----------------------|------------------------------|
| 0-5                   | Sand, white, coarse grained. |

Notes: All depths, lengths, heights, and elevations are measured in feet. All boreholes are 4 inches in diameter. All well casings and screens are 2-inch diameter; well screen slot sizes are .010 inches. No annular material (i.e. filter pack, seal or grout) was used in well installation. Unless otherwise noted, all sand grains are quartz.

|                        |                            |
|------------------------|----------------------------|
| NA = not applicable    | BLS = below land surface   |
| SSA = solid stem auger | TOC = top of casing        |
| HA = hand auger        | BTOC = below top of casing |

0000506

SOIL BORING/TEMPORARY MONITORING WELL INFORMATION

- 1) Site no.: 13
- 2) Boring no./Well no.: P13B011/P13TW011
- 3) Drilling firm: Thomason Drilling Service
- 4) Drilling method: SSA
- 5) Date drilled/installed: 01/07/91
- 6) Geologist: M. Grecu
- 7) Depth of boring (BLS): 5.0
- 8) Depth to water in borehole (BLS): 5.0
- 9) Highest open-borehole OVA/HnU reading (ppm): 0
- 10) Depth of well (BLS): 8.28
- 11) Length of well screen: 5
- 12) Length of casing (BLS): 3.28
- 13) Aprox. height of casing above land surface: 1.72
- 14) Depth to water in well (BTOC): 6.03
- 15) Elevation of TOC: 6.39
- 16) Water level elevation: 0.36
- 17) Date groundwater sampled: 01/09/91
- 18) pH (units): 4.12
- 19) Temperature (degrees C): 19.0
- 20) Specific conductance (umhos/cm): 76
- 21) Borehole/Well abandonment method: Backfilled with cuttings.
- 22) Comments:

BOREHOLE LITHOLOGIC LOG

| Sample<br>Depth (BLS) | Sample<br>Description  |
|-----------------------|--|
| 0-5                   | Sand, light gray to white, coarse grained, minor amount of organic material present. |

Notes: All depths, lengths, heights, and elevations are measured in feet. All boreholes are 4 inches in diameter. All well casings and screens are 2-inch-diameter; well screen slot sizes are .010 inches. No annular material (i.e. filter pack, seal or grout) was used in well installation. Unless otherwise noted, all sand grains are quartz.

NA = not applicable  
 SSA = solid stem auger  
 HA = hand auger

BLS = below land surface  
 TOC = top of casing  
 BTOC = below top of casing

SOIL BORING/TEMPORARY MONITORING WELL INFORMATION

- 1) Site no.: 13
- 2) Boring no./Well no. : P13B012
- 3) Drilling firm: Thomason Drilling Service
- 4) Drilling method: SSA
- 5) Date drilled/installed: 01/04/91
- 6) Geologist: M. Grecu
- 7) Depth of boring (BLS): 9.5
- 8) Depth to water in borehole (BLS): 9.5
- 9) Highest open-borehole OVA/HnU reading (ppm): 0
- 10) Depth of well (BLS): NA
- 11) Length of well screen: NA
- 12) Length of casing (BLS): NA
- 13) Aprox. height of casing above land surface. NA
- 14) Depth to water in well (BTOC): NA
- 15) Elevation of TOC: NA
- 16) Water level elevation: NA
- 17) Date groundwater sampled: / /
- 18) pH (units): NA
- 19) Temperature (degrees C): NA
- 20) Specific conductance (umhos/cm): NA
- 21) Borehole/Well abandonment method:
- 22) Comments:

**BOREHOLE LITHOLOGIC LOG**

| Sample<br>Depth (BLS) | Sample<br>Description   |
|-----------------------|---|
| 0-5                   | Sand, light tan to white, coarse grained.                                 |
| 5-9.5                 | Sand, light gray to white, coarse grained. Hydrogen sulfide odor present. |

Notes: All depths, lengths, heights, and elevations are measured in feet. All boreholes are 4 inches in diameter. All well casings and screens are 2-inch-diameter; well screen slot sizes are .010 inches. No annular material (i.e. filter pack, seal or grout) was used in well installation. Unless otherwise noted, all sand grains are quartz.

NA = not applicable  
 SSA = solid stem auger  
 EA = hand auger

BLS = below land surface  
 TOC = top of casing  
 BTOC = below top of casing

0000507

SOIL BORING/TEMPORARY MONITORING WELL INFORMATION

- 1) Site no.: 13
- 2) Boring no./Well no.: P13B013
- 3) Drilling firm: Thomason Drilling Service
- 4) Drilling method: SSA
- 5) Date drilled/installed: 01/04/91
- 6) Geologist: M. Grecu
- 7) Depth of boring (BLS): 8.5
- 8) Depth to water in borehole (BLS): 8.5
- 9) Highest open-borehole OVA/HnU reading (ppm): 0
- 10) Depth of well (BLS): NA
- 11) Length of well screen: NA
- 12) Length of casing (BLS): NA
- 13) Aprox. height of casing above land surface: NA
- 14) Depth to water in well (BTOC): NA
- 15) Elevation of TOC: NA
- 16) Water level elevation: NA
- 17) Date groundwater sampled: / /
- 18) pH (units): NA
- 19) Temperature (degrees C): NA
- 20) Specific conductance (umhos/cm): NA
- 21) Borehole/Well abandonment method:
- 22) Comments:

---

BOREHOLE LITHOLOGIC LOG

| Sample<br>Depth (BLS) | Sample<br>Description                                |
|-----------------------|--|
| 0-5                   | Sand, light gray to white, medium to coarse grained. |
| 5-8.5                 | Sand, white, coarse grained.                         |

Notes: All depths, lengths, heights, and elevations are measured in feet. All boreholes are 4 inches in diameter. All well casings and screens are 2-inch-diameter; well screen slot sizes are .010 inches. No annular material (i.e. filter pack, seal or grout) was used in well installation. Unless otherwise noted, all sand grains are quartz.

NA = not applicable  
 SSA = solid stem auger  
 EA = handauger

BLS = below land surface  
 TOC = top of casing  
 BTOC = below top of casing

SOIL BORING/TEMPORARY MONITORING WELL INFORMATION

- 1) Site no.: 13
- 2) Boring no./Well no. : P13B014
- 3) Drilling firm: Thomason Drilling Service
- 4) Drilling method: SSA
- 5) Date drilled/installed: 01/07/91
- 6) Geologist: M. Grecu
- 7) Depth of boring (BLS): 5.0
- 8) Depth to water in borehole (BLS): 5.0
- 9) Highest open-borehole OVA/HnU reading (ppm): 0
- 10) Depth of well (BLS): NA
- 11) Length of well screen: NA
- 12) Length of casing (BLS): NA
- 13) Approx. height of casing above land surface: NA
- 14) Depth to water in well (BTOC): NA
- 15) Elevation of TOC: NA
- 16) Water level elevation: NA
- 17) Date groundwater sampled: / /
- 18) pH (units): NA
- 19) Temperature (degrees C): NA
- 20) Specific conductance (umhos/cm): NA
- 21) Borehole/Well abandonment method:
- 22) Comments:

---

BOREHOLE LITEOLOGIC LOG

| Sample<br>Depth (BLS) | Sample<br>Description   |
|-----------------------|---|
| 0-5                   | Sand, white, coarse grained, speckled throughout interval is tourmaline and zircon. |

Notes: All depths, lengths, heights, and elevations are measured in feet. All boreholes are 4 inches in diameter. All well casings and screens are 2-inch-diameter; well screen slot sizes are .010 inches. No annular material (i.e. filter pack, seal or grout) was used in well installation. Unless otherwise noted, all sand grains are quartz.

NA = not applicable  
 SSA = solid stem auger  
 HA = hand auger

BLS = below land surface  
 TOC = top of casing  
 BTOC = below top of casing

0000508

SOIL BORING/TEMPORARY MONITORING WELL INFORMATION

- 1) Site no.: 13
- 2) Boring no./Well no. : P13B015
- 3) Drilling firm: Thomason Drilling Service
- 4) Drilling method: SSA
- 5) Date drilled/installed: 01/07/91
- 6) Geologist: M. Grecu
- 7) Depth of boring (BLS): 6.0
- 8) Depth to water in borehole (BLS): 6.0
- 9) Highest open-borehole OVA/HnU reading (ppm): 0
- 10) Depth of well (BLS): NA
- 11) Length of well screen: NA
- 12) Length of casing (BLS): NA
- 13) Aprox. height of casing above land surface: NA
- 14) Depth to water in well (BTOC): NA
- 15) Elevation of TOC: NA
- 16) Water level elevation: NA
- 17) Date groundwater sampled: / /
- 18) pH (units): NA
- 19) Temperature (degrees C): NA
- 20) Specific conductance (umhos/cm): NA
- 21) Borehole/Well abandonment method:
- 22) Comments:

---

BOREHOLE LITHOLOGIC LOG

| Sample<br>Depth (BLS) | Sample<br>Description            |
|-----------------------|----------------------------------|
| 0-5                   | Sand, light tan, coarse grained. |
| 5-6                   | Sand, white, coarse grained.     |

Notes: All depths, lengths, heights, and elevations are measured in feet. All boreholes are 4 inches in diameter. All well casings and screens are 2-inch-diameter; well screen slot sizes are .010 inches. No annular material (i.e. filter pack, seal or grout) was used in well installation. Unless otherwise noted, all sand grains are quartz.

NA = not applicable  
 SSA = solid stem auger  
 HA = hand auger

BLS = below land surface  
 TOC = top of casing  
 BTOC = below top of casing

SOIL BORING/TEMPORARY MONITORING WELL INFORMATION

- 1) Site no.: 13
- 2) Boring no./Well no.: P13B016/P13TW016
- 3) Drilling firm: Thomason Drilling Service
- 4) Drilling method: SSA
- 5) Date drilled/installed: 01/07/91
- 6) Geologist: M. Grecu
- 7) Depth of boring (ELS): 5.0
- 8) Depth to water in borehole (ELS): 5.0
- 9) Highest open-borehole OVA/HnU reading (ppm): 0
- 10) Depth of well (ELS): 7.91
- 11) Length of well screen: 5
- 12) Length of casing (BLS): 2.91
- 13) Aprox. height of casing above land surface: 2.09
- 14) Depth to water in well (BTOC): 5.84
- 15) Elevation of TOC: 6.03
- 16) Water level elevation: 0.19
- 17) Date groundwater sampled: 01/09/91
- 18) pH (units): 6.50
- 19) Temperature (degrees C): 19.0
- 20) Specific conductance (umhos/cm): 1600
- 21) Borehole/Well abandonment method: Backfilled with cuttings.
- 22) Comments:

BOREHOLE LITHOLOGIC LOG

| Sample<br>Depth (BLS) | Sample<br>Description                          |
|-----------------------|--|
| 0-3                   | Sand, light tan to light gray, coarse grained. |
| 3-5                   | Sand, white, coarse grained.                   |

Notes: All depths, lengths, heights, and elevations are measured in feet. All boreholes are 4 inches in diameter. All well casings and screens are 2-inch diameter; well screen slot sizes are .010 inches. No annular material (i.e. filter pack, seal or grout) was used in well installation. Unless otherwise noted, all sand grains are quartz.

NA = not applicable  
 SSA = solid stem auger  
 HA = hand auger

BLS = below land surface  
 TOC = top of casing  
 BTOC = below top of casing

0000500

APPENDIX F  
GROUNDWATER SAMPLING ANALYTICAL SCREENING RESULTS

**ecology and environment, inc.**  
**QUALITY ASSURANCE PROTOCOL REVIEW**

Job No.: 111558 Date: 1/2/91  
 Report Title: \_\_\_\_\_  
 Client: \_\_\_\_\_

| Laboratory Data Review | Supervisor    | Date          |
|------------------------|---------------|---------------|
| Metals                 | <u>RAN</u>    | <u>2-1-91</u> |
| Gen. Chem.             | <u>2-1-91</u> | <u>2-1-91</u> |
| GC                     | <u>1/2/91</u> | <u>3/1/91</u> |
| GC/MS                  |               |               |
| Micro, Asbestos        |               |               |
| Other                  |               |               |

|   | Signature                                      | Date          |
|---|--|---------------|
| Report Written by:  | <u>J</u>                                       | <u>1/3/91</u> |
| 1st Draft Reviewed by:  |  |               |
| 2nd Draft Reviewed by: (If needed)  |  |               |
| Final Review by Author:   |  |               |
| ASC Manager:  | <u>[Signature]</u>                             | <u>2-1-91</u> |
| QA Officer:   |  |               |
| Corp. Project Manager:<br>(Internal Job)  | <u>[Signature]</u>                             |               |
| <i>Backdate needed. sign return to BC</i>                                       |  |               |
| All QA Protocol Review Forms Signed and in File (to be signed by report writer) |  |               |
| Copies of Report Sent to:   | <u>[Signature]</u>                             | <u>2-1-91</u> |
| Invoices Sent to Accounting   | <u>[Signature]</u>                             | <u>2-1-91</u> |
| Comments/Notes:   | <u>TFT table not analyzed ✓ BK</u>             |               |
|   | <u>"Aroclor" not analyzed on spike table ✓</u> |               |

Copy Distribution: White - Report to Project File; Canary - Project Manager; 407064  
 Pink - Project File.

**M E M O R A N D U M**

**TO :** John Barksdale  
**FROM :** Gary Hahn *G. Hahn*  
**DATE :** February 1, 1991  
**SUBJECT:** UE-6000 Pensacola Report  
**REF:** 9100.058  
**CC:** Lab File

Attached is the laboratory report of the analysis conducted on five samples received at the Analytical Services Center on January 10, 1991. Analysis was performed according to the screening procedures set forth in "Generic Quality Assurance Project Plan, Contamination Assessments and Remedial Activities, Naval Air Station Pensacola, Pensacola, Florida," July 1990.

All samples on which this report is based will be retained by E & E for a period of 30 days from the date of this report, unless otherwise instructed by the client. If additional storage of samples is requested by the client, a storage fee of \$1.00 per sample container per month will be charged for each sample, with such charges accruing until destruction of the samples is authorized by the client.

**GH:tms**  
enclosure

0000512



ecology and environment, inc.

280 PLEASANTVIEW DRIVE, LANCASTER, NEW YORK 14086, TEL. 716/684 8888  
International Specialists in the Environment

Job # 9/00.058

TO THE SITE SPECIFIC QAPP  
(See BARB KRAJEWSKI)

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

| Project No.:<br>11H6030                  |              | Project Name:<br>NASP PHASE I A-E  |             |   | Project Manager:<br>JOHN BARKDALE |   | SCREENING: PAH'S<br>SCREENING: PCB'S<br>SCREENING: PESTICIDES<br>SCREENING: TOTAL PLU'S<br>TRPH'S (418.1)<br>SCREENING: METALS<br>SCREENING: VOC'S |                      |   |   |   |                                  |   | REMARKS |  |
|--|--------------|------------------------------------|-------------|---|-----------------------------------|---|--|----------------------|---|---|---|----------------------------------|---|---------|--|
| Sampler (Signature):<br>M. GRECU         |              | Field Team Leader:<br>Dan Casschia |             |   | Field Team Leader:<br>MIKE GRECU  |   |  |                      |   |   |   |                                  |   |         |  |
| STATION NUMBER                           | DATE<br>1991 | TIME                               | SAMPLE TYPE |   |                                   | SAMPLE INFORMATION<br>EXPECTED COMPOUNDS (Concentration)* | STATION LOCATION   | NUMBER OF CONTAINERS |   |   |   |                                  |   |         |  |
|  |              |                                    | COND        | DRAB  | AIR                               |   |  |                      |   |   |   |                                  |   |         |  |
| P13 G10016                               | 1/9          | 1030                               |             | X   |                                   | LOW LEVEL   | SITE 13 TEMP WELL 10   | 5                    | X | X                                       | X | X                                | X | X       | *VOC-PRESERVED WITH HCl  |
| P13 G10016D                              | 1/9          | 1032                               |             | X   |                                   | "   | SITE 13 TEMP WELL 10 DUP   | 5                    | X | X                                       | X | X                                | X | X       | VOA'S: LOT# B9251043<br>QC# B.886C                                   |
| P13 G10011                               | 1/9          | 1120                               |             | X   |                                   | "   | SITE 13 TEMP WELL 11   | 5                    | X | X                                       | X | X                                | X | X       |  |
| P13 G10007                               | 1/9          | 1230                               |             | X   |                                   | "   | SITE 13 TEMP WELL 7  | 5                    | X | X                                       | X | X                                | X | X       |  |
| P13 G10002                               | 1/9          | 1423                               |             | X   |                                   | "   | SITE 13 TEMP WELL 2  | 5                    | X | X                                       | X | X                                | X | X       | LITER ARBER: LOT# 9223013<br>QC# 3282C                               |
|  |              |                                    |             |   |                                   |   |  |                      |   |   |   |                                  |   |         | GALBA ARBER: LOT# K0115013<br>QC# X0413C                             |
|  |              |                                    |             |   |                                   |   |  |                      |   |   |   |                                  |   |         | LITER POLY: LOT# 0304013<br>QC# 0889C                                |
|  |              |                                    |             |   |                                   |   |  |                      |   |   |   |                                  |   |         | *TRPH'S (418.1) PRESERVED WITH H2SO4<br>*METALS: PRESERVED WITH HNO3 |
| Relinquished By: (Signature)<br>M. Greco |              | Date/Time:<br>1/9/91 1700          |             | Received By: (Signature)<br>Fed Ex                      |                                   | Relinquished By: (Signature)                              |  | Date/Time:           |   | Received By: (Signature)                |   | Ship Via<br>FEDERAL EXPRESS      |   |         |  |
| Relinquished By: (Signature)             |              | Date/Time:                         |             | Received By: (Signature)                                |                                   | Relinquished By: (Signature)                              |  | Date/Time:           |   | Received By: (Signature)                |   | BL/Airbill Number:<br>9548745533 |   |         |  |
| Relinquished By: (Signature)<br>Fed Ex   |              | Date/Time: 1-10-91                 |             | Received For Laboratory By: (Signature)<br>Dan Casschia |                                   | Relinquished By: (Signature)                              |  | Date/Time:           |   | Received For Laboratory By: (Signature) |   | Date:<br>1/9/91                  |   |         |  |

Distribution: Original Accompanies Shipment; Copy to Coordinator Field File  
\*See CONCENTRATION RANGE on back of form

Ecology and Environment, Inc.  
SAMPLE TRACKING REPORT

| LAB<br>SAMPLE<br>ID | CLIENT<br>SAMPLE<br>ID | TEST<br>CODE | DATE<br>SAMPLED | DATE<br>EXTRACTED | DATE<br>ANALYZED |
|---------------------|------------------------|--------------|-----------------|-------------------|------------------|
| 495.01              | P13-GW002              | WPNPRG1      | 01/09/91        |                   | 01/14/91         |
| 495.03              | P13-GW002              | WPNP&P1      | 01/09/91        |                   | 01/11/91         |
|                     |                        | WPNPAH1      | 01/09/91        |                   | 01/24/91         |
|                     |                        | WPNPHL1      | 01/09/91        |                   | 01/29/91         |
| 495.04              | P13-GW002              | WPNTPH1      | 01/09/91        |                   | 01/15/91         |
| 495.05              | P13-GW002              | WPNMET1      | 01/09/91        |                   | 01/11/91         |
| 496.01              | P13-GW007              | WPNPRG1      | 01/09/91        |                   | 01/14/91         |
| 496.03              | P13-GW007              | WPNP&P1      | 01/09/91        |                   | 01/11/91         |
|                     |                        | WPNPAH1      | 01/09/91        |                   | 01/24/91         |
|                     |                        | WPNPHL1      | 01/09/91        |                   | 01/29/91         |
| 496.04              | P13-GW007              | WPNTPH1      | 01/09/91        |                   | 01/15/91         |
| 496.05              | P13-GW007              | WPNMET1      | 01/09/91        |                   | 01/11/91         |
| 497.01              | P13-GW011              | WPNPRG1      | 01/09/91        |                   | 01/14/91         |
| 497.03              | P13-GW011              | WPNP&P1      | 01/09/91        |                   | 01/11/91         |
|                     |                        | WPNPAH1      | 01/09/91        |                   | 01/24/91         |
|                     |                        | WPNPHL1      | 01/09/91        |                   | 01/29/91         |
| 497.04              | P13-GW011              | WPNTPH1      | 01/09/91        |                   | 01/15/91         |
| 497.05              | P13-GW011              | WPNMET1      | 01/09/91        |                   | 01/11/91         |
| 498.01              | P13-GW016              | WPNPRG1      | 01/09/91        |                   | 01/14/91         |
| 498.03              | P13-GW016              | WPNP&P1      | 01/09/91        |                   | 01/11/91         |
|                     |                        | WPNPAH1      | 01/09/91        |                   | 01/24/91         |
|                     |                        | WPNPHL1      | 01/09/91        |                   | 01/29/91         |
| 498.04              | P13-GW016              | WPNTPH1      | 01/09/91        |                   | 01/15/91         |
| 498.05              | P13-GW016              | WPNMET1      | 01/09/91        |                   | 01/11/91         |
| 499.01              | P13-GW016-D            | WPNPRG1      | 01/09/91        |                   | 01/14/91         |
| 499.03              | P13-GW016-D            | WPNP&P1      | 01/09/91        |                   | 01/11/91         |
|                     |                        | WPNPAH1      | 01/09/91        |                   | 01/24/91         |
|                     |                        | WPNPHL1      | 01/09/91        |                   | 01/29/91         |
| 499.04              | P13-GW016-D            | WPNTPH1      | 01/09/91        |                   | 01/15/91         |
| 499.05              | P13-GW016-D            | WPNMET1      | 01/09/91        |                   | 01/11/91         |

0000513

Ecology and Environment, Inc.  
Analytical Services CenterCLIENT : UH-6000 NASP PEASE I GROUPS A-E  
TEST NAME : PNC TRPH UNITS : MG/L  
PARAMETER : TRPH

| SAMPLE ID                  | RESULTS | Q | DET. LIMIT |
|----------------------------|---------|---|------------|
| EE-91-00495<br>P13-GW002   | ND      | - | 1.0        |
| EE-91-00496<br>P13-GW007   | ND      | - | 1.0        |
| EE-91-00497<br>P13-GW011   | ND      | - | 1.0        |
| EE-91-00498<br>P13-GW016   | ND      | - | 1.0        |
| EE-91-00499<br>P13-GW016-D | ND      | - | 1.0        |

QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
              J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT  
              NA = NOT APPLICABLE

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PEASE I GROUPS A-E  
TEST NAME : PNC TRPH UNITS : MG/L  
PARAMETER : TRPH

| SAMPLE ID    | RESULTS | Q | DET. LIMIT |
|--------------|---------|---|------------|
| METHOD BLANK | ND      |   | 1.0        |

QUALIFIERS: C = COMMENT ND = NOT DETECTED  
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
L = PRESENT BELOW STATED DETECTION LIMIT  
NA = NOT APPLICABLE

0000514

Ecology and Environment, Inc.  
Analytical Services Center

CWENT : UH-6000 NASP PHASE I GROUPS A-E  
 SAHPLE ID LAB : EE-91-00495 MATRIX: WATER  
 SAHPLE ID CLIENT: P13-GW002

| <u>PARAMETER</u> | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> | <u>UNITS</u> |
|------------------|----------------|----------|-------------------|--------------|
| Arsenic          | NO             |          | 69                | UG/L         |
| Chromium         | 30             |          | 10                | UG/L         |
| Zinc             | 510            |          | 20                | UG/L         |
| Lead             | 53             |          | 40                | UG/L         |
| Cadmium          | 5.6            |          | 5.0               | UG/L         |
| Nickel           | ND             |          | 40                | UG/L         |
| Copper           | 170            |          | 25                | UG/L         |
| Silver           | ND             |          | 10                | UG/L         |

.....  
 QUALIFIERS: C = COMMENT                      NO<sup>D</sup> = NOT DETECTED  
               J = ESTIMATED VALUE            B = ALSO PRESENT IN BLANK  
               L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-B  
 SAMPLE ID-LAB :EE-91-00496 MATRIX: WATER  
 SAMPLE ID CLIENT: P13-GW007

| <u>PARAMETER</u> | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> | <u>UNITS</u> |
|------------------|----------------|----------|-------------------|--------------|
| Arsenic          | ND             |          | 69                | UG/L         |
| Chromium         | 18             |          | 10                | UG/L         |
| Zinc             | 30             |          | 20                | UG/L         |
| Lead             | ND             |          | 40                | UG/L         |
| Cadmium          | ND             |          | 5.0               | UG/L         |
| Nickel           | ND             |          | 40                | UG/L         |
| Copper           | ND             |          | 25                | UG/L         |
| Silver           | ND             |          | 10                | UG/L         |

-----  
 QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
               J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
               L = PRESENT BELOW STATED DETECTION LIMIT

0000515

Ecology and Environment, Inc.  
 Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E  
 SAMPLE ID-LAB : EE-91-00497 MATRIX: WATER  
 SAMPLE ID CLIENT: P13-GW011

| <u>PARAMETER</u> | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIHIT</u> | <u>UNITS</u> |
|------------------|----------------|----------|-------------------|--------------|
| Arsenic          | ND             |          | 69                | UG/L         |
| Chromium         | 30             |          | 10                | UG/L         |
| Zinc             | 85             |          | 20                | UG/L         |
| Lead             | ND             |          | 40                | UG/L         |
| Cadmium          | 5.6            |          | 5.0               | UG/L         |
| Nickel           | ND             |          | 40                | UG/L         |
| Copper           | ND             |          | 25                | UG/L         |
| Silver           | ND             |          | 10                | UG/L         |

.....  
 QUALIFIERS: C = COMMENT ND = NOT DETECTED  
 J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
 L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E  
 SAMPLE ID LAB :EE-91-00498 MATRIX: WATER  
 SAMPLE ID CLIENT: P13-GW016

| <u>PARAMETER</u> | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> | <u>UNITS</u> |
|------------------|----------------|----------|-------------------|--------------|
| Arsenic          | ND             |          | 69                | UG/L         |
| Chromium         | 57             |          | 10                | UG/L         |
| Zinc             | 40             |          | 20                | UG/L         |
| Lead             | ND             |          | 40                | UG/L         |
| Cadmium          | ND             |          | 5.0               | UG/L         |
| Nickel           | ND             |          | 40                | UG/L         |
| Copper           | ND             |          | 25                | UG/L         |
| Silver           | ND             |          | 10                | UG/L         |

-----  
 QUALIFIERS: C = COMMENT ND = NOT DETECTED  
 J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
 L = PRESENT BELOW STATED DETECTION LIMIT

0000516

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E  
 SAMPLE ID-LAB :EE-91-00499 MATRIX: WATER  
 SAMPLE ID CLIENT: P13-GW016-D

| PARAMETER | RESULTS | Q | DET. LIMIT | UNITS |
|-----------|---------|---|------------|-------|
| -----     | -----   | - | -----      | ----- |
| Arsenic   | ND      |   | 69         | UG/L  |
| Chromium  | 37      |   | 10         | UG/L  |
| Zinc      | 24      |   | 20         | UG/L  |
| Lead      | ND      |   | 40         | UG/L  |
| Cadmium   | ND      |   | 5.0        | UG/L  |
| Nickel    | ND      |   | 40         | UG/L  |
| Copper    | ND      |   | 25         | UG/L  |
| Silver    | ND      |   | 10         | UG/L  |

.....  
 QUALIFIERS: C = COMMENT ND = NOT DETECTED  
 J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
 L = PRESENT BELOW STATED DETECTION LIMIT

QUALITY CONTROL FOR PRECISION  
RESULTS OF ANALYSIS OF REPLICATE  
ANALYSES OF WATER SAMPLES

9100.058

---

(ug/L)

---

| Parameter | E & E<br>Laboratory<br>No. 91-<br>00498 | Original<br>Analysis | Replicate<br>Analysis | Relative<br>Percent<br>Difference<br>(RPD) |
|-----------|---|----------------------|-----------------------|--|
| Arsenic   |   | ND                   | ND                    | --   |
| Chromium  |   | 57                   | 62                    | 8.4  |
| Zinc      |   | 40                   | 37                    | 7.8  |
| Lead      |   | ND                   | ND                    | --   |
| Cadmium   |   | ND                   | ND                    | --   |
| Nickel    |   | ND                   | ND                    | --   |
| Copper    |   | ND                   | ND                    | --   |
| Silver    |   | ND                   | ND                    | --   |

---

0000517

QUALITY CONTROL FOR ACCURACY: PERCENT RECOVERY  
FOR SPIKED WATER SAMPLES

9100.058

(ug/L)

| Parameter | E & E<br>Laboratory<br>No. 91-<br>00498 | Original<br>Value | Amount<br>Added | Amount<br>Determined | Percent<br>Recovery |
|-----------|---|-------------------|-----------------|----------------------|---------------------|
| Arsenic   |   | ND                | 2000            | 1900                 | 95                  |
| Chromium  |   | 57                | 200             | 270                  | 106                 |
| Zinc      |   | 40                | 500             | 480                  | 88                  |
| Lead      |   | ND                | 500             | 350                  | 70                  |
| Cadmium   |   | ND                | 50              | 45                   | 90                  |
| Nickel    |   | ND                | 500             | 410                  | 82                  |
| Copper    |   | ND                | 250             | 230                  | 92                  |
| Silver    |   | ND                | 50              | 47                   | 94                  |

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E  
SAMPLE ID-LAB :METHOD BLANK MATRIX: WATER

| <u>PARAMETER</u> | <u>RESULTS</u> | <u>0</u> | <u>DET. LIMIT</u> | <u>UNITS</u> |
|------------------|----------------|----------|-------------------|--------------|
| Arsenic          | ND             |          | 69                | UG/L         |
| Chromium         | ND             |          | 10                | UG/L         |
| Zinc             | ND             |          | 20                | UG/L         |
| Lead             | ND             |          | 40                | UG/L         |
| Cadmium          | ND             |          | 5.0               | UG/L         |
| Nickel           | ND             |          | 40                | UG/L         |
| Copper           | ND             |          | 23                | UG/L         |
| Silver           | ND             |          | 10                | UG/L         |

-----  
**QUALIFIERS:** C = COMMENT                      ND = NOT DETECTED  
 J = ESTIMATED VALUE                      B = ALSO PRESENT IN BLANK  
 L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E  
TEST NAME : PNC PEST./PCB UNITS : UG/L  
SAMPLE ID LAB : EE-91-00495 MATRIX: WATER  
SAMPLE ID CLIENT: P13-GW002

| PARAMETER            | RESULTS | Q | DET. UMIT |
|----------------------|---------|---|-----------|
| Heptachlor           | ND      |   | 5.0       |
| Lindane              | ND      |   | 5.0       |
| Aldrin               | ND      |   | 5.0       |
| 4,4 - DDT            | ND      |   | 5.0       |
| Dieldrin / 4,4 - DDE | ND      |   | 5.0       |
| Endrin               | ND      |   | 5.0       |
| Chlordane            | ND      |   | 5.0       |
| Total PCBS           | ND      |   | 10        |

-----  
QUALIFIERS: C = COMMENT ND = NOT DETECTED  
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PEASE I GROUPS A-E  
TEST NAME : PNC PEST:/PCB WITS : UG/L  
SAMPLE ID LAB : EE-91-00496 MATRIX: WATER  
SAMPLE ID CLIENT: P13-GW007

| PARAMETER            | RESULTS | Q | DET. LIMIT |
|----------------------|---------|---|------------|
| Heptachlor           | ND      | - | 5.0        |
| Lindane              | ND      | - | 5.0        |
| Aldrin               | ND      | - | 5.0        |
| 4,4 - DDT            | ND      | - | 5.0        |
| Dieldrin / 4,4 - DDE | ND      | - | 5.0        |
| Endrin               | ND      | - | 5.0        |
| Chlordane            | ND      | - | 5.0        |
| Total PCBS           | ND      | - | 10         |

-----  
QUALIFIERS: C = COMMENT            ND = NOT DETECTED  
              J = ESTIMATED VALUE    B = ALSO PRESENT IN BLANK  
              L = PRESENT BELOW STATED DETECTION LIMIT

TEST CODE : WPNP&P1

JOB NUMBER : 9100.058

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E  
TEST NAME : PNC PEST./PCB UNITS : UG/L  
SAMPLE ID LAB : EE-91-00497 MATRIX: WATER  
SAMPLE ID CLIENT: P13-GW011

| <u>PARAMETER</u>     | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|----------------------|----------------|----------|-------------------|
| Heptachlor           | ND             | -        | 5.0               |
| Lindane              | ND             | -        | 5.0               |
| Aldrin               | ND             | -        | 5.0               |
| 4,4 - DDT            | ND             | -        | 5.0               |
| Dieldrin / 4,4 - DDE | ND             | -        | 5.0               |
| Endrin               | ND             | -        | 5.0               |
| Chlordane            | ND             | -        | 5.0               |
| Total PCBS           | ND             | -        | 10                |

-----  
QUALIFIERS: C = COMMENT ND = NOT DETECTED  
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E  
TEST NAME : PNC PEST./PCB UNITS : UG/L  
SAMPLE ID LAB : BE-91-00498 MATRIX: WATER  
SAMPLE ID CLIENT: P13-GW016

| PARAMETER            | RESULTS | Q | DET. LIMIT |
|----------------------|---------|---|------------|
| Heptachlor           | ND      |   | 5.0        |
| Lindane              | ND      |   | 5.0        |
| Aldrin               | ND      |   | 5.0        |
| 4,4 - DDT            | ND      |   | 5.0        |
| Dieldrin / 4,4 - DDE | ND      |   | 5.0        |
| Endrin               | ND      |   | 5.0        |
| Chlordane            | ND      |   | 5.0        |
| Total PCBS           | ND      |   | 10         |

-----  
QUALIFIERS: C - COMMENT ND - NOT DETECTED  
J - ESTIMATED VALUE B - ALSO PRESENT IN BLANK  
L - PRESENT BELOW STATED DETECTION LIMIT

TEST CODE :WPNP&P1

JOB NUMBER :9100.058

Ecology and Environment, Inc.  
Analytical Sarvicas C mtar

CLIENT : UH-6000 NASP PEASE I GROUPS A-E  
TEST NAME : PNC PEST./PCB UNITS : UG/L  
SAXPLE ID LAB : EE-91-00499 MATRIX : WATER  
SAXPLE ID CLIENT: P13-GW016-D

| <u>PARAMETER</u>     | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|----------------------|----------------|----------|-------------------|
| Heptachlor           | ND             |          | 5.0               |
| Lindane              | ND             |          | 5.0               |
| Aldrin               | ND             |          | 5.0               |
| 4,4 - DDT            | ND             |          | 5.0               |
| Dieldrin / 4,4 - DDE | ND             |          | 5.0               |
| Endrin               | ND             |          | 5.0               |
| Chlordane            | ND             |          | 5.0               |
| Total PCBS           | ND             |          | 10                |

-----  
QUALIFIERS: C = COMMENT ND = NOT DETECTED  
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
L = PRESENT BELOW STATED DETECTION LIMIT

QUALITY CONTROL FOR ACCURACY AND PRECISION:  
PERCENT RECOVERY AND RELATIVE PERCENT DIFFERENCE (RPD)  
OF WATER MATRIX SPIKE (MS) FOR PENSACOLA SCREENING  
(Sample # 00493)

9100.058

(ug/L)

| Compound     | Original<br>Result | Amount<br>Added<br>MS | Amount<br>Determined<br>MS | Percent<br>Recovery<br>MS |
|--------------|--------------------|-----------------------|----------------------------|---------------------------|
| Aroclor 1254 | ND                 | 12.5                  | 12.3                       | 98                        |

0000521

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PEASE I GROUPS A-E  
TEST NAME- : PNC PEST./PCB UNITS : UG/L  
SAMPLE ID LAB : METHOD BLANK MATRIX: VATER

| PARAMETER            | RESULTS | Q | DET. LIMIT |
|----------------------|---------|---|------------|
| Heptachlor           | ND      | - | 9.0        |
| Lindane              | ND      |   | 5.0        |
| Aldrin               | ND      |   | 9.0        |
| 4,4 - DDT            | ND      |   | 5.0        |
| Dieldrin / 4,4 - DDE | ND      |   | 5.0        |
| Endrin               | ND      |   | 5.0        |
| Chlordane            | ND      |   | 5.0        |
| Total PCBS           | ND      |   | 10         |

-----  
QUALIFIERS: C = COMMENT ND = NOT DETECTED  
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
L = PRESENT BELOW STATED DETECTION LIMIT

TEST CODE : WPNPAH1

JOB NUMBER : 9100.058

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E  
TEST NAME : PNC PAR - LC UNITS : UG/L  
SAMPLE ID LAB : EE-91-00495 MATRIX: WATER  
SAMPLE ID CLIENT: P13-GW002

| PARAMETER               | RESULTS | Q | DET. LIMIT |
|-------------------------|---------|---|------------|
| Total as Benzo-a-pyrene | ND      | - | 100        |

-----  
QUALIFIERS: C = COMMENT ND = NOT DETECTED  
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
L = PRESENT BELOW STATED DETECTION LIMIT

0000522

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E  
TEST NAME : PNC PAR - LC UNITS : UG/L  
SAMPLE ID LAB : EE-91-00496 MATRIX: WATER  
SAMPLE ID CLIENT: P13-GW007

| PARAMETER               | RESULTS | Q | DET. LIMIT |
|-------------------------|---------|---|------------|
| Total as Benzo-a-pyrene | 110     | - | 100        |

-----  
QUALIFIERS: C = COMMENT ND = NOT DETECTED  
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
L = PRESENT BELOW STATED DETECTION LIMIT

TEST CODE : WPNPAH1

JOB NUMBER : 9100.058

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E  
TEST NAME : PNC PAH - LC UNITS : UG/L  
SAMPLE ID LAB : EE-91-00497 MATRIX: WATER  
SAMPLE ID CLIENT: P13-GW011

| PARAMETER               | RESULTS | Q | DET. LIMIT |
|-------------------------|---------|---|------------|
| Total as Benzo-a-pyrene | ND      | - | 100        |

-----  
QUALIFIERS: C = COMMENT ND = NOT DETECTED  
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
L = PRESENT BELOW STATED DETECTION LIMIT

0000523

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PRASE I GROUPS A-E  
TEST NAME : PNC PAR - LC UNITS : UG/L  
SAMPLE ID LAB : EE-91-00498 MATRIX: WATER  
SAMPLE ID CLIENT: P13-GW016

| PARAMETER               | RESULTS | Q | DET. LIMIT |
|-------------------------|---------|---|------------|
| Total as Benzo-a-pyrene | ND      | - | 100        |

-----  
QUALIFIERS: C = COMMENT ND = NOT DETECTED  
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
L = PRESENT BELOW STATED DETECTION LIMIT

TEST CODE : WPNPAH1

JOB NUMBER : 9100.058

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PEASE I GROUPS A-E  
TEST NAME : PNC PAH - LC UNITS : UG/L  
SAMPLE ID LAB : EE-91-00499 MATRIX: WATER  
SAMPLE ID CLIENT: P13-GW016-D

| PARAMETER               | RESULTS | Q | DET. LIMIT |
|-------------------------|---------|---|------------|
| Total as Benzo-a-pyrene | ND      | - | 100        |

-----  
QUALIFIERS: C = COMMENT ND = NOT DETECTED  
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
L = PRESENT BELOW STATED DETECTION LIMIT

0000524

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E  
TEST NAME : PNC PAH - LC UNITS : UG/L  
SAMPLE ID LAB : METHOD BLANK MATRIX: WATER

| PARAMETER               | RESULTS | Q | DET. LIMIT |
|-------------------------|---------|---|------------|
| Total as Benzo-a-pyrene | ND      | - | 100        |

-----  
QUALIFIERS: C = COMMENT ND = NOT DETECTED  
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
L = PRESENT BELOW STATED DETECTION LIMIT

TEST CODE : WPNPHL1

JOB NUMBER : 9100.058

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UE-6000 NASP PEASE I GROUPS A-E  
TEST NAME : PNC PHENOL - LC UNITS : UG/L  
SAMPLE ID LAB : EE-91-00495 MATRIX: WATER  
SAMPLE ID CLIENT: P13-GW002

| <u>PARAMETER</u>         | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|--------------------------|----------------|----------|-------------------|
| Total as Trichlorophenol | ND             | -        | 100               |

-----  
QUALIFIERS: C = COMMENT ND = NOT DETECTED  
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
L = PRESENT BELOW STATED DETECTION LIMIT

0000525

**Ecology and Environment, Inc.  
Analytical Services Center**

CLIENT : UH-6000 NASP PEASE I GROUPS A-E  
TEST NAME - : PNC PHENOL - LC UNITS : UG/L  
SAMPLE ID LAB : EE-91-00496 MATRIX: WATER  
SAMPLE ID CLIENT: P13-GW007

| PARAMETER                | RESULTS | Q | DET. LIMIT |
|--------------------------|---------|---|------------|
| Total as Trichlorophenol | ND      | - | 100        |

-----  
QUALIFIERS: C = COMMENT ND = NOT DETECTED  
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
L = PRESENT BELOW STATED DETECTION LIMIT

TEST CODE : WPNPHL1

JOB NUMBER : 9100.058

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E  
TEST NAME : PNC PHENOL - LC UNITS : UG/L  
SAMPLE ID LAB : EE-91-00497 MATRIX: WATER  
SAMPLE ID CLIENT: P13-GW011

| PARAMETER                | RESULTS | Q | DET. LIMIT |
|--------------------------|---------|---|------------|
| Total as Trichlorophenol | ND      | - | 100        |

-----  
QUALIFIERS: C = COMMENT ND = NOT DETECTED  
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
L = PRESENT BELOW STATED DETECTION LIMIT

0000530

TEST CODE : WPNPHL1

JOB NUMBER : 9100.058

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PEASE I GROUPS A-E  
TEST NAME : PNC PHENOL - LC UNITS : UG/L  
SAMPLE ID LAB : BE-91-00498 MATRIX: WATER  
SAMPLE ID CLIENT: P13-GW016

| PARAMETER                | RESULTS | Q | DET. LIMIT |
|--------------------------|---------|---|------------|
| Total as Trichlorophenol | ND      | - | 100        |

-----  
QUALIFIERS: C = COMMENT ND = NOT DETECTED  
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
L = PRESENT BELOW STATED DETECTION LIMIT

TEST CODE : WPNPHL1

JOB NUMBER : 9100.058

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E  
TEST NAME : PNC PHENOL - LC UNITS : UG/L  
SAMPLE ID LAB : BE-91-00499 MATRIX: WATER  
SAMPLE ID CLIENT: P13-GW016-D

| <u>PARAMETER</u>         | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|--------------------------|----------------|----------|-------------------|
| Total as Trichlorophenol | ND             | -        | 100               |

-----  
QUALIFIERS: C = COMMENT ND = NOT DETECTED  
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
L = PRESENT BELOW STATED DETECTION LIMIT

0000527

QUALITY CONTROL FOR ACCURACY: PERCENT RECOVERY  
FOR SPIKED WATER SAMPLES

9100.058

---

(ug)

---

| Parameter       | E & E<br>Laboratory<br>No. 91-<br>BLANK | Original<br>Value | Amount<br>Added | Amount<br>Determined | Percent<br>Recovery |
|-----------------|---|-------------------|-----------------|----------------------|---------------------|
| Trichlorophenol |   | ND                | 50              | 35                   | 70                  |

---

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PUASE I GROUPS A-E  
TEST NAME : PNC PURGABLES- GC UNITS : UG/L  
SAMPLE ID LAB : EE-91-00495 MATRIX: WATER  
SAMPLE ID CLIENT: P13-GW002

| <u>PARAMETER</u>             | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIHIT</u> |
|------------------------------|----------------|----------|-------------------|
| Benzene                      | ND             |          | 10                |
| Toluene                      | ND             |          | 10                |
| Ethylbenzene                 | ND             |          | 10                |
| Total Xylenes                | ND             |          | 10                |
| 1,2 - Dichlorobenzene        | ND             |          | 10                |
| 1,3 - Dichlorobenzene        | ND             |          | 10                |
| 1,4 - Dichlorobenzene        | ND             |          | 10                |
| 1,1 - Dichloroethene         | ND             |          | 10                |
| Methylene Chloride           | ND             |          | 10                |
| Trans - 1,2 - Dichloroethene | ND             |          | 10                |
| 1,1 - Dichloroethane         | ND             |          | 10                |
| 1,1,1 - Trichloroethane      | ND             |          | 10                |
| 1,2 - Dichloroethane         | ND             |          | 10                |
| Trichloroethene              | ND             |          | 10                |
| Tetrachloroethene            | ND             |          | 10                |

-----  
QUALIFIERS: C = COMMENT ND = NOT DETECTED  
J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK  
L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PEASE I GROUPS A-E  
TEST NAME : PNC PURGABLES- GC UNITS : UG/L  
SAMPLE ID LAB : EE-91-00496 MATRIX: WATER  
SAMPLE ID CLIENT: P13-GW007

| PARAMETER                    | RESULTS | Q | DET. LIHIT |
|------------------------------|---------|---|------------|
| -----                        | -----   | - | -----      |
| Benzene                      | ND      |   | 10         |
| Toluene                      | ND      |   | 10         |
| Ethylbenzene                 | ND      |   | 10         |
| Total Xylenes                | ND      |   | 10         |
| 1,2 - Dichlorobenzene        | 22      |   | 10         |
| 1,3 - Dichlorobenzene        | ND      |   | 10         |
| 1,4 - Dichlorobenzene        | 14      |   | 10         |
| 1,1 - Dichloroathene         | 140     |   | 10         |
| Methylene Chloride           | ND      |   | 10         |
| Trans - 1,2 - Dichloroethcne | ND      |   | 10         |
| 1,1 - Dichloroethane         | 110     |   | 10         |
| 1,1,1 - Trichloroethane      | ND      |   | 10         |
| 1,2 - Dichloroathana         | ND      |   | 10         |
| Trichloroathane              | ND      |   | 10         |
| Tetrachloroathena            | ND      |   | 10         |

-----  
**QUALIFIERS: C = COMMENT ND = NOT DETECTED**  
**J = ESTIMATED VALUE B = ALSO PRESENT IN BLANK**  
**L = PRESENT BELOW STATED DETECTION LIMIT**

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E  
TEST NAME- : PNC PURGABLES- GC UNITS : UG/L  
SAMPLE ID LAB : EE-91-00497 MATRIX: WATER  
SAMPLE ID CLIENT: P13-GW011

| PARAMETER                    | RESULTS | Q | DET. LIMIT |
|------------------------------|---------|---|------------|
| Benzene                      | ND      |   | 10         |
| Toluene                      | ND      |   | 10         |
| Ethylbenzene                 | ND      |   | 10         |
| Total Xylenes                | ND      |   | 10         |
| 1,2 - Dichlorobenzene        | ND      |   | 10         |
| 1,3 - Dichlorobenzene        | ND      |   | 10         |
| 1,4 - Dichlorobenzene        | ND      |   | 10         |
| 1,1 - Dichloroethene         | ND      |   | 10         |
| Methylene Chloride           | ND      |   | 10         |
| Trans - 1,2 - Dichloroethene | ND      |   | 10         |
| 1,1 - Dichloroethane         | ND      |   | 10         |
| 1,1,1 - Trichloroethane      | ND      |   | 10         |
| 1,2 - Dichloroethane         | ND      |   | 10         |
| Trichloroethene              | ND      |   | 10         |
| Tetrachloroethene            | ND      |   | 10         |

-----  
**QUALIFIERS:** C = COMMENT      ND = NOT DETECTED  
 J = ESTIMATED VALUE      B = ALSO PRESENT IN BLANK  
 L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E  
TEST NAME : PNC PURGABLES- GC UNITS : UGXL  
SAMPLE ID LAB : EE-91-00498 MATRIX: WATER  
SAMPLE ID CLIENT: P13-GW016

| <u>PARAMETER</u>             | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIHIT</u> |
|------------------------------|----------------|----------|-------------------|
| Benzene                      | ND             |          | 10                |
| Toluene                      | ND             |          | 10                |
| Ethylbenzene                 | ND             |          | 10                |
| Total Xylenes                | ND             |          | 10                |
| 1,2 - Dichlorobenzene        | ND             |          | 10                |
| 1,3 - Dichlorobenzene        | ND             |          | 10                |
| 1,4 - Dichlorobenzene        | ND             |          | 10                |
| 1,1 - Dichloroethene         | ND             |          | 10                |
| Methylene Chloride           | ND             |          | 10                |
| Trans - 1,2 - Dichloroethene | ND             |          | 10                |
| 1,1 - Dichloroethane         | ND             |          | 10                |
| 1,1,1 - Trichloroethane      | ND             |          | 10                |
| 1,2 - Dichloroethane         | ND             |          | 10                |
| Trichloroethene              | ND             |          | 10                |
| Tetrachloroethene            | ND             |          | 10                |

-----  
QUALIFIERS: C = COMMENT ND = NOT DETECTED  
J = ESTIHATED VALUE B = ALSO PRESENT IN BLANK  
L = PRESENT BELOW STATED DETECTION LIMIT

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PEASE I GROUPS A-E  
TEST NAME : PNC PURGABLES- GC UNITS : UG/L  
SAMPLE ID LAB : EE-91-00499 MATRIX: WATER  
SAMPLE ID CLIENT: P13-GW016-D

| <u>PARAMETER</u>             | <u>RESULTS</u> | <u>Q</u> | <u>DBT. LIMIT</u> |
|------------------------------|----------------|----------|-------------------|
| Benzene                      | ND             |          | 10                |
| Toluene                      | ND             |          | 10                |
| Ethylbenzene                 | ND             |          | 10                |
| Total Xylenes                | ND             |          | 10                |
| 1,2 - Dichlorobenzene        | ND             |          | 10                |
| 1,3 - Dichlorobenzene        | ND             |          | 10                |
| 1,4 - Dichlorobenzene        | ND             |          | 10                |
| 1,1 - Dichloroethene         | ND             |          | 10                |
| Methylene Chloride           | ND             |          | 10                |
| Trans - 1,2 - Dichloroethene | ND             |          | 10                |
| 1,1 - Dichloroethane         | ND             |          | 10                |
| 1,1,1 - Trichloroethane      | ND             |          | 10                |
| 1,2 - Dichloroethane         | ND             |          | 10                |
| Trichloroethene              | ND             |          | 10                |
| Tetrchloroethene             | ND             |          | 10                |

-----  
**QUALIFIERS: C = COMMENT**                      **ND = NOT DETECTED**  
**J = ESTIMATED VALUE**                      **B = ALSO PRESENT IN BLANK**  
**L = PRESENT BELOW STATED DETECTION LIMIT**

0000530

Ecology and Environment, Inc.  
Analytical Services Center

CLIENT : UH-6000 NASP PHASE I GROUPS A-E  
TEST NAME : PNC PURGABLES- GC UNITS : UG/L  
SAMPLE ID LAB : METHOD BLANK MATRIX: WATER

| <u>PARAMETER</u>             | <u>RESULTS</u> | <u>Q</u> | <u>DET. LIMIT</u> |
|------------------------------|----------------|----------|-------------------|
| Benzene                      | ND             | -        | 10                |
| Toluene                      | ND             |          | 10                |
| Ethylbenzene                 | ND             |          | 10                |
| Total Xylenes                | ND             |          | 10                |
| 1,2 - Dichlorobenzene        | ND             |          | 10                |
| 1,3 - Dichlorobenzene        | ND             |          | 10                |
| 1,4 - Dichlorobenzene        | ND             |          | 10                |
| 1,1 - Dichloroethene         | ND             |          | 10                |
| Methylene Chloride           | ND             |          | 10                |
| Trans - 1,2 - Dichloroethene | ND             |          | 10                |
| 1,1 - Dichloroethane         | ND             |          | 10                |
| 1,1,1 - Trichloroethane      | ND             |          | 10                |
| 1,2 - Dichloroethane         | ND             |          | 10                |
| Trichloroethane              | ND             |          | 10                |
| Tetrachloroethene            | ND             |          | 10                |

-----  
 QUALIFIERS: C = COMMENT                    ND = NOT DETECTED  
               J = ESTIMATED VALUE        B = ALSO PRESENT IN BLANK  
               L = PRESENT BELOW STATED DETECTION LIMIT