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REVISED FINAL SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS OF INORGANIC COMPOUNDS WITH TRANSMITTAL NAVAL ACTIVITY PUERTO RICO

10/17/2006

CH2MHILL/ BAKER ENVIRONMENTAL, INC.

Baker Environmental, Inc.
A Unit of Michael Baker Corporation

Airside Business Park
100 Airside Drive
Moon Township, PA 15108

Office: 412-269-6300
Fax: 412-375-3995

October 17, 2006

U.S. Environmental Protection Agency - Region II
290 Broadway – 22nd Floor
New York, New York 10007-1866

Attn: Mr. Adolph Everett, P.E.
Chief, RCRA Programs Branch

Re: Contract N62470-02-D-3052
Navy CLEAN, District III
Contract Task Order (CTO) 121
U.S. Naval Activity Puerto Rico (NAPR)
Revised Final Summary Report for Environmental Background Concentrations of Inorganic Compounds at Naval Activity Puerto Rico
RCRA/HSWA Permit No. PR2170027203

Dear Mr. Everett:

Baker Environmental, Inc. (Baker), on behalf of the Navy, is pleased to provide you with two copies of the replacement cover and spine, and the inside cover for the Final Summary Report for Environmental Background Concentrations of Inorganic Compounds at Naval Activity Puerto Rico. Additionally, page 1-10 needs to be removed from the document as it no longer applies to this document. These replacement pages make up the Revised Final Summary Report for Environmental Background Concentrations of Inorganic Compounds at Naval Activity Puerto Rico. Directions for modifying the Final Summary Report for Environmental Background Concentrations of Inorganic Compounds at Naval Activity Puerto Rico are provided for your use. Also included with the replacement pages are two electronic copies provided on CD of the Revised Final Summary Report for Environmental Background Concentrations of Inorganic Compounds at Naval Activity Puerto Rico.

Attached to this letter is the revised Navy Responses to EPA Comments dated May 22, 2006 on the Draft Summary Report for Environmental Background Concentrations of Inorganic Compounds. These revised responses address additional comments that were received from the USEPA on August 14, 2006 and October 5, 2006 as part of interim revisions to the document and responses to comments. The attached responses incorporate all of the USEPA's concerns raised during these additional reviews of the Background Summary Report.

If you have questions regarding this submittal, please contact Mr. Mark E. Davidson at (843) 743-2135. Additional distribution has been made as indicated below.

Sincerely,

BAKER ENVIRONMENTAL, INC.

Mark E. Kimes, P.E.
Activity Manager

MEK/lp
Attachments

cc: Mr. Kevin R. Cloe, P.E. NAVFAC Atlantic - Code OPCEV5 (1 hard copy and 1 CD)
Ms. Jean Mann, NAVFAC Atlantic – Code AQ119 (letter only)
Ms. Lee Anne Rapp, NAVFAC Atlantic – Code EV312 (letter only)
Mr. David Criswell, BRAC PMO SE (1 hard copy and 1 CD)
Ms. Bonnie Capito, NAVFAC Atlantic– Code EV42 (1 hard copy for administrative record)
Mr. Pedro Ruiz, NAPR (1 hard copy and 1 CD)
Mr. Tim Gordon, US EPA Region II (2 hard copies and 2 CDs)
Ms. Jennifer Nystrom, BAH (1 CD)
Mr. Carl Soderberg, US EPA Caribbean Office (1 CD)
Mr. Manny Vargas, PR EQB (1 hard copy and 1 CD)
Ms. Janna Staszak, CH2M Hill Virginia Beach (1 CD)
Mr. Mark Davidson, Navy BRAC PMO SE (1 hard copy and 1 CD)

NAVY RESPONSE TO EPA COMMENTS DATED MAY 22, 2006 ON THE DRAFT SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS OF INORGANIC COMPOUNDS APRIL 2006 NAVAL ACTIVITY PUERTO RICO CEIBA, PUERTO RICO

Note: Additional comments were received from the USEPA on August 14, 2006 and October 5, 2006 as part of interim revisions to the document and responses to comments. The following set of responses incorporates all of the USEPA's concerns raised during these additional reviews of the Background Summary Report.

EPA REGION II COMMENT

The Background Report was reviewed to determine if it complies with EPA's Guidance for Comparing Background and Chemical Concentrations I Soil for CERCLA Sites (EPA 540-R-01-003) (CERCLA Guidance). The CERCLA Guidance extensively references the Guidance for Data Quality Assessment - Practical Methods for Data Analysis (EPA QA/G-9) (DQO Guidance). Thus, the Background Report was also reviewed to verify compliance with DQO Guidance, where relevant. The data sets and background statistics presented in the Background Report were reviewed to identify any potential concerns.

Based on Booz Allen's and our own reviews, EP A has identified a number of concerns regarding compliance with the CERCLA and DQO Guidance. Concerns regarding several of the data sets and associated statistic were also identified. These concerns are discussed in the enclosed Technical Review.

Response: *Comment noted. Please see the responses to BAH comments below.*

BAH TECHNICAL REVIEW

General Comment

1. A technical review has been performed on the April 2006 Draft Summary Report for environmental Background Concentration of Inorganic Compounds (Background Report) at Naval Activity Puerto Rico (NAPR) in Ceiba, Puerto Rico. The Background Report was reviewed to determine if it complies with EPA's Guidance for Comparing Background and Chemical Concentrations I Soil for CERCLA Sites (EPA 540-R-0I-003) (CERCLA Guidance). The CERCLA Guidance extensively references the Guidance for Data Quality Assessment - Practical Methods for Data Analysis (EPA QA/G-9) (DQO Guidance). Thus, the Background Report was also reviewed to verify compliance with DQO Guidance, where relevant. The data sets and background statistics presented in the Background Report were reviewed to identify any potential concerns.

   The technical review identified a number of concerns regarding compliance with the CERCLA and DQO Guidance. Concerns regarding several of the data sets and associated statistic were also identified. These concerns are presented in the following Specific Comments.

Response: *Noted. The specific comments are addressed below. When necessary, the Background Summary Report was also modified to reflect the comment responses.*

Specific Comments

1. As indicated in the CERCLA Guidance (page 3-12), it is generally difficult to judge the adequacy of a background data set without first making certain basic decisions regarding the statistical comparison of background and site data. Of particular importance are decisions regarding the desired power and confidence levels of the statistical analysis. These inputs, particularly the desired power of the statistical tests, are closely related to the number of background samples required to achieve the required statistical performance. The adequacy of the number of background samples can only be judged in the context of the specific comparisons being made and the decisions made regarding the desired statistical performance. However, the number of background samples included in some of the data sets raise concerns over the adequacy of these data sets. For example, weathered bedrock soil background set only contains samples and the surface water and sediment background data sets only contain seven to ten samples. These relatively small data sets may limit significantly the statistical performance of any statistical analysis used to compared site data to background. After a more complete review of the implication of these limited background data sets, the Navy may want to consider the collection of additional background data.

Response: *Additional background data was pulled into to the background data sets for the surface water and sediment data sets, both estuarine and open water, as requested in the conference call on June 2, 2006.*

The weathered bedrock data set was not expanded. This data set was only included for completeness and very little data is available for weathered bedrock in the first place. However, it is highly unlikely that a background comparison would be necessary for this media, since much of this formation is located in areas where no risk is posed to human health or the environment. Therefore, it is likely that this background data set will never be used.

Discussion related to the above response was included in the text of the report (see Sections 1.5 and 3.4.3). Surface water and sediment background data sets were modified to include additional samples (see Section 5 tables).

2. When discussing the treatment of censored data (non-detects), the Background Report (page 1-6) indicates that for data sets with a frequency of detection (FOD) greater than 50 percent, descriptive statistics were developed using surrogate values for the censored data. This does not appear consistent with the CERCLA Guidance (page 4-7), which indicates that if less than 15 percent of the background samples are non-detects, the distributions of the background sample may be determined using surrogate values. However, if more that 15 percent but less than 50 percent of the measurements in the background sample set are non-detects, the CERCLA Guidance recommends the use of specialized methods for analyzing non-detects and refers the reader to Section 4.7 of the DQO Guidance. The approach that was used in the Background Report to treat background data sets with between 15 and 50 percent non-detects does not appear to conform with the those recommended in the DQO Guidance. NAPR should ensure that the approach used to handle background data sets with between 15 and 50 percent non-detects is consistent with the CERCLA Guidance.

   In addition, the Background Report (page 1-6) indicates that for data sets with a FOD of 50 percent or less, "the data set is truncated such that non-detect and blank results are not considered in the calculation of descriptive statistics." The Background Report further indicates that "although this will reduce the power of the calculated statistics, the use of non-

detect or blank results could yield an unacceptably large bias of any calculated statistics." This approach does not appear consistent with CERCLA Guidance. The CERCLA Guidance (page 4-7) indicates that for data sets with more than 50 percent nondetects, "it may not be possible to compare the means of two distributions," and indicates that "an alternative approach is to compare the upper percentiles of two distributions by comparing the proportion of the two populations that is above a fixed level." The DQO Guidance (page 4-50) suggests the use of the Test of Proportions to perform such a comparison. NAPR should ensure that the approach used to handle background data sets with greater than 50 percent non-detects is consistent with CERCLA guidance.

Response: *CERCLA guidance indicates that background data sets should be used in parametric or non-parametric statistical tests to determine if site data sets are significantly different (above some predetermined level of confidence) from background data sets. The treatment of non-detects used in the Background Summary Report was only done in order to establish screening values for INITIAL screening of site data against background data. No statistical tests of comparison with site data were done with truncated data sets in the Background Summary Report. Those comparison tests, in accordance with CERCLA guidance, should be done during site investigation reporting if questions arise as to whether site data exceed background data.*

In order to address the Navy's concern about the use of non-detects in background data sets, the following changes were made in the approach. No changes were made to data sets with a frequency of detection greater than 50 percent (FOD category "D"). The Navy revised the data sets with the frequency of detection category of "C" (more than one detection but less than 50 percent detections) to include surrogate values for the non-detects. The surrogate value was one-half the reporting limit. No presumption of normality or lognormality was made for these revised data sets. Instead, the W-test for normality was performed on the data set. If the data set was found to be represented by a normal distribution, the mean and standard deviation of the revised data sets were calculated in a straightforward manner. If the data set was represented by a lognormal distribution, the data was transformed to their natural logs, and the mean and standard deviation of the transformed data set were calculated. A screening value of the mean plus two standard deviations was used for these compounds as indicated above, and the tables in the report were revised to reflect the new screening values for the FOD Category "C" compounds.

Discussion and slight textual changes were added to the text in Section 1.0 in order to address USEPA's concern above and to describe the modified approach.

3. When discussing the use of background data sets, the Background Report (page 1-9) indicates that "the use of the upper limit of the means is warranted as an initial step in screening the analytical results for inorganics, consistent with the previous use of background data sets." It is not clear that this approach is consistent with the CERCLA Guidance. The use of this approach to initially screen site data relative to background should be justified based on the CERCLA Guidance.

Response: *The use of setting an initial screening value is warranted based on the intended purpose of establishing inorganic background values, and falls under the "identify the decision" step. The purpose is to determine if one or more site concentrations ares in excess of the background concentrations, or outside the distribution of the background data set. There are some recommended ways to do this. One is to use two times the average value, or mean, of the background concentrations. This is recommended in RAGS (USEPA. 2000. Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment Bulletins. EPA Region 4, originally published November 1995, Website version last updated May 2000:http://www.epa.gov/region4/waste/oftecser/*

healtbul.htm).

Another way is to use some percentile value of the data, such as the 90th or 95th percentile, as given by the distribution of the background data set. If a site concentration is less than or equal to this percentile value, there is no doubt that it represents background concentrations. This is the approach used in this document. A typical normal distribution is encompassed by 6 standard deviations, three on each side of the mean. In fact, an EPA Engineering Forum Issue (EPA/540/S-96/500, December 1995) states that:

> "In some cases, it may be of interest to establish an upper limit of background for the site. This would be useful if the investigator wanted to compare single values for a soil type from the hazardous waste site with the background population for a similar soil. The mean background concentration plus 3 standard deviations comprises a reasonable maximum allowable or upper limit."

Since we are only interested in the higher concentrations, and since the data is not always normally distributed, a conservative approach is to use the mean plus 2 standard deviations as an initial screening level. This method actually takes into account the scatter in the data set, as opposed to simply multiplying the mean by two. In addition, it is more conservative than using the mean plus three standard deviations.

In both methods, a site concentration in exceedance of the background screening level does not by itself warrant its determination to be non-background. Statistical tests, whether parametric or nonparametric, should be used to make that determination.

Discussion reflecting the above response was added to Section 1.5 of the Report

4. When discussing the analysis of outliers, the Background Report (page 1-7) states that "the discordance test is one of four recommended outlier tests," while referencing Navy guidance. Although the discordance test is referenced, the text does not clearly state how outliers were identified. It should be noted, however, that the DQO guidance (page 4-29) indicates that the discordance test is only suitable for identifying outliers for normally distributed data. The Background Report should clearly identify how each data set was analyzed to identify outliers. The Background Report should also verify that the outlier tests that were used are suitable for the distributions of the data sets tested.

Response: *The DQO guidance gives four examples of outlier tests. Three of them require that the data set is normally distributed. The other one (Walsh's test) can be used for data that is not normally distributed, but requires data sets in excess of 60 values for a significance level of 0.10. None of the data sets in this document have more than 60 values. Therefore, all the data sets were assumed to be normally distributed for the purpose of conducting outlier tests.*

Text reflecting the above response was added to Section 1.4.3.

5. The Background Report (page 1-7) indicates that an outlier test was conducted on data sets with a FOD of more than 50 percent. The text further indicates that "in general outliers should not be removed from the data set unless clear evidence shows that they are not based on elements of the population being studied and should not have been included in the data set." As indicated in the tables presenting the results of the background analysis for the individual media, outliers have been identified in a number of the data sets. However, none were removed from the data set because "no errors were found in the sample results."

Although these data were not removed from the data set because no errors were found, the outlier tests indicate that these data likely do not belong to the statistical population being studied

When discussing outliers, the CERCLA guidance (page 4-6) indicates that:

> The use of nonparametric hypothesis tests for background comparisons greatly reduces the sensitivity of test results to the presence of outliers. Parametric tests based on the lognormal distribution may yield results that are extremely sensitive to the presence of one of more outliers.

The CERCLA Guidance (page 5-6) futher indicates that:

> If the data sets contain outliers or non-detect values, an additional level of uncertainty is faced when conducting parametric tests. Since most environmental data sets do contain outliers and non-detect values, it is unlikely that the current widespread use of parametric tests is justified, given that these tests may be adversely affected by outliers and by assumptions made for handling non-detect values.

Thus, the retention of the outliers in the background data sets will likely require that nonparametric tests be used when comparing these sets with site data, although distributional tests may identify the populations as normal or lognormal.

Response: *An additional outlier test was performed (Dixon test) in order to determine if outliers were indeed present in the data sets, as requested in the June 2, 2006 conference call. However, for data sets with less than 20 values, the outliers were only removed if both outlier tests were positive for outliers. For data sets with greater than 20 values, the outliers were removed if either the Discordance test or the Dixon test were positive for outliers. Modified statistics were calculated on data sets with the outliers removed and are provided in the tables in the Report.*

6. The Background Report (page 1-7) indicates that the Shapiro-Wilk's W-test was performed on all data sets with frequencies of detection over 50 percent. The text further indicates that "the W test is a 'goodness-of-fit' test considered to be effective for determining whether a data set can be described as 'normally' or lognormally distributed for sample sets with 50 or fewer samples." This statement is in agreement with the test of normality presented in the CERCLA Guidance (page 4-2). However, the CERCLA Guidance (page 5-3) adds further qualifications to the use of the W-test for determining normality by also indicating that:

> Tests for the distribution of the data (such as the Shapiro- Wilk test for normality) often fail if there are insufficient data, if the data contain multiple populations, or if there is a high proportion of non-detects in the sample. Test for normality lack statistical power for small sample sizes. In this context, "small" may be defined roughly as less than 20 samples, either on site or in background areas. ....
>
> Therefore, for small sample sizes or when the distribution cannot be determined, non parametric tests should be used to avoid incorrectly assuming the data are normally distributed when there is not enough information to test this assumption.

Many of the background data sets presented in the Background Report have less than 20 samples. Thus, it does not appear appropriate to use the results of the W -test to identify normally or lognormally distributed populations for purposes of later recommending the use of parametric over nonparametric tests. For those sample populations with less than 20

samples that are found to be normally or lognormally distributed using the W -test, the Background Report should either remove their designations as normally or lognormally distributed or clearly identify these designations as qualified based on sample size.

Response: *Text was added to the report in order to clearly identify the normal or lognormal distributions as qualified based on sample size.*

7. The data sets used to establish background for groundwater do not appear to include multiple measurements from the same background well over the period of a year or more. Consequently, these data sets may not adequately include any temporal variability inherent in background groundwater quality, such as that introduced by seasonal effects. NAPR should demonstrate that data sets used to establish groundwater background adequately represent seasonal and other temporal effects.

Response: *A check of the sampling dates for groundwater revealed that the samples were taken in five different months, and most of the wells were only sampled once. Therefore, no temporal variability is able to be determined from the background groundwater data set. It would seem fairly intuitive that temporal variability would not be as important in a setting such as Puerto Rico which has a fairly uniform, year round climate. However, data from NAPR Landfill (SWMU 3) semi-annual sampling was analyzed for temporal variability. Typically this data is collected in March and September of each year. Data from March was compared to data from September using the Krustal-Wallis test to determine if the two data sets are statistically different. The H statistic was found to be 0.915 compared to the H statistic from the chi-square distribution for 1 degree of freedom of 2.705 (0.10 significance level). Since the H statistic was less than the chi-square statistic, the null hypothesis is accepted that they are both from the same distribution. No discussion is provided in the text.*

8. Background for groundwater has been established without any apparent regard for the geologic strata from which the groundwater samples were derived. Frequently, groundwater quality is influenced by geochemical differences between the various geologic materials through which groundwater passes. NAPR should demonstrate that it is not necessary to establish separate groundwater backgrounds for each of the various strata present at the former Roosevelt Roads site. Otherwise, a separate groundwater background should be established for each geologic strata in which groundwater is present and in which contamination is present at the facility.

Response*: Upon inspection of the boring logs in Appendix A, the majority of the groundwater samples for inclusion in the background data set were from formations primarily composed of clay. Since most of NAPR shallow groundwater geology is clay in nature, it is expected that the inorganics in the clay will represent an adequate background data set for comparison to site data for groundwater.*

9. Table 5.3 indicates that the mean copper concentration in the data set used to establish background for estuarine wetland surface water is 12.2 micrograms per liter (µg/L). This is nearly three times the chronic marine ambient water quality criteria for copper (3.1 (µg/L). NAPR should provide further discussion and/or analysis that demonstrate the suitability of the data set proposed for establishing background estuarine wetland surface water.

Response: *The background database for NAPR estuarine surface water was expanded as indicated in Specific Comment No. 1. The mean copper concentration for estuarine wetland surface water was recalculated and found to be 8.89 ug/L (based on 23 samples), slightly lower than the original value*

of 12.2 ug/L, but still higher than 3.1 ug/L. The outlier tests run on the data set indicated no outliers present. Therefore, it is concluded that copper is present naturally in higher concentrations at NAPR than elsewhere on the island.

10. Based on a comparison to EPA's National Coastal Assessment (NCA) data, concentrations of cadmium and selenium in NAPR's estuarine background sediment samples appear to be somewhat greater than typical background levels observed in Puerto Rico. For example, the mean cadmium concentration reported in Table 5-9 is 0.527 milligrams per kilogram (mg/kg), while only two of 43 samples in the NCA data set had detected cadmium concentrations of 0.5 mg/kg or greater. (NCA data were obtained in June 2005 from John Macauley of EPA's Environmental Effects Research Laboratory in Gulf Breeze, Florida). NAPR should discuss possible reasons for elevated cadmium and selenium concentrations in the background estuarine sediment samples and provide adequate justification for continued use of the data set proposed for background for cadmium and selenium in estuarine sediments.

Response: *The estuarine sediment background databases were expanded as indicated in response to Specific Comment No.1. The mean cadmium concentration in estuarine sediment was lowered slightly to 0.45 mg/kg and the mean selenium concentration was recalculated and found to be 0.67 mg/kg. It is concluded that these chemicals are present naturally in higher concentrations at NAPR than elsewhere on the island. In addition, a comparison to the Threshhold Effects Level (TEL) reveals that these mean concentrations are below the TEL for those two compounds (see Baker, 2006, SWMU 45 Screening Level Ecological Risk Assessment and Step 3A of the Baseline Ecological Risk Assessment). Since the TEL is higher than the mean background, it would likely be used as a screening level, as opposed to the background level.*

Revised Final

Summary Report for Environmental Background Concentrations of Inorganic Compounds
Naval Activity Puerto Rico
RCRA/HSWA Permit No. PR2170027203
Ceiba, Puerto Rico

Prepared for

Department of the Navy
Naval Facilities Engineering Command
Atlantic Division

Norfolk, Virginia

Contract No. N62470-02-D-3052
CTO-0121

October 17, 2006

Prepared by

Baker
Environmental, Inc.

CH2M HILL
Federal Group, Inc.

CDM
Federal Programs Corp.

REVISED FINAL

SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS OF INORGANIC COMPOUNDS

NAVAL ACTIVITY PUERTO RICO
RCRA/HSWA PERMIT NO. PR2170027203
CEIBA, PUERTO RICO

CONTRACT TASK ORDER 121

OCTOBER 17, 2006

Prepared for:

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
Norfolk, Virginia

Under the:

LANTDIV CLEAN PROGRAM
Contract N62470-02-D-3052

Prepared by:

CH2M Hill
Herndon, Virginia

BAKER ENVIRONMENTAL, INC.
Coraopolis, Pennsylvania

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ACRONYMS AND ABBREVIATIONS

AOC	Area of Concern
Baker	Baker Environmental, Inc.
BEHP	Bis(2-ethylhexyl) Phthalate
BRAC	Defense Base Realignment and Closure Act
CERCLA	Comprehensive Environmental Response Compensation, and Liability Act
CERFA	Community Environmental Response Facilitation Act
CTO	Contract Task Order
CV	Coefficient of Variation
DoN	Department of the Navy
DQO	Data Quality Objective
DQA	Data Quality Assurance
DQO/DQA	Data Quality Objective/Data Quality Assurance
DRMO	Defense Reutilization and Marketing Office
DRO	Diesel Range Organics
ECP	Environmental Condition of Property
FOD	Frequency of Detection
HSWA	Hazardous and Solid Waste Amendments
IR	Installation Restoration
NAPR	Naval Activity Puerto Rico
NAVFAC	Naval Facilities Engineering Command
NSRR	Naval Station Roosevelt Roads
OU	Operable Unit
PAH	polycyclic aromatic hydrocarbons
PDF	probability density function
PREQB	Puerto Rico Environmental Quality Board
RFI	RCRA Facility Investigation
s	Standard deviation
SWDIV	Southwest Division
SVOC	Semi-Volatile Organic Compound
USEPA	United States Environmental Protection Agency
USTs	underground storage tanks

1.0 INTRODUCTION

This document presents the Summary Report for Environmental Background Concentrations of Inorganic Compounds at Naval Activity Puerto Rico (NAPR). It was performed by Baker Environmental, Inc. (Baker), under contract to Naval Facilities Engineering Command (NAVFAC), Atlantic Division, Contract Number N62470-02-D-3052, Contract Task Order (CTO) 0121.

1.1 Purpose of Report

On November 28, 1994, the United States Environmental Protection Agency (USEPA) Region II issued a Final RCRA Part B Permit to the former Naval Station Roosevelt Roads (NSRR), now NAPR. This permit contained requirements for RCRA Facility Investigation (RFI) activities at 24 SWMUs and three area of concern (AOC). Prior to 1993, environmental activities at NSRR, exclusive of underground storage tanks (USTs), were conducted in compliance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) regulations under the Department of the Navy's (DoN's) Installation Restoration (IR) Program. The RCRA Part B Permit, issued for the Defense Reutilization and Marketing Office (DRMO) at NAPR, included provisions for corrective action under the Hazardous and Solid Waste Amendments (HSWA) provisions of RCRA.

Section 8132 of fiscal year 2004 Defense Appropriation Act, signed into law on 30 September 2003, directed that NSRR be disestablished within 6 months, and that the real estate disposal/transfer be carried out in accordance with procedures contained in the Defense Base Realignment and Closure Act (BRAC) of 1990. This legislation required that the base closure be conducted in accordance with the CERCLA, as amended by the Community Environmental Response Facilitation (CERFA). At this time NSRR has been decommissioned, and NAPR is the Navy entity under which its operations and real estate transfers are continuing. Figure 1-1 depicts the regional location of NAPR within Puerto Rico.

During the course of the RCRA program at NAPR, RFIs and other investigations subsequent to the RFIs have included some background concentrations for inorganics. In 1996, background concentrations were obtained from four sites (sample locations) on the base located in an area believed to be ambient in nature, and not associated with Base activities for any SWMU. These were published in the RFI for Operable Unit (OU) No. 2, SWMUs 7/8 (Baker, 1997). When deemed necessary, other SWMU investigations have provided more background data (see Section 1.3). Because no stand-alone document has been produced which contains a comprehensive compilation of environmental inorganic background concentrations at NAPR, the production of this document was necessitated in order to provide a data set of inorganic background concentrations for use by NAPR.

This document has been prepared using the procedural guidance provided by the NAVFAC Southwest Division (SWDIV) (NAVFAC, 1998), and its accompanying handbook, also prepared by the NAVFAC (1999). Guidance provided in USEPA Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites (USEPA, 2002) was also used. It is expected that the use of the soil background data provided in this document will comply with the USEPA (2002) guidance document as well. At the same time, while it serves its purpose as a stand alone document for the USEPA's and NAPR's use in environmental compliance, it will not be used to re-evaluate work that has already been done under the RCRA program.

1.2 Report Organization

This report is organized into seven sections, including this introduction describing the purpose of the report and summary of previous reports for which background concentrations are available. It also contains a description of the methods used in evaluating the background concentrations. Surface soil background data is discussed in Section 2. Section 3 contains information on subsurface soil at NAPR, including information on the different soil types located on the facility. Section 4 discusses the groundwater concentrations of inorganics at background locations. Section 5 provides information on the availability of surface water and sediment background concentrations at NAPR, and Section 6 contains the references used in this report.

1.3 Previous Reports Containing Environmental Background Concentrations and Information

Previous reports produced under the RCRA program at NAPR containing background soil, groundwater, surface water, and sediment information are listed in this section. They include:

- Baker, 1997, *Revised Draft RCRA Facility Investigation Report for OU 2, SWMU 7/8*, Naval Station Roosevelt Roads, Ceiba, Puerto Rico. June 16, 1997. This document contains the analytical results from the background locations located off of Boxer Drive on the north side of the installation.

- Baker, 1999, *Revised Draft RCRA Facility Investigation Report for OU 3/5*, Naval Station Roosevelt Roads, Ceiba, Puerto Rico. April 1999.

- Baker, 2000, *Revised Draft RCRA Facility Investigation Report for SWMU 9*, Naval Station Roosevelt Roads, Ceiba, Puerto Rico. March 10, 2000. This SWMU 9 report contains background data from locations specifically used for SWMU 9 evaluations, including soil, groundwater, and estuarine surface water and sediment.

- Baker, 2003a, *Final Additional Data Collection Investigation Report*, Tow Way Fuel Farm, Naval Station Roosevelt Roads, Ceiba, Puerto Rico. April 22, 2003 (published as Appendix E of the *Final Corrective Measures Study, Task 1 Report, Tow Way Fuel Farm*, Naval Station Roosevelt Roads, Ceiba, Puerto Rico. April 22, 2003). This document contains background concentrations for open surface water and sediment.

In addition to the above documents with background concentrations, groundwater monitoring events at the Base Landfill at NAPR have provided background groundwater concentrations for organics and inorganics in accordance with the Landfill Sampling and Analysis Plan (Burns and McDonnell, 2000). These concentrations are summarized in Baker (2003b), but were not included in the data for the base-wide background groundwater concentrations. There are two reasons for this exclusion: 1) the data were obtained after Landfill activities had begun, and 2) there are many more analytical results for the Landfill than any other location on the Base, which would have potentially resulted in bias in the data set (see Section 1.4.3).

1.4 Procedure for Background Analysis

This section describes the rationale and procedure used to evaluate background concentrations for inorganics, including those used for determining site sample locations, evaluation of data quality, and the statistical calculations performed on concentrations within each media. As stated above,

guidance provided by NAVFAC (1998) was relied upon to produce a defensible data set for determining background environmental concentrations.

The objectives for the data quality process as outlined in Section 6 of Guidance for the Data Quality Objectives Process (USEPA, 1994) are listed in the following seven steps:

1. State the Problem
2. Identify the Decision
3. Identify Inputs to the Decision
4. Define Boundaries of Study
5. Develop a Decision Rule
6. Specify Limits on Decision Errors
7. Optimize the Design for Obtaining Data

These steps were qualitatively considered in this compilation of background data at NAPR. For example, the first objective is to state the problem. For this study, the problem was to identify suitable samples and sample locations for inclusion in the background data set. The decision that needed to be made (item 2) was whether or not to include a particular sample in the data set. Inputs to the decision (item 3) included a) whether or not the sample was associated with a release as determined by scrutiny of the analytical results, both organic and inorganic, b) whether the appropriate analytical parameters were available for the sample (for instance, if the sample was not analyzed for inorganics, then the sample could not be considered for inclusion in the background data set for inorganics), and c) location of the sample (for example, whether or not it was located outside the boundary of an impacted area, either horizontally or vertically). Further discussion on sample location rationale can be found in Section 1.4.1. Item 4, defines the boundaries of the study, was simply determined to be the property boundaries of the Navy installation. Steps 5 and 6 are applicable to comparison of background data to site data, and as such, are not discussed here. Step 7 is mostly applicable to developing sampling and analysis plans used to obtain data, and is not applicable to this study.

1.4.1 Sample Location Determination

The USEPA defines non-impacted background areas as “those that have not been influenced by site activities involving a chemical release,” (EPA 1989). Also, “the ideal data sets should be independent (spatially uncorrelated), unbiased, and representative of the underlying background populations” (USEPA, 2002). A range of background levels needs to be established for each medium of concern (NAVFAC, 1998). NAPR is currently in an advanced stage of investigation. For an installation at this stage, it is impractical, inefficient, and too costly to design and implement an entirely new background sampling program. Background data sets were, therefore, extracted from all the existing data available at NAPR. NAPR has an extensive web-based GIS application in place for use by the Base, contractors, and regulatory personnel. This website was used to peruse the information available at the different locations within the installation.

All existing SWMU locations on the Base were considered, and existing site samples within and around the SWMUs were evaluated for use in the background data sets. The SWMU locations can be seen on Figure 1-2. In addition to SWMU locations, site samples from the Environmental Condition of Property (ECP) investigations were also evaluated for inclusion in the data sets. These areas can be seen on Figure 1-3. Baker performed field investigations at these sites for NAVFAC as part of its BRAC process and the results were published in the ECP Report (Baker, 2004). Background locations off of Boxer Drive, mentioned above and not part of any SWMU or ECP location, were included in the data sets as well.

Naturally occurring inorganic chemicals are present in soil and groundwater as part of the geological or hydrogeological conditions of the area. Organic compounds in site samples, however, are generally not considered to be naturally occurring. Some organic compounds can be considered anthropogenic in nature. The guidance (NAVFAC, 1998) states that "anthropogenic background chemicals are generated through human activity, but are unrelated to Navy site operations or activities. Examples of anthropogenic background chemicals include pesticides, polycyclic aromatic hydrocarbons (PAHs), and lead." Low levels of some organic and inorganic compounds are often detected in areas where no operations or releases have occurred. In order to be consistent with USEPA's *Risk Assessment Guidance for Superfund* (RAGS) (1989), the background data sets will be assumed to contain both naturally occurring and anthropogenic sources of inorganics.

Site locations with organic compounds present were, as a general principle, excluded from use in the inorganic data sets for the soil and groundwater background data sets. This exclusion was not necessary, as justification for their use is given in the guidance (NAVFAC, 1998) by this statement: "When it can be confirmed that inorganic chemicals, such as arsenic or chromium, were not used or released during operations, the inorganic chemical data likely represent background conditions for the area and may be included in the installation-wide background data set." In general, though, only a few sites with low organic concentrations, highly indicative of anthropogenic origin, were used in the current evaluation.

No restriction on the co-location of soil and groundwater samples was made when determining site samples for use in the data sets. The NAVFAC (1998) guidance states, "Water and soil background samples may be collected from different areas." Site locations that were specifically chosen for background data evaluations, and which included both soil and groundwater analyses, were included without restriction, since these locations were previously evaluated for their potential for impact by Navy operations. Other soil and groundwater co-located site samples may have been included, but only after evaluating possible impacts by Navy operations on the different media.

1.4.2 Data Quality

The data chosen using the above selection criteria and Data Quality Objective (DQO) process were evaluated for data quality. Because the various sample results included in the background data sets were selected from a variety of investigations, a general evaluation of the overall data quality was included in this study. In most cases, the goal of the various investigations from which the background data sets were extracted was to determine the nature and extent of contaminations at the different SWMUs or ECP sites. When the sample was determined to be outside of the bounds of the contaminated area, either horizontally or vertically, it was considered for inclusion in the appropriate background data set.

Data quality was evaluated during each of the investigations from which the background data sets were obtained using USEPA guidance for Data Quality Objective and Data Quality Assurance (DQO/DQA). In some cases, the data was validated by a third-party validator. In other cases, the data underwent an internal evaluation. The data quality as evaluated during the original investigation was presumed to be sufficient for the purposes of this study, and a high priority was placed on using as much reliable data as possible. In general, data should only be "eliminated from data sets when they are clearly shown to be of such poor relative quality that they confound the analysis or are outliers" (NAVFAC, 1998).

Although inorganic compounds are not as subject to a wide variation in non-detect levels as are organic compounds, detection limits may have changed over the time period from which the data were obtained. The range of non-detect concentrations was determined for each constituent as part of the Data Quality Assurance (DQA) process. When sample analyses resulted in higher non-detect levels for organic constituents, such as those resulting from dilution of the original sample, the sample was not included in the data set for inorganic compounds due to the higher level of uncertainty in deciding whether or not the sample location had been impacted by Navy operations.

Laboratory data qualifiers found in the data sets included the following:

- U – non-detected above the method detection limit
- J or B – the compound was detected at a concentration less than the reporting limit but more than the method detection limit
- UJ – non-detect concentration estimated
- N – the matrix spike recovery was not within the control limits
- R – rejected by the third-party validator
- * - the duplicate was not within the control limits
- E – the reported concentration is estimated due to the presence of matrix interference
- S – the result was determined by the Method of Standard Addition

Concentrations qualified with an “R” were not included in the statistical analyses.

1.4.3 Descriptive Summary Statistics and Statistical Tests

The following summary statistics were calculated for the selected data sets for inorganic background concentrations. These statistics are consistent with those listed in NAVFAC (1998) and recommended by the USEPA (1989) and are described in the following subsections.

- Range of non-detect values
- Range of detected values
- Location of Maximum Detected value
- Frequency of Detection (FOD)
- Arithmetic Mean of all data, using surrogate values for non-detects (for data sets with FOD > 50 percent)
- Standard Deviation (same FOD criteria as for the mean)
- Coefficient of Variation
- Range of Detection Limits
- Upper Limit of the Mean

1.4.3.1 Censored Data

A data set is censored when it contains values that are unknown, although their existence is known. In other words, a data set is censored when it contains non-detections or blank results. A consistent means of handling censored data is needed prior to statistically analyzing the data set. Additional discussion on methods to evaluate censored data is provided in NAVFAC (1998).

Frequency of Detection

The FOD for a parameter is the number of positively detected results divided by the total number of samples (usually expressed as a percent). By definition, the FOD gives an indication of the number of censored data in a given data set. For example, if the FOD is 85 percent, then 15 percent of the data set is censored and consists of either non-detects or blank-qualified results.

Prior to proceeding with other statistical evaluations, the FOD of these detected compounds was examined and used as a tool to further screen the analytical data. Four ranges of FODs were established (A through D) to evaluate whether further statistical analysis is warranted. These ranges or categories include no detections, only one detection, an FOD of less than or equal to 50 percent and more than one detection; and an FOD of greater than 50 percent:

- A: FOD = 0 detections: The laboratory results indicate no detections of a compound at a given quantitation limit. These compounds may or may not be present in the background media; however, the current data set yields insufficient information to quantify the concentration of these compounds. For the purpose of this background report, non-detected compounds are considered as "not present" in the background data set.

- B: FOD = 1 detection: Statistical evaluations could not be conducted for parameters in which there was only one positive detection for a given media. Consequently, these compounds will be reported as potentially present in the background; however, the concentration cannot be quantified.

- C: FOD $\leq$ 50 percent with more than one detection: this category equates to greater than 50 percent non-detect and/or blank results. It is likely that goodness-of-fit tests or other statistical evaluations to determine distribution or other characteristics for parameters with an FOD less than or equal to 50 percent would result in a high level of uncertainty. In this category, the descriptive statistics were developed using surrogate values for the censored data. For this category, the surrogate values for non-detect results were one-half of the reporting limit.

- D: FOD > 50 percent: this category equates to less than 50 percent non-detects and/or blank results. For parameters that have an FOD greater than 50 percent, an outlier test will be conducted, descriptive statistics were developed using surrogate values for the censored data (if necessary). For this category, the surrogate values for non-detect results were one-half of the reporting limit.

This discussion about the FOD as a descriptor for the data sets does not carry over to statistical tests for comparing site data to background data. Appropriate methods for comparing data sets with non-detects should be applied as given in the CERCLA guidance.

1.4.3.2 Outliers

Outliers are measurements, in this case, concentrations, that are unusually larger or smaller than the rest of the data for that compound. Outliers are not necessarily representative of the sample population and may bias the resulting statistics. An outlier may be an item for which the data has been incorrectly recorded, an item that was incorrectly added to the data set, or it may be an unusual item that has been recorded correctly and does belong in the data set.

Two outlier tests were conducted on data sets with FODs of more than 50 percent. While it is a general rule that a data point should never be deleted from a data set solely on the basis of an outlier test, the outlier test is helpful for determining if a mistake or error has been made in including a data point in the data set. In the case where the outlier has been recorded correctly and does belong in the data set, the outlier should remain; in general outliers should not be removed from the data set unless clear evidence shows that they are not based on elements of the population being studied and should not have been included in the original data set. The Discordance test and the Dixon test are two of four recommended outlier tests (NAVFAC, 1998). Both of these tests require that the data is normally distributed. For the purposes of the outlier tests, the data was *assumed* to be normally distributed, since the recommended outlier test for non-normal data sets requires at least 60 data points (USEPA, 2000). Outliers were removed for data sets of 20 or more if either outlier test indicated an outlier. If the data set had 15 to 20 samples, the outlier was removed if both outlier tests indicated an outlier. Once the outlier was removed, the background statistics were recalculated as indicated in Section 1.4.3.4.

1.4.3.3 Distributions

Determining the probability density function (PDF) or distribution that best fits a particular data set is important for selecting the statistical test best suited for the data (NAVFAC, 1998). Many statistical procedures have been developed for data sets presumed to have been drawn from a population having a symmetric, bell-shaped, Gaussian or "normal" distribution. However, environmental data sets are often asymmetrical and skewed to the right, or in other words, with a "long tail towards high concentrations". A right-skewed distribution can be transformed to become approximately Gaussian, by using a logarithmic transformation, so that the procedures for normally distributed data can be applied to the transformed data. For data sets that do not follow the normal or lognormal distributions, other statistical tests to determine the distribution or non-parametric tests that do not rely on a particular distribution would be used in the statistical evaluation of the data.

The Shapiro-Wilk's W-test was performed for all Category "C" and "D" data sets to aid in the determination of the underlying distribution. The W-test is a "goodness-of-fit" test considered to be effective for determining whether a data set can be described as "normally" or lognormally distributed for samples sets with 50 or fewer samples. The W test has been shown to have more power than other tests to detect when data are not from a normal or lognormal distribution, especially if the coefficient of variation is over 50 percent (NAVFAC, 1999). Even so, the results of the W test should be noted as qualified based on sample size, especially those with less than 20 samples.

1.4.3.4 Descriptive Statistics

Descriptive statistics provide a concise method of summarizing some of the more important and commonly used characteristics of a data set.

- Total Number of Samples (n): the total number of samples collected from each medium.
- Frequency of Detection: the number of positive detections divided by the total number of samples for a given medium
- Minimum and Maximum (Range): the minimum and maximum of the detected concentrations for a parameter in a given medium

- Arithmetic Mean (X): calculated as the sum of the measurements for a parameter in a given medium divided by the total number of measurements:

$$\bar{x} = \frac{\sum_{i=1}^{n} x_i}{n}$$

- Standard Deviation (s): calculated as the square root of the sum of the variances divided by the degrees of freedom:

$$s = \sqrt{\frac{\sum_{i=1}^{n} (x_i - \bar{x})^2}{n-1}}$$

- Coefficient of Variation (CV): calculated as the standard deviation divided by the mean:

$$CV = \frac{s}{\bar{x}}$$

- Upper Limit of the Mean: calculated as the mean plus two times the standard deviation of the mean

$$\overline{x_{UL}} = \bar{x} + 2s$$

Descriptive statistics were also developed for category "C" data sets using a truncated data set.

Data Variability

The CV is a measure of the dispersion of a data set about the central value or mean. Environmental data sets typically contain a relatively high degree of variability. Some of the reasons for this include variations in detection limits due to sample size, dilution/concentration factors, variations in surrogate recoveries and other factors associated with laboratory analysis, variations in the matrix, matrix composition, source, as well as small sample set sizes, and many other factors.

Upper Limit of the Mean

As indicated above, the upper limit of the mean of the background data was calculated as the mean plus two times the standard deviation of the mean

$$\overline{x_{UL}} = \bar{x} + 2s$$

This estimate of the upper limit of the mean effectively equates to a one-sided tolerance limit or the value below which approximately 95 percent of the background population is expected to fall.

For data sets with no detections, or only one detection, no summary statistics were calculated. For all other data sets, the arithmetic mean and standard deviation were determined using surrogate values for the non-detects (one-half the non-detect reporting limit). For data sets with FOD category "C", and the Weibull test indicated a lognormal distribution, the arithmetic mean and standard deviation of the log-transformed data set were found, and the results converted back to concentrations.

1.5 Recommended Use of Background Data Sets

It is expected that the data sets developed in this document will be used when background concentrations are needed to determine if site contamination is a result of Navy operations or if it is consistent with background conditions. Guidance provided in USEPA's *Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites* (USEPA, 2002) should be followed. Various statistical tests used to compare background concentrations to site concentrations can be found in this document.

Little discussion is provided in the CERCLA Guidance for use of a screening value. Some discussion of the use of a screening value is provided here. The use of setting an initial screening value is warranted based on the intended purpose of establishing inorganic background values, and falls under the "identify the decision" step. The purpose is to determine if one or more site concentrations are in excess of the background concentrations, or outside the distribution of the background data set. There are some recommended ways to do this. One is to use two times the average value, or mean, of the background concentrations. This is recommended in RAGS (USEPA. 2000. Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment Bulletins. EPA Region 4, originally published November 1995, Website version last updated May 2000: http://www.epa.gov/region4/waste/oftecser/healtbul.htm).

Another way is to use some percentile value of the data, such as the 90th or 95th percentile, as given by the distribution of the background data set. If a site concentration is less than or equal to this percentile value, there is no doubt that it represents background concentrations. This is the approach used in this document. A typical normal distribution is encompassed by 6 standard deviations, three on each side of the mean. In fact, an EPA Engineering Forum Issue (EPA/540/S-96/500, December 1995) states that:

> "In some cases, it may be of interest to establish an upper limit of background for the site. This would be useful if the investigator wanted to compare single values for a soil type from the hazardous waste site with the background population for a similar soil. The mean background concentration plus three standard deviations comprises a reasonable maximum allowable or upper limit."

Since only the higher concentrations are of interest, and since the data is not always normally distributed, a conservative approach is to use the mean plus two standard deviations as an initial screening level. This method actually takes into account the scatter in the data set, as opposed to simply multiplying the mean by two. In addition, it is more conservative than using the mean plus three standard deviations.

In both methods, a site concentration in exceedance of the background screening level does not by itself warrant its determination to be non-background. Statistical tests, whether parametric or nonparametric, should be used to make that determination.

2.0 ESTABLISHMENT OF BACKGROUND CONCENTRATIONS OF INORGANICS IN SURFACE SOIL

This section presents the results of the background concentrations for surface soil at NAPR.

2.1 Sample Locations

Twenty-one sample locations were found to be suitable for inclusion in the surface soil background concentration data set for inorganics. These locations are shown on Figure 2-1. As shown on this figure, most of the locations were located in areas with limited impact by Navy operations, as noted by the presence of flora and fauna. While this was not the only criteria for including the data from these locations in the background data sets, it was considered to be somewhat important in the surface soil evaluation. The location marked 16E-SS06 was not located in a wooded area. However, no Navy impact was noted in the analytical results of this sample, so it was considered for inclusion.

Because some samples from this group did not have a soil description associated with them, no distinction in soil types was made for this sample group. (The subsurface soil sample groups, however, were divided into different soil types, as discussed in Section 3.0.) Figure 2-2 depicts the various surface soil types found at NAPR. As noted in the legend of this figure, the vast majority of the soil types on the installation are clay in nature, including clay, clay loam, or silty clay. This is further justification for the use of just one data set for the surface soil samples.

The sample locations for this data set are also listed in Table 2-1. Along with the sample identification number, the SWMU or ECP site of the sample and the report that the data was originally published in is given. Any comments about the sample are also noted.

2.2 Analytical Data

The inorganic analytical data from the 21 sample locations is given in Table 2-2. This table contains the results of inorganic compounds that were detected in any of the 21 samples. As shown, the data was obtained over an eight year period, from April 1996 through May 2004. The analytical results of all the analyses performed on these samples are given in Appendix A.1. Confirmation that most of the samples were organic free, when information was available, can be seen in this appendix, and are noted in Table 2-1 as well. In sample BGMW01-00, some semi-volatile organic compounds (SVOCs) were present. These included bis(2-ethylhexyl) phthalate (BEHP), butyl benzyl phthalate, and fluoranthene (see Appendix A.1). The phthalates are often found as inert ingredients in pesticides, and fluoranthene is a chemical found in petroleum derived asphalt. Both of these uses are anthropogenic in nature at that location. A trace amount of the pesticide 4,4-DDT was found in sample 8E-SS01, representing anthropogenic use at that location. Some trace amounts of pesticide associated organics were found in the groundwater at the same location as surface soil sample 2MW03-00. Again, because they were pesticide related, they are believed to be anthropogenic.

It should be noted here that soil samples from the ECP Investigation (Baker, 2004) showed an unusually high occurrence of two volatile organic compounds (VOCs), tetrachloroethene and carbon tetrachloride, at site located all over the installation. Prior to this investigation, only two soil samples exhibited detections of these two compounds during the entire base history. As a result, the detections of these compounds during the ECP investigation were not considered a result of Navy operations, and were not noted on Table 2-1.

The SWMU 9 background locations were not analyzed for organics as their purpose was to establish a SWMU 9 specific background data set for inorganic compounds only. Their location was determined to be out of the area of Navy operations prior to that investigation, and the analytical results were found to be consistent with background concentrations.

2.3 Data Quality

As shown on Table 2-2, no data quality issues are apparent in the data sets for the different analytes. Typical laboratory qualifiers are found with the data, as noted in Section 1.4.2. With the exception of data with an R qualifier, all data was considered to be usable. Antimony was the only analyte for which third-party validation indicated a vast majority of the data unusable (R qualified); one sample result for lead was also rejected.

Table 2-3 depicts the ranges of the data, and the ranges of the detection limits. As shown, one compound, cadmium, had detection limits that varied by two orders of magnitude. All other detection limits were within one order of magnitude of each other.

Also seen on Table 2-3 is the location of the maximum detection for each analyte. A quick review of the list of the sample sites indicates that there is wide variety in the locations of these maximum detections. If one location would have shown up more frequently than others, a closer look at the analytical results from that location would have been warranted. The two locations with organic detections, BGMW01-00 and 8E-SS01, were not found to exhibit a higher than usual occurrence of maximum metals concentration. Thallium was the only metal detected once, found at BGMW01-00. Its presence there is believed to be anthropogenic, due to its use as a rodenticide and ant killer (http://www.speclab.com/elements/thallium.htm).

2.4 Descriptive Summary Statistics and Statistical Tests

The results of the W test for normality are given in Table 2-4. Also seen on this table are the descriptive statistics, and the FOD category. As noted above, the mean and standard deviation were determined using surrogate values for the non-detects. The W test was performed on FOD Category “C” and “D” data sets. The outlier tests were only performed on FOD Category “D” data sets.

All data sets evaluated for normality indicated either a normal distribution or lognormal distribution fit the data. As shown in the column labeled “outlier removed,” there were six analytes with outliers. These were not included in the data set or the descriptive statistics.

Other descriptive statistics given on Table 2-4 include the arithmetic mean, the standard deviation, the coefficient of variation, and the upper limit of means.

Box and whisker plots were made for all chemicals with an FOD of greater than 50 percent, and were constructed using surrogate values for the censored data. These plots graphically depict the range of the data for the user, including the 25th and 75th percentile values, the median of the data, and the upper and lower inner and outer fences. These can be found in Appendix B, along with an explanation of the meaning of the plot.

3.0 ESTABLISHMENT OF BACKGROUND CONCENTRATIONS OF INORGANICS IN SUBSURFACE SOIL

This section presents the results of the background concentrations for subsurface soil at NAPR. The subsurface soil samples were evaluated to determine the type of soil present in the sample through careful evaluation of the soil boring logs or geologic cross section diagrams. All the boring logs evaluated, when available, can be seen in Appendix C. In some cases, geologic cross sections developed for a report were used to determine the soil type at the sample depth.

Three different categories of soil types were found to be correlated with the subsurface soil samples: clay, fine sand/silt, and weathered bedrock. Separate descriptive statistics were developed for each of these soil types.

3.1 Sample Locations

Thirty-eight samples from thirty locations were found to be suitable for inclusion in the subsurface soil background concentration data set for inorganics. A list of them is given in Table 3-1. Of these, twenty were described as clay, fifteen as fine sand or silt, and three as weathered bedrock. The sample locations for clay can be seen in Figure 3-1. Figure 3-2 shows the locations of the fine sand/silt samples, and Figure 3-3 shows the three weathered bedrock sample locations.

3.2 Clay

3.2.1 Analytical Data

The inorganic analytical data from the 20 samples from 17 locations for the clay soil is given in Table 3-2. This table contains the results of inorganic compounds that were detected in any of the 20 samples. As shown, the data was obtained over an eight year period, from April 1996 through May 2004. The analytical results of all the analyses performed on these samples are given in Appendix A.2. Confirmation that most of the samples were organic free, when information was available, can be seen in this appendix. Any organic detections are noted on Table 3-1, with the exception of the VOCs found in the ECP samples (see Section 2.2). Most of the organic detections are anthropogenic in nature, including trace amounts of pesticide related organics such as 2,3,7,8- Hexacholorodibenzo-p-dioxin, and di-n-butylphthalate (http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+@rel+34465-46-8). Others can be associated with motor vehicle operation, including trace amounts of diesel range organics (DRO) and xylene.

The SWMU 9 background locations were not analyzed for organics as their purpose was to establish a SWMU 9 specific background data set for inorganic compounds only. Their location was determined to be out of the area of Navy operations prior to that investigation, and the analytical results were found to be consistent with background concentrations.

3.2.2 Data Quality

As shown on Table 3-2, no data quality issues are apparent in the data sets for the different analytes. Typical laboratory qualifiers are found with the data, as noted in Section 1.4.2. With the exception of data with an R qualifier, all data was considered to be usable. Antimony was the only analyte for which third-party validation indicated a vast majority of the data unusable (R qualified); one sample result for lead was also rejected, and two samples each of copper and chromium were rejected.

Table 3-3 depicts the ranges of the data, and the ranges of the detection limits. As shown, one compound, silver, had detection limits that varied by two orders of magnitude. Because there was only one detection of silver, this wide range of detection limits will not have an effect on this data set. All other detection limits were within one order of magnitude of each other.

Also seen on Table 3-3 is the location of the maximum detection for each analyte. A quick review of the list of the sample sites indicates that there are two locations that show up more frequently than others, 9BGSB03-8-10 and BGMW04-02. These locations have already been determined to be within background locations, and are expected to reflect typical inorganic concentrations, although no organic analyses were available for them. Other locations with inorganic maximums were not found to be particularly associated with locations where trace organics were found.

3.2.3 Descriptive Summary Statistics and Statistical Tests

The results of the W test for normality are given in Table 3-4. Also seen on this table are the descriptive statistics, and the FOD category. As noted above, the mean and standard deviation were determined using surrogate values for the non-detects. The W test was performed on FOD Category "C" and "D" data sets. The outlier tests were only performed on FOD Category "D" data sets.

All data sets evaluated for normality indicated either a normal distribution or lognormal distribution fit the data. As shown in the column labeled "outlier removed," there were four analytes with outliers. These were not included in the data set.

Other descriptive statistics given on Table 3-4 include the arithmetic mean, the standard deviation, the coefficient of variation, and the upper limit of means. Box and whisker plots can be found in Appendix B.

3.3 Fine Sand/Silt

3.3.1 Analytical Data

The inorganic analytical data from the 15 samples from 13 locations for the fine sand/silt soil is given in Table 3-5. This table contains the results of inorganic compounds that were detected in any of the 15 samples. As shown, the data was obtained over an eight year period, from April 1996 through May 2004. The analytical results of all the analyses performed on these samples are given in Appendix A.2. Confirmation that most of the samples were organic free, when information was available, can be seen in this appendix. Any organic detections are noted on Table 3-1, with the exception of the VOCs found in the ECP samples (see Section 2.2). As shown in this table, only one sample, 14E-SB01-04, had any organic compound present in it, and trace amounts of DRO are typically associated with anthropogenic uses, such as motor vehicle emissions. The other notations are for samples which were co-located with the subsurface soil sample included in this particular group, such as a groundwater or surface soil sample.

The SWMU 9 background locations were not analyzed for organics as their purpose was to establish a SWMU 9 specific background data set for inorganic compounds only. Their location was determined to be out of the area of Navy operations prior to that investigation, and the analytical results were found to be consistent with background concentrations.

3.3.2 Data Quality

As shown on Table 3-5, no data quality issues are apparent in the data sets for the different analytes. Typical laboratory qualifiers are found with the data, as noted in Section 1.4.2. With the exception of data with an R qualifier, all data was considered to be usable. Antimony, selenium, and zinc compounds indicated a few unusable data points (R qualified).

Table 3-6 depicts the ranges of the data, and the ranges of the detection limits. All detection limits were within one order of magnitude and are not expected to influence the descriptive statistics to a large extent.

Also seen on Table 3-6 is the location of the maximum detection for each analyte. A quick review of the list of the sample sites indicates that there are two locations that show up more frequently than others, 2MW01-01 and BGMW02-08. Since there was not a single location with the highest concentrations for the inorganic compounds, the results are expected to reflect typical inorganic concentrations. No maximum concentration was seen at 14E-SB01-04, the location with a trace amount of DRO.

3.3.3 Descriptive Summary Statistics and Statistical Tests

The results of the W test for normality are given in Table 3-7. Also seen on this table are the descriptive statistics, and the FOD category. As noted above, the mean and standard deviation were determined using surrogate values for the non-detects. The W test was performed on FOD Category “C” and “D” data sets. The outlier tests were only performed on FOD Category “D” data sets.

All data sets evaluated for normality indicated either a normal distribution or lognormal distribution fit the data with the exception of beryllium. As shown in the column labeled “outlier removed,” there were three analytes removed from in the data set.

Other descriptive statistics given on Table 3-7 include the arithmetic mean, the standard deviation, the coefficient of variation, and the upper limit of means. Box and whisker plots can be seen in Appendix B

3.4 Weathered Bedrock

3.4.1 Analytical Data

The inorganic analytical data from the 3 samples from 3 locations for the weathered bedrock soil is given in Table 3-8. This table contains the results of inorganic compounds that were detected in any of the 3 samples. As shown, the data was obtained over a five year period, from June 1999 through May 2004. The analytical results of all the analyses performed on these samples are given in Appendix A.2. All of these samples were organic free, when information was available, as shown in this appendix.

The SWMU 9 background locations were not analyzed for organics as their purpose was to establish a SWMU 9 specific background data set for inorganic compounds only. Their location was determined to be out of the area of Navy operations prior to that investigation, and the analytical results were found to be consistent with background concentrations.

3.4.2 Data Quality

As shown on Table 3-8, no data quality issues are apparent in the data sets for the different analytes. Typical laboratory qualifiers are found with the data, as noted in Section 1.4.2. All of the data was considered usable.

Table 3-9 depicts the ranges of the data, and the ranges of the detection limits. All detection limits were within one order of magnitude, as were the detections. Also seen on Table 3-8 is the location of the maximum detection for each analyte. A quick review of the list of the sample sites indicates 9BGSB05-21-23 shows up the most frequently. Upon review of the data, the differences in analytical results between the three locations were not greater than one order of magnitude, and all three are expected to represent background

3.4.3 Descriptive Summary Statistics and Statistical Tests

The results of the W test for normality are given in Table 3-10. Also seen on this table are the descriptive statistics, and the FOD category. As noted above, the mean and standard deviation were determined using surrogate values for the non-detects. The W test was performed on FOD Category "C" and "D" data sets. The outlier tests were only performed on FOD Category "D" data sets.

All data sets evaluated for normality indicated both a normal distribution and a lognormal distribution fit the data.

Other descriptive statistics given on Table 3-10 include the arithmetic mean, the standard deviation, the coefficient of variation, and the upper limit of means. Box and whisker plots can be seen in Appendix B. While the size of this data set is questionable with regard to its usefulness in comparing site data to background data, it is not expected that this media will pose any risk to human health or the media, and it is unlikely that this data set will be used. It is only included here for completeness.

4.0 ESTABLISHMENT OF BACKGROUND CONCENTRATIONS OF INORGANICS IN GROUNDWATER

This section presents the results of the background concentrations for groundwater at NAPR. Both total concentrations and dissolved concentrations were evaluated.

4.1 Sample Locations

Fifteen samples were found to be suitable for inclusion in the groundwater background concentration data set for inorganics. The locations for these samples are shown on Figure 4-1. A list of them is given in Table 4-1. Along with the sample identification number, the SWMU or ECP site of the sample and the report that the data was originally published in is given. Any comments about the sample are also noted.

4.2 Analytical Data

The inorganic analytical data from the 15 samples is given in Table 4-2. This table contains the results of inorganic compounds that were detected in any of the 15 samples. As shown, the data was obtained over a three year period, from April 1996 through June 1999. The analytical results of all the analyses performed on these samples are given in Appendix A.3. Confirmation that most of the samples were organic free, when information was available, can be seen in this appendix, and are noted in Table 4-1 as well. Two locations (BGMW02 and BGMW03) had very low concentrations of SVOCs, including acetophenone, BEHP, and dimethyl phthalate. Whereas BEHP and dimethyl phthalate are, as noted previously, associated with pesticides, it is unclear where acetophenone has its origin in the groundwater at this location. Its presence is not expected to affect the data quality (see next section) of the inorganic data set.

4.3 Data Quality

As shown on Table 4-2, no data quality issues are apparent in the data sets for the different analytes. Typical laboratory qualifiers are found with the data, as noted in Section 1.4.2. With the exception of data with an R qualifier, all data was considered to be usable. A few analytical results were qualified as rejected in both the total and the dissolved metals analyses. These included arsenic, lead, and selenium in the dissolved analyses, and arsenic, chromium, lead, and selenium in the total metals analyses.

Table 4-3 depicts the ranges of the data, and the ranges of the detection limits. As shown, one compound, nickel, had detection limits that varied by two orders of magnitude in the dissolved analysis. This wide range may influence the descriptive statistics for this compound since descriptive statistics for that data set included surrogate values for the non-detect values (FOD > 50%). All other detection limits were within one order of magnitude of each other. Two others compounds, antimony and tin, had detection limits that were fairly far apart, but within one order of magnitude. This wide range will not affect descriptive statistics as neither of these compounds had an FOD > 50 percent.

Also seen on Table 4-3 is the location of the maximum detection for each analyte. One location, 9BGGW03 accounts for the vast majority of maximum detections. This location has already been determined to represent background concentrations. In addition, the other analytical results all are within one order of magnitude of the maximum detected at that location. No samples with organic detections were found to contain the maximum concentrations for the inorganics.

4.4 Descriptive Summary Statistics and Statistical Tests

The results of the W test for normality are given in Table 4-4. Also seen on this table are the descriptive statistics, and the FOD category. As noted above, the mean and standard deviation were determined using surrogate values for the non-detects. The W test was performed on FOD Category "C" and "D" data sets. The outlier tests were only performed on FOD Category "D" data sets.

All data sets evaluated for normality indicated either a normal distribution or lognormal distribution fit the data, with the exception of cobalt and nickel. As shown in the column labeled "outlier removed," there were seven analytes removed from the data sets.

Other descriptive statistics given on Table 4-4 include the arithmetic mean, the standard deviation, the coefficient of variation, and the upper limit of means. Box and whisker plots are given in Appendix B.

All data sets developed in this document can be found electronically in Appendix D, for use in statistical tests to determine if new site concentrations exceed background concentrations. The data sets are given as Microsoft® Excel files, and as text files. All the data is provided as reported, and non-detects were neither removed nor replaced with surrogate values.

5.0 ESTABLISHMENT OF BACKGROUND CONCENTRATIONS OF INORGANICS IN SURFACE WATER AND SEDIMENT

Two different studies were performed for surface water background concentrations at NAPR. These can be found in:

- Baker, 2000, *Revised Draft RCRA Facility Investigation Report for SWMU 9*, Naval Station Roosevelt Roads, Ceiba, Puerto Rico. March 10, 2000. This SWMU 9 report contains background data from locations specifically used for SWMU 9 evaluations, including soil, groundwater, and estuarine surface water and sediment.

- Baker, 2003a, *Final Additional Data Collection Investigation Report*, Tow Way Fuel Farm, Naval Station Roosevelt Roads, Ceiba, Puerto Rico. April 22, 2003 (published as Appendix E of the *Final Corrective Measures Study, Task 1 Report, Tow Way Fuel Farm*, Naval Station Roosevelt Roads, Ceiba, Puerto Rico. April 22, 2003). This document contains background concentrations for open surface water and sediment.

The locations at NAPR at which these two studies took place are shown in Figure 5-1. One study was done in the open water off the beach on the northern side of NAPR, and one study was done in the estuarine wetland in the los Machos Forest.

Additional sample locations were added to these background locations in order to strengthen the data sets. For the estuarine data sets, additional data was taken from SWMUs 1, 2, and 9. For the open water data sets, additional data was taken from SWMUs 1, 2, 3, 7, and ECP sites 6 and 16. Figures 5-2 and 5-3 depict the locations used in these data sets.

5.1 Estuarine Wetland Surface Water

The locations of the estuarine wetland samples included in this data set can be seen in Figure 5-2. Table 5-1 contains the detections of the various inorganic analytes determined to be applicable to this data set. Table 5-2 depicts the ranges of the data, and the ranges of the detection limits. No data quality issues are noted. Table 5-3 contains the estuarine wetland water descriptive statistics, and the results of the W test for probability distribution. As indicated in Table 5-3, seven analytes had outliers indicated in their data sets. These were removed prior to calculating the descriptive statistics.

5.2 Open Water Background Surface Water

The locations of the open water samples included in this data set can be seen in Figure 5-3. Table 5-4 contains the detections of the various inorganic analytes determined during this investigation. Table 5-5 depicts the ranges of the data, and the ranges of the detection limits. No data quality issues are noted, with the exception of some analytes having detection limits over two orders of magnitude. Table 5-6 contains the open water descriptive statistics, and the results of the W test for probability distribution. Eight analytes were removed as a result of the outlier tests as seen on Table 5-6.

5.3 Estuarine Wetland Sediment

The locations of the estuarine wetland background sediment samples used in this data set can be seen in Figure 5-2. Table 5-7 contains the detections of the various inorganic analytes determined

by this data set. Table 5-8 depicts the ranges of the data, and the ranges of the detection limits. Tin detection limits had a two order of magnitude range, but that was the only data quality issue noted. Table 5-9 contains the estuarine sediment descriptive statistics, and the results of the W test for probability distribution. Nine results were removed as a result of the outlier tests.

5.4 Open Water Background Sediment

The locations of the open water background sediment samples included in this data set can be seen in Figure 5-3. Table 5-10 contains the detections of the various inorganic analytes determined during this investigation. Table 5-11 depicts the ranges of the data, and the ranges of the detection limits. Cadmium detection limits ranged two orders of magnitude. Table 5-12 contains the open water sediment descriptive statistics, and the results of the W test for probability distribution. The lead, selenium, and tin data sets indicated outliers were present. These extreme values were removed and the descriptive statistics shown in this table.

6.0 REFERENCES

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Baker, 1999, *Revised Draft RCRA Facility Investigation Report for OU 3/5*, Naval Station Roosevelt Roads, Ceiba, Puerto Rico. April 1999.

Baker, 2000, *Revised Draft RCRA Facility Investigation Report for SWMU 9*, Naval Station Roosevelt Roads, Ceiba, Puerto Rico. March 10, 2000.

Baker, 2003a, *Final Additional Data Collection Investigation Report*, Tow Way Fuel Farm, Naval Station Roosevelt Roads, Ceiba, Puerto Rico. April 22, 2003 (published as Appendix E of the *Final Corrective Measures Study, Task 1 Report, Tow Way Fuel Farm*, Naval Station Roosevelt Roads, Ceiba, Puerto Rico. April 22, 2003).

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TABLES

TABLE 2-1

Revised: September 15, 2006

SAMPLE LOCATIONS FOR SURFACE SOIL BACKGROUND
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample Type	Sample IDs	Location	Report	Comments
Surface Soil	BGMW01-00	Background, Boxer Drive	RFI 3/5, 1999	A few SVOCs in this sample
Surface Soil	BGMW02-00	Background, Boxer Drive	RFI 3/5, 1999	
Surface Soil	BGMW03-00	Background, Boxer Drive	RFI 3/5, 1999	
Surface Soil	BGMW04-00	Background, Boxer Drive	RFI 3/5, 1999	
Surface Soil	1MW01-00	SWMU 1	RFI 3/5, 1999	
Surface Soil	1MW02-00	SWMU 1	RFI 3/5, 1999	
Surface Soil	1SS01	SWMU 1	RFI 3/5, 1999	
Surface Soil	1SS03	SWMU 1	RFI 3/5, 1999	
Surface Soil	2SB01-00	SWMU 2	RFI 3/5, 1999	
Surface Soil	2MW03-00	SWMU 2	RFI 3/5, 1999	trace amounts of isodren, aldrin and 2,4,5-triclorophenyl in groundwater at this location, not soil related
Surface Soil	9-BG-SS01	SWMU 9	Rev Draft RFI SWMU 9, 2000	
Surface Soil	9-BG-SS01D	SWMU 9	Rev Draft RFI SWMU 9, 2000	
Surface Soil	9-BG-SS02	SWMU 9	Rev Draft RFI SWMU 9, 2000	
Surface Soil	9-BG-SS03	SWMU 9	Rev Draft RFI SWMU 9, 2000	
Surface Soil	9-BG-SS04	SWMU 9	Rev Draft RFI SWMU 9, 2000	
Surface Soil	9-BG-SS05	SWMU 9	Rev Draft RFI SWMU 9, 2000	
Surface Soil	45MW01-00	SWMU 45/11	RFI 3/5, 1999	limited metals analysis
Surface Soil	8E-SS01	ECP 8	ECP Report, 2004	trace 4,4- DDT present
Surface Soil	8E-SS03	ECP 8	ECP Report, 2004	
Surface Soil	16E-SS06	ECP 16	ECP Report, 2004	
Surface Soil	19E-SS09	ECP 19	ECP Report, 2004	

Notes:
SVOC - semi-volatile organic compounds

TABLE 2-1

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SAMPLE LOCATIONS FOR SURFACE SOIL BACKGROUND
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample Type	Sample IDs	Location	Report	Comments
Surface Soil	BGMW01-00	Background, Boxer Drive	RFI 3/5, 1999	A few SVOCs in this sample
Surface Soil	BGMW02-00	Background, Boxer Drive	RFI 3/5, 1999	
Surface Soil	BGMW03-00	Background, Boxer Drive	RFI 3/5, 1999	
Surface Soil	BGMW04-00	Background, Boxer Drive	RFI 3/5, 1999	
Surface Soil	1MW01-00	SWMU 1	RFI 3/5, 1999	
Surface Soil	1MW02-00	SWMU 1	RFI 3/5, 1999	
Surface Soil	1SS01	SWMU 1	RFI 3/5, 1999	
Surface Soil	1SS03	SWMU 1	RFI 3/5, 1999	
Surface Soil	2SB01-00	SWMU 2	RFI 3/5, 1999	
Surface Soil	2MW03-00	SWMU 2	RFI 3/5, 1999	trace amounts of isodren, aldrin and 2,4,5-triclorophenyl in groundwater at this location, not soil related
Surface Soil	9-BG-SS01	SWMU 9	Rev Draft RFI SWMU 9, 2000	
Surface Soil	9-BG-SS01D	SWMU 9	Rev Draft RFI SWMU 9, 2000	
Surface Soil	9-BG-SS02	SWMU 9	Rev Draft RFI SWMU 9, 2000	
Surface Soil	9-BG-SS03	SWMU 9	Rev Draft RFI SWMU 9, 2000	
Surface Soil	9-BG-SS04	SWMU 9	Rev Draft RFI SWMU 9, 2000	
Surface Soil	9-BG-SS05	SWMU 9	Rev Draft RFI SWMU 9, 2000	
Surface Soil	45MW01-00	SWMU 45/11	RFI 3/5, 1999	limited metals analysis
Surface Soil	8E-SS01	ECP 8	ECP Report, 2004	trace 4,4- DDT present
Surface Soil	8E-SS03	ECP 8	ECP Report, 2004	
Surface Soil	16E-SS06	ECP 16	ECP Report, 2004	
Surface Soil	19E-SS09	ECP 19	ECP Report, 2004	

Notes:
SVOC - semi-volatile organic compounds

TABLE 2-2

Revised: September 15, 2006

POSITIVE DETECTIONS - SURFACE SOIL BACKGROUND
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	16E-SS06	19E-SS09	1MW01-00	1MW02-00	1SS01	1SS03	2MW03-00
Date	05-13-2004	05-13-2004	10-29-1996	10-11-1996	10-13-1996	10-10-1996	10-08-1996
Metals (mg/kg)							
Antimony	2.2 U	2.5 U	2.4 J	2.8 J	1.3 UJ	1.8 UJ	1.5 UJ
Arsenic	1.9	1.5	0.67	0.78 UJ	1.8 U	0.69 UJ	1.1
Barium	16	140	76.2	53.8	90.9	64.2	129
Beryllium	0.085 B	0.36 B	(1)	0.32	0.46	0.51	0.33
Cadmium	0.19 B	0.62 U	0.77	0.27	0.2	0.23 U	0.2 U
Chromium	47	34	32.4	30.6	5.9 J	30	31.7 J
Cobalt	13	27	15.2	13.8	14.2	15.6	23.1 J
Copper	43	180	169	19.8	35.2	37.9	109 J
Lead	3.3	21	3.6 R	4.4	3.4	2	(1)
Mercury	0.012 B	0.092 S	0.02 U	0.05	0.08	0.02 U	0.07 J
Nickel	19	14	16.5	6.8	5.4	12.7	16.1
Selenium	1.1 U	1.2 U	0.45 J	0.49	0.23 UJ	0.31 U	0.7 UJ
Silver	1.1 U	1.2 U	0.19 UJ	0.21 UJ	0.14 UJ	0.2 UJ	0.17 U
Thallium	1.1 U	1.2 U	0.15 U	0.16 U	0.18 U	0.14 U	0.13 U
Tin	2.9 B	4 B	0.94 U	1 U	0.69 U	0.95 U	2.2
Vanadium	74 N*	150	84.2	157	91.6	77.4	153 J
Zinc	34	120 E	(1)	13.9 J	19.1	23.1 J	108
Conventionals (mg/kg)							
Cyanide	0.6 U	0.37 B	0.55 U	0.56 U	0.44 U	0.56 U	0.46 U
Sulfide	30 B	33 U	28.6	27.1 UJ	23 UJ	28.4 UJ	28.8 UJ

NA - not analyzed
(1) outlier removed

TABLE 2-2

Revised: September 15, 2006

POSITIVE DETECTIONS - SURFACE SOIL BACKGROUND
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	2SB01-00	45MW01-00	8E-SS01	8E-SS03	9BGSS01	9BGSS01D	9BGSS02
Date	10-08-1996	11-22-1996	05-14-2004	05-14-2004	06-26-1999	06-26-1999	06-26-1999
Metals (mg/kg)							
Antimony	1.5 UJ	NA	2.3 UN	2.1 UN	0.33 R	0.33 R	0.66 R
Arsenic	0.83 U	0.7 UJ	1.3	1 U	2.2 J	0.8 J	2.5 J
Barium	106	(1)	220 N	190 N	91	75	53
Beryllium	0.04 U	NA	0.37 B	0.58	0.36 J	0.34 J	0.17 J
Cadmium	0.2 U	0.25	1.2 U	1 U	0.061 U	0.062 U	0.92 J
Chromium	37.4 J	24.6	12	12	9.6	9.5	17
Cobalt	50.2 J	NA	12	11	(1)	48	29
Copper	54.7 J	NA	130 N	13 N	78 J	78 J	67 J
Lead	16.1	2.8 J	18	2	3.9 J	3 J	8.3 J
Mercury	0.07 J	0.03	0.039	0.038	0.058 J	0.037 J	0.12 J
Nickel	18.1	NA	6.4	3.4 B	5.5	5.3	4.6 J
Selenium	0.93 UJ	0.79 UJ	1.2 U	1 U	2.1 UJ	2.1 UJ	0.41 UJ
Silver	0.17 U	0.7 U	1.2 U	1 U	0.073 U	0.074 U	0.15 U
Thallium	0.13 U	NA	1.2 U	1 U	0.22 UJ	0.22 UJ	0.22 UJ
Tin	0.84 U	NA	3.2 B	1.9 B	1.9 J	2.3 J	1.4 J
Vanadium	225 J	NA	82	35	250	270	230
Zinc	62	NA	45 E	6.2 E	36 J	36 J	49 J
Conventionals (mg/kg)							
Cyanide	0.39 U	NA	0.61 U	0.6 U	1.2 U	1.2 U	1.2 U
Sulfide	29.6 UJ	NA	32 U	30 U	30 U	31 U	30 U

NA - not analyzed
(1) outlier removed

TABLE 2-2

Revised: September 15, 2006

POSITIVE DETECTIONS - SURFACE SOIL BACKGROUND
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	9BGSS03	9BGSS04	9BGSS05	BGMW01-00	BGMW02-00	BGMW03-00	BGMW04-00
Date	06-26-1999	06-26-1999	06-27-1999	04-04-1996	04-04-1996	04-04-1996	04-04-1996
Metals (mg/kg)							
Antimony	0.32 R	0.3 R	0.33 R	2.4 UJ	2.2 UJ	2.3 UJ	2.3 UJ
Arsenic	2.3 J	2.1 J	0.21 J	1.2	0.35 J	1.5	1.8
Barium	110	62	66	169	94.1	35.6	63.7
Beryllium	0.18 J	0.15 J	0.32 J	0.36	0.1 U	0.28	0.21
Cadmium	0.059 U	0.18 J	0.061 U	0.28 U	0.26 U	0.27 U	0.27 U
Chromium	10	27	34	44.1 J	11 J	33.6 J	29.9 J
Cobalt	25	16	33	30.2	27	9.5	21.2
Copper	100 J	67 J	66 J	98.5	(1)	57	62.9
Lead	3.5 J	16 J	21 J	9.6	2.4	6.6	11.9
Mercury	0.032 J	0.03 J	0.071 J	0.06	0.04 U	0.07	0.07
Nickel	6.6	15	17	10.9	7.8	5.8	8.6
Selenium	1 UJ	0.86 UJ	1 UJ	0.56 J	0.13 UJ	1.2 J	1.1 J
Silver	0.071 U	0.067 U	0.073 U	0.39 U	0.35 U	0.37 U	0.37 U
Thallium	0.21 UJ	0.36 UJ	0.22 UJ	0.1 J	0.08 U	0.09 UJ	0.09 UJ
Tin	2.1 J	2 J	2.3 J	1.3 U	1.2 U	1.4	2.2
Vanadium	180	120	180	227	123	189	170
Zinc	67 J	50 J	61 J	106 J	66.2 J	34.2 J	43.9 J
Conventionals (mg/kg)							
Cyanide	1.2 U	1.1 U	1.2 U	0.47 U	0.57 U	0.46 U	0.56 U
Sulfide	29 U	39	44	29.2 U	28.8 U	29.2 U	26.7 U

NA - not analyzed
(1) outlier removed

TABLE 2-3

Revised: September 15, 2006

DATA SUMMARY - SURFACE SOIL BACKGROUND
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

	Minimum Non-Detect	Maximum Non-Detect	Minimum Detected	Maximum Detected	Location of Maximum Detect	Frequency of Detection	Range of Detection Limits	Number of Samples	Number Detected
Metals (mg/kg)									
Antimony	1.3 UJ	2.5 U	2.4 J	2.8 J	1MW02-00	2/14	1.3UJ - 2.5U	14	2
Arsenic	0.69 UJ	1.8 U	0.21 J	2.5 J	9BGSS02	15/21	0.69UJ - 1.8U	21	15
Barium	ND	ND	16	220 N	8E-SS01	20/20	(5)	20	20
Beryllium	0.04 U	0.1 U	0.085 B	0.58	8E-SS03	17/19	0.04U - 0.1U	19	17
Cadmium	0.059 U	1.2 U	0.18 J	0.92 J	9BGSS02	7/21	0.059U - 1.2U	21	7
Chromium	ND	ND	5.9 J	47	16E-SS06	21/21	(5)	21	21
Cobalt	ND	ND	9.5	50.2 J	2SB01-00	19/19	(5)	19	19
Copper	ND	ND	13 N	180	19E-SS09	19/19	(5)	19	19
Lead	ND	ND	2	21 J	19E-SS09, 9BGSS05	19/19	(5)	19	19
Mercury	0.02 U	0.04 U	0.012 B	0.12 J	9BGSS02	18/21	0.02U - 0.04U	21	18
Nickel	ND	ND	3.4 B	19	16E-SS06	20/20	(5)	20	20
Selenium	0.13 UJ	2.1 UJ	0.45 J	1.2 J	BGMW03-00	5/21	0.13UJ - 2.1UJ	21	5
Thallium	0.08 U	1.2 U	0.1 J	0.1 J	BGMW01-00	1/20	0.08U - 1.2U	20	1
Tin	0.69 U	1.3 U	1.4	4 B	19E-SS09	13/20	0.69U - 1.3U	20	13
Vanadium	ND	ND	35	270	9BGSS01D	20/20	(5)	20	20
Zinc	ND	ND	6.2 E	120 E	19E-SS09	19/19	(5)	19	19
Conventionals (mg/kg)									
Cyanide	0.39 U	1.2 U	0.37 B	0.37 B	19E-SS09	1/20	0.39U - 1.2U	20	1
Sulfide	23 UJ	33 U	28.6	44	9BGSS05	4/20	23UJ - 33U	20	4

(5) - not determined
ND - not determined

TABLE 2-4

Revised: September 15, 2006

DESCRIPTIVE STATISTICS - SURFACE SOIL BACKGROUND
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

			W-Test Results									
	FOD	n	Normal Dist	Lognormal Dist	Assumed Dist	Arithmetic Mean (x)	Standard Deviation (s)	Lognormal Arithmetic Mean (x)	Lognormal Standard Deviation (s)	Coefficient of Variation (CV)	Upper Limit of Means (x + 2s)	Outlier Removed?
Metals (mg/kg)												
Antimony	C	14	NO	NO	NORMAL	1.24	0.61	--	--	0.490	2.46	
Arsenic	D	21	YES	YES	NORMAL	1.16	0.75	--	--	0.645	2.65	
Barium	D	20	YES	YES	NORMAL	95	52	--	--	0.547	199	Yes
Beryllium	D	19	YES	NO	NORMAL	0.287	0.152	--	--	0.528	0.590	Yes
Cadmium	C	21	NO	YES	LOGNORMAL	--	--	0.155	2.805	18.100	5.76	
Chromium	D	21	YES	NO	NORMAL	24.9	12.4	--	--	0.499	49.8	
Cobalt	D	19	NO	YES	LOGNORMAL	22.8	11.7	--	--	0.512	46.2	Yes
Copper	D	19	YES	YES	NORMAL	77.2	45.4	--	--	0.589	168	Yes
Lead	D	19	NO	NO	NORMAL	8.4	6.8	--	--	0.81	22.0	Yes
Mercury	D	21	YES	NO	NORMAL	0.0509	0.0290	--	--	0.570	0.109	
Nickel	D	20	NO	YES	LOGNORMAL	10.3	5.22	--	--	0.508	20.7	
Selenium	C	21	NO	NO	NORMAL	0.540	0.32	--	--	0.591	1.18	
Thallium	B	20	--	--	--	--	--	--	--	--	--	
Tin	D	20	YES	NO	NORMAL	1.66	1.05	--	--	0.631	3.76	
Vanadium	D	20	YES	YES	NORMAL	153	66.6	--	--	0.434	287	
Zinc	D	19	YES	YES	NORMAL	51.6	31.6	--	--	0.613	115	Yes
Conventionals (mg/kg)												
Cyanide	B	20	--	--	--	--	--	--	--	--	--	
Sulfide	C	20	NO	NO	NORMAL	18.7	9	--	--	0	37	

TABLE 3-1

Revised: September 15, 2006

SAMPLE LOCATIONS FOR SUBSURFACE SOIL BACKGROUND
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Soil Type Identified as Clay				
Sample IDs	Soil Type	Location	Report	Comments
9-BG-SB01-10-12	Clay	SWMU 9	Rev Draft RFI SWMU 9, 2000	
9-BG-SB02-8-10	Clay	SWMU 9	Rev Draft RFI SWMU 9, 2000	
9-BG-SB03-8-10	Clay	SWMU 9	Rev Draft RFI SWMU 9, 2000	
9-BG-SB04-10-12	Clay	SWMU 9	Rev Draft RFI SWMU 9, 2000	
9-BG-SB05-15-17	Clay	SWMU 9	Rev Draft RFI SWMU 9, 2000	
BGMW03-03	Clay and rock fragments, little silt and sand	Background, Boxer Drive	RFI 3/5, 1999	trace dioxin 2,3,7,8-HxCDD
BGMW03-04	Clay and rock fragments, little silt and sand	Background, Boxer Drive	RFI 3/5, 1999	trace xylene
BGMW04-02	Clay and silt	Background, Boxer Drive	RFI 3/5, 1999	
BGMW04-04	Clay and silt, rock fragments	Background, Boxer Drive	RFI 3/5, 1999	
1MW01-02	Clay silt to silty clay, fill	SWMU 1	RFI 3/5, 1999	Fig 4-4, geology
11E-SB02-04	Clay, brittle red silty fracture	ECP 11	ECP Report, 2004	trace DRO
12E-SB02-04	Clay, brittle red silty fracture	ECP 12	ECP Report, 2004	trace DRO
45MW01-03	Clay, clay and silt	SWMU 45/11	RFI 3/5, 1999	limited metals analysis
BGMW01-04	Clay, little silt, trace sand	Background, Boxer Drive	RFI 3/5, 1999	trace xylene
BGMW01-06	Clay, little silt, trace sand	Background, Boxer Drive	RFI 3/5, 1999	trace xylene, chlorinated herbicide
14E-SB02-02	Clay, some silt, fine gravel layer	ECP 14	ECP Report, 2004	trace DRO
12E-SB01-02	Clay, trace fine gravel and silt	ECP 12	ECP Report, 2004	
14E-SB03-02	Clay, trace fine gravel, fine sand, and silt	ECP 14	ECP Report, 2004	trace DRO
BGMW02-05	Clay, trace fine sand and silt	Background, Boxer Drive	RFI 3/5, 1999	trace di-n-butylphthalate
11E-SB01-03	Clay, trace silt	ECP 11	ECP Report, 2004	trace DRO, trace VOCs.

TABLE 3-1

Revised: September 15, 2006

SAMPLE LOCATIONS FOR SUBSURFACE SOIL BACKGROUND
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Soil Type Identified as Sand or Silt				
Sample IDs	Soil Type	Location	Report	Comments
14E-SB01-04	Fine gravel, little f sand and clay	ECP 14	ECP Report, 2004	trace DRO
11SB04-01	Fine Sand	SWMU 45/11	RFI 3/5, 1999	
11SB15-02	Fine Sand	SWMU 45/11	RFI 3/5, 1999	
18E-SB04-04	Fine Sand	ECP 18	ECP Report, 2004	
8E-SB01-01	no log available	ECP 8	ECP Report, 2004	
45MW01-02	Sand and Silt	SWMU 45/11	RFI 3/5, 1999	limited metals analysis
2MW02-02	Silt and Clay	SWMU 2	RFI 3/5, 1999	small TCE hit in groundwater, Fig 4-7 geology
2MW01-01	Silt clay, little sand	SWMU 2	RFI 3/5, 1999	trace bis 2-ethylhexylphthalate and pesticides in groundwater, Fig 4-9 geology
5E-SB02-02	Silt, little clay, trace fine sand	ECP 5	ECP Report, 2004	trace SVOCs in the surface soil sample at this location
BGMW02-08	Silt, little clay, trace sand	Background, Boxer Drive	RFI 3/5, 1999	
1SB02-03/04	Silt, trace fine sand, trace clay	SWMU 1	RFI 3/5, 1999	Fig 4-2, geology
1SB02-10/11/12	Silt, trace fine sand, trace clay	SWMU 1	RFI 3/5, 1999	Fig 4-2, geology
1MW02-03	Silt, trace to little clay	SWMU 1	RFI 3/5, 1999	Fig 4-4, geology
5GW03R-03	Silt, trace to little clay	SWMU 1	RFI 3/5, 1999	Fig 4-5, geology, 5GW03R mislabeled 5GW02
2MW02-05	Silty clay to clayey silt	SWMU 2	RFI 3/5, 1999	small TCE hit in groundwater at this soil sample location, Fig 4-7 for geology
Soil Type Identified as Weathered Bedrock				
9-BG-SB05-21-23	Weathered Bedrock	SWMU 9	Rev Draft RFI SWMU 9, 2000	
18E-SB03-01	Weathered Bedrock	ECP 18	ECP Report, 2004	
20E-SB07-06	Weathered Bedrock	ECP 20	ECP Report, 2004	

Notes:
DRO - diesel range organics
SVOC - semi-volatile organic compound
VOC - volatile organic compound
TCE - trichloroethene

TABLE 3-2

Revised: September 15, 2006

POSITIVE DETECTIONS - SUBSURFACE SOIL BACKGROUND, CLAY
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	11E-SB01-03	11E-SB02-04	12E-SB01-02	12E-SB02-04	14E-SB02-02	14E-SB03-02	1MW01-02	45MW01-03	9BGSB01-10-12	9BGSB02-8-10	9BGSB03-8-10
Date	05-09-2004	05-09-2004	05-09-2004	05-09-2004	05-08-2004	05-08-2004	10-29-1996	11-22-1996	06-26-1999	06-26-1999	06-26-1999
Metals (mg/kg)											
Antimony	2.4 UN	2.2 UN	2.3 U	2.6 U	2.2 UN	2.4 UN	2.7 J	NA	0.33 R	0.36 R	0.67 R
Arsenic	1.2 U	1.6	1.2 U	1.3 U	1.1 U	1.2 U	0.31	0.49 J	0.54 J	0.53 J	0.85 J
Barium	21	3.6	42	11	51	40	76.5	30.6	54	9.3	150
Beryllium	0.052 B	0.3 B	0.14 B	0.093 B	0.29 B	0.26 B	0.54	NA	0.077 J	0.21 J	
Cadmium	0.61 U	0.54 U	0.59 U	0.66 U	0.55 U	0.6 U	0.19 U	0.33	0.061 U	0.066 U	0.12 U
Chromium	18	65	18	19	28	19	37.1	36.1	3.9	10	6
Cobalt	1.2 U	5	5.4	0.83 B	7.3	6.6	19.9	NA	(1)	2.5	8.9
Copper	18	210	57	53	48	33	52.6	NA	160 J	130 J	260 J
Lead	2	3.6	1.5	1.3	1.7	1.9	1.4 R	2 J	0.27 J	3 J	4.5 J
Mercury	0.013 B	0.023 U	0.097	0.028	0.029	0.033	0.03 U	0.02 U	0.0055 UJ	0.006 UJ	0.0051 UJ
Nickel	1.7 B	6.3	4.3 B	2.2 B	11	6.8	16.5	NA	5.9	1.1 J	2.1 J
Selenium	1.2 U	1.1 U	1.2 U	1.3 U	1.1 U	1.2 U	0.31 J	0.15 UJ	0.94 UJ	0.22 UJ	3.8 J
Silver	1.2 U	1.1 U	0.16 B	1.3 U	1.1 U	1.2 U	0.16 UJ	0.12 U	0.073 U	0.079 U	0.074 U
Thallium	1.2 U	1.1 U	1.2 U	1.3 U	1.1 U	2.4 U	0.16 U	NA	0.2 UJ	0.24 UJ	0.2 UJ
Tin	2.9 B	2.1 B	1.8 B	2.5 B	2 B	2.7 B	0.78 U	NA	2.2 J	2.6 J	2.4 J
Vanadium	25	410	120	180	140	120	111	NA	200	360	410
Zinc	3.9	24	19	7.5	54	38	27.8 J	NA	52 J	27 U	98 J
Conventionals (mg/kg)											
Cyanide	NA	NA	NA	NA	NA	NA	0.46 U	NA	1.2 U	1.3 U	1.2 U
Sulfide	NA	NA	NA	NA	NA	NA	26.9 U	NA	30 U	33 U	31 U

NA - not analyzed
(1) - outlier removed

TABLE 3-2

Revised: September 15, 2006

POSITIVE DETECTIONS - SUBSURFACE SOIL BACKGROUND, CLAY
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	9BGSB04-10-12	9BGSB05-15-17	BGMW01-04	BGMW01-06	BGMW02-05	BGMW03-03	BGMW03-04	BGMW04-02	BGMW04-04
Date	06-26-1999	06-27-1999	04-23-1996	04-23-1996	04-22-1996	04-12-1996	04-12-1996	04-24-1996	04-24-1996
Metals (mg/kg)									
Antimony	0.43 R	0.28 R	2.6 R	3 R	3.4 R	2.8 UJ	2.8 UJ	2.6 R	2.7 R
Arsenic	1.5 J	0.28 J	1.7	0.22 UJ	0.71 J	(1)	0.76 J	0.72	0.79
Barium	53	82	13 J	243 J	178 J	9.7	3.5	246 J	17.3 J
Beryllium	0.1 J	0.38 J	0.29	0.7	0.37	0.15	0.25	0.33	0.13
Cadmium	0.079 U	0.099 J	0.46	0.44	0.4 U	0.33 UJ	0.33 UJ	0.48	0.43
Chromium	8.7	24	101 J	84.1 J	148 J	58.9 R	63.6 R	34.7 J	10.9 J
Cobalt	6.5	23	3.7	14	15.7	2	4.3	33.8	4.1
Copper	89 J	200 J	65.3	120	144	72.9 R	94.5 R	107	37.6
Lead	2.7 J	2 J	4.8	4.9	3.3	4.1 J	3.4 J	5	6.6
Mercury	0.024 J	0.0052 UJ	0.05 U	0.06 U	0.06 U	0.06 UJ	0.17 J	0.06 U	0.06 U
Nickel	2.4 J	17	7.2	(1)	35.6	3.7	5.8	10.2	2.2
Selenium	1.8 J	0.98 UJ	0.22 J	0.17 UJ	0.19 UJ	1.2 J	0.3 UJ	0.37 J	0.16 UJ
Silver	0.095 U	0.063 U	0.42 U	0.48 U	0.55 U	0.46 U	0.45 U	0.42 U	0.43 U
Thallium	0.29 J	0.21 J	0.59 UJ	0.13 UJ	0.15 UJ	0.11 UJ	0.11 UJ	0.12 UJ	0.12 UJ
Tin	2.2 J	2.5 J	1.4 UJ	3.1 J	1.9 UJ	1.5 UJ	1.5 UJ	1.4 UJ	1.5 J
Vanadium	110	160	206	256	373	204	260	234	83.9
Zinc	40 J	76 J	24.1 J	64.6 J	55.7 J	14 J	23 J	56.2 J	18.4 J
Conventionals (mg/kg)									
Cyanide	1.6 U	1.1 U	0.57 U	0.7 U	0.76 U	0.46 U	0.61 U	0.59 U	0.64 U
Sulfide	40 U	37	30.4 U	32.7 U	36.1 U	33.1 U	33.9 U	28.3 U	32.5 U

NA - not analyzed
(1) - outlier removed

TABLE 3-3

Revised: September 15, 2006

DATA SUMMARY - SUBSURFACE SOIL BACKGROUND, CLAY
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

	Minimum Non-Detect	Maximum Non-Detect	Minimum Detected	Maximum Detected	Location of Maximum Detect	Frequency of Detection	Range of Detection Limits	Number of Samples	Number Detected
Metals (mg/kg)									
Antimony	2.2 U	2.8 UJ	2.7 J	2.7 J	1MW01-02	1/9	2.2U - 2.8UJ	9	1
Arsenic	0.22 UJ	1.3 U	0.28 J	1.7	BGMW01-04	13/19	0.22UJ - 1.3U	19	13
Barium	ND	ND	3.5	246 J	BGMW04-02	20/20	(5)	20	20
Beryllium	ND	ND	0.052 B	0.7	BGMW01-06	18/18	(5)	18	18
Cadmium	0.061 U	0.66 U	0.099 J	0.48	BGMW04-02	6/20	0.061U - 0.66U	20	6
Chromium	ND	ND	3.9	148 J	BGMW02-05	18/18	(5)	18	18
Cobalt	1.2 U	1.2 U	0.83 B	33.8	BGMW04-02	17/18	1.2U - 1.2U	18	17
Copper	ND	ND	18	260 J	9BGSB03-8-10	17/17	(5)	17	17
Lead	ND	ND	0.27 J	6.6	BGMW04-04	19/19	(5)	19	19
Mercury	0.0051 UJ	0.06 U	0.013 B	0.17 J	BGMW03-04	7/20	0.0051UJ - 0.06U	20	7
Nickel	ND	ND	1.1 J	35.6	BGMW02-05	18/18	(5)	18	18
Selenium	0.15 UJ	1.3 U	0.22 J	3.8 J	9BGSB03-8-10	6/20	0.15UJ - 1.3U	20	6
Silver	0.063 U	1.3 U	0.16 B	0.16 B	12E-SB01-02	1/20	0.063U - 1.3U	20	1
Thallium	0.11 UJ	2.4 U	0.21 J	0.29 J	9BGSB04-10-12	2/19	0.11UJ - 2.4U	19	2
Tin	0.78 U	1.9 UJ	1.5 J	3.1 J	BGMW01-06	13/19	0.78U - 1.9UJ	19	13
Vanadium	ND	ND	25	410	11E-SB02-04, 9BGSB03-8-10	19/19	(5)	19	19
Zinc	27 U	27 U	3.9	98 J	9BGSB03-8-10	18/19	27U - 27U	19	18
Conventionals (mg/kg)	ND								
Sulfide	26.9 U	40 U	37	37	9BGSB05-15-17	1/13	26.9U - 40U	13	1

(5) - not determined
ND - not determined

TABLE 3-4

Revised: September 15, 2006

DESCRIPTIVE STATISTICS - SUBSURFACE SOIL BACKGROUND, CLAY
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

			W-Test Results									
	FOD	n	Normal Dist	Lognormal Dist	Assumed Dist	Arithmetic Mean (x)	Standard Deviation (s)	Lognormal Arithmetic Mean (x)	Lognormal Standard Deviation (s)	Coefficient of Variation (CV)	Upper Limit of Means (x + 2s)	Outlier Removed?
Metals (mg/kg)												
Antimony	B	9	--	--	--	--	--	--	--	--	--	
Arsenic	D	19	NO	YES	LOGNORMAL	0.73	0.43	--	--	0.585	1.59	Yes
Barium	D	20	NO	YES	LOGNORMAL	67	76	--	--	1.146	220	
Beryllium	D	18	YES	YES	NORMAL	0.259	0.169	--	--	0.651	0.596	Yes
Cadmium	C	20	YES	NO	NORMAL	0.240	0.149	--	--	0.622	0.54	
Chromium	D	18	NO	YES	LOGNORMAL	37.3	38.6	--	--	1.034	114.5	
Cobalt	D	18	NO	YES	LOGNORMAL	9.1	8.9	--	--	0.976	26.9	Yes
Copper	D	17	YES	YES	NORMAL	105.0	70.5	--	--	0.672	246	
Lead	D	19	YES	NO	NORMAL	3.1	1.6	--	--	0.52	6.3	
Mercury	C	20	NO	NO	NORMAL	0.0308	0.0386	--	--	1.253	0.108	
Nickel	D	18	NO	YES	LOGNORMAL	7.9	8.39	--	--	1.063	24.7	Yes
Selenium	C	20	NO	YES	LOGNORMAL	--	--	0.51	2.72	5.377	5.94	
Silver	B	20	--	--	--	--	--	--	--	--	--	
Thallium	C	19	NO	NO	NORMAL	0.30	0.31	--	--	1.036	0.92	
Tin	D	19	YES	NO	NORMAL	2	0.9	--	--	0.475	4	
Vanadium	D	19	YES	YES	NORMAL	208.6	112.7	--	--	0.541	434	
Zinc	D	19	YES	YES	NORMAL	37.4	25.4	--	--	0.679	88	
Conventionals (mg/kg)												
Sulfide	B	13	--	--	--	--	--	--	--	--	--	

TABLE 3-5

Revised: September 15, 2006

POSITIVE DETECTIONS - SUBSURFACE SOIL BACKGROUND, FINE SAND/SILT
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	11SB04-01	11SB15-02	14E-SB01-04	18E-SB04-04	1MW02-03	1SB02-03/04	1SB02-10/11/12	2MW01-01
Date Sampled	09-24-1997	09-19-1997	05-08-2004	05-04-2004	10-28-1996	10-26-1996	10-26-1996	11-08-1996
Metals (mg/kg)								
Antimony	0.36 UJ	0.38 UJ	2.1 UN	2 UN	2.6 J	3.8 J	1.5 UJ	4.6 J
Arsenic	3.2 J	2.3 J	1.1 U	0.99 U	0.16 UJ	0.7 UJ	0.74 UJ	1.6 J
Barium	12.9 J	33	170	54	87.9	89.5	95.6	67.8 J
Beryllium	0.06 U	0.06 U	0.36 B	0.22 B	0.87	0.47	0.53	0.05 U
Cadmium	0.07 U	0.08 U	0.53 U	0.5 U	0.21 U	0.18 U	0.19 U	0.33
Chromium	18.3	15.1	16	8.6 N	19.1	28.6	24.8	38.5
Cobalt	6 J	9.7 J	38	5.9	13.7	18.4	17.3	42.5
Copper	28.4 J	59.4 J	26	(1)	58.4	85.5	88.9	44.8
Lead	3.8 J	1.4 J	2.1	0.5 U	0.91 J	0.47 J	0.48 J	7.8
Mercury	0.02 U	0.02 U	0.022	0.021 U	0.02 U	0.02 U	0.02 U	0.06
Nickel	6.2 J	7 J	13	11	8.2	19.2	16	16.8
Selenium	0.41 R	0.44 R	2.1 U	0.99 U	0.36 UJ	1.6 UJ	1.7 UJ	1 J
Silver	0.11 U	0.12 U	1.1 U	0.99 U	0.18 UJ	0.16 UJ	0.17 UJ	0.22 U
Thallium	0.39 UJ	0.42 UJ	1.1 U	0.99 U	0.16 U	0.14 U	0.15 U	0.18 U
Tin	1.7 J	2.2 J	1.7 B	2.9 B	0.85 U	0.76 U	0.8 U	1.1 U
Vanadium	52.5	63.4	78	89	141	150	134	232
Zinc	17.5 R	29.3 R	61	38	27.5	27.7	34.1	42.6
Conventionals (mg/kg)								
Cyanide	NA	NA	NA	0.54 U	0.49 U	0.48 U	0.48 U	0.7 U
Sulfide	NA	NA	NA	28 U	27.8 UJ	25.6 UJ	26.2 UJ	34.2 R

NA - not analyzed
(1) outlier removed

TABLE 3-5

Revised: September 15, 2006

POSITIVE DETECTIONS - SUBSURFACE SOIL BACKGROUND, FINE SAND/SILT
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	2MW02-02	2MW02-05	45MW01-02	5E-SB02-02	5GW03R-03	8E-SB01-01	BGMW02-08
Date Sampled	11-06-1996	11-06-1996	11-22-1996	05-03-2004	09-18-1997	05-14-2004	04-22-1996
Metals (mg/kg)							
Antimony	3.6 J	1.9 UJ	NA	2.4 UN	0.32 J	1.9 UN	2.8 R
Arsenic	0.73 J	0.2 UJ	3.4 J	1.2 U	0.68 U	0.97 U	1
Barium	90.8 J	(1)	19.4	130 N	123	180 N	178 J
Beryllium	0.05 U	0.05 U	NA	0.18 B	0.19 J	0.77	0.74
Cadmium	0.24 U	0.3	0.35	0.6 U	0.24 U	0.97 U	0.62
Chromium	28.8	6.3	9.2	52	27.5	2.7	29.1 J
Cobalt	35.6	73.4	NA	19	15.3 J	11	42.4
Copper	40.1	50.3	NA	79 N	55	22 N	131
Lead	(1)	3.5	1.1 J	3.3	1.3	0.93	2.6
Mercury	0.03 U	0.02 U	0.02 U	0.024 UN	0.02 U	0.18 U	0.05 U
Nickel	11.1	13.5	NA	26	11.2 J	1.6 B	23
Selenium	0.21 J	0.18 UJ	0.89 UJ	1.2 U	0.19 U	0.97 U	0.16 UJ
Silver	0.2 U	0.21 U	0.21 U	1.2 U	0.1 J	0.97 U	0.46 U
Thallium	0.18 U	0.16 U	NA	1.2 U	1.2 U	0.97 U	0.13 UJ
Tin	0.99 U	1 U	NA	1 B	1.8 J	2.4 B	3.4 J
Vanadium	210	141	NA	120 N	91.9	24	232
Zinc	36.3	36.1	NA	80	30	14 E	98.5 J
Conventionals (mg/kg)							
Cyanide	0.37 U	0.42 U	NA	0.63 U	NA	0.52 U	0.69 U
Sulfide	31 R	27.6 R	NA	33 U	NA	27 U	33.6 U

NA - not analyzed
(1) outlier removed

TABLE 3-6

Revised: September 15, 2006

DATA SUMMARY - SUBSURFACE SOIL BACKGROUND, FINE SAND/SILT
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID Date Sampled	Minimum Non-Detect	Maximum Non-Detect	Minimum Detected	Maximum Detected	Location of Maximum Detect	Frequency of Detection	Range of Detection Limits	Number of Samples	Number Detected
Metals (mg/kg)									
Antimony	0.36 UJ	2.4 U	0.32 J	4.6 J	2MW01-01	5/13	0.36UJ - 2.4U	13	5
Arsenic	0.16 UJ	1.2 U	0.73 J	3.4 J	45MW01-02	6/15	0.16UJ - 1.2U	15	6
Barium	ND	ND	12.9 J	180 N	8E-SB01-01	14/14	(5)	14	14
Beryllium	0.05 U	0.06 U	0.18 B	0.87	1MW02-03	9/14	0.05U - 0.06U	14	9
Cadmium	0.07 U	0.97 U	0.3	0.62	BGMW02-08	4/15	0.07U - 0.97U	15	4
Chromium	ND	ND	2.7	52	5E-SB02-02	15/15	(5)	15	15
Cobalt	ND	ND	5.9	73.4	2MW02-05	14/14	(5)	14	14
Copper	ND	ND	22 N	131	BGMW02-08	13/13	(5)	13	13
Lead	0.5 U	0.5 U	0.47 J	7.8	2MW01-01	13/14	0.5U - 0.5U	14	13
Mercury	0.02 U	0.18 U	0.022	0.06	2MW01-01	2/15	0.02U - 0.18U	15	2
Nickel	ND	ND	1.6 B	26	5E-SB02-02	14/14	(5)	14	14
Selenium	0.16 UJ	2.1 U	0.21 J	1 J	2MW01-01	2/13	0.16UJ - 2.1U	13	2
Silver	0.11 U	1.2 U	0.1 J	0.1 J	5GW03R-03	1/15	0.11U - 1.2U	15	1
Thallium	0.13 UJ	1.2 U	ND	ND		0/14	0.13UJ - 1.2U	14	0
Tin	0.76 U	1.1 U	1 B	3.4 J	BGMW02-08	8/14	0.76U - 1.1U	14	8
Vanadium	ND	ND	24	232	2MW01-01, BGMW02-08	14/14	(5)	14	14
Zinc	ND	ND	14 E	98.5 J	BGMW02-08	12/12	(5)	12	12
Conventionals (mg/kg)									
Cyanide	0.37 U	0.7 U	ND	ND		0/10	0.37U - 0.7U	10	0
Sulfide	25.6 UJ	33.6 U	ND	ND		0/7	25.6UJ - 33.6U	7	0

(5) - not determined
ND - not determined

TABLE 3-7

Revised: September 15, 2006

DESCRIPTIVE STATISTICS - SUBSURFACE SOIL BACKGROUND, FINE SAND/SILT
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

	FOD	n	W-Test Results			Arithmetic Mean (x)	Standard Deviation (s)	Lognormal Arithmetic Mean (x)	Lognormal Standard Deviation (s)	Coefficient of Variation (CV)	Upper Limit of Means (x + 2s)	Outlier Removed?
			Normal Dist	Lognormal Dist	Assumed Dist							
Metals (mg/kg)												
Antimony	C	13	NO	YES	LOGNORMAL	--	--	1.28	3.08	2.407	7.44	
Arsenic	C	15	NO	YES	LOGNORMAL	--	--	0.62	3.02	4.846	6.66	
Barium	D	14	YES	YES	NORMAL	95	56	--	--	0.587	207	Yes
Beryllium	D	14	NO	NO	NORMAL	0.319	0.307	--	--	0.963	0.933	
Cadmium	C	15	YES	YES	NORMAL	0.234	0.170	--	--	0.727	0.57	
Chromium	D	15	YES	YES	NORMAL	21.6	13.1	--	--	0.607	47.9	
Cobalt	D	14	NO	YES	LOGNORMAL	24.9	19.1	--	--	0.768	63.1	
Copper	D	13	YES	YES	NORMAL	59.1	30.6	--	--	0.517	120	Yes
Lead	D	14	NO	YES	LOGNORMAL	2.1	2.0	--	--	0.94	6.2	Yes
Mercury	C	15	NO	NO	NORMAL	0.0210	0.0231	--	--	1.100	0.067	
Nickel	D	14	YES	NO	NORMAL	13.1	6.66	--	--	0.507	26.5	
Selenium	C	13	YES	YES	NORMAL	0.491	0.35	--	--	0.714	1.19	
Silver	B	15	--	--	--	--	--	--	--	--	--	
Tin	D	14	YES	NO	NORMAL	1.42	1.03	--	--	0.725	3.47	
Vanadium	D	14	YES	YES	NORMAL	126	65.2	--	--	0.519	256	
Zinc	D	12	NO	YES	LOGNORMAL	43.8	24.2	--	--	0.552	92	

TABLE 3-8

POSITIVE DETECTIONS - SUBSURFACE SOIL BACKGROUND, WEATHERED BEDROCK
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	18E-SB03-01	20E-SB07-06	9BGSB05-21-23
Date Sampled	05/04/04	05/11/04	06/27/99
Metals (mg/kg)			
Barium	110	41	45
Beryllium	0.13 B	0.18 B	0.35 J
Cadmium	0.52 U	0.55 U	0.33 J
Chromium	5.8 N	10	28
Cobalt	31	17	25
Copper	92	120	210 J
Lead	0.63	1.3	1.9 J
Nickel	12	13	18
Selenium	1 U	1.1 U	0.98 J
Tin	1.5 B	2.5 B	3.6 J
Vanadium	130	180	190
Zinc	36	73	83 J

TABLE 3-9

Revised: September 15, 2006

DATA SUMMARY - SUBSURFACE SOIL BACKGROUND, WEATHERED BEDROCK
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID Date Sampled	Minimum Non-Detect	Maximum Non-Detect	Minimum Detected	Maximum Detected	Location of Maximum Detect	Frequency of Detection	Range of Detection Limits	Number of Samples	Number Detected
Metals (mg/kg)									
Barium	ND	ND	41	110	18E-SB03-01	3/3	(5)	3	3
Beryllium	ND	ND	0.13 B	0.35 J	9BGSB05-21-23	3/3	(5)	3	3
Cadmium	0.52 U	0.55 U	0.33 J	0.33 J	9BGSB05-21-23	1/3	0.52U - 0.55U	3	1
Chromium	ND	ND	5.8 N	28	9BGSB05-21-23	3/3	(5)	3	3
Cobalt	ND	ND	17	31	18E-SB03-01	3/3	(5)	3	3
Copper	ND	ND	92	210 J	9BGSB05-21-23	3/3	(5)	3	3
Lead	ND	ND	0.63	1.9 J	9BGSB05-21-23	3/3	(5)	3	3
Nickel	ND	ND	12	18	9BGSB05-21-23	3/3	(5)	3	3
Selenium	1 U	1.1 U	0.98 J	0.98 J	9BGSB05-21-23	1/3	1U - 1.1U	3	1
Tin	ND	ND	1.5 B	3.6 J	9BGSB05-21-23	3/3	(5)	3	3
Vanadium	ND	ND	130	190	9BGSB05-21-23	3/3	(5)	3	3
Zinc	ND	ND	36	83 J	9BGSB05-21-23	3/3	(5)	3	3

(5) - not determined
ND - not determined

TABLE 3-10

DESCRIPTIVE STATISTICS - SUBSURFACE SOIL BACKGROUND, WEATHERED BEDROCK
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

			W-Test Results			Arithmetic	Standard	Coefficient	Upper Limit
	FOD	n	Normal Dist	Lognormal Dist	Assumed Dist	Mean (x)	Deviation (s)	of Variation (CV)	of Means (x + 2s)
Metals (mg/kg)									
Barium	D	3	YES	YES	Normal	65.33	38.73	0.593	142.80
Beryllium	D	3	YES	YES	Normal	0.22	0.12	0.524	0.45
Cadmium	B	3	--	--	--	--	--	--	--
Chromium	D	3	YES	YES	Normal	14.600	11.793	0.808	38.186
Cobalt	D	3	YES	YES	Normal	24.333	7.024	0.289	38.38
Copper	D	3	YES	YES	Normal	140.7	61.7	0.438	264.0
Lead	D	3	YES	YES	Normal	1.3	0.6	0.498	2.5
Nickel	D	3	YES	YES	Normal	14.3	3.2	0.224	21
Selenium	B	3	--	--	--	--	--	--	--
Tin	D	3	YES	YES	Normal	2.5333	1.0504	0.415	4.634
Vanadium	D	3	YES	YES	Normal	166.7	32.15	0.193	231.0
Zinc	D	3	YES	YES	Normal	64.000	24.76	0.387	113.52

TABLE 4-1

Revised: September 15, 2006

SAMPLE LOCATIONS FOR GROUNDWATER BACKGROUND
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample Type	Sample IDs	Location	Report	Comments
Groundwater	BGMW01	Background, Boxer Drive	RFI 3/5, 1999	
Groundwater	BGMW02	Background, Boxer Drive	RFI 3/5, 1999	trace SVOC present
Groundwater	BGMW03	Background, Boxer Drive	RFI 3/5, 1999	trace SVOCs present. Bis(2-ethylhelxyl)phthalate over MCL
Groundwater	BGMW04	Background, Boxer Drive	RFI 3/5, 1999	
Groundwater	5GW01	SWMU 1	RFI 3/5, 1999	
Groundwater	5GW04	SWMU 1	RFI 3/5, 1999	
Groundwater	1GW05	SWMU 1	RFI 3/5, 1999	
Groundwater	5GW03R	SWMU 1	RFI 3/5, 1999	
Groundwater	9-BG-GW01	SWMU 9	Rev Draft RFI SWMU 9, 2000	
Groundwater	9-BG-GW02	SWMU 9	Rev Draft RFI SWMU 9, 2000	
Groundwater	9-BG-GW03	SWMU 9	Rev Draft RFI SWMU 9, 2000	not good inorganic correlation between primary and duplicate for total inorganics
Groundwater	9-BG-GW03D	SWMU 9	Rev Draft RFI SWMU 9, 2000	
Groundwater	45MW01	SWMU 45/11	RFI 3/5, 1999	limited metals analysis
Groundwater	11GW24	SWMU 45/11	RFI 3/5, 1999	
Groundwater	11GW24D	SWMU 45/11	RFI 3/5, 1999	

Notes:

SVOC - semi-volatile organic compound

MCL - maximum contaminant level

TABLE 4-2

Revised: September 15, 2006

POSITIVE DETECTIONS - GROUNDWATER BACKGROUND
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	11GW24	11GW24D	1GW05	45MW01	5GW01	5GW03R	5GW04	9BGGW01
Date Sampled	09/22/97	09/22/97	10/01/97	11/25/96	11/06/96	10/01/97	11/05/96	06/29/99
Dissolved Metals (ug/L)								
Antimony	2.3 J	1.9 U	1.4 J	NA	16 U	1.3 J	80 U	2.7 U
Arsenic	3.6 J	2.6 U	2.1 U	2.5 J	26 R	2.1 U	26 R	9.3 J
Barium	23.6 J	22.3 J	19.8 J	50.6	158	74.3 J	53.9	114
Beryllium	0.3 U	0.3 U	0.3 U	NA	0.4 U	0.3 U	2 U	0.1 U
Cadmium	0.4 U	0.4 U	0.3 U	2.1 U	2.1 UJ	0.3 U	33.8 J	1.7 J
Chromium	0.7 U	0.7 U	3.2 J	1.7 U	1.7 U	4.3 J	8.5 U	0.8 U
Cobalt	0.7 U	0.7 U	0.93 J	NA	2.8 U	0.8 U	83.8	6.6 J
Copper	0.5 U	0.5 U	1.3 U	NA	3.3	1.3 U	7.5 U	6.2 J
Lead	9.2 R	1.5 U	1.3 U	1.6	26 R	1.3 U	26 R	0.9 UJ
Mercury	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.13 J
Nickel	0.8 U	0.8 U	0.91 J	NA	6.7 U	0.6 U	71.7	2.6 J
Selenium	2.2 U	2.2 U	2 UJ	1.8 R	36 R	2 UJ	36 R	17 U
Silver	0.6 U	0.6 U	0.7 U	1.8 UJ	1.8 UJ	0.7 U	9 UJ	1.8 J
Tin	1.8 U	1.8 U	2.4 U	NA	8.7 U	2.4 U	43.5 U	1.7 U
Vanadium	0.8 U	0.8 U	32.6 J	NA	42.2	71.1	8.5 U	29.3 J
Zinc	2.8 J	1.9 J	5.4 J	NA	6.8	1.6 J	26.6	2.4 U

TABLE 4-2

Revised: September 15, 2006

POSITIVE DETECTIONS - GROUNDWATER BACKGROUND
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	11GW24	11GW24D	1GW05	45MW01	5GW01	5GW03R	5GW04	9BGGW01
Date Sampled	09/22/97	09/22/97	10/01/97	11/25/96	11/06/96	10/01/97	11/05/96	06/29/99
Total Metals (ug/L)								
Antimony	3.1 J	2 J	2.5 J	NA	16 U	1.4 J	80 U	14.2 J
Arsenic	2.8 J	2.5 J	2.1 U	13.4 J	26 R	2.1 U	26 R	5.8 J
Barium	25.6 J	23.1 J	350	483	177	690	69.7	156 J
Beryllium	0.3 U	0.3 U	0.82 J	NA	0.4 U	0.67 J	2 U	0.83 J
Cadmium	0.4 U	0.4 U	0.3 U	5.4 J	5.5 J	0.3 U	24.6 J	2.5 U
Chromium	1.2 J	0.7 U	113	182	1.7 U	59.1	8.5 U	4 U
Cobalt	0.7 U	0.7 U	104	NA	2.8 U	59.1	77.2	11.1 J
Copper	0.5 U	0.5 U	81.9	NA	9.8	199	8.5	52.5 J
Lead	1.5 U	1.5 U	6.3	22.8	26 R	4.9	26 R	0.9 U
Mercury	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	0.8 U	0.8 U	86.9	NA	6.7 U	41.5	35.9	12.6 J
Selenium	2.2 U	2.2 U	2 UJ	9 R	36 R	2 UJ	36 R	17 U
Silver	0.6 U	0.6 U	0.82 J	1.8 UJ	1.8 UJ	0.7 U	9 UJ	3 U
Tin	1.8 U	1.8 U	2.5 J	NA	8.7 U	2.8 J	43.5 U	10.9 J
Vanadium	1.7 J	0.8 U	330	NA	50.4	344	8.5 U	73.3
Zinc	3.1 J	1.3 J	182	NA	12.5	134	23.8	24.9 U

NA - not analyzed
(1) outlier removed

TABLE 4-2

Revised: September 15, 2006

POSITIVE DETECTIONS - GROUNDWATER BACKGROUND
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	9BGGW02	9BGGW03	9BGGW03D	BGMW01	BGMW02	BGMW03	BGMW04
Date Sampled	06/29/99	06/29/99	06/29/99	04/27/96	04/27/96	04/16/96	04/12/96
Dissolved Metals (ug/L)							
Antimony	13.5 U	2.7 U	3.8 J	24.6 UJ	24.6 UJ	24.6 UJ	24.6 UJ
Arsenic	2.6 UJ	17.7 J	8.7 J	1.8 U	1.8 U	1.2 UJ	1.8 U
Barium	271	146	236	82	148	121	126
Beryllium	0.5 U	0.1 J	1.1 J	1.1 U	1.1 U	1.1 U	1.1 U
Cadmium	15.4 J	36	33.6	2.9 U	2.9 U	2.9 U	2.9 U
Chromium	4 U	1.3 J	8 J	2.6 U	2.6 U	3.7	2.6 U
Cobalt	501	591	533	59.4	44.4	11.5	3.9 U
Copper	84.8 J	373	496 J	32	2.2 U	2.2 U	2.2 U
Lead	0.9 J	0.9 UJ	0.9 UJ	0.9 UJ	0.9 UJ	1.2 U	0.9 UJ
Mercury	0.11 J	0.1 U	0.2 J	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	80.1 J	52.2	57.7	34.1	35.6	11.1 U	11.1 U
Selenium	27.3 J	18.2 J	13 J	2.8 UJ	1.4 UJ	1.4 UJ	1.4 UJ
Silver	3 U	1.9 J	1.7 J	4 U	4 U	4 U	4 U
Tin	8.5 U	1.7 U	2 J	13.5 U	13.5 U	13.5 U	13.5 U
Vanadium	3 U	1.2 U	265	2.6 U	2.6 U	2.6 U	8.1
Zinc	(1)	253	492	82.6	60.6	4.4 J	3.8

TABLE 4-2

Revised: September 15, 2006

POSITIVE DETECTIONS - GROUNDWATER BACKGROUND
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	9BGGW02	9BGGW03	9BGGW03D	BGMW01	BGMW02	BGMW03	BGMW04
Date Sampled	06/29/99	06/29/99	06/29/99	04/27/96	04/27/96	04/16/96	04/12/96
Total Metals (ug/L)							
Antimony	13.5 R	5.7 U	13.5 R	24.6 UJ	24.6 UJ	24.6 UJ	24.6 UJ
Arsenic	2.6 UJ	22.4 J	13.3 J	1.8 U	1.8 U	1.7 J	3.6
Barium	315 J	(1) J	191 J	275	212	313	612
Beryllium	1.3 J	(1)	0.99 J	2	1.1 U	1.1 U	2.3
Cadmium	14.8 J	53.1	32.4	7.5	2.9 U	2.9 U	2.9 U
Chromium	6.9 J	112	4 U	54.1	3.1 R	29.4	92
Cobalt	507	778	428	91.8	54.3	55.4	83.4
Copper	200	(1)	223	120	24	102	352
Lead	0.9 U	32.5 J	0.9 U	4.3 J	0.9 UJ	2.5 J	7 J
Mercury	0.12 J	0.21	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	79.7 J	(1)	44 J	73.7	40	26.4	39.4
Selenium	42.7 J	17 UJ	8.5 U	2.8 UJ	1.4 UJ	1.4 UJ	3.1 J
Silver	3 U	30.1	3 U	4 U	4 U	4 U	4 U
Tin	8.5 U	15.5 J	8.5 U	13.5 U	13.5 U	13.5 U	13.5 U
Vanadium	218	(1)	70.8	159	26.8	103	549
Zinc	695	(1)	299	178	95.7	128	320

NA - not analyzed
(1) outlier removed

TABLE 4-3

Revised: September 15, 2006

DATA SUMMARY - GROUNDWATER BACKGROUND
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

	Minimum Non-Detect	Maximum Non-Detect	Minimum Detected	Maximum Detected	Location of Maximum Detect	Frequency of Detection	Range of Detection Limits	Number of Samples	Number Detected
Dissolved Metals (ug/L)									
Antimony	1.9 U	80 U	1.3 J	3.8 J	9BGGW03D	4/14	1.9U - 80U	14	4
Arsenic	1.2 UJ	2.6 UJ	2.5 J	17.7 J	9BGGW03	5/13	1.2UJ - 2.6UJ	13	5
Barium	ND	ND	19.8 J	271	9BGGW02	15/15	(5)	15	15
Beryllium	0.1 U	2 U	0.1 J	1.1 J	9BGGW03D	2/14	0.1U - 2U	14	2
Cadmium	0.3 U	2.9 U	1.7 J	36	9BGGW03	5/15	0.3U - 2.9U	15	5
Chromium	0.7 U	8.5 U	1.3 J	8 J	9BGGW03D	5/15	0.7U - 8.5U	15	5
Cobalt	0.7 U	3.9 U	0.93 J	591	9BGGW03	9/14	0.7U - 3.9U	14	9
Copper	0.5 U	7.5 U	3.3	496 J	9BGGW03D	6/14	0.5U - 7.5U	14	6
Lead	0.9 UJ	1.5 U	0.9 J	1.6	45MW01	2/12	0.9UJ - 1.5U	12	2
Mercury	0.1 U	0.1 U	0.11 J	0.2 J	9BGGW03D	3/15	0.1U - 0.1U	15	3
Nickel	0.6 U	11.1 U	0.91 J	80.1 J	9BGGW02	8/14	0.6U - 11.1U	14	8
Selenium	1.4 UJ	17 U	13 J	27.3 J	9BGGW02	3/12	1.4UJ - 17U	12	3
Silver	0.6 U	9 UJ	1.7 J	1.9 J	9BGGW03	3/15	0.6U - 9UJ	15	3
Sodium	ND	ND	935000 J	1.9E+07 J	5GW04	2/2	(5)	2	2
Tin	1.7 U	43.5 U	2 J	2 J	9BGGW03D	1/14	1.7U - 43.5U	14	1
Vanadium	0.8 U	8.5 U	8.1	265	9BGGW03D	6/14	0.8U - 8.5U	14	6
Zinc	2.4 U	2.4 U	1.6 J	492	9BGGW03D	12/13	2.4U - 2.4U	13	12

TABLE 4-3

Revised: September 15, 2006

DATA SUMMARY - GROUNDWATER BACKGROUND
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

	Minimum Non-Detect	Maximum Non-Detect	Minimum Detected	Maximum Detected	Location of Maximum Detect	Frequency of Detection	Range of Detection Limits	Number of Samples	Number Detected
Total Metals (ug/L)									
Antimony	5.7 U	80 U	1.4 J	14.2 J	9BGGW01	5/12	5.7U - 80U	12	5
Arsenic	1.8 U	2.6 UJ	1.7 J	22.4 J	9BGGW03	8/13	1.8U - 2.6UJ	13	8
Barium	ND	ND	23.1 J	690	5GW03R	14/14	(5)	14	14
Beryllium	0.3 U	2 U	0.67 J	2.3	BGMW04	7/13	0.3U - 2U	13	7
Cadmium	0.3 U	2.9 U	5.4 J	53.1	9BGGW03	7/15	0.3U - 2.9U	15	7
Chromium	0.7 U	8.5 U	1.2 J	182	45MW01	9/14	0.7U - 8.5U	14	9
Cobalt	0.7 U	2.8 U	11.1 J	778	9BGGW03	11/14	0.7U - 2.8U	14	11
Copper	0.5 U	0.5 U	8.5	352	BGMW04	11/13	0.5U - 0.5U	13	11
Lead	0.9 UJ	1.5 U	2.5 J	32.5 J	9BGGW03	7/13	0.9UJ - 1.5U	13	7
Mercury	0.1 U	0.1 U	0.12 J	0.21	9BGGW03	2/15	0.1U - 0.1U	15	2
Nickel	0.8 U	6.7 U	12.6 J	86.9	1GW05	10/13	0.8U - 6.7U	13	10
Selenium	1.4 UJ	17 UJ	3.1 J	42.7 J	9BGGW02	2/12	1.4UJ - 17UJ	12	2
Silver	0.6 U	9 UJ	0.82 J	30.1	9BGGW03	2/15	0.6U - 9UJ	15	2
Sodium	ND	ND	153000	938000 J	5GW01	4/4	(5)	4	4
Tin	1.8 U	43.5 U	2.5 J	15.5 J	9BGGW03	4/14	1.8U - 43.5U	14	4

TABLE 4-4

Revised: September 15, 2006

DESCRIPTIVE STATISTICS - GROUNDWATER BACKGROUND
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

			W-Test Results			Arithmetic	Standard	Lognormal Arithmetic	Lognormal Standard	Coefficient	Upper Limit	Outlier
	FOD	n	Normal Dist	Lognormal Dist	Assumed Dist	Mean ($\bar{x}$)	Deviation (s)	Mean (x)	Deviation (s)	of Variation (CV)	of Means ($\bar{x}$ + 2s)	Removed?
Dissolved Metals (ug/L)												
Antimony	C	14	NO	YES	LOGNORMAL	--	--	4.49	3.35	0.746	11.19	
Arsenic	C	13	NO	NO	NORMAL	3.83	5.10	--	--	1.332	14.03	
Barium	D	15	YES	YES	NORMAL	110	75	--	--	0.685	260	
Beryllium	C	14	NO	YES	LOGNORMAL	--	--	0.273	2.563	9.391	5.400	
Cadmium	C	15	NO	NO	NORMAL	8.607	13.906	--	--	1.616	36.42	
Chromium	C	15	NO	YES	LOGNORMAL	--	--	1.5	2.5	1.694	6.5	
Cobalt	D	14	NO	YES	LOGNORMAL	131.1	224.7	--	--	1.713	580.5	
Copper	C	14	NO	YES	LOGNORMAL	--	--	4.5	12.3	2.736	29	
Lead	C	12	NO	NO	NORMAL	0.7	0.3	--	--	0.51	1.3	
Mercury	C	15	NO	NO	NORMAL	0.0693	0.0438	--	--	0.632	0.157	
Nickel	D	14	NO	YES	LOGNORMAL	25.0	29.55	--	--	1.180	84.1	
Selenium	C	12	NO	NO	NORMAL	6.225	8.85	--	--	1.421	23.92	
Silver	C	15	NO	NO	NORMAL	1.500	1.09	--	--	0.725	3.67	
Tin	B	14	--	--	--	--	--			--	--	
Vanadium	C	14	NO	YES	LOGNORMAL	--	--	5.11	7.92	1.551	20.96	
Zinc	D	13	NO	YES	LOGNORMAL	72.515	144.06	--	--	1.987	360.64	Yes

TABLE 4-4

Revised: September 15, 2006

DESCRIPTIVE STATISTICS - GROUNDWATER BACKGROUND
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

			W-Test Results			Arithmetic	Standard	Lognormal Arithmetic	Lognormal Standard	Coefficient	Upper Limit	Outlier
	FOD	n	Normal Dist	Lognormal Dist	Assumed Dist	Mean ($\bar{x}$)	Deviation (s)	Mean (x)	Deviation (s)	of Variation (CV)	of Means ($\bar{x}$ + 2s)	Removed?
Total Metals (ug/L)												
Antimony	C	12	NO	YES	LOGNORMAL	--	--	6.57	2.83	0.432	12.24	
Arsenic	D	13	NO	YES	LOGNORMAL	5.439	6.73	--	--	1.237	18.89	
Barium	D	14	YES	YES	NORMAL	278	204	--	--	0.733	686	Yes
Beryllium	D	13	YES	YES	NORMAL	0.885	0.66	--	--	0.748	2.21	Yes
Cadmium	C	15	NO	YES	LOGNORMAL	--	--	2.39	7.11	2.975	16.62	
Chromium	D	14	NO	YES	LOGNORMAL	47.082	57.66	--	--	1.225	162.41	
Cobalt	D	14	NO	NO	NORMAL	161	236	--	--	1.469	633.21	
Copper	D	13	YES	NO	NORMAL	106	109	--	--	1.034	324	Yes
Lead	D	13	NO	YES	LOGNORMAL	6.431	9.91	--	--	1.541	26.25	
Mercury	C	15	NO	NO	NORMAL	0.065	0.04	--	--	0.672	0.15	
Nickel	D	13	YES	NO	NORMAL	37.250	29.25	--	--	0.785	95.74	Yes
Selenium	C	12	NO	NO	NORMAL	6.171	11.85	--	--	1.921	29.88	
Silver	C	15	NO	NO	NORMAL	3.378	7.47	--	--	2.210	18.31	
Tin	C	14	NO	YES	LOGNORMAL	--	--	4.80	2.28	0.475	9.35	
Vanadium	D	13	NO	YES	LOGNORMAL	148.512	168.08	--	--	1.132	484.66	Yes
Zinc	D	13	NO	YES	LOGNORMAL	160.373	193.58	--	--	1.207	547.53	Yes

TABLE 5-1

Revised: September 15, 2006

POSITIVE DETECTIONS - ESTUARINE WETLAND BACKGROUND SURFACE WATER
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	9SW05	9SW08	9SW08D	9SW09	9SW10	9SW11	9SW12	9SW24
Date Sampled	06-29-1999	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000
Dissolved Metals (ug/L)								
Antimony	NA	20 U	7.4 J	20 U	20 U	5.5 J	10 J	20 U
Arsenic	NA	10 U	10 U	10 U	10 U	10 U	3.8 J	10 U
Barium	NA	25	25	27	21	22	24	15
Beryllium	NA	4 U	4 U	4 U	4 U	4 U	4 U	4 U
Cadmium	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chromium	NA	2.2 J	1.8 J	10 U	10 U	2.2 J	10 U	10 U
Cobalt	NA	3 J	2.8 J	2.2 J	10 U	1.9 J	(1) J	10 U
Copper	NA	2 J	1.8 J	20 U	2.9 J	2.9 J	2.4 J	20 U
Lead	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Mercury	NA	0.083 J	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	NA	40 U	40 U	40 U	40 U	40 U	40 U	40 U
Selenium	NA	4.2 J	7.7 J	10 U	10 U	4.3 J	5.2 J	10 U
Silver	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Thallium	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tin	NA	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Vanadium	NA	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Zinc	NA	8.6 J	20 U	20 U	14 J	20 U	21	20 U

TABLE 5-1

Revised: September 15, 2006

POSITIVE DETECTIONS - ESTUARINE WETLAND BACKGROUND SURFACE WATER
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	9SW05	9SW08	9SW08D	9SW09	9SW10	9SW11	9SW12	9SW24
Date Sampled	06-29-1999	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000
Total Metals (ug/L)								
Antimony	2.7 U	20 U	20 U	20 U	20 U	20 U	(1) J	20 U
Arsenic	(1) J	10 U	10 U	3.3 J	4.2 J	4.5 J	10 U	10 U
Barium	(1)	27	27	32	22	23	24	16
Beryllium	0.1 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
Cadmium	0.5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chromium	(1)	2.2 J	3.8 J	4.4 J	2.6 J	5 J	3.2 J	2 J
Cobalt	3.2 J	5.6 J	6.3 J	4.9 J	10 U	2.8 J	7.1 J	10 U
Copper	42.3 U	14 J	17 J	7.9 J	7.1 J	12 J	6.4 J	2.3 J
Lead	4.5 UJ	5 U	5 U	5 U	2 J	5 U	5 U	5 U
Mercury	0.1 U	0.2 U	0.2 U	0.086 J	0.2 U	0.2 U	0.091 J	0.2 U
Nickel	1.4 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U
Selenium	17 UJ	5.7 J	4.6 J	10 U	7.5 J	5.5 J	10 U	10 U
Silver	0.6 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Thallium	180 R	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tin	2.7 J	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Vanadium	(1)	12 J	21 J	14 J	24 J	23 J	50 U	50 U
Zinc	11.9 J	8.1 J	8.6 J	6 J	20 U	7.3 J	6.2 J	20 U

(1) - outlier removed

TABLE 5-1

Revised: September 15, 2006

POSITIVE DETECTIONS - ESTUARINE WETLAND BACKGROUND SURFACE WATER
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	9SW24D	9SW25	9SW26	9SW27	9SW28	01EWSSW01	01EWSSW02	01EWSSW03
Date Sampled	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	07-26-2003	07-26-2003	07-26-2003
Dissolved Metals (ug/L								
Antimony	20 U	6.1 J	20 U	8.1 J	5.6 J	2 J	2.6	1.7 J
Arsenic	10 U	10 U	10 U	10 U	10 U	2.1 J	2.9 J	1.9 J
Barium	15	15	17	22	16	33	35	31
Beryllium	4 U	4 U	4 U	4 U	4 U	0.5 U	0.5 U	0.5 U
Cadmium	5 U	5 U	5 U	5 U	5 U	2.5 U	2.5 U	2.5 U
Chromium	10 U	10 U	10 U	10 U	10 U	0.95 J	5 U	5 U
Cobalt	10 U	10 U	10 U	10 U	10 U	1.9 J	2.1 J	1.7 J
Copper	20 U	2 J	1.4 J	20 U	1.1 J	2.4 J	2.4 J	(1) J
Lead	5 U	5 U	5 U	5 U	5 U	0.11 J	0.2 J	0.11 J
Mercury	0.2 U	0.11 J	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	40 U	40 U	40 U	40 U	40 U	0.83 J	0.83 J	0.91 J
Selenium	7.2 J	5 J	10 U	7.7 J	7.4 J	0.36 J	0.3 J	0.26 J
Silver	10 U	10 U	10 U	10 U	10 U	5 U	5 U	5 U
Thallium	10 U	10 U	10 U	10 U	10 U	1 U	1 U	1 U
Tin	50 U	50 U	50 U	50 U	50 U	0.49 J	0.16 J	0.22 J
Vanadium	50 U	50 U	50 U	50 U	50 U	7.2	10	7.2
Zinc	20 U	20 U	14 J	7.6 J	20 U	20	21	21

TABLE 5-1

Revised: September 15, 2006

POSITIVE DETECTIONS - ESTUARINE WETLAND BACKGROUND SURFACE WATER
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	9SW24D	9SW25	9SW26	9SW27	9SW28	01EWSSW01	01EWSSW02	01EWSSW03
Date Sampled	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	07-26-2003	07-26-2003	07-26-2003
Total Metals (ug/L)								
Antimony	20 U	5.5 J	20 U	20 U	20 U	2.1 J	2.5 J	1.7 J
Arsenic	10 U	4.7 J	6.1 J	10 U	3.3 J	2.7 J	3.4 J	2.1 J
Barium	16	16	18	25	16	33	36	32
Beryllium	4 U	4 U	4 U	4 U	4 U	0.5 U	0.5 U	0.5 U
Cadmium	5 U	5 U	5 U	5 U	5 U	2.5 U	2.5 U	2.5 U
Chromium	10 U	1.9 J	10 U	2.1 J	2.2 J	2.1 J	3.8 J	1.4 J
Cobalt	10 U	1.8 J	10 U	2.3 J	1.5 J	2 J	2.5 J	1.8 J
Copper	2.7 J	3.6 J	2.6 J	4.5 J	2.5 J	8.1	13	6.3
Lead	5 U	5 U	5 U	5 U	5 U	1.8	2.5	0.87 J
Mercury	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	40 U	40 U	40 U	40 U	40 U	1.5 J	2.6 J	1.3 J
Selenium	10 U	10 U	10 U	10 U	6 J	0.49 J	0.44 J	0.31 J
Silver	10 U	10 U	10 U	10 U	10 U	5 U	0.066 J	5 U
Thallium	10 U	10 U	10 U	10 U	10 U	0.28 J	1 U	1 U
Tin	50 U	50 U	50 U	50 U	50 U	0.34 J	0.29 J	5 U
Vanadium	50 U	50 U	50 U	50 U	50 U	13	21	13
Zinc	20 U	20 U	20 U	6.5 J	20 U	21	25	19

(1) - outlier removed

TABLE 5-1

Revised: September 15, 2006

POSITIVE DETECTIONS - ESTUARINE WETLAND BACKGROUND SURFACE WATER
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	01EWSSW04	01EWSSW05	01EWSSW05D	01EWSSW06	01EWSSW07	01EWSSW08	01EWSSW09
Date Sampled	07-25-2003	07-26-2003	07-26-2003	07-26-2003	07-26-2003	07-25-2003	07-26-2003
Dissolved Metals (ug/L							
Antimony	0.79 J	0.51 J	0.53 J	1.4 J	1.7 J	1.3 J	0.63 J
Arsenic	1.7 J	1.9 J	1.6 J	2.4 J	2 J	2.3 J	1.8 J
Barium	17	14	14	31	32	23	15
Beryllium	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Cadmium	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Chromium	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cobalt	1.6 J	1.4 J	1.5 J	1.7 J	1.8 J	1.8 J	1.6 J
Copper	1.5 J	2.7 J	1.8 J	1.8 J	2.2 J	1.4 J	1.9 J
Lead	1.5 U	1.5 U	1.5 U	0.11 J	0.12 J	1.5 U	1.5 U
Mercury	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	0.58 J	0.54 J	0.49 J	0.53 J	0.72 J	0.68 J	0.64 J
Selenium	0.32 J	0.28 J	0.26 J	0.27 J	0.38 J	0.29 J	0.28 J
Silver	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Thallium	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tin	0.33 J	0.18 J	5 U	0.16 J	5 U	0.27 J	5 U
Vanadium	9.8	12	12	5.4	9.5	8.3	15
Zinc	18	17	17	21	20	20	19

TABLE 5-1

Revised: September 15, 2006

POSITIVE DETECTIONS - ESTUARINE WETLAND BACKGROUND SURFACE WATER
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	01EWSSW04	01EWSSW05	01EWSSW05D	01EWSSW06	01EWSSW07	01EWSSW08	01EWSSW09
Date Sampled	07-25-2003	07-26-2003	07-26-2003	07-26-2003	07-26-2003	07-25-2003	07-26-2003
Total Metals (ug/L)							
Antimony	0.84 J	0.52 J	0.49 J	1.6 J	1.7 J	1.3 J	0.64 J
Arsenic	2.3 J	1.8 J	1.8 J	3.2 J	2.7 J	3 J	2.1 J
Barium	22	15	15	34	32	27	16
Beryllium	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Cadmium	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Chromium	4.3 J	2.3 J	1.9 J	2.5 J	2.1 J	3.6 J	3.4 J
Cobalt	2.3 J	1.8 J	1.7 J	2.4 J	2 J	2.3 J	2.2 J
Copper	10	9.2	4.2 J	19	9.1	14	7.8
Lead	1.2 J	0.74 J	0.46 J	1.9	0.98 J	1.2 J	0.94 J
Mercury	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	1.8 J	1.2 J	1.1 J	2.4 J	1.5 J	2 J	1.7 J
Selenium	0.32 J	0.27 J	0.24 J	0.43 J	0.36 J	0.4 J	0.24 J
Silver	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Thallium	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tin	0.25 J	0.16 J	5 U	0.21 J	0.2 J	0.28 J	0.15 J
Vanadium	22	19	17	13	14	18	25
Zinc	21	19	16	30	20	23	19

(1) - outlier removed

TABLE 5-2

Revised: September 15, 2006

DATA SUMMARY - ESTUARINE WETALND BACKGROUND SURFACE WATER
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

	Minimum Non-Detect	Maximum Non-Detect	Minimum Detected	Maximum Detected	Location of Maximum Detect	Frequency of Detection	Range of Detection Limits	Number of Samples	Number Detected
Dissolved Metals (ug/L)									
Antimony	20 U	20 U	0.51 J	10 J	9SW12	16/22	20U - 20U	22	16
Arsenic	10 U	10 U	1.6 J	3.8 J	9SW12	11/22	10U - 10U	22	11
Barium	ND	ND	14	35	01EWSSW02	22/22	(5)	22	22
Beryllium	0.5 U	4 U	ND	ND		0/22	0.5U - 4U	22	0
Cadmium	2.5 U	5 U	ND	ND		0/22	2.5U - 5U	22	0
Chromium	5 U	10 U	0.95 J	2.2 J	9SW08, 9SW11	4/22	5U - 10U	22	4
Cobalt	10 U	10 U	1.4 J	3 J	9SW08	14/21	10U - 10U	21	14
Copper	20 U	20 U	1.1 J	2.9 J	9SW10, 9SW11	17/21	20U - 20U	21	17
Lead	1.5 U	5 U	0.11 J	0.2 J	01EWSSW02	5/22	1.5U - 5U	22	5
Mercury	0.2 U	0.2 U	0.083 J	0.11 J	9SW25	2/22	0.2U - 0.2U	22	2
Nickel	40 U	40 U	0.49 J	0.91 J	01EWSSW03	10/22	40U - 40U	22	10
Selenium	10 U	10 U	0.26 J	7.7 J	9SW08D, 9SW27	18/22	10U - 10U	22	18
Silver	5 U	10 U	ND	ND		0/22	5U - 10U	22	0
Thallium	1 U	10 U	ND	ND		0/22	1U - 10U	22	0
Tin	5 U	50 U	0.16 J	0.49 J	01EWSSW01	7/22	5U - 50U	22	7
Vanadium	50 U	50 U	5.4	15	01EWSSW09	10/22	50U - 50U	22	10
Zinc	20 U	20 U	7.6 J	21	SSW02, 01EWSSW03	15/22	20U - 20U	22	15

TABLE 5-2

Revised: September 15, 2006

DATA SUMMARY - ESTUARINE WETALND BACKGROUND SURFACE WATER
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

	Minimum Non-Detect	Maximum Non-Detect	Minimum Detected	Maximum Detected	Location of Maximum Detect	Frequency of Detection	Range of Detection Limits	Number of Samples	Number Detected
Total Metals (ug/L)									
Antimony	2.7 U	20 U	0.49 J	5.5 J	9SW25	11/22	2.7U - 20U	22	11
Arsenic	10 U	10 U	1.8 J	6.1 J	9SW26	16/22	10U - 10U	22	16
Barium	ND	ND	15	36	01EWSSW02	22/22	(5)	22	22
Beryllium	0.1 U	4 U	ND	ND		0/23	0.1U - 4U	23	0
Cadmium	0.5 U	5 U	ND	ND		0/23	0.5U - 5U	23	0
Carbon	ND	ND	ND	ND		0/0	(5)	0	0
Chromium	10 U	10 U	1.4 J	5 J	9SW11	20/22	10U - 10U	22	20
Chromium VI	ND	ND	ND	ND		0/0	(5)	0	0
Cobalt	10 U	10 U	1.5 J	7.1 J	9SW12	19/23	10U - 10U	23	19
Copper	42.3 U	42.3 U	2.3 J	19	01EWSSW06	22/23	42.3U - 42.3U	23	22
Cyanide	10 U	10 U	ND	ND		0/18	10U - 10U	18	0
Lead	4.5 UJ	5 U	0.46 J	2.5	01EWSSW02	11/23	4.5UJ - 5U	23	11
Mercury	0.1 U	0.2 U	0.086 J	0.091 J	9SW12	2/23	0.1U - 0.2U	23	2
Nickel	1.4 U	40 U	1.1 J	2.6 J	01EWSSW02	10/23	1.4U - 40U	23	10
Selenium	10 U	17 UJ	0.24 J	7.5 J	9SW10	15/23	10U - 17UJ	23	15
Silver	0.6 U	10 U	0.066 J	0.066 J	01EWSSW02	1/23	0.6U - 10U	23	1
Sulfide	100 U	100 U	ND	ND		0/1	100U - 100U	1	0
Thallium	1 U	10 U	0.28 J	0.28 J	01EWSSW01	1/22	1U - 10U	22	1
Tin	5 U	50 U	0.15 J	2.7 J	9SW05	9/23	5U - 50U	23	9
Vanadium	50 U	50 U	12 J	25	01EWSSW09	15/22	50U - 50U	22	15
Zinc	20 U	20 U	6 J	30	01EWSSW06	17/23	20U - 20U	23	17

(5) - not determined
ND - not determined

TABLE 5-3

Revised: September 15, 2006

DESCRIPTIVE STATISTICS - ESTUARINE WETLAND BACKGROUND SURFACE WATER
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

			W-Test Results									
	FOD	n	Normal Dist	Lognormal Dist	Assumed Dist	Arithmetic Mean ($\bar{x}$)	Standard Deviation (s)	Lognormal Arithmetic Mean ($\bar{x}$)	Lognormal Standard Deviation (s)	Coefficient of Variation (CV)	Upper Limit of Means ($\bar{x}$ + 2s)	Outlier Removed?
Dissolved Metals (ug/L)												
Antimony	D	22	NO	NO	NORMAL	5.27	3.97	--	--	0.754	13.20	
Arsenic	C	22	NO	NO	NORMAL	3.61	1.49	--	--	0.413	6.59	
Barium	D	22	NO	NO	NORMAL	22.23	6.93	--	--	0.312	36.10	
Chromium	C	22	NO	NO	NORMAL	3.39	1.41	--	--	0.416	6.21	
Cobalt	D	21	NO	NO	NORMAL	2.95	1.53	--	--	0.518	6.01	Yes
Copper	D	21	NO	NO	NORMAL	3.55	3.24	--	--	0.912	10.03	Yes
Lead	C	22	NO	NO	NORMAL	1.56	1.07	--	--	0.685	3.71	
Mercury	C	22	NO	NO	NORMAL	0.10	0.00	--	--	0.043	0.11	
Nickel	C	22	NO	NO	NORMAL	11.22	9.85	--	--	0.878	30.91	
Selenium	D	22	NO	NO	NORMAL	3.26	2.93	--	--	0.900	9.12	
Tin	C	22	NO	NO	NORMAL	14.06	12.29	--	--	0.874	38.63	
Vanadium	C	22	NO	NO	NORMAL	18.02	8.04	--	--	0.446	34.11	
Zinc	D	22	NO	NO	NORMAL	14.96	5.00	--	--	0.334	24.96	

TABLE 5-3

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DESCRIPTIVE STATISTICS - ESTUARINE WETLAND BACKGROUND SURFACE WATER
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

	FOD	n	W-Test Results			Arithmetic Mean ($\bar{x}$)	Standard Deviation (s)	Lognormal Arithmetic Mean ($\bar{x}$)	Lognormal Standard Deviation (s)	Coefficient of Variation (CV)	Upper Limit of Means ($\bar{x}$ + 2s)	Outlier Removed?
			Normal Dist	Lognormal Dist	Assumed Dist							
Total Metals (ug/L)												
Antimony	C	22	NO	NO	NORMAL	5.47	4.35	--	--	0.796	14.16	Yes
Arsenic	D	22	YES	YES	NORMAL	3.69	1.30	--	--	0.351	6.28	Yes
Barium	D	22	NO	NO	NORMAL	23.82	7.14	--	--	0.300	38.10	Yes
Chromium	D	22	NO	YES	LOGNORMAL	3.04	1.16	--	--	0.381	5.35	Yes
Cobalt	D	23	NO	NO	NORMAL	3.33	1.71	--	--	0.516	6.76	
Copper	D	23	YES	YES	NORMAL	8.89	5.43	--	--	0.611	19.75	
Lead	C	23	NO	NO	NORMAL	1.93	0.73	--	--	0.378	3.38	
Mercury	C	23	NO	NO	NORMAL	0.10	0.01	--	--	0.112	0.12	
Nickel	C	23	NO	NO	NORMAL	11.21	9.40	--	--	0.838	30.00	
Selenium	D	23	NO	NO	NORMAL	3.32	2.79	--	--	0.842	8.90	
Silver	B	23	--	--	--	--	--	--	--	--	--	
Thallium	B	22	--	--	--	--	--	--	--	--	--	
Tin	C	23	NO	NO	NORMAL	13.46	12.35	--	--	0.917	38.15	
Vanadium	D	22	NO	NO	NORMAL	20.18	5.01	--	--	0.248	30.20	Yes
Zinc	D	23	NO	YES	LOGNORMAL	14.24	6.94	--	--	0.487	28.13	

TABLE 5-4

Revised: September 15, 2006

POSITIVE DETECTIONS - OPEN WATER BACKGROUND SURFACE WATER
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

	BGOWSW01 01-17-2002	BGOWSW02 01-17-2002	BGOWSW03 01-17-2002	BGOWSW03D 01-17-2002	BGOWSW04 01-17-2002	BGOWSW05 01-17-2002	BGOWSW06 01-17-2002	BGOWSW07 01-17-2002	BGOWSW08 01-17-2002	BGOWSW09 01-17-2002
Dissolved Metals (ug/L)										
Antimony	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Arsenic	10 U	6.7 J	4.4 J	3.6 J	10 U	5.5 J	10 U	3.3 J	7.1 J	4.1 J
Barium	8.6 J	8.5 J	8.6 J	7.9 J	8.6 J	8.9 J	8 J	8 J	8.2 J	7.8 J
Cadmium	5 U	0.89 J	0.83 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chromium	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cobalt	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Copper	(1)	3.2 J	2.9 J	2.9 J	2.9 J	3.3 J	2.9 J	3.4 J	3 J	2.7 J
Lead	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Nickel	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U
Selenium	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Thallium	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Tin	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Vanadium	20 U	8.9 J	6.5 J	20 U	7 J	6 J	5 J	7 J	5.3 J	20 U
Zinc	7.7 J	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Total Metals (ug/L)										
Antimony	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Arsenic	10 U	6.9 J	10 U	9.4 J	4.5 J	7.4 J	10 U	10 U	4.2 J	10 U
Barium	8.7 J	8.2 J	8.6 J	9.5 J	9.4 J	9.8 J	8.7 J	8.5 J	9 J	8.7 J
Cadmium	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.94 J	5 U
Chromium	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cobalt	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Copper	2.5 J	2.2 J	1.7 J	2 J	1.9 J	2 J	2.4 J	1.8 J	1.9 J	1.8 J
Lead	5 U	5 U	5 U	5 U	3.3 J	5 U	5 U	5 U	5 U	5 U
Mercury	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U
Selenium	10 U	10 U	10 U	10 U	10 U	10 U	6 J	10 U	10 U	10 U
Silver	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Thallium	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Tin	50 U	6.5 J	50 U	50 U	50 U	50 U	7.3 J	50 U	50 U	50 U
Vanadium	20 U	20 U	20 U	4.7 J	4.6 J	8.2 J	6.8 J	20 U	20 U	12 J
Zinc	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U

(1) - outlier removed

TABLE 5-4

Revised: September 15, 2006

POSITIVE DETECTIONS - OPEN WATER BACKGROUND SURFACE WATER
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

	7SW2	7SW5	7SW6	7SW7	7SW8	7SW9	01OWSW01	01OWSW02	01OWSW03	01OWSW04
	01-15-2002	01-15-2002	01-15-2002	01-15-2002	01-15-2002	01-15-2002	07-24-2003	07-24-2003	07-25-2003	07-25-2003
Dissolved Metals (ug/L)										
Antimony	20 U	20 U	20 U	20 U	20 U	20 U	0.25 J	0.22 J	0.2 J	0.17 J
Arsenic	7.1 J	10 U	3.2 J	10 U	10 U	7.7 J	5 U	5 U	5 U	5 U
Barium	8.9 J	9.4 J	7.5 J	8.9 J	8.6 J	8.2 J	8	8.5	7.9	8.1
Cadmium	0.95 J	5 U	5 U	5 U	5 U	5 U	2.5 U	2.5 U	2.5 U	2.5 U
Chromium	10 U	10 U	10 U	10 U	10 U	10 U	5 U	5 U	5 U	5 U
Cobalt	10 U	10 U	10 U	10 U	10 U	10 U	0.85 J	0.87 J	1 J	1.1 J
Copper	3.8 J	2.3 J	2.1 J	3.4 J	2.3 J	2.7 J	0.77 J	0.71 J	0.64 J	1.2 J
Lead	5 U	5 U	5 U	5 U	5 U	5 U	1.5 U	1.5 U	1.5 U	1.5 U
Nickel	40 U	40 U	40 U	40 U	40 U	40 U	0.3 J	0.17 J	0.29 J	0.27 J
Selenium	10 U	10 U	10 U	10 U	10 U	10 U	2.5 U	0.16 J	0.16 J	0.19 J
Thallium	10 UJ	10 U	4.9 J	10 U	10 U	10 U	1 U	1 U	1 U	1 U
Tin	50 U	9.1 J	6.6 J	8.6 J	7.3 J	50 U	0.36 J	0.32 J	5 U	5 U
Vanadium	20 U	20 U	6.2 J	5.2 J	20 U	4.5 J	1.7 J	1.9 J	1.9 J	2 J
Zinc	20 U	20 U	20 U	20 U	20 U	20 U	12	13	16	16
Total Metals (ug/L)										
Antimony	20 U	20 U	(1) J	20 U	20 U	20 U	0.3 J	0.32 J	0.22 J	0.18 J
Arsenic	4 J	7 J	10 U	4.2 J	4.6 J	10 U	5 U	5 U	1.5 J	5 U
Barium	9 J	9.3 J	8.8 J	8.4 J	8.6 J	8.6 J	8.9	7.7	8.2	7.3
Cadmium	5 U	5 U	5 U	5 U	5 U	5 U	2.5 U	2.5 U	2.5 U	2.5 U
Chromium	10 U	10 U	10 U	10 U	10 U	10 U	5 U	5 U	5 U	5 U
Cobalt	10 U	10 U	10 U	10 U	10 U	10 U	0.8 J	0.89 J	1 J	0.89 J
Copper	3.8 J	2.2 J	2.9 J	2.2 J	2.6 J	2.1 J	1.3 J	1.2 J	3.9 J	1.3 J
Lead	5 U	1.7 J	5 U	5 U	5 U	5 U	0.24 J	0.086 J	0.21 J	1.5 U
Mercury	0.2 U	0.2 U	0.2 U	0.2 U	0.081 J	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	40 U	40 U	40 U	40 U	40 U	40 U	0.31 J	0.48 J	0.26 J	0.24 J
Selenium	10 U	10 U	10 U	10 U	(1)	10 U	0.21 J	0.16 J	0.18 J	2.5 U
Silver	10 U	10 U	10 U	10 U	10 U	10 U	5 U	5 U	5 U	5 U
Thallium	10 UJ	10 U	10 U	10 U	10 U	10 U	0.24 J	0.28 J	1 U	1 U
Tin	50 U	6.8 J	50 U	50 U	50 U	50 U	1.9 J	0.78 J	5 U	5 U
Vanadium	10 J	9.2 J	6.4 J	4.6 J	7.7 J	6.1 J	2 J	2.2 J	2.4 J	2 J
Zinc	20 U	20 U	20 U	20 U	20 U	20 U	11	12	15	12

(1) - outlier removed

TABLE 5-4

Revised: September 15, 2006

POSITIVE DETECTIONS - OPEN WATER BACKGROUND SURFACE WATER
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

	01OWSW05 07-25-2003	01OWSW05D 07-25-2003	01OWSW06 07-24-2003	01OWSW07 07-24-2003	01OWSW08 07-25-2003	01OWSW09 07-25-2003	02OWSW01 07-27-2003	02OWSW02 07-27-2003	02OWSW03 07-28-2003	02OWSW 07-28-20
Dissolved Metals (ug/L)										
Antimony	0.22 J	0.24 J	0.22 J	0.26 J	0.22 J	0.2 J	0.21 J	0.22 J	0.2 J	0.19
Arsenic	1.4 J	5 U	5 U	5 U	1.4 J	5 U	1.6 J	1.8 J	1.5 J	1.5
Barium	7.5	7.6	7.9	7.7	7.6	7.9	10	(1)	7.3	7.4
Cadmium	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5
Chromium	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.84 J	0.9 J	0.77
Cobalt	1.1 J	1.1 J	0.89 J	0.85 J	1.1 J	1.1 J	0.97 J	0.98 J	1 J	0.96
Copper	0.8 J	0.69 J	0.83 J	0.86 J	0.91 J	0.98 J	0.98 J	1.6	1.1 J	0.89
Lead	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	0.086 J	1.5
Nickel	0.31 J	0.28 J	0.25 J	0.19 J	0.23 J	0.25 J	0.31 J	0.3 J	(1)	0.19
Selenium	0.21 J	0.35 J	0.15 J	0.16 J	0.15 J	0.2 J	0.16 J	2.5 U	2.5 U	0.23
Thallium	1 U	0.81 J	1 U	1 U	0.21 J	1 U	1 U	1 U	1 U	1
Tin	5 U	0.66 J	0.27 J	0.22 J	0.41 J	0.37 J	0.28 J	0.26 J	0.29 J	0.32
Vanadium	2.1 J	2.1 J	1.7 J	1.9 J	2 J	2.2 J	2.1 J	2.4 J	2 J	2
Zinc	16	16	13	13	16	16	16	18	17	17
Total Metals (ug/L)										
Antimony	0.22 J	0.21 J	0.26 J	0.25 J	0.2 J	0.21 J	0.27 J	0.26 J	0.24 J	0.22
Arsenic	5 U	1.5 J	5 U	5 U	5 U	5 U	2 J	1.9 J	1.4 J	5
Barium	8	8.4	9	8.1	8	7.7	12	8.4	7.5	7.7
Cadmium	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5
Chromium	5 U	5 U	5 U	5 U	5 U	5 U	4.4 J	0.8 J	1.2 J	0.95
Cobalt	0.97 J	0.94 J	0.8 J	0.8 J	0.93 J	0.94 J	1.1 J	1.1 J	0.93 J	0.99
Copper	14	0.91 J	1.8 J	0.92 J	0.97 J	1.1 J	4.5 J	1.4 J	0.89 J	1
Lead	0.67 J	0.074 J	0.099 J	0.082 J	1.5 U	1.5 U	0.19 J	0.12 J	1.5 U	1.5
Mercury	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2
Nickel	0.28 J	0.29 J	0.29 J	(1) J	0.21 J	0.17 J	0.42 J	0.28 J	0.33 J	0.28
Selenium	0.21 J	0.28 J	0.14 J	0.15 J	0.24 J	0.28 J	0.26 J	0.43 J	0.16 J	0.22
Silver	5 U	5 U	5 U	5 U	5 U	5 U	0.088 J	0.079 J	5 U	5
Thallium	1 U	1 U	1 U	1 U	1 U	1 U	0.27 J	0.44 J	0.28 J	1
Tin	5 U	0.56 J	0.49 J	0.41 J	0.39 J	0.28 J	0.32 J	0.68 J	0.27 J	0.27
Vanadium	2.3 J	2.2 J	1.9 J	1.9 J	2.1 J	2.3 J	3.2 J	2.6 J	2.1 J	2
Zinc	21	15	12	13	18	13	17	16	14	15

(1) - outlier removed

TABLE 5-4

Revised: September 15, 2006

POSITIVE DETECTIONS - OPEN WATER BACKGROUND SURFACE WATER
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

	/04 03	02OWSW05 07-28-2003	02OWSW05D 07-28-2003	02OWSW06 07-27-2003	02OWSW07 07-27-2003	02OWSW08 07-28-2003	02OWSW09 07-28-2003	16E-SW01 05-14-2004	6E-SW01 05-14-2004	6E-SW01D 05-14-2004
Dissolved Metals (ug/L)										
Antimony	J	0.17 J	0.21 J	0.21 J	0.21 J	0.21 J	0.21 J	NA	NA	NA
Arsenic	J	1.4 J	1.6 J	1.5 J	1.6 J	1.6 J	1.5 J	NA	NA	NA
Barium		7.4	7.3	8.4	7.7	7.1	7.3	NA	NA	NA
Cadmium	U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	NA	NA	NA
Chromium	J	0.82 J	0.78 J	0.74 J	5 U	0.9 J	0.86 J	NA	NA	NA
Cobalt	J	1 J	1 J	0.99 J	1 J	1 J	1 J	NA	NA	NA
Copper	J	0.6 J	1 J	0.86 J	1.5 J	0.72 J	0.52 J	NA	NA	NA
Lead	U	1.5 U	1.5 U	1.5 U	0.088 J	1.5 U	1.5 U	NA	NA	NA
Nickel	J	0.28 J	0.25 J	0.22 J	0.27 J	0.28 J	0.31 J	NA	NA	NA
Selenium	J	2.5 U	0.17 J	2.5 U	0.15 J	0.18 J	0.23 J	NA	NA	NA
Thallium	U	1 U	0.42 J	1 U	1 U	1 U	1 U	NA	NA	NA
Tin	J	0.24 J	0.67 J	0.21 J	0.21 J	0.51 J	0.38 J	NA	NA	NA
Vanadium	J	2 J	2 J	2.6 J	2.6 J	2.2 J	2.1 J	NA	NA	NA
Zinc		16	18	17	18	16	17	NA	NA	NA
Total Metals (ug/L)										
Antimony	J	0.18 J	0.26 J	0.23 J	0.22 J	0.22 J	0.18 J	200 U	100 U	100 U
Arsenic	U	1.6 J	1.5 J	1.6 J	1.9 J	1.7 J	1.6 J	100 U	10 UN	10 UN
Barium		7.5	7.3	(1)	8	7.5	7.4	6.8 B	7 B	6.9 B
Cadmium	U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	5 U	5 U	5 U
Chromium	J	5 U	0.85 J	0.84 J	1.1 J	0.79 J	0.9 J	10 U	10 U	10 U
Cobalt	J	0.91 J	0.98 J	0.98 J	1 J	1 J	1.1 J	10 U	10 U	10 U
Copper	J	0.86 J	3.6 J	2.5 J	3.1 J	0.92 J	2.5 J	200 U	100 U	100 U
Lead	U	1.5 U	0.15 J	0.19 J	0.27 J	1.5 U	0.098 J	5 U	25 U	5 U
Mercury	U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	J	0.44 J	0.31 J	0.34 J	0.47 J	0.3 J	0.3 J	40 U	40 U	40 U
Selenium	J	0.15 J	0.24 J	0.15 J	0.21 J	0.18 J	0.18 J	100 U	50 U	50 U
Silver	U	5 U	5 U	5 U	5 U	5 U	5 U	100 U	50 UN	50 UN
Thallium	U	1 U	0.42 J	1 U	1 U	1 U	1 U	10 U	10 U	10 U
Tin	J	0.2 J	0.83 J	0.52 J	0.44 J	0.47 J	0.41 J	500 U	250 U	250 U
Vanadium	J	2.1 J	2.3 J	2.6 J	3.1 J	2.2 J	2.2 J	100 U	50 U	4.3 B
Zinc		14	16	18	20	15	16	25	(1)	25

(1) - outlier removed

TABLE 5-4

POSITIVE DETECTIONS - OPEN WATER BACKGROUND SURFACE WATER
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

	6E-SW02	6E-SW02D
	05-14-2004	05-14-2004
Dissolved Metals (ug/L)		
Antimony	NA	NA
Arsenic	NA	NA
Barium	NA	NA
Cadmium	NA	NA
Chromium	NA	NA
Cobalt	NA	NA
Copper	NA	NA
Lead	NA	NA
Nickel	NA	NA
Selenium	NA	NA
Thallium	NA	NA
Tin	NA	NA
Vanadium	NA	NA
Zinc	NA	NA
Total Metals (ug/L)		
Antimony	100 U	100 U
Arsenic	10 UN	10 UN
Barium	6.9 B	7.2 B
Cadmium	5 U	5 U
Chromium	10 U	10 U
Cobalt	10 U	10 U
Copper	100 U	100 U
Lead	5 U	5 U
Mercury	0.2 U	0.2 U
Nickel	40 U	40 U
Selenium	50 U	50 U
Silver	50 UN	50 UN
Thallium	10 U	10 U
Tin	250 U	250 U
Vanadium	50 U	50 U
Zinc	25	2.2 B

(1) - outlier removed

TABLE 5-5

Revised: September 15, 2006

DATA SUMMARY - OPEN WATER BACKGROUND SURFACE WATER
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

	Minimum Non-Detect	Maximum Non-Detect	Minimum Detected	Maximum Detected	Location of Maximum Detect	Frequency of Detection	Range of Detection Limits	Number of Samples	Number Detected
Dissolved Metals (ug/L)									
Antimony	20 U	20 U	0.17 J	0.26 J	01OWSW07	20/36	20U - 20U	36	20
Arsenic	5 U	10 U	1.4 J	7.7 J	7SW9	22/36	5U - 10U	36	22
Barium	ND	ND	7.1	10	02OWSW01	35/35	(5)	35	35
Beryllium	0.5 U	4 U	ND	ND		0/36	0.5U - 4U	36	0
Cadmium	2.5 U	5 U	0.83 J	0.95 J	7SW2	3/36	2.5U - 5U	36	3
Chromium	5 U	10 U	0.74 J	0.9 J	OWSW03, 02OWSW	8/36	5U - 10U	36	8
Cobalt	10 U	10 U	0.85 J	1.1 J	05, 01OWSW05D, 01	20/36	10U - 10U	36	20
Copper	ND	ND	0.52 J	3.8 J	7SW2	35/35	(5)	35	35
Lead	1.5 U	5 U	0.086 J	0.088 J	02OWSW07	2/36	1.5U - 5U	36	2
Mercury	0.2 U	0.2 U	ND	ND		0/36	0.2U - 0.2U	36	0
Nickel	40 U	40 U	0.17 J	0.31 J	705, 02OWSW01, 02C	19/35	40U - 40U	35	19
Selenium	2.5 U	10 U	0.15 J	0.35 J	01OWSW05D	15/36	2.5U - 10U	36	15
Silver	5 U	10 U	ND	ND		0/36	5U - 10U	36	0
Thallium	1 U	10 U	0.21 J	4.9 J	7SW6	4/36	1U - 10U	36	4
Tin	5 U	50 U	0.21 J	9.1 J	7SW5	21/36	5U - 50U	36	21
Vanadium	20 U	20 U	1.7 J	8.9 J	BGOWSW02	30/36	20U - 20U	36	30
Zinc	20 U	20 U	7.7 J	18	02, 02OWSW05D, 02	21/36	20U - 20U	36	21

TABLE 5-5

Revised: September 15, 2006

DATA SUMMARY - OPEN WATER BACKGROUND SURFACE WATER
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

	Minimum Non-Detect	Maximum Non-Detect	Minimum Detected	Maximum Detected	Location of Maximum Detect	Frequency of Detection	Range of Detection Limits	Number of Samples	Number Detected
Total Metals (ug/L)									
Antimony	20 U	200 U	0.18 J	0.32 J	01OWSW02	20/40	20U - 200U	40	20
Arsenic	5 U	100 U	1.4 J	9.4 J	BGOWSW03D	20/41	5U - 100U	41	20
Barium	ND	ND	6.8 B	12	02OWSW01	40/40	(5)	40	40
Beryllium	0.5 U	4 U	ND	ND		0/41	0.5U - 4U	41	0
Cadmium	2.5 U	5 U	0.94 J	0.94 J	BGOWSW08	1/41	2.5U - 5U	41	1
Carbon	ND	ND	ND	ND		0/0	(5)	0	0
Chromium	5 U	10 U	0.79 J	4.4 J	02OWSW01	9/41	5U - 10U	41	9
Cobalt	10 U	10 U	0.8 J	1.1 J	V01, 02OWSW02, 02C	20/41	10U - 10U	41	20
Copper	100 U	200 U	0.86 J	14	01OWSW05	36/41	100U - 200U	41	36
Lead	1.5 U	25 U	0.074 J	3.3 J	BGOWSW04	15/41	1.5U - 25U	41	15
Mercury	0.2 U	0.2 U	0.081 J	0.081 J	7SW8	1/41	0.2U - 0.2U	41	1
Nickel	40 U	40 U	0.17 J	0.48 J	01OWSW02	19/40	40U - 40U	40	19
Selenium	2.5 U	100 U	0.14 J	6 J	BGOWSW06	20/40	2.5U - 100U	40	20
Silver	5 U	100 U	0.079 J	0.088 J	02OWSW01	2/41	5U - 100U	41	2
Thallium	1 U	10 U	0.24 J	0.44 J	02OWSW02	6/41	1U - 10U	41	6
Tin	5 U	500 U	0.2 J	7.3 J	BGOWSW06	20/41	5U - 500U	41	20
Vanadium	20 U	100 U	1.9 J	12 J	BGOWSW09	32/41	20U - 100U	41	32
Zinc	20 U	20 U	2.2 B	25	W01, 6E-SW01D, 6E-	24/40	20U - 20U	40	24

(5) - not determined
ND - not determined

TABLE 5-6

Revised: September 15, 2006

DESCRIPTIVE STATISTICS - OPEN WATER BACKGROUND SURFACE WATER
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

	FOD	n	W-Test Results: Normal Dist	W-Test Results: Lognormal Dist	W-Test Results: Assumed Dist	Arithmetic Mean ($\bar{x}$)	Standard Deviation (s)	Lognormal Arithmetic Mean ($\bar{x}$)	Lognormal Standard Deviation (s)	Coefficient of Variation (CV)	Upper Limit of Means ($\bar{x}+2s$)	Outlier Removed?
Dissolved Metals (ug/L)												
Antimony	D	36	NO	NO	NORMAL	4.56	4.93	--	--	1.081	14.43	
Arsenic	D	36	NO	NO	NORMAL	3.36	1.90	--	--	0.565	7.17	
Barium	D	35	YES	YES	NORMAL	8.09	0.65	--	--	0.080	9.39	Yes
Cadmium	C	36	NO	NO	NORMAL	1.67	0.64	--	--	0.383	2.95	
Chromium	C	36	NO	NO	NORMAL	3.24	1.71	--	--	0.529	6.67	
Cobalt	D	36	NO	NO	NORMAL	2.77	2.02	--	--	0.728	6.81	
Copper	D	35	NO	NO	NORMAL	1.77	1.07	--	--	0.606	3.92	Yes
Lead	C	36	NO	NO	NORMAL	1.49	0.93	--	--	0.622	3.35	
Nickel	D	35	NO	NO	NORMAL	9.28	9.98	--	--	1.075	29.24	Yes
Selenium	C	36	NO	NO	NORMAL	2.48	2.32	--	--	0.936	7.11	
Thallium	C	36	NO	NO	NORMAL	2.50	2.27	--	--	0.909	7.03	
Tin	D	36	NO	NO	NORMAL	9.59	11.30	--	--	1.179	32.18	
Vanadium	D	36	NO	NO	NORMAL	4.53	3.13	--	--	0.691	10.79	
Zinc	D	36	NO	NO	NORMAL	13.19	3.31	--	--	0.251	19.80	

TABLE 5-6

Revised: September 15, 2006

DESCRIPTIVE STATISTICS - OPEN WATER BACKGROUND SURFACE WATER
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

	FOD	n	W-Test Results			Arithmetic Mean	Standard Deviation	Lognormal Arithmetic Mean	Lognormal Standard Deviation	Coefficient of Variation	Upper Limit of Means	Outlier Removed?
			Normal Dist	Lognormal Dist	Assumed Dist	$(\bar{x})$	(s)	$(\bar{x})$	(s)	(CV)	$(\bar{x}+2s)$	
Total Metals (ug/L)												
Antimony	C	40	NO	NO	NORMAL	11.37	20.46	--	--	1.800	52.30	Yes
Arsenic	C	41	NO	NO	NORMAL	4.83	7.48	--	--	1.550	19.79	
Barium	D	40	NO	YES	LOGNORMAL	8.28	0.98	--	--	0.119	10.25	Yes
Cadmium	B	41	--	--	--	--	--	--	--	--	--	
Chromium	C	41	NO	NO	NORMAL	3.52	1.67	--	--	0.476	6.87	
Cobalt	C	41	NO	NO	NORMAL	3.03	2.05	--	--	0.677	7.12	
Copper	D	41	NO	NO	NORMAL	9.38	20.47	--	--	2.182	50.32	
Lead	C	41	NO	NO	NORMAL	1.71	2.04	--	--	1.193	5.80	
Mercury	B	41	--	--	--	--	--	--	--	--	--	
Nickel	C	40	NO	NO	NORMAL	10.65	9.96	--	--	0.935	30.56	Yes
Selenium	C	40	NO	NO	NORMAL	5.78	10.19	--	--	1.763	26.17	Yes
Silver	C	41	NO	NO	NORMAL	6.71	9.57	--	--	1.426	25.86	
Thallium	C	41	NO	NO	NORMAL	2.78	2.31	--	--	0.830	7.39	
Tin	C	41	NO	NO	NORMAL	27.13	50.77	--	--	1.871	128.68	
Vanadium	D	41	NO	NO	NORMAL	7.45	9.18	--	--	1.233	25.81	
Zinc	D	40	NO	NO	NORMAL	13.51	4.84	--	--	0.358	23.18	Yes

TABLE 5-7

Revised: September 15, 2006

POSITIVE DETECTIONS - ESTUARINE WETLAND BACKGROUND SEDIMENT
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	2SD03	9SD05	9SD08	9SD08D	9SD09	9SD10	9SD11	9SD12	01EWSSD01
Date Sampled	11-11-1996	06-29-1999	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	07-26-2003
Metals (mg/kg)									
Antimony	(1)	0.66 UJ	4.2 UJ	4.2 UJ	6.7 UJ	7.6 UJ	4.1 UJ	3.2 UJ	2.7
Arsenic	2.6 J	1.3 J	4	3.3	4.8	3.8 J	4.8	5	4.5
Barium	(1)	8.1	6.9	6.5	4.6	5.7	11	15	14
Beryllium	0.07	0.047 J	0.18 J	0.14 J	1.3 U	1.5 U	0.16 J	0.25 J	0.29 J
Cadmium	0.32	0.12 U	0.32 J	0.27 J	1.7 U	1.9 U	0.55 J	0.69 J	1.9 U
Chromium	25.3 J	16	13 J	11 J	11 J	13 J	25 J	33 J	38
Cobalt	(1)	4.7	18	16	6.4	3.1 J	23	27	5.3
Copper	62.4	58 J	78	68	56	39	73	53	130
Lead	(1) J	4.6 J	5.5	5	1.7	1.8 J	10	13	38
Mercury	0.05	0.041 J	0.072	0.08	0.12	0.14	0.066	0.057	(1)
Nickel	14	4.8 J	7.2 J	6.5 J	4 J	3.9 J	9.8	10	12
Selenium	0.45 J	0.75 UJ	0.93 J	2.1 U	2 J	(1)	1.4 J	1.6 U	0.83 J
Silver	0.12 UJ	0.15 U	2.1 U	2.1 U	3.3 U	3.8 U	2.1 U	1.6 U	0.76 J
Tin	0.59 U	4.2 J	11 U	11 U	17 U	19 U	10 U	8.1 U	10 J
Vanadium	154 J	110	140 J	120 J	150 J	120 J	200 J	220 J	120
Zinc	92.8	29 U	43	37	21	20	63	62	77

(1) - outlier removed

TABLE 5-7

Revised: September 15, 2006

POSITIVE DETECTIONS - ESTUARINE WETLAND BACKGROUND SEDIMENT
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	01EWSSD02	01EWSSD03	01EWSSD04	01EWSSD05	01EWSSD05D	01EWSSD06	01EWSSD07	01EWSSD08
Date Sampled	07-26-2003	07-26-2003	07-25-2003	07-26-2003	07-26-2003	07-26-2003	07-26-2003	07-25-2003
Metals (mg/kg)								
Antimony	1.6 J	0.21 J	0.37 J	0.35 J	0.44 J	0.99 J	0.17 J	0.31 J
Arsenic	5.8	1.7	5.1	5.3	2.2 J	6.3	2 J	3.6 J
Barium	13	28	15	13	30	13	13	12
Beryllium	0.23 J	0.31	0.25 J	0.3 J	0.3	0.17 J	0.088 J	0.15 J
Cadmium	0.39 J	0.83 U	1.5 U	1.7 U	1.2 U	0.95 J	2 U	2.4 U
Chromium	28	39	43	52	(1)	27	24	26
Cobalt	6.6	7.2	8.2	13	17	10	2.2 J	4.9
Copper	90	66	88	100	140	91	32	65
Lead	17	4.3	4.7	8.9	13	17	1.2	5.3
Mercury	0.13	0.046	0.074	0.095	0.07	0.12	0.037 J	0.12
Nickel	12	9.6	14	18	(1)	13	5	9.3
Selenium	0.73 J	0.33 J	0.73 J	0.64 J	0.26 J	1.1 J	0.34 J	0.68 J
Silver	0.47 J	0.052 J	3 U	3.4 U	0.032 J	0.32 J	4 U	4.8 U
Tin	7.1 J	3.4 J	5.7 J	6.3 J	4.6 J	8.8 J	6.9 J	7.8 J
Vanadium	110	130	130	140	230	93	74	79
Zinc	76	43	37	61	89	83	15	29

(1) - outlier removed

TABLE 5-7

Revised: September 15, 2006

POSITIVE DETECTIONS - ESTUARINE WETLAND BACKGROUND SEDIMENT
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	01EWSSD09	02EWSSD04	02EWSSD05	02EWSSD06	02EWSSD07	02EWSSD07D	02EWSSD08	02EWSSD09
Date Sampled	07-26-2003	07-27-2003	07-27-2003	07-27-2003	07-27-2003	07-27-2003	07-27-2003	07-27-2003
Metals (mg/kg)								
Antimony	0.3 J	0.13 J	0.25 J	0.51 J	0.17 J	0.23 J	0.13 J	0.22 J
Arsenic	3.8 J	2.5	(1)	3.9	2.1	4.4	2	7.4
Barium	12	15	11	17	13	15	14	12
Beryllium	0.25 J	0.089 J	0.074 J	0.15 J	0.074 J	0.11 J	0.089 J	0.089 J
Cadmium	2.3 U	0.83 U	0.66 U	0.1 J	0.84 U	0.76 U	0.71 U	0.77 U
Chromium	54	14	16	25	17	22	13	17
Cobalt	9.4	4.1	3.2	6.6	2.9	3.5	3.3	3.5
Copper	89	20	11	69	17	20	14	14
Lead	8.2	3.7	2.2	23	3.3	4	2.7	2.4
Mercury	0.081	0.022 J	0.027 J	0.21	0.025 J	0.028 J	0.015 J	0.022 J
Nickel	17	4.7	4.9	9.3	4.7	5.9	4.1	5.1
Selenium	0.94 J	0.29 J	0.35 J	0.52 J	0.42 J	0.45 J	0.21 J	0.33 J
Silver	4.5 U	0.026 J	1.3 U	0.045 J	0.025 J	0.019 J	0.021 J	1.5 U
Tin	8.4 J	2.9 J	2.3 J	4.5 J	2.8 J	2.8 J	2.5 J	2.7 J
Vanadium	170	33	30	55	30	36	23	30
Zinc	52	21	13	66	16	18	16	14

(1) - outlier removed

TABLE 5-8

Revised: September 15, 2006

DATA SUMMARY - ESTUARINE WETLAND BACKGROUND SEDIMENT
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

	Minimum Non-Detect	Maximum Non-Detect	Minimum Detected	Maximum Detected	Location of Maximum Detect	Frequency of Detection	Range of Detection Limits	Number of Samples	Number Detected
Metals (mg/kg)									
Antimony	0.66 UJ	7.6 UJ	0.13 J	2.7	01EWSSD01	17/24	0.66UJ - 7.6UJ	24	17
Arsenic	ND	ND	1.3 J	7.4	02EWSSD09	24/24	(5)	24	24
Barium	ND	ND	4.6	30	01EWSSD05D	24/24	(5)	24	24
Beryllium	1.3 U	1.5 U	0.047 J	0.31	01EWSSD03	23/25	1.3U - 1.5U	25	23
Cadmium	0.12 U	2.4 U	0.1 J	0.95 J	01EWSSD06	8/25	0.12U - 2.4U	25	8
Chromium	ND	ND	11 J	54	01EWSSD09	24/24	(5)	24	24
Cobalt	ND	ND	2.2 J	27	9SD12	24/24	(5)	24	24
Copper	ND	ND	11	140	01EWSSD05D	25/25	(5)	25	25
Lead	ND	ND	1.2	38	01EWSSD01	24/24	(5)	24	24
Mercury	ND	ND	0.015 J	0.21	02EWSSD06	24/24	(5)	24	24
Nickel	ND	ND	3.9 J	18	01EWSSD05	24/24	(5)	24	24
Selenium	0.75 UJ	2.1 U	0.21 J	2 J	9SD09	21/24	0.75UJ - 2.1U	24	21
Silver	0.12 UJ	4.8 U	0.019 J	0.76 J	01EWSSD01	10/25	0.12UJ - 4.8U	25	10
Tin	0.59 U	19 U	2.3 J	10 J	01EWSSD01	18/25	0.59U - 19U	25	18
Vanadium	ND	ND	23	230	01EWSSD05D	25/25	(5)	25	25
Zinc	29 U	29 U	13	92.8	2SD03	24/25	29U - 29U	25	24

(5) - not determined
ND - not determined

TABLE 5-9

Revised: September 15, 2006

DESCRIPTIVE STATISTICS - ESTUARINE WETLAND BACKGROUND SEDIMENT
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

			W-Test Results			Arithmetic Mean	Standard Deviation	Lognormal Arithmetic Mean	Lognormal Standard Deviation	Coefficient of Variation	Upper Limit of Means	Outlier Removed?
	FOD	n	Normal Dist	Lognormal Dist	Assumed Dist	($\bar{x}$)	(s)	($\bar{x}$)	(s)	(CV)	($\bar{x}$+2s)	
Metals (mg/kg)												
Antimony	D	24	NO	NO	NORMAL	1.02	1.11	--	--	1.095	3.25	Yes
Arsenic	D	24	YES	YES	NORMAL	3.84	1.58	--	--	0.411	7.00	Yes
Barium	D	24	NO	NO	NORMAL	13.24	5.84	--	--	0.441	24.93	Yes
Beryllium	D	25	NO	YES	LOGNORMAL	0.21	0.17	--	--	0.807	0.55	
Cadmium	C	25	YES	NO	NORMAL	0.59	0.32	--	--	0.553	1.23	
Chromium	D	24	NO	YES	LOGNORMAL	25.10	12.48	--	--	0.497	50.05	Yes
Cobalt	D	24	NO	YES	LOGNORMAL	8.71	6.82	--	--	0.783	22.35	Yes
Copper	D	25	YES	NO	NORMAL	61.74	35.35	--	--	0.573	132.44	
Lead	D	24	NO	YES	LOGNORMAL	8.35	8.53	--	--	1.020	25.40	Yes
Mercury	D	24	NO	YES	LOGNORMAL	0.07	0.05	--	--	0.657	0.17	Yes
Nickel	D	24	NO	YES	LOGNORMAL	8.70	4.30	--	--	0.495	17.31	Yes
Selenium	D	24	NO	YES	LOGNORMAL	0.67	0.42	--	--	0.624	1.51	Yes
Silver	C	25	NO	NO	NORMAL	0.83	0.79	--	--	0.959	2.41	
Tin	D	25	YES	NO	NORMAL	5.28	2.58	--	--	0.488	10.44	
Vanadium	D	25	YES	NO	NORMAL	109.08	60.68	--	--	0.556	230.43	
Zinc	D	25	NO	NO	NORMAL	43.17	26.86	--	--	0.622	96.90	

TABLE 5-10

POSITIVE DETECTIONS - OPEN WATER BACKGROUND SEDIMENT
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	3SD01	3SD01D	3SD02	3SD03	3SD04	3SD05	3SD06	3SD07
Date Sampled	10-29-1995	10-29-1995	10-29-1995	10-29-1995	10-27-1995	10-27-1995	10-27-1995	10-27-1995
Metals (mg/kg)								
Antimony	7.4 U	6.8 U	7.7 U	8.2 U	8.5 U	8.8 U	6.6 U	7.1 U
Arsenic	1.8	1.7	5 J	4.3	1.4	0.89 U	0.94 U	1.1
Barium	9.3	8.6	9.1	9.1	7.5	8.2	6.3	8.4
Beryllium	0.18 U	0.16 U	0.19 U	0.2 U	0.21 U	0.21 U	0.16 U	0.2
Cadmium	2.5 U	2.3 U	2.6 U	2.8 U	2.9 U	3 U	2.3 U	2.4 U
Chromium	5.1	5	14.7	15.3	5	5.8	3.7	8.2
Cobalt	1.3	1.2 U	4.7	4.6	1.5 U	1.6	1.2 U	1.7
Copper	13.8	12.9	28	29.1	19.3	14.8	11.4	20.9
Lead	1.2 J	0.89 J	1.8 J	1.7 J	1.8 J	0.36 J	0.7 J	0.96 J
Mercury	0.06 U	0.07 U	0.08 U	0.073 U	0.074 U	0.055 U	0.073 U	0.059 U
Nickel	2.2 U	2 U	4.2	4.3	2.6 U	2.6 U	2 U	2.1 U
Selenium	0.61 UJ	0.73 UJ	0.9 UJ	1.6 UJ	1.6 UJ	(1)	1.4 UJ	1.4 UJ
Silver	1.9 UJ	1.8 UJ	2 UJ	2.1 UJ	2.2 UJ	2.3 UJ	1.7 UJ	1.8 UJ
Thallium	0.66 UJ	0.16 UJ	0.98 UJ	0.87 UJ	0.84 UJ	0.73 UJ	0.15 UJ	0.76 UJ
Tin	6.8 U	6.2 U	7.1 U	7.5 U	7.8 U	8.1 U	6.1 U	6.5 U
Vanadium	6.2	5.5	33.6	27.7	7.2	5	7.1	19.7
Zinc	2.9	3.4	18.4	20.2	7.9	3	3.6	8.3

(1) - outlier removed

TABLE 5-10

Revised: September 15, 2006

POSITIVE DETECTIONS - OPEN WATER BACKGROUND SEDIMENT
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	3SD08	3SD09	3SD16	3SD17	BGOWSD01	BGOWSD02	BGOWSD03	BGOWSD03D
Date Sampled	10-28-1995	10-28-1995	9/18/1997	9/18/1997	01-17-2002	01-17-2002	01-17-2002	01-17-2002
Metals (mg/kg)								
Antimony	7.8 U	8.4 U	0.31 J	0.4 J	2.6 UJ	2.6 UJ	3.1 UJ	2.6 UJ
Arsenic	2.1	3.2	2 J	2.4 J	1.8	1.9	1.4 J	1.8
Barium	8.3	8.6	7.8 J	7.1 J	7.2	7.6	8.1	7
Beryllium	0.19 U	0.2 U	0.05 U	0.05 U	0.51 U	0.53 U	0.62 U	0.51 U
Cadmium	2.6 U	2.9 U	0.11 J	0.07 U	0.64 U	0.66 U	0.77 U	0.64 U
Chromium	3.9	3.1 U	5.8	3.3	2.6	3.3	3.1	3.1
Cobalt	1.4 U	1.5 U	1.6	0.11 U	0.35 J	0.93 J	0.56 J	0.77 J
Copper	16.6	15.2	7.8 J	0.71 J	2.2 J	3	2.6 J	2.7
Lead	1.2 J	0.76 J	0.73	1	0.63 J	0.66 UJ	0.74 J	0.56 J
Mercury	0.08 U	0.075 U	0.02 U	0.03 U	0.031 U	0.0062 J	0.026 U	0.026 U
Nickel	2.3 U	2.5 U	1.2 J	0.13 U	5.1 U	5.3 U	6.2 U	5.1 U
Selenium	2.2 UJ	1.7 UJ	0.45 UJ	0.9 UJ	1.3 U	1.3 U	1.5 U	1.3 U
Silver	2 UJ	2.2 UJ	0.09 U	0.1 U	1.3 U	1.3 U	1.5 U	1.3 U
Thallium	0.24 UJ	0.94 UJ	0.32 U	0.34 U	1.3 U	1.3 U	0.91 J	1.3 U
Tin	7.1 U	7.7 U	1 J	1.9 J	6.4 U	6.6 U	7.7 U	6.4 U
Vanadium	12.7	13.4	19.3	3.6 J	3.6	8.3	6	7.2
Zinc	6.4	6.8	6	1.7 J	2.6	4.3	3.4	3.8

(1) - outlier removed

TABLE 5-10

Revised: September 15, 2006

POSITIVE DETECTIONS - OPEN WATER BACKGROUND SEDIMENT
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	BGOWSD04	BGOWSD05	BGOWSD06	BGOWSD07	BGOWSD08	BGOWSD09	01OWSD01	01OWSD02	01OWSD03
Date Sampled	01-17-2002	01-17-2002	01-17-2002	01-17-2002	01-17-2002	01-17-2002	07-24-2003	07-24-2003	07-25-2003
Metals (mg/kg)									
Antimony	2.8 UJ	2.9 UJ	2.6 UJ	2.4 UJ	2.7 UJ	2.6 UJ	0.24 J	0.28 J	0.77 J
Arsenic	2.7	3	1.9	2.3	3	2.7	8.3	6.7	8.7
Barium	7.9	7.6	7.6	6.8	7.5	7.3	11	8.4	9.6
Beryllium	0.55 U	0.58 U	0.52 U	0.48 U	0.54 U	0.52 U	0.056 J	0.051 J	0.082 J
Cadmium	0.69 U	0.72 U	0.65 U	0.6 U	0.67 U	0.65 U	1.3 U	1.2 U	0.15 J
Chromium	3.1	3.5	2.5	3.5	3.5	3.1	13	11	17
Cobalt	0.66 J	0.8 J	0.54 J	0.93 J	0.7 J	0.91 J	1.7 J	1.6 J	3.3
Copper	2.7 J	3.1	2.4 J	3	3.2	3.1	14	12	26
Lead	0.69 UJ	0.72 UJ	0.65 UJ	0.57 J	0.66 J	0.57 J	2.6	2.3	5.4
Mercury	0.0043 J	0.029 U	0.028 U	0.0052 J	0.0042 J	0.0056 J	0.034 J	0.029 J	0.062 J
Nickel	5.5 U	5.8 U	5.2 U	0.58 J	5.4 U	5.2 U	4.3	4	8
Selenium	1.4 U	1.4 U	1.3 U	1.2 U	1.3 U	1.3 U	0.61 J	0.77 J	1.1 J
Silver	1.4 U	1.4 U	1.3 U	1.2 U	1.3 U	1.3 U	0.042 J	0.041 J	0.076 J
Thallium	1.4 U	1.4 U	1.3 U	1.2 U	1.3 U	1.3 U	0.5 U	0.48 U	0.082 J
Tin	6.9 U	7.2 U	6.5 U	6 U	6.7 U	6.5 U	4.7 J	4.3 J	6.1 J
Vanadium	5.7	9.1	4.1	9.6	8.1	9.1	16	18	53
Zinc	3.5	4.3	2.8	4.4	4.2	4.5	18	16	32

(1) - outlier removed

TABLE 5-10

Revised: September 15, 2006

POSITIVE DETECTIONS - OPEN WATER BACKGROUND SEDIMENT
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	01OWSD04	01OWSD05	01OWSD05D	01OWSD06	01OWSD07	01OWSD08	01OWSD09	02OWSD01	02OWSD02
Date Sampled	07-25-2003	07-25-2003	07-25-2003	07-24-2003	07-24-2003	07-25-2003	07-25-2003	07-27-2003	07-27-2003
Metals (mg/kg)									
Antimony	0.66 J	0.34 J	0.44 J	0.21 J	0.3 J	0.54 J	0.35 J	0.23 J	0.34 J
Arsenic	6.5	3.7	5.3	6.2	5.8	8.5	5.3	8.6	9.2
Barium	13	9.3	9	9.2	7.9	13	9.9	9	9.4
Beryllium	0.42 U	0.031 J	0.05 J	0.05 J	0.067 J	0.055 J	0.045 J	0.062 J	0.067 J
Cadmium	2.1 U	0.078 J	0.1 J	1.2 U	1.4 U	0.91 U	1.8 U	0.99 U	1.5 U
Chromium	13	7.3	11	12	12	9.7	14	11	12
Cobalt	2.7 J	1.7 J	3	1.6 J	1.8 J	2.8	2.5 J	2.8	2.3 J
Copper	21	12	23	13	19	21	26	15	16
Lead	3.1	1.8	8.1	2.1	4.5	1.8	3.8	3.4	3.7
Mercury	0.085 U	0.052	0.066	0.032 J	0.024 J	0.023 J	0.031 J	0.033 J	0.025 J
Nickel	6.6	4.3	5.5	4.2	4.4	4.7	6.3	3.5	3.9
Selenium	1.2 J	0.74 J	0.7 J	0.53 J	0.6 J	0.75 J	1 J	0.29 J	0.42 J
Silver	0.054 J	0.031 J	0.056 J	0.032 J	0.048 J	0.024 J	0.06 J	0.028 J	3.1 U
Thallium	0.85 U	0.45 U	0.47 U	0.49 U	0.55 U	0.16 J	0.72 U	0.4 U	0.61 U
Tin	(1)	3.9 J	4.7 J	4.4 J	4.7 J	3.3 J	6.7 J	3.5 J	5.2 J
Vanadium	58	38	33	18	20	54	40	23	23
Zinc	25	11	32	17	27	13	30	19	25

(1) - outlier removed

TABLE 5-10

Revised: September 15, 2006

POSITIVE DETECTIONS - OPEN WATER BACKGROUND SEDIMENT
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	02OWSD03	02OWSD04	02OWSD05	02OWSD05D	02OWSD06	02OWSD07	02OWSD08	02OWSD09
Date Sampled	07-28-2003	07-28-2003	07-28-2003	07-28-2003	07-27-2003	07-27-2003	07-28-2003	07-28-2003
Metals (mg/kg)								
Antimony	0.34 J	0.66 J	0.14 J	0.14 J	0.23 J	0.39 J	0.25 J	0.21 J
Arsenic	9.3	10	6.8	6	6.1	11	7.9	3.5
Barium	10	8.5	11	9.7	8.9	12	9.1	7.7
Beryllium	0.082 J	0.038 J	0.075 J	0.079 J	0.033 J	0.059 J	0.066 J	0.25 U
Cadmium	1.2 U	0.88 U	1 U	1 U	0.93 U	0.091 J	0.95 U	1.2 U
Chromium	14	7.6	17	15	8.4	12	12	6
Cobalt	3.2	1.9	2	1.9 J	2.1	2.6	2.9	1.4 J
Copper	19	8	13	12	11	13	16	10
Lead	4.6	(1)	2	2.1	2.6	4.5	3.6	2.1
Mercury	0.034	0.016 J	0.03 J	0.022 J	0.0094 J	0.047 U	0.027 J	0.018 J
Nickel	4.3	2.6	5.4	4.7	2.6	3.3	4	2.1 J
Selenium	0.43 J	0.38 J	0.51 J	0.45 J	0.3 J	0.33 J	0.36 J	0.27 J
Silver	0.041 J	0.025 J	0.033 J	0.053 J	0.043 J	0.041 J	0.035 J	2.5 U
Thallium	0.49 U	0.043 J	0.4 U	0.41 U	0.37 U	0.5 U	0.12 J	0.49 U
Tin	4.4 J	3 J	4.3 J	3.6 J	3.1 J	4.4 J	3.3 J	4.1 J
Vanadium	29	15	19	16	19	26	29	13
Zinc	29	12	15	15	19	23	18	21

(1) - outlier removed

TABLE 5-11

Revised: September 15, 2006

DATA SUMMARY - OPEN WATER BACKGROUND SEDIMENT
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

	Minimum Non-Detect	Maximum Non-Detect	Minimum Detected	Maximum Detected	Location of Maximum Detect	Frequency of Detection	Range of Detection Limits	Number of Samples	Number Detected
Inorganics - Total (mg/kg)									
Antimony	2.4 UJ	8.8 U	0.14 J	0.77 J	01OWSD03	22/42	2.4UJ - 8.8U	42	22
Arsenic	0.89 U	0.94 U	1.1	11	02OWSD07	40/42	0.89U - 0.94U	42	40
Barium	ND	ND	6.3	13	01OWSD04, 01OWSD08	42/42	(5)	42	42
Beryllium	0.05 U	0.62 U	0.031 J	0.2	3SD07	19/42	0.05U - 0.62U	42	19
Cadmium	0.07 U	3 U	0.078 J	0.15 J	01OWSD03	5/42	0.07U - 3U	42	5
Carbon	ND	ND	ND	ND		0/0	(5)	0	0
Chromium	3.1 U	3.1 U	2.5	17	01OWSD03, 02OWSD05	41/42	3.1U - 3.1U	42	41
Chromium VI	ND	ND	ND	ND		0/0	(5)	0	0
Cobalt	0.11 U	1.5 U	0.35 J	4.7	3SD02	36/42	0.11U - 1.5U	42	36
Copper	ND	ND	0.71 J	29.1	3SD03	42/42	(5)	42	42
Cyanide	0.62 U	2.2 U	ND	ND		0/37	0.62U - 2.2U	37	0
Lead	0.65 UJ	0.72 UJ	0.36 J	8.1	01OWSD05D	37/41	0.65UJ - 0.72UJ	41	37
Mercury	0.02 U	0.085 U	0.0042 J	0.066	01OWSD05D	23/42	0.02U - 0.085U	42	23
Nickel	0.13 U	6.2 U	0.58 J	8	01OWSD03	24/42	0.13U - 6.2U	42	24
Selenium	0.45 UJ	2.2 UJ	0.27 J	1.2 J	01OWSD04	20/41	0.45UJ - 2.2UJ	41	20
Silver	0.09 U	3.1 U	0.024 J	0.076 J	01OWSD03	18/42	0.09U - 3.1U	42	18
Sulfide	ND	ND	ND	ND		0/0	(5)	0	0
Thallium	0.15 UJ	1.4 U	0.043 J	0.91 J	BGOWSD03	5/42	0.15UJ - 1.4U	42	5
Tin	6 U	8.1 U	1 J	6.7 J	01OWSD09	21/41	6U - 8.1U	41	21
Vanadium	ND	ND	3.6	58	01OWSD04	42/42	(5)	42	42
Zinc	ND	ND	1.7 J	32	01OWSD03, 01OWSD05D	42/42	(5)	42	42

(5) - not determined
ND - not determined

TABLE 5-12

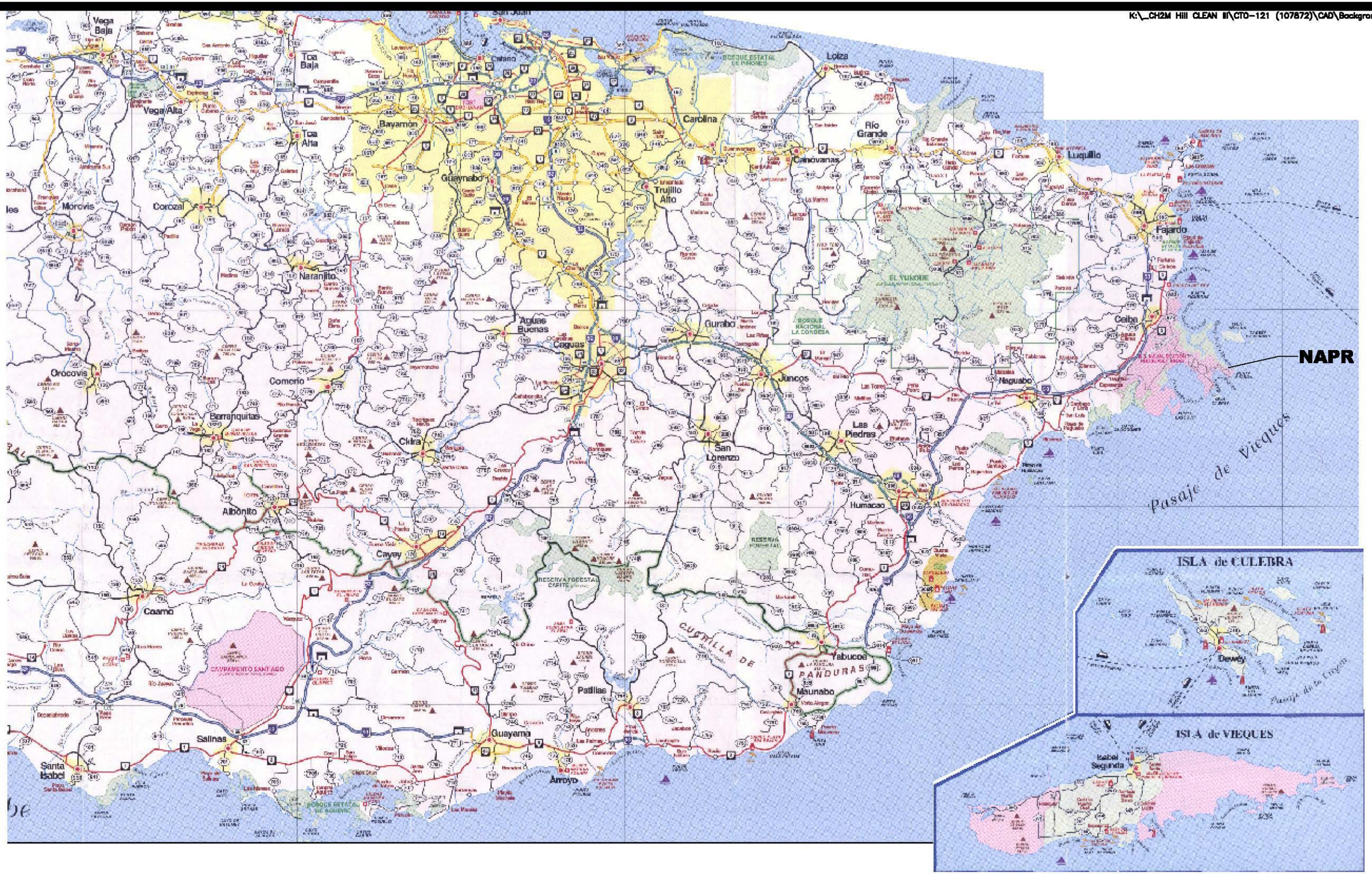
Revised: September 15, 2006

DESCRIPTIVE STATISTICS - OPEN WATER BACKGROUND SEDIMENT
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

			W-Test Results			Arithmetic Mean	Standard Deviation	Lognormal Arithmetic Mean	Lognormal Standard Deviation	Coefficient of Variation	Upper Limit of Means	Outlier Removed?
	FOD	n	Normal Dist	Lognormal Dist	Assumed Dist	$(\bar{x})$	(s)	$(\bar{x})$	(s)	(CV)	$(\bar{x} \mp 2s)$	
Inorganics - Total (mg/kg)												
Antimony	D	42	NO	NO	NORMAL	1.43	1.46	--	--	1.021	4.34	
Arsenic	D	42	NO	NO	NORMAL	4.57	2.97	--	--	0.650	10.50	
Barium	D	42	NO	YES	LOGNORMAL	8.77	1.52	--	--	0.173	11.82	
Beryllium	C	42	NO	NO	NORMAL	0.123	0.090	--	--	0.735	0.304	
Cadmium	C	42	NO	NO	NORMAL	0.639	0.439	--	--	0.687	1.52	
Chromium	D	42	NO	NO	NORMAL	8.2	4.7	--	--	0.578	17.6	
Cobalt	D	42	NO	NO	NORMAL	1.7	1.1	--	--	0.640	3.9	
Copper	D	42	NO	NO	NORMAL	12.8	7.9	--	--	0.613	29	
Lead	D	41	NO	NO	NORMAL	2.0	1.7	--	--	0.85	5.4	Yes
Mercury	D	42	YES	NO	NORMAL	0.0263	0.0147	--	--	0.559	0.056	
Nickel	D	42	YES	NO	NORMAL	3.2	1.77	--	--	0.559	6.7	
Selenium	C	41	NO	NO	NORMAL	0.613	0.24	--	--	0.384	1.08	Yes
Silver	C	42	NO	NO	NORMAL	0	0	--	--	0.953	1	
Thallium	C	42	NO	YES	LOGNORMAL	--	--	0.28	2.03	7.140	4.35	
Tin	D	41	NO	NO	NORMAL	4	1.0	--	--	0.257	6	Yes
Vanadium	D	42	NO	YES	LOGNORMAL	18.9	14.1	--	--	0.747	47	
Zinc	D	42	NO	NO	NORMAL	13	9	--	--	0.734	32	

FIGURES

K:_CH2M Hill CLEAN II\CTO-121 (107872)\CAD\Background Report\107872COV01



4 0 2 4

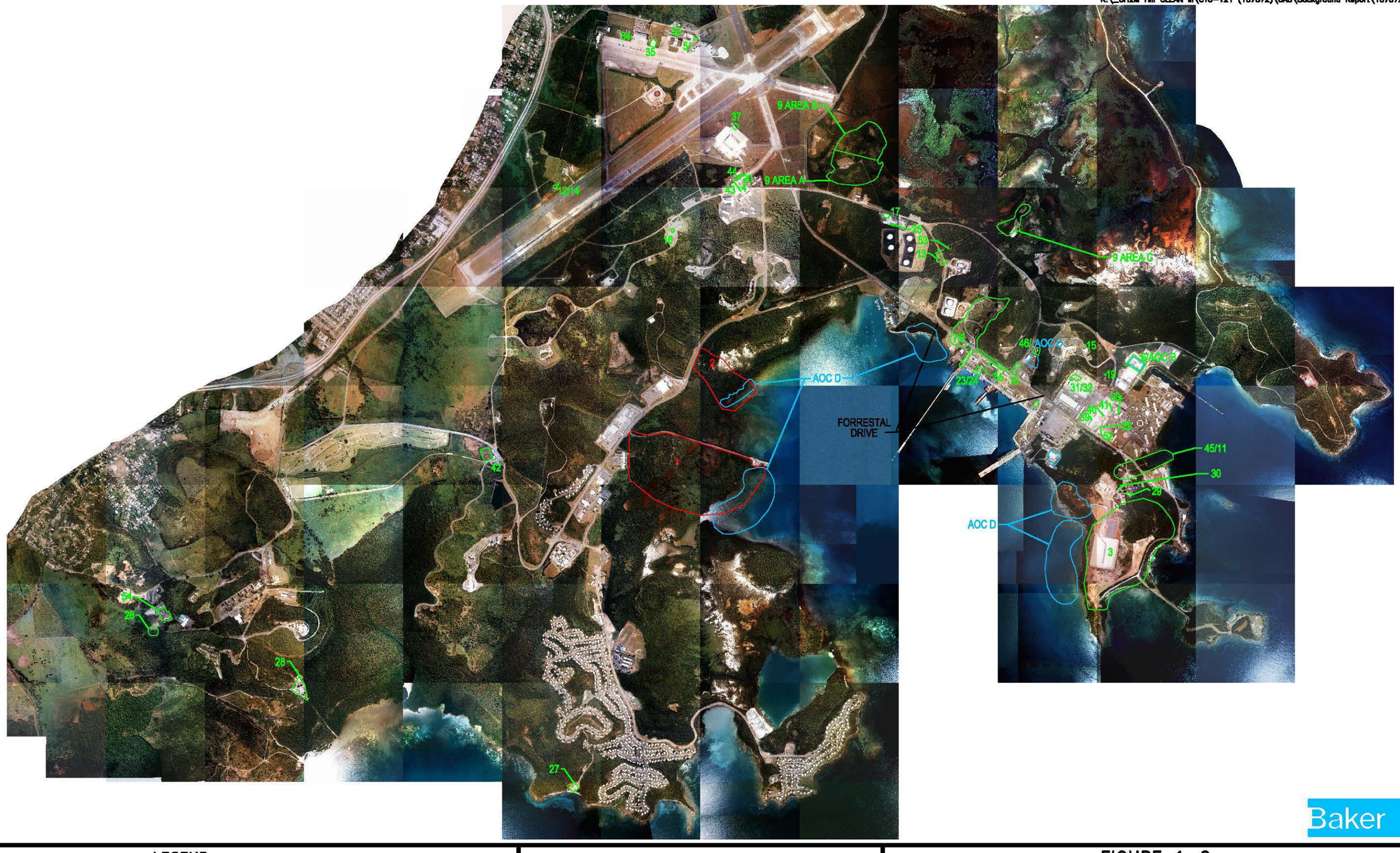
1 inch = 4 miles

Baker

FIGURE 1-1
REGIONAL LOCATION MAP
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
NAVAL ACTIVITY PUERTO RICO

SOURCE: METRODATA, INC., 2001

K:_CH2M HILL CLEAN III\CTO-121 (107872)\CAD\Background Report\107872BR12



LEGEND

1 – SWMUs

1 – AREA OF WHICH THIS INVESTIGATION PERTAINS TO

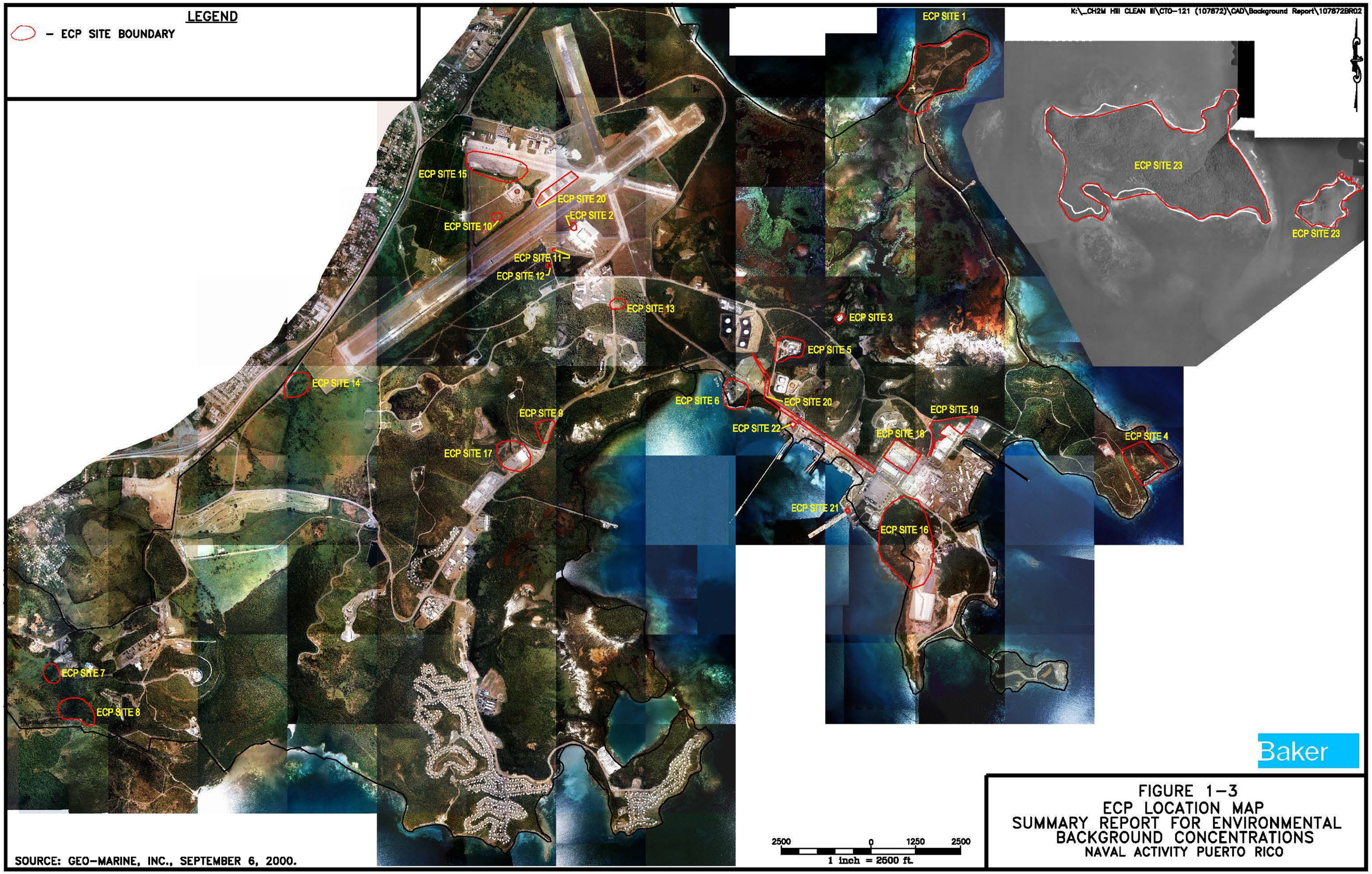
AOC D – AOCs

SOURCE: GEO-MARINE, INC., SEPTEMBER 6, 2000.

2500 0 1250 2500

1 inch = 2500 ft.

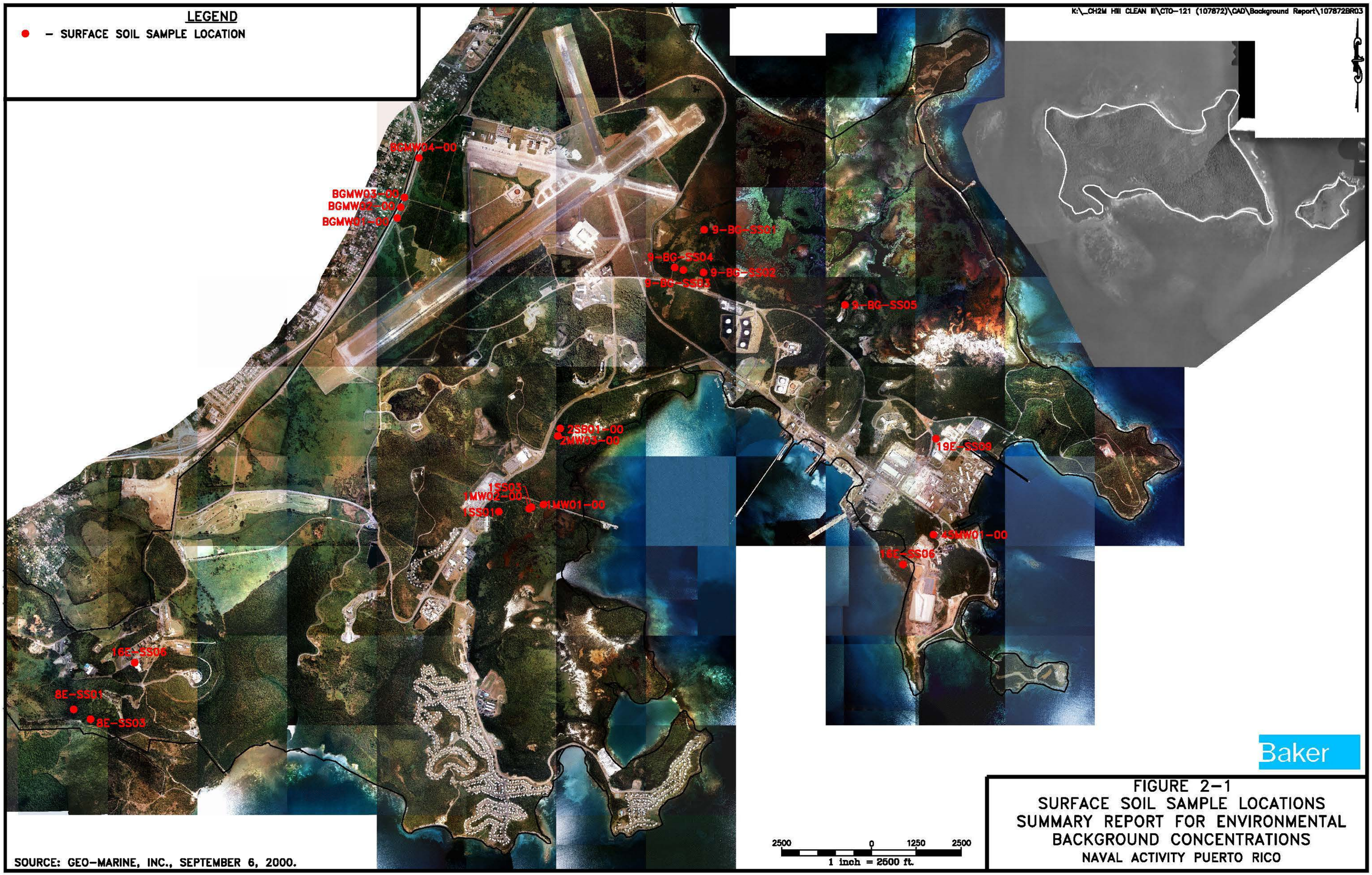
FIGURE 1-2
SWMU/AOC LOCATION MAP
SUMMARY REPORT FOR ENVIROMENTAL BACKGROUND CONCENTRATIONS
NAVAL ACTIVITY PUERTO RICO



SOURCE: GEO-MARINE, INC., SEPTEMBER 6, 2000.

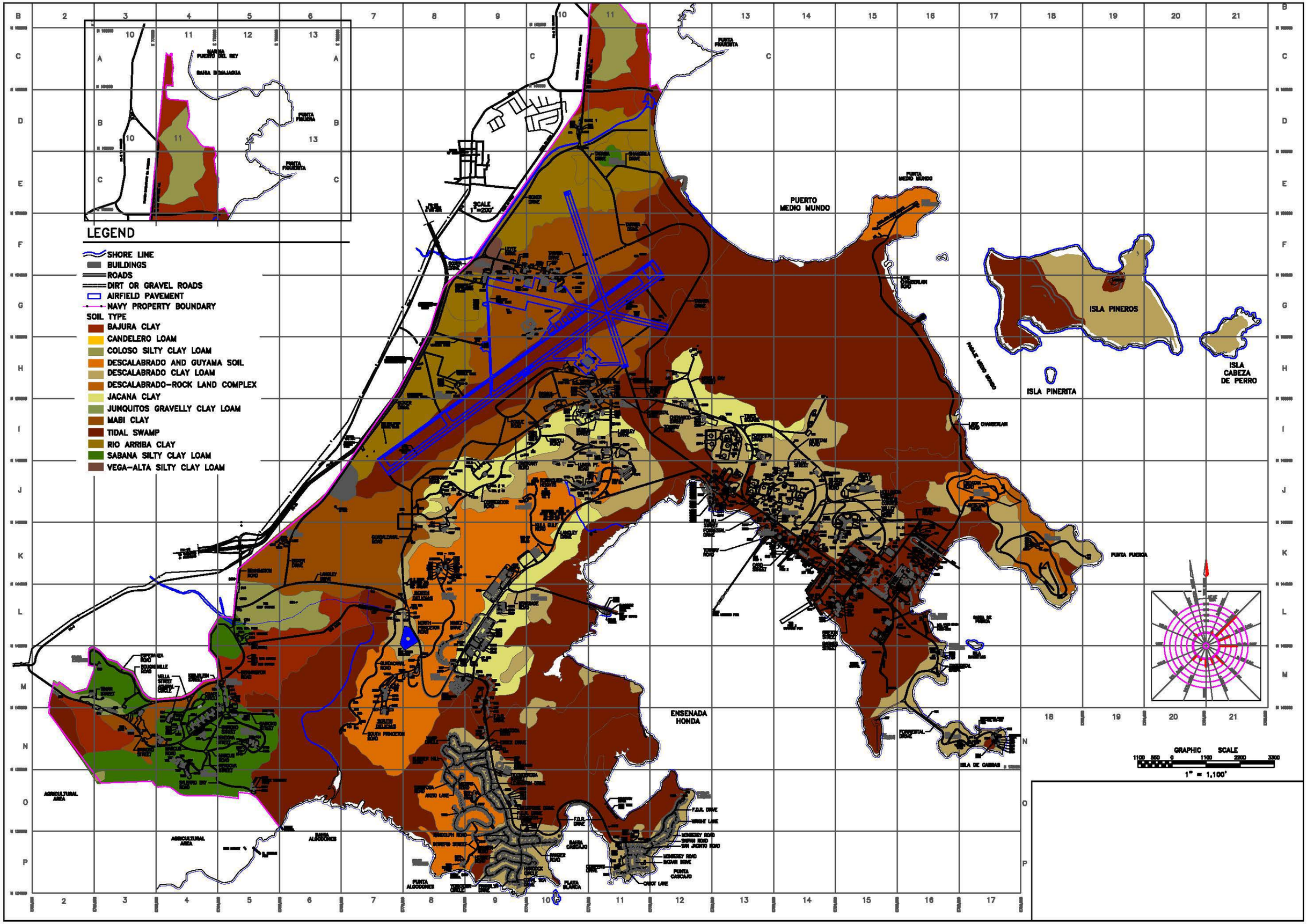
Baker

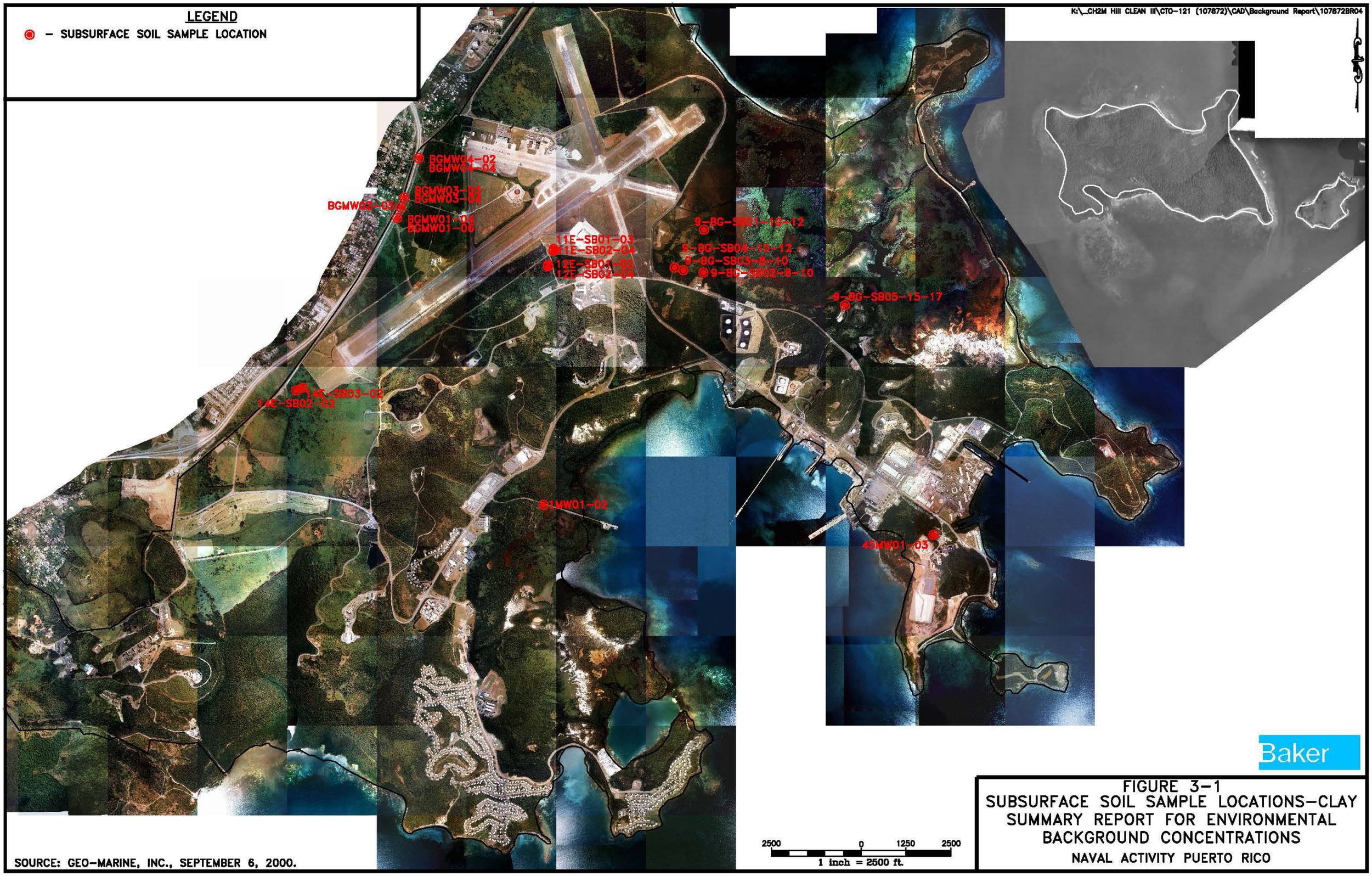
FIGURE 1-3
ECP LOCATION MAP
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
NAVAL ACTIVITY PUERTO RICO



SOURCE: GEO-MARINE, INC., SEPTEMBER 6, 2000.

FIGURE 2-1
SURFACE SOIL SAMPLE LOCATIONS
SUMMARY REPORT FOR ENVIRONMENTAL
BACKGROUND CONCENTRATIONS
NAVAL ACTIVITY PUERTO RICO

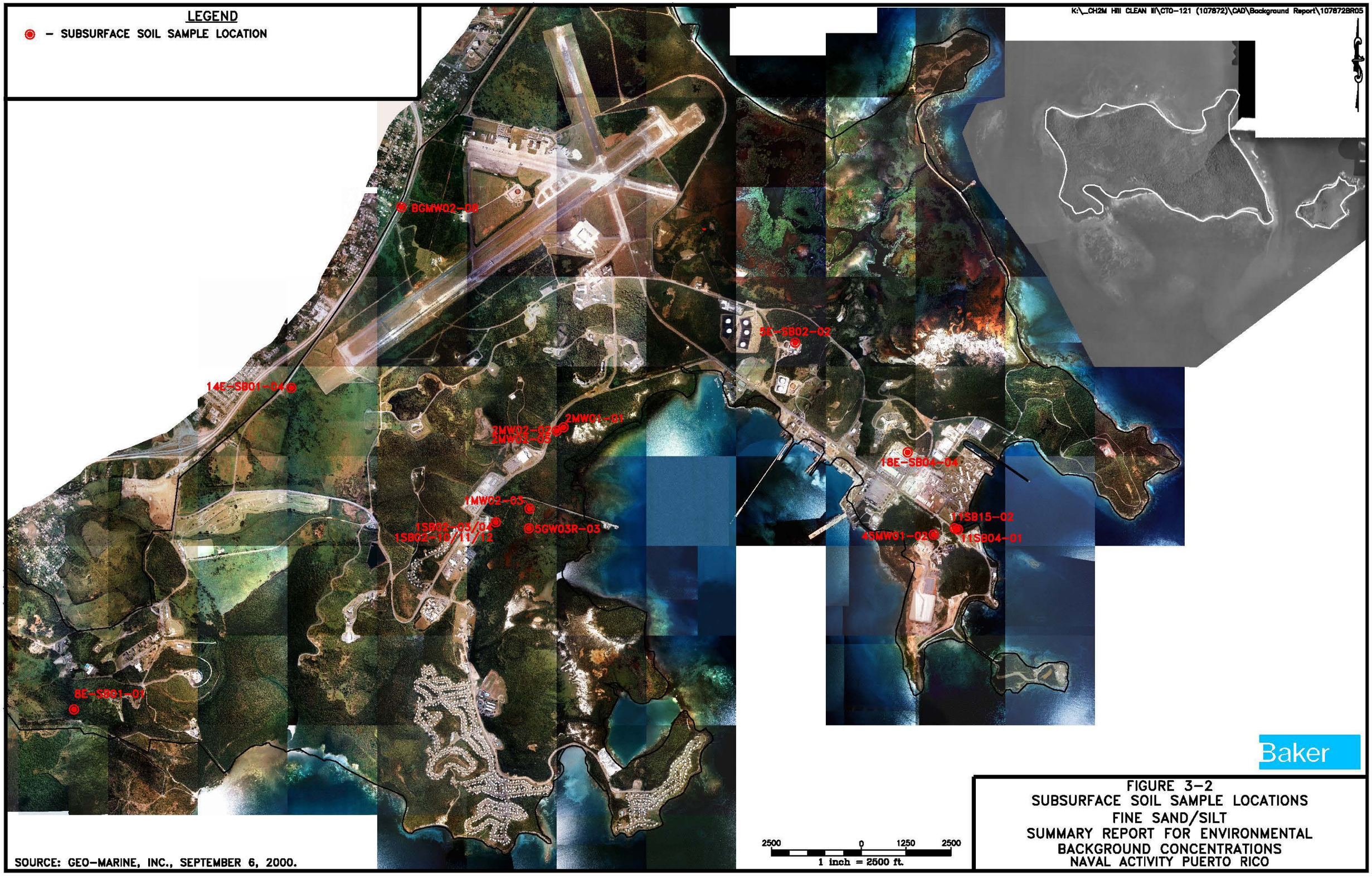

LEGEND
SHORE LINE
BUILDINGS
ROADS
DIRT OR GRAVEL ROADS
AIRFIELD PAVEMENT
NAVY PROPERTY BOUNDARY
SOIL TYPE
BAJURA CLAY
CANDELERO LOAM
COLOSO SILTY CLAY LOAM
DESCALABRADO AND GUYAMA SOIL
DESCALABRADO CLAY LOAM
DESCALABRADO-ROCK LAND COMPLEX
JACANA CLAY
JUNQUITOS GRAVELLY CLAY LOAM
MABI CLAY
TIDAL SWAMP
RIO ARRIBA CLAY
SABANA SILTY CLAY LOAM
VEGA-ALTA SILTY CLAY LOAM
PUERTO MEDIO MUNDO
ISLA PINEROS
ISLA PINERITA
ISLA CABEZA DE PERRO
PUNTA FUERTA
ENSENADA HONDA
ISLA DE CABRAS
AGRICULTURAL AREA
BAHIA ALGODONES
PUNTA ALGODONES
PLATA BLANCA
BAHIA CASCAJO
PUNTA CASCAJO
GRAPHIC SCALE
1" = 1,100'



SOURCE: GEO-MARINE, INC., SEPTEMBER 6, 2000.

FIGURE 3-1
SUBSURFACE SOIL SAMPLE LOCATIONS-CLAY
SUMMARY REPORT FOR ENVIRONMENTAL
BACKGROUND CONCENTRATIONS
NAVAL ACTIVITY PUERTO RICO

K:_CH2M HILL CLEAN III\CTO-121 (107872)\CAD\Background Report\107872BR05



SOURCE: GEO-MARINE, INC., SEPTEMBER 6, 2000.

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FIGURE 3-2
SUBSURFACE SOIL SAMPLE LOCATIONS
FINE SAND/SILT
SUMMARY REPORT FOR ENVIRONMENTAL
BACKGROUND CONCENTRATIONS
NAVAL ACTIVITY PUERTO RICO

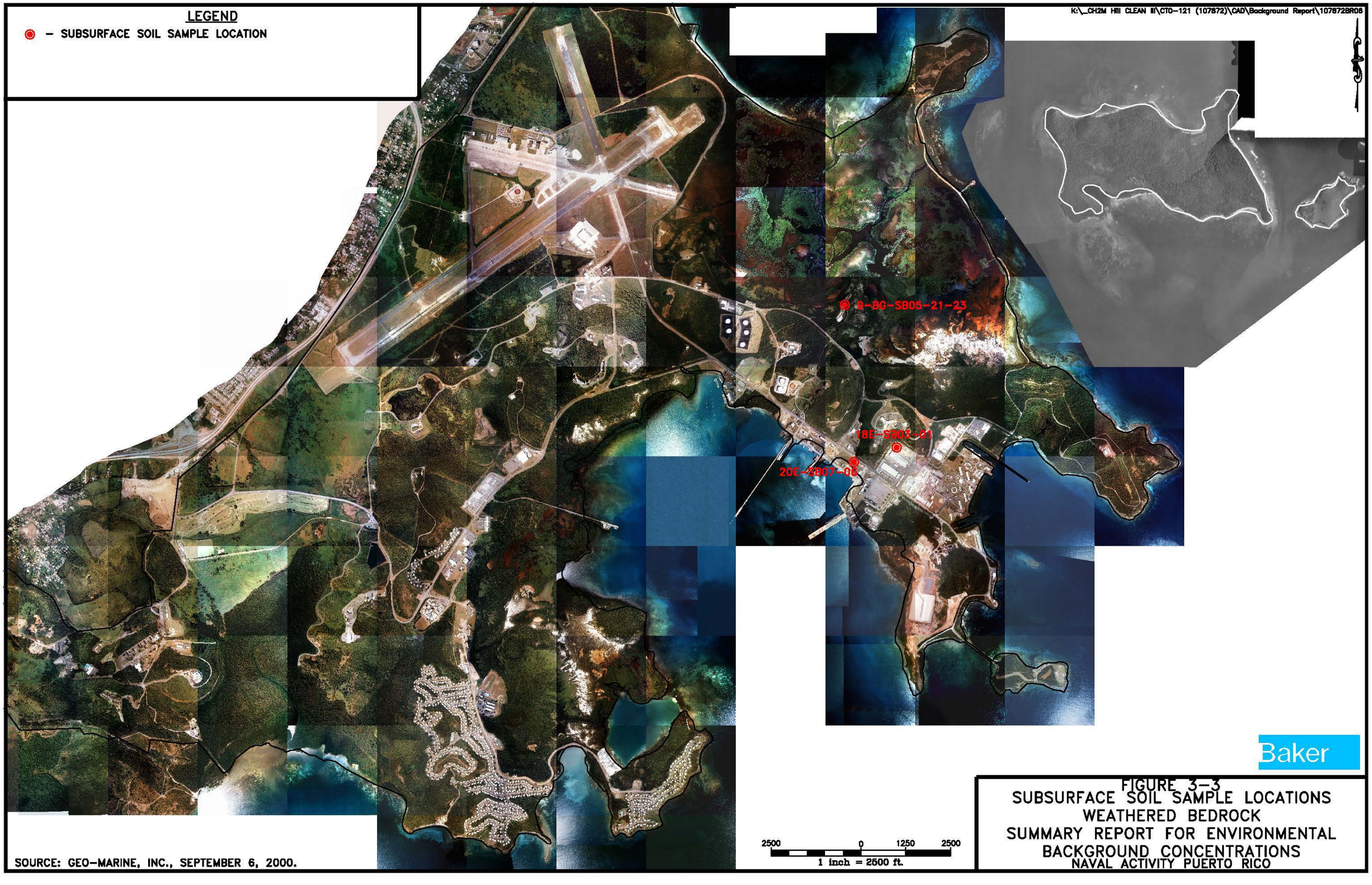
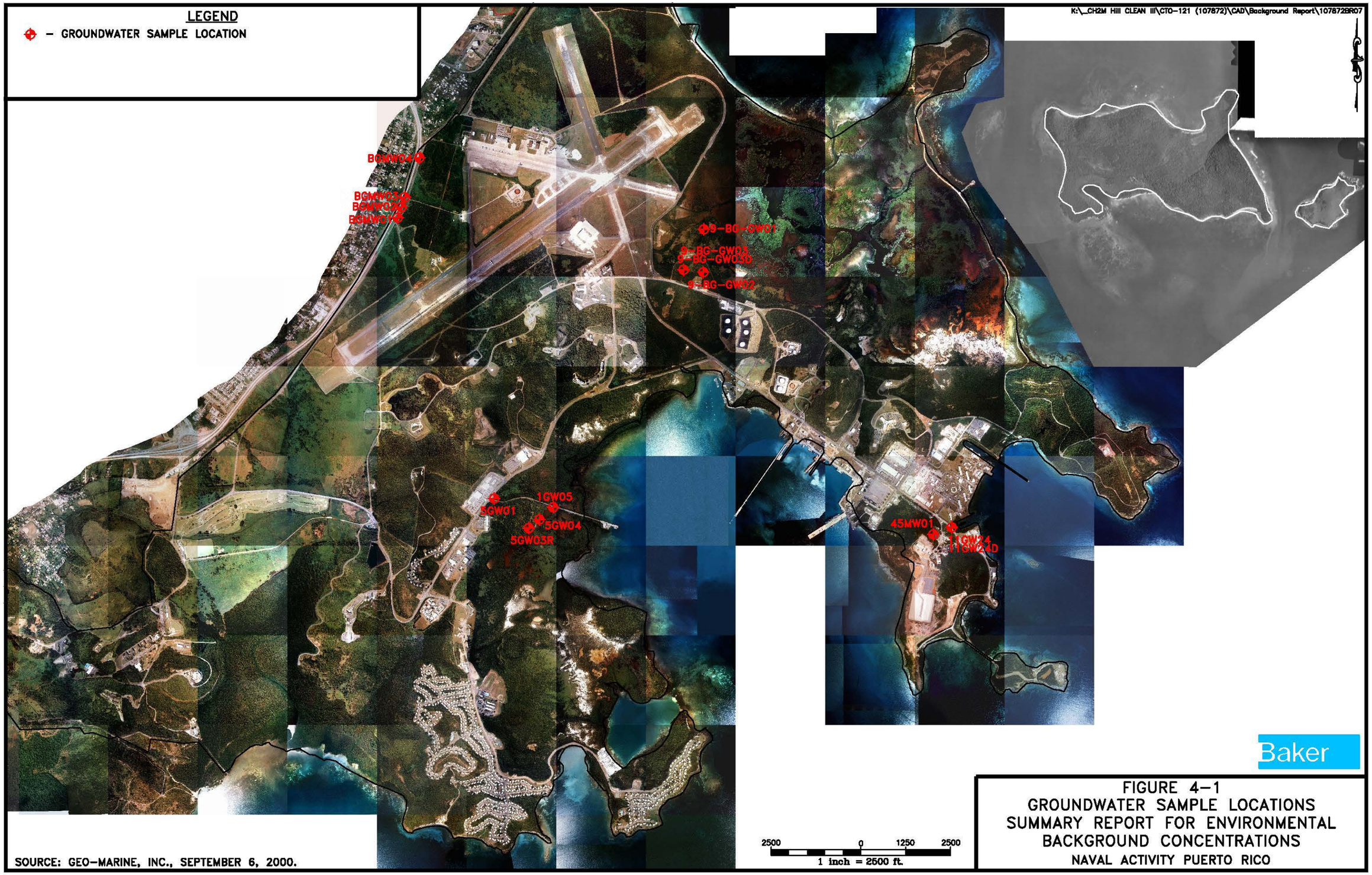


FIGURE 3-3
SUBSURFACE SOIL SAMPLE LOCATIONS
WEATHERED BEDROCK
SUMMARY REPORT FOR ENVIRONMENTAL
BACKGROUND CONCENTRATIONS
NAVAL ACTIVITY PUERTO RICO

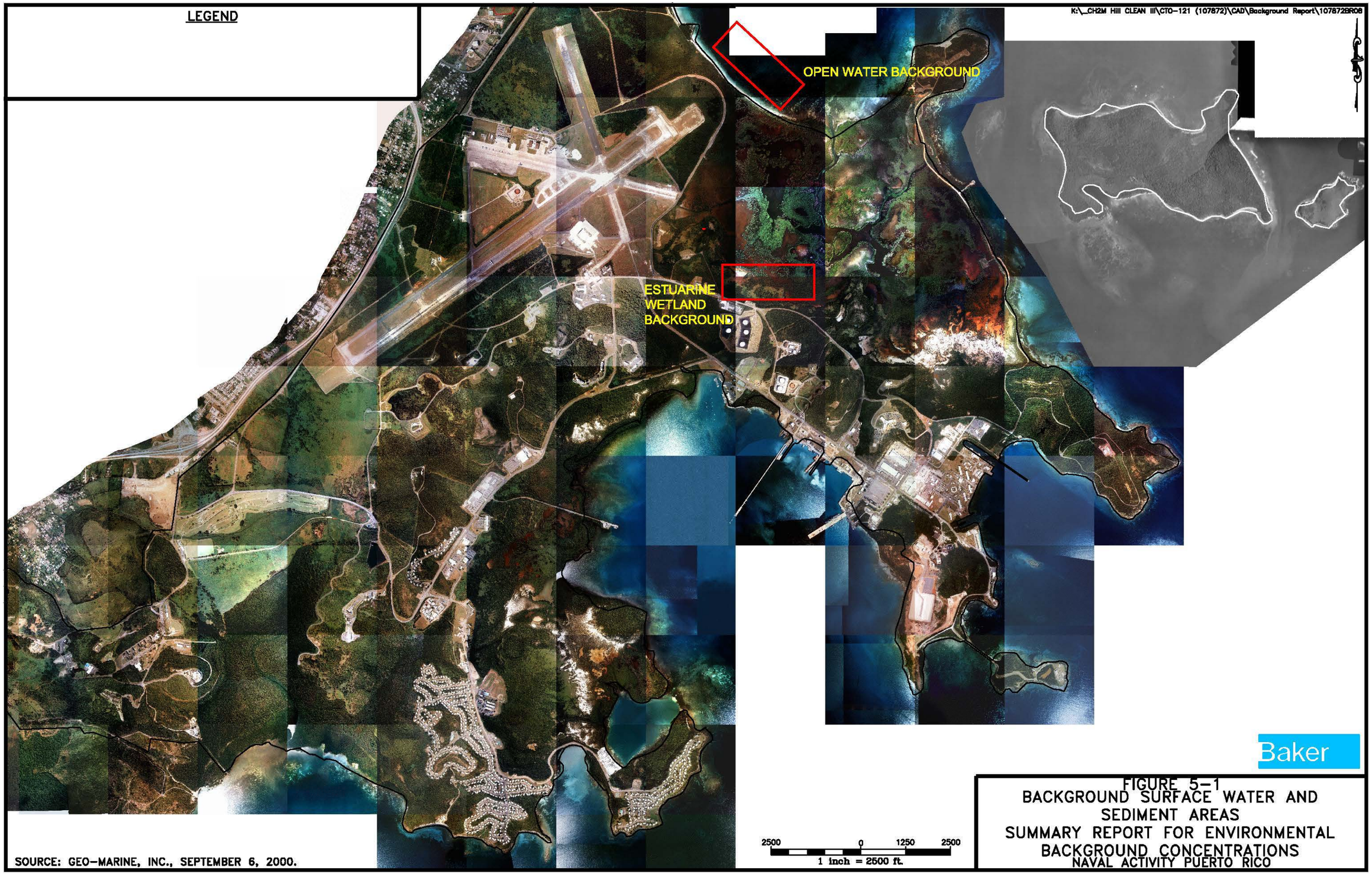


SOURCE: GEO-MARINE, INC., SEPTEMBER 6, 2000.

FIGURE 4-1
GROUNDWATER SAMPLE LOCATIONS
SUMMARY REPORT FOR ENVIRONMENTAL
BACKGROUND CONCENTRATIONS
NAVAL ACTIVITY PUERTO RICO

K:_CH2M Hill CLEAN III\CTO-121 (107872)\CAD\Background Report\107872BR08

LEGEND

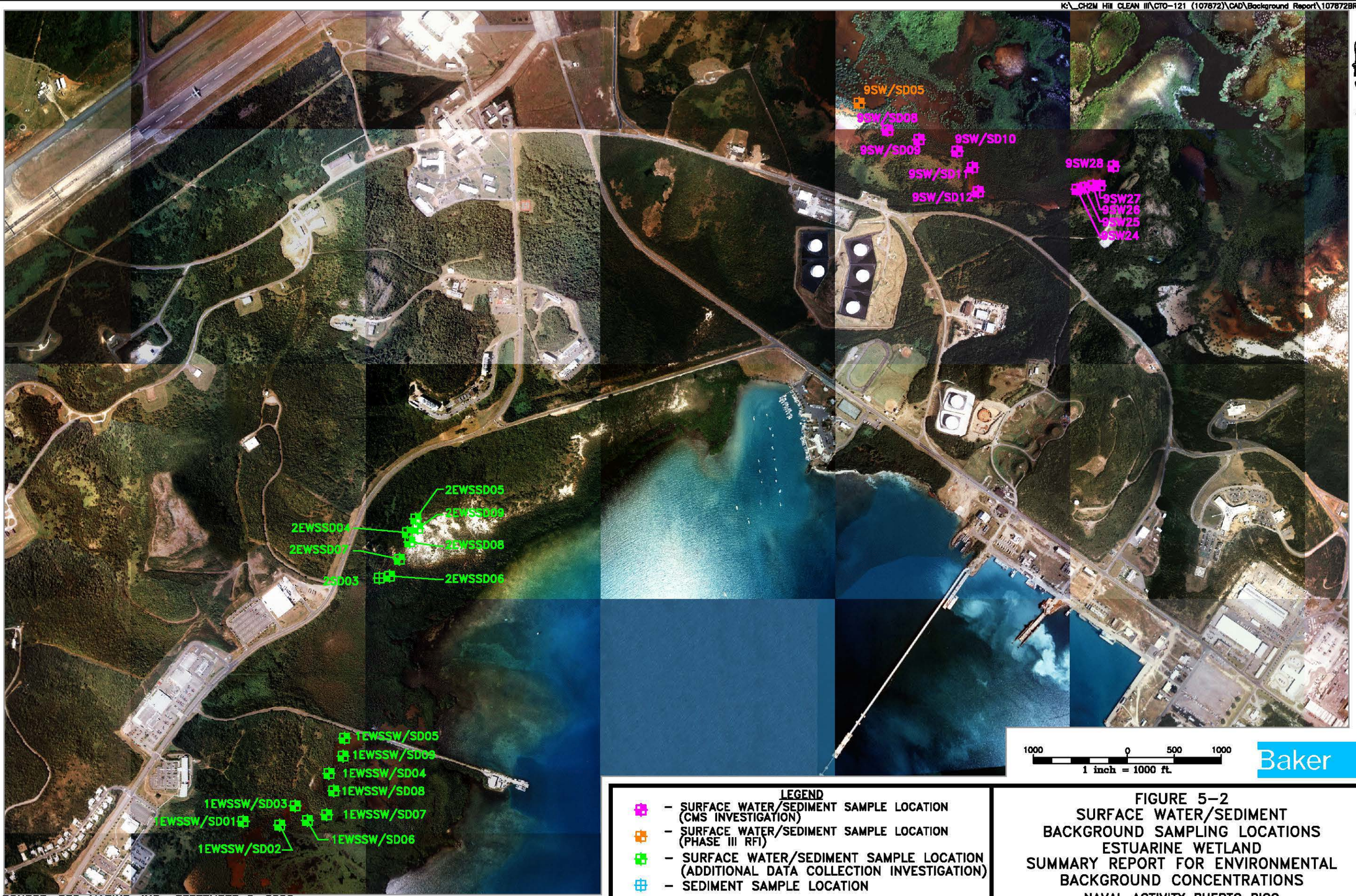


SOURCE: GEO-MARINE, INC., SEPTEMBER 6, 2000.

Baker

FIGURE 5-1
BACKGROUND SURFACE WATER AND SEDIMENT AREAS
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
NAVAL ACTIVITY PUERTO RICO

K:_CH2M Hill CLEAN III\CTO-121 (107872)\CAD\Background Report\107872BR13



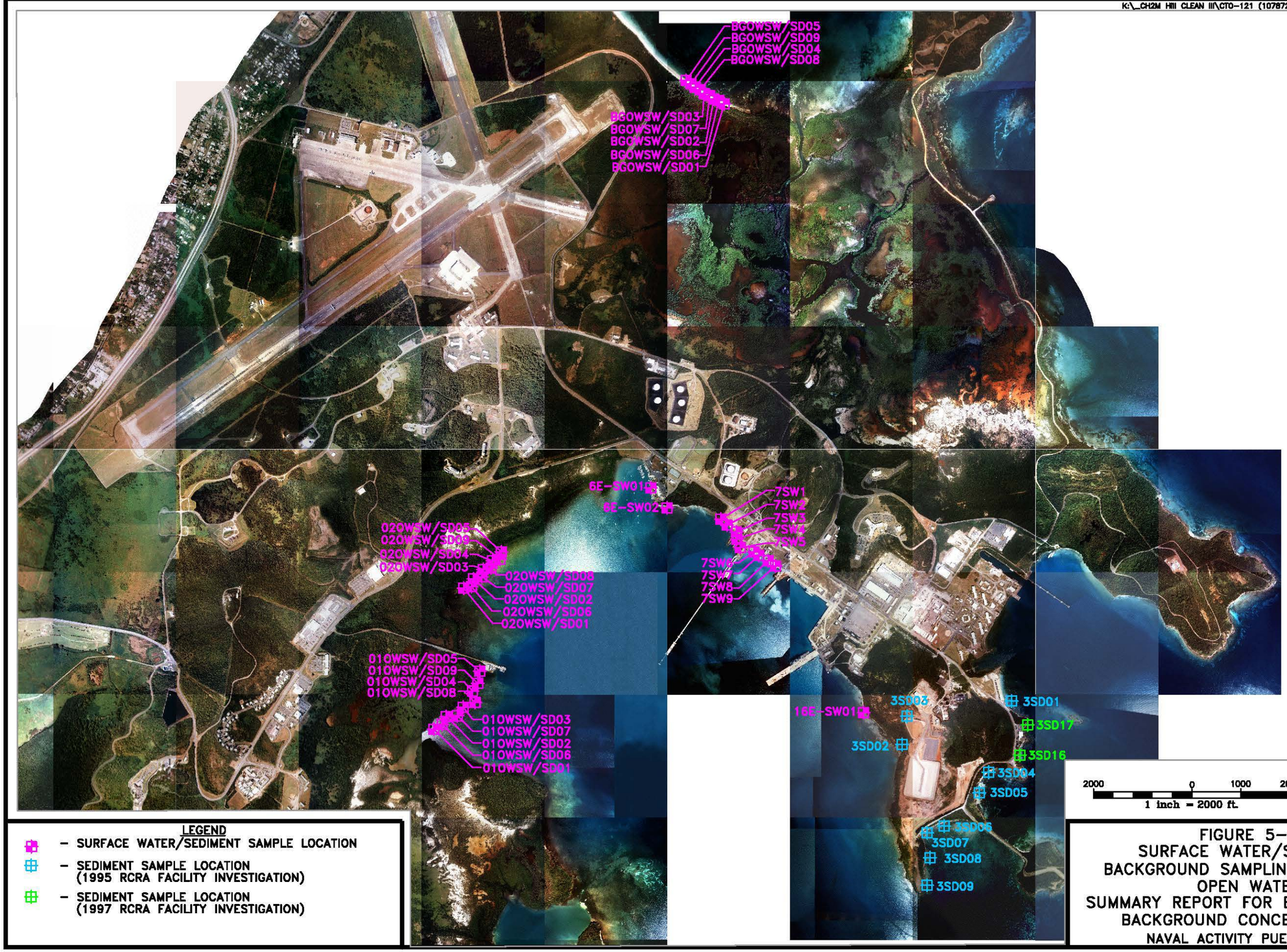
SOURCE: GEO-MARINE, INC., SEPTEMBER 6, 2000.

LEGEND

- SURFACE WATER/SEDIMENT SAMPLE LOCATION (CMS INVESTIGATION)
- SURFACE WATER/SEDIMENT SAMPLE LOCATION (PHASE III RFI)
- SURFACE WATER/SEDIMENT SAMPLE LOCATION (ADDITIONAL DATA COLLECTION INVESTIGATION)
- SEDIMENT SAMPLE LOCATION

FIGURE 5-2
SURFACE WATER/SEDIMENT
BACKGROUND SAMPLING LOCATIONS
ESTUARINE WETLAND
SUMMARY REPORT FOR ENVIRONMENTAL
BACKGROUND CONCENTRATIONS
NAVAL ACTIVITY PUERTO RICO

K:_CH2M HILL CLEAN III\CTO-121 (107872)\CAD\Background Report\107872BR14



Baker

LEGEND

- SURFACE WATER/SEDIMENT SAMPLE LOCATION
- SEDIMENT SAMPLE LOCATION (1995 RCRA FACILITY INVESTIGATION)
- SEDIMENT SAMPLE LOCATION (1997 RCRA FACILITY INVESTIGATION)

FIGURE 5-3
SURFACE WATER/SEDIMENT
BACKGROUND SAMPLING LOCATIONS
OPEN WATER
SUMMARY REPORT FOR ENVIRONMENTAL
BACKGROUND CONCENTRATIONS
NAVAL ACTIVITY PUERTO RICO

Appendix A:
Analytical Data

APPENDIX A.1
Analytical Data, Surface Soil

APPENDIX A.1

ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SURFACE SOIL
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	16E-SS06	19E-SS09	1MW01-00	1MW02-00	1SS01	1SS03	2MW03-00	2SB01-00
Date	05-13-2004	05-13-2004	10-29-1996	10-11-1996	10-13-1996	10-10-1996	10-08-1996	10-08-1996
Volatiles (ug/kg)								
1,1,1,2-Tetrachloroethane	5.2 U	6.3 U	11 U	12 UJ	12 UJ	11 U	12 U	12 U
1,1,1-Trichloroethane (TCA)	5.2 U	6.3 U	6 U	6 UJ	6 U	6 U	6 U	6 U
1,1,2,2-Tetrachloroethane	5.2 U	6.3 U	6 UJ	6 UJ	6 U	6 U	6 U	6 U
1,1,2-Trichloroethane	5.2 U	6.3 U	6 U	6 UJ	6 U	6 U	6 U	6 U
1,1-Dichloroethane	5.2 U	6.3 U	6 U	6 UJ	6 U	6 U	6 U	6 U
1,1-Dichloroethene	5.2 U	6.3 U	6 U	6 UJ	6 U	6 U	6 U	6 U
1,2,3-Trichloropropane	5.2 U	6.3 U	11 U	12 UJ	12 UJ	11 U	12 U	12 U
1,2-Dibromo-3-chloropropane (DBCP)	10 U	12 U	23 UJ	24 UJ	23 UJ	23 U	24 U	25 U
1,2-Dibromoethane (EDB)	5.2 U	6.3 U	23 U	24 UJ	23 UJ	23 U	24 U	25 U
1,2-Dichloroethane	5.2 U	6.3 U	6 U	6 UJ	6 U	6 U	6 U	6 U
1,2-Dichloroethene (total)	NA	NA	6 U	6 UJ	6 U	6 U	6 U	6 U
1,2-Dichloroethene (trans)	5.2 U	6.3 U	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	5.2 U	6.3 U	6 U	6 UJ	6 U	6 U	6 U	6 U
1,3-Dichloropropene (cis)	5.2 U	6.3 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U
1,3-Dichloropropene (trans)	5.2 U	6.3 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U
1,4-Dichloro-2-butene (trans)	10 U	12 U	23 UJ	24 UJ	23 U	23 U	24 U	25 U
2-Butanone (MEK)	26 U	31 U	11 UJ	12 UJ	12 U	11 U	12 U	12 U
2-Chloro-1,3-butadiene (Chloroprene)	5.2 U	6.3 U	110 R	120 UJ	120 UJ	110 U	120 U	120 U
2-Hexanone (MBK)	26 U	31 U	11 UJ	12 UJ	12 U	11 U	12 U	12 UJ
3-Chloropropene (Allyl Chloride)	5.2 U	6.3 U	23 U	24 UJ	23 UJ	23 U	24 UJ	25 U
4-Methyl-2-pentanone (MIBK)	26 U	31 U	11 U	12 UJ	12 U	11 U	12 U	12 UJ
Acetone	52 U	63 U	11 U	15 J	12 UJ	11 U	12 U	12 UJ
Acetonitrile	210 U	250 U	110 U	120 UJ	120 U	110 U	120 U	120 U
Acrolein	100 U	120 U	570 U	600 UJ	580 U	570 UJ	590 UJ	620 UJ
Acrylonitrile	100 U	120 U	110 U	120 UJ	120 U	110 U	120 U	120 UJ
Benzene	5.2 U	6.3 U	6 U	6 UJ	6 U	6 U	6 U	6 U
Bromodichloromethane	5.2 U	6.3 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U
Bromoform	5.2 U	6.3 U	6 U	6 UJ	6 UJ	6 U	6 UJ	6 U
Bromomethane	5.2 U	6.3 U	11 U	12 UJ	12 U	11 U	12 U	12 U
Carbon Disulfide	5.2 U	6.3 U	6 U	6 UJ	6 U	6 U	6 U	6 U
Carbon Tetrachloride	5.2 U	6.3 U	6 U	6 UJ	6 U	6 U	6 U	6 U
Chlorobenzene	5.2 U	6.3 U	6 U	6 UJ	6 U	6 U	6 U	6 U
Chloroethane	5.2 U	6.3 U	11 U	12 UJ	12 U	11 U	12 U	12 UJ
Chloroform	5.2 U	6.3 U	6 U	6 UJ	6 U	6 U	6 U	6 UJ
Chloromethane	5.2 U	6.3 U	11 U	12 UJ	12 U	11 UJ	12 UJ	12 UJ
Dibromochloromethane	5.2 U	6.3 U	6 U	6 UJ	6 UJ	6 U	6 U	6 U

APPENDIX A.1

ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SURFACE SOIL
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	16E-SS06	19E-SS09	1MW01-00	1MW02-00	1SS01	1SS03	2MW03-00	2SB01-00
Date	05-13-2004	05-13-2004	10-29-1996	10-11-1996	10-13-1996	10-10-1996	10-08-1996	10-08-1996
Volatiles (ug/kg) (Continued)								
Dibromomethane	5.2 U	6.3 U	11 U	12 UJ	12 U	11 U	12 U	12 U
Dichlorodifluoromethane (Freon-12)	5.2 U	6.3 U	23 UJ	24 UJ	23 U	23 UJ	24 U	25 UJ
Ethyl Methacrylate	5.2 U	6.3 U	23 UJ	24 UJ	23 U	23 U	24 U	25 UJ
Ethylbenzene	5.2 U	6.3 U	6 U	6 UJ	6 U	6 U	6 U	6 U
Iodomethane	5.2 U	6.3 U	11 U	12 UJ	12 UJ	11 U	12 UJ	12 UJ
Isobutyl Alcohol	210 U	250 U	2300 R	2400 R	2300 R	2300 R	2400 R	2500 R
Methyl Acrylonitrile	100 U	120 U	23 U	24 UJ	23 U	23 U	24 U	25 U
Methyl Methacrylate	5.2 U	6.3 U	23 U	24 UJ	23 U	23 U	24 U	25 U
Methylene Chloride	5.2 U	6.3 U	6 U	6 UJ	6 U	6 U	6 UJ	6 U
Pentachloroethane	26 U	31 U	23 U	24 UJ	23 U	23 U	24 U	25 U
Propionitrile (Ethyl Cyanide)	100 U	120 U	57 R	60 UJ	58 R	57 UJ	59 U	62 R
Styrene (Ethenylbenzene)	5.2 U	6.3 U	6 U	6 UJ	6 U	6 U	6 U	6 U
Tetrachloroethene (PCE)	5.2 U	6.3 U	6 U	6 UJ	6 UJ	6 U	6 UJ	6 U
Toluene	5.2 U	6.3 U	6 U	6 UJ	6 U	6 U	6 U	6 U
Trichloroethene (TCE)	5.2 U	6.3 U	6 U	6 UJ	6 U	6 U	6 U	6 U
Trichlorofluoromethane	5.2 U	6.3 U	11 U	12 UJ	12 U	11 UJ	12 UJ	12 UJ
Vinyl Acetate	10 U	12 U	11 UJ	12 UJ	12 U	11 U	12 U	12 U
Vinyl Chloride	5.2 U	6.3 U	11 U	12 UJ	12 U	11 U	12 UJ	12 U
Xylenes, total	10 U	12 U	6 U	6 UJ	6 U	6 U	6 U	6 U
Semivolatiles (ug/kg)								
1,2,4,5-Tetrachlorobenzene	390 U	440 U	370 U	400 UJ	370 UJ	380 UJ	390 UJ	410 UJ
1,2,4-Trichlorobenzene	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
1,2-Dichlorobenzene (o-)	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
1,2-Diphenylhydrazine			370 U	400 U	370 U	380 U	390 U	410 U
1,3,5-Trinitrobenzene	390 U	440 U	3700 U	4000 UJ	3700 UJ	3800 UJ	3900 U	4100 U
1,3-Dichlorobenzene (m-)	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
1,3-Dinitrobenzene	390 U	440 U	740 U	790 UJ	750 UJ	760 UJ	780 UJ	810 UJ
1,4-Dichlorobenzene (p-)	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
1,4-Dioxane (p-)	390 U	440 U	740 U	790 U	750 U	760 U	780 U	810 U
1,4-Naphthoquinone	390 U	440 U	1800 U	2000 UJ	1900 UJ	1900 UJ	1900 UJ	2000 UJ
1,4-Phenylenediamine	2000 U	2300 U	740 U	790 R	750 R	760 R	780 R	810 R
1-Naphthylamine	390 U	440 U	740 U	790 UJ	750 U	760 UJ	780 U	810 U
2,2'-Oxybis[1-chloropropane]	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
2,3,4,6-Tetrachlorophenol	390 U	440 U	370 U	400 UJ	370 UJ	380 UJ	390 UJ	410 UJ
2,4,5-Trichlorophenol	390 U	440 U	1800 U	2000 U	1900 U	1900 U	1900 U	2000 U

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ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SURFACE SOIL
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	16E-SS06	19E-SS09	1MW01-00	1MW02-00	1SS01	1SS03	2MW03-00	2SB01-00
Date	05-13-2004	05-13-2004	10-29-1996	10-11-1996	10-13-1996	10-10-1996	10-08-1996	10-08-1996
Semivolatiles (ug/kg) (Continued)								
2,4,6-Trichlorophenol	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
2,4-Dichlorophenol	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
2,4-Dimethylphenol	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
2,4-Dinitrophenol	2000 U	2300 U	1800 U	2000 UJ	1900 UJ	1900 UJ	1900 UJ	2000 UJ
2,4-Dinitrotoluene	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
2,6-Dichlorophenol	390 U	440 U	370 U	400 UJ	370 UJ	380 UJ	390 UJ	410 UJ
2,6-Dinitrotoluene	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
2-Acetylaminofluorene	390 U	440 U	740 U	790 U	750 U	760 U	780 UJ	810 UJ
2-Chloronaphthalene	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
2-Chlorophenol	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
2-Methyl-5-nitroaniline	390 U	440 U	740 U	790 U	750 U	760 U	780 U	810 U
2-Methylnaphthalene	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
2-Methylphenol (o-Cresol)	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
2-Naphthylamine	390 U	440 U	930 U	990 UJ	940 UJ	940 UJ	970 UJ	1000 UJ
2-Nitroaniline	2000 U	2300 U	1800 U	2000 U	1900 U	1900 U	1900 U	2000 U
2-Nitrophenol	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
2-Picoline	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
3,3'-Dichlorobenzidine	780 U	880 U	740 U	790 U	750 U	760 U	780 U	810 U
3,3'-Dimethylbenzidine	2000 U	2300 U	1800 U	2000 R	1900 UJ	1900 R	1900 UJ	2000 UJ
3-Methylcholanthrene	390 U	440 U	370 U	400 UJ	370 UJ	380 UJ	390 UJ	410 UJ
3-Nitroaniline	2000 U	2300 U	1800 U	2000 UJ	1900 UJ	1900 UJ	1900 UJ	2000 UJ
4,6-Dinitro-2-methylphenol	2000 U	2300 U	1800 U	2000 U	1900 U	1900 U	1900 UJ	2000 UJ
4-Aminobiphenyl	390 U	440 U	740 U	790 U	750 UJ	760 U	780 U	810 U
4-Bromophenyl-phenylether	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
4-Chloro-3-methylphenol	390 U	440 U	740 U	790 U	750 U	760 U	780 U	810 U
4-Chloroaniline	780 U	880 U	740 U	790 U	750 U	760 U	780 UJ	810 UJ
4-Chlorophenyl-phenylether	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
4-Dimethylaminoazobenzene	390 U	440 U	740 UJ	790 U	750 U	760 U	780 U	810 U
4-Methylphenol (p-Cresol)	390 U	440 U						
4-Nitroaniline	2000 U	2300 U	1800 U	2000 U	1900 UJ	1900 U	1900 UJ	2000 UJ
4-Nitrophenol	2000 U	2300 U	1800 U	2000 U	1900 UJ	1900 U	1900 UJ	2000 UJ
4-Nitroquinoline-1-Oxide	3900 U	4400 U	1800 U	2000 R	1900 R	1900 R	1900 R	2000 R
7,12-Dimethylbenz(a)anthracene	390 U	440 U	740 U	790 UJ	750 UJ	760 UJ	780 UJ	810 UJ
a,a-Dimethylphenethylamine	80000 U	89000 U	1800 UJ	2000 UJ	1900 UJ	1900 UJ	1900 U	2000 U

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ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SURFACE SOIL
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	16E-SS06	19E-SS09	1MW01-00	1MW02-00	1SS01	1SS03	2MW03-00	2SB01-00
Date	05-13-2004	05-13-2004	10-29-1996	10-11-1996	10-13-1996	10-10-1996	10-08-1996	10-08-1996
Semivolatiles (ug/kg) (Continued)								
Acenaphthene	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Acenaphthylene	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Acetophenone	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Aniline	390 U	440 U	1800 U	2000 U	1900 U	1900 U	1900 UJ	2000 UJ
Anthracene	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Aramite	390 U	440 U	740 U	790 U	750 U	760 U	780 U	810 U
Benzidine			3700 U	4000 UJ	3700 UJ	3800 UJ	3900 UJ	4100 UJ
Benzo(a)anthracene	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Benzo(a)pyrene (BaP)	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Benzo(b)fluoranthene	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Benzo(g,h,i)perylene	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Benzo(k)fluoranthene	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Benzoic Acid			1800 U	2000 U	1900 UJ	1900 U	1900 UJ	2000 UJ
Benzyl Alcohol	390 U	440 U	370 U	400 U	370 UJ	380 U	390 UJ	410 UJ
Bis(2-chloroethoxy)methane	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Bis(2-chloroethyl)ether	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Bis(2-ethylhexyl) Phthalate (BEHP)	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Butyl Benzyl Phthalate	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Carbazole			370 U	400 UJ	370 U	380 UJ	390 U	410 U
Chrysene	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Cresol (Mixed Isomers)			370 U	400 U	370 U	380 U	390 U	410 U
Diallate	390 U	440 U	370 UJ	400 UJ	370 U	380 UJ	390 U	410 U
Dibenz(a,h)anthracene	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Dibenzofuran	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Diethyl Phthalate (DEP)	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Dimethyl Phthalate	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Di-n-butyl Phthalate (DBP)	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Di-n-octyl Phthalate	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Dinoseb	390 U	440 U	740 U	790 UJ	750 UJ	760 UJ	780 UJ	810 UJ
Diphenylamine			370 U	400 U	370 U	380 U	390 U	410 U
Ethyl 4,4'-Dichlorobenzilate (Chlorobenzilate)	20 U	23 U	370 U	400 UJ	370 UJ	380 UJ	390 UJ	410 UJ
Ethyl Methanesulfonate	390 U	440 U	370 U	400 UJ	370 UJ	380 UJ	390 UJ	410 UJ
Fluoranthene	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Fluorene	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Hexachlorobenzene	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Hexachlorobutadiene	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U

APPENDIX A.1

ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SURFACE SOIL
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	16E-SS06	19E-SS09	1MW01-00	1MW02-00	1SS01	1SS03	2MW03-00	2SB01-00
Date	05-13-2004	05-13-2004	10-29-1996	10-11-1996	10-13-1996	10-10-1996	10-08-1996	10-08-1996
Semivolatiles (ug/kg) (Continued)								
Hexachlorocyclopentadiene	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Hexachloroethane	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Hexachlorophene	200000 U	230000 U	3700 R	4000 R	3700 R	3800 R	3900 R	4100 R
Hexachloropropene	390 U	440 U	1800 U	2000 UJ	1900 UJ	1900 UJ	1900 UJ	2000 UJ
Indeno(1,2,3-cd)pyrene	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Isophorone	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Isosafrole	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Methapyrilene	80000 U	89000 U	930 UJ	990 UJ	940 UJ	940 UJ	970 UJ	1000 UJ
Methyl Methane Sulfonate	390 U	440 U	370 U	400 UJ	370 UJ	380 UJ	390 UJ	410 UJ
Naphthalene	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Nitrobenzene	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
n-Nitrosodiethylamine	390 U	440 U	370 UJ	400 U	370 UJ	380 U	390 U	410 U
n-Nitrosodimethylamine	390 U	440 U	370 U	400 U	370 UJ	380 U	390 U	410 U
n-Nitroso-di-n-butylamine	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
n-Nitrosodi-n-propylamine	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
n-Nitrosodiphenylamine	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
n-Nitrosomethylethylamine	390 U	440 U	370 UJ	400 UJ	370 UJ	380 UJ	390 U	410 U
n-Nitrosomorpholine	390 U	440 U	740 UJ	790 UJ	750 UJ	760 UJ	780 U	810 U
n-Nitrosopiperidine	390 U	440 U	370 UJ	400 UJ	370 UJ	380 UJ	390 U	410 U
n-Nitrosopyrrolidine	390 U	440 U	1800 U	2000 U	1900 U	1900 U	1900 U	2000 U
o-Toluidine	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Pentachlorobenzene	390 U	440 U	370 U	400 UJ	370 UJ	380 UJ	390 UJ	410 UJ
Pentachloronitrobenzene	390 U	440 U	370 U	400 R	370 R	380 R	390 R	410 R
Pentachlorophenol	2000 U	2300 U	1800 U	2000 U	1900 U	1900 U	1900 U	2000 U
Phenacetin	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Phenanthrene	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Phenol	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Pronamide	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Pyrene	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U
Pyridine	390 U	440 U	740 U	790 U	750 U	760 U	780 UJ	810 UJ
Safrole	390 U	440 U	370 U	400 U	370 U	380 U	390 U	410 U

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ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SURFACE SOIL
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	16E-SS06	19E-SS09	1MW01-00	1MW02-00	1SS01	1SS03	2MW03-00	2SB01-00
Date	05-13-2004	05-13-2004	10-29-1996	10-11-1996	10-13-1996	10-10-1996	10-08-1996	10-08-1996
Pesticides (ug/kg)								
4,4'-DDD	3.9 U	4.4 U	9 U	9.6 U	9.1 U	9.1 U	9.2 U	9.8 UJ
4,4'-DDE	3.9 U	1 JP	9 U	9.6 U	9.1 U	9.1 U	9.2 U	9.8 U
4,4'-DDT	3.9 U	3.7 J	9 U	9.6 U	9.1 U	9.1 U	9.2 U	9.8 U
Aldrin	2 U	2.3 U	4.5 U	4.8 U	4.6 U	4.5 U	4.6 U	4.9 U
BHC, alpha-	2 U	2.3 U	4.5 U	4.8 U	4.6 U	4.5 U	4.6 U	4.9 U
BHC, beta-	2 U	2.3 U	4.5 U	4.8 U	4.6 U	4.5 U	4.6 U	4.9 U
BHC, delta-	2 U	2.3 U	4.5 U	4.8 U	4.6 U	4.5 U	4.6 U	4.9 U
BHC, gamma- (Lindane)	2 U	2.3 U	4.5 U	4.8 U	4.6 U	4.5 U	4.6 U	4.9 U
Chlordane	20 U	23 U	NA	NA	NA	NA	NA	NA
Chlordane, alpha-	NA	NA	45 U	48 U	46 U	45 U	46 U	49 U
Chlordane, gamma-	NA	NA	45 U	48 U	46 U	45 U	46 U	49 U
Dieldrin	3.9 U	4.4 U	9 U	9.6 U	9.1 U	9.1 U	9.2 U	9.8 U
Endosulfan I	2 U	2.3 U	4.5 U	4.8 U	4.6 U	4.5 U	4.6 U	4.9 U
Endosulfan II	3.9 U	4.4 U	9 U	9.6 U	9.1 U	9.1 U	9.2 U	9.8 U
Endosulfan Sulfate	3.9 U	4.4 U	9 U	9.6 U	9.1 U	9.1 U	9.2 U	9.8 U
Endrin	3.9 U	4.4 U	9 U	9.6 U	9.1 U	9.1 U	9.2 U	9.8 U
Endrin Aldehyde	3.9 U	4.4 U	9 U	9.6 U	9.1 U	9.1 U	9.2 U	9.8 U
Heptachlor	2 U	2.3 U	4.5 U	4.8 U	4.6 U	4.5 U	4.6 U	4.9 U
Heptachlor Epoxide	2 U	2.3 U	4.5 U	4.8 U	4.6 U	4.5 U	4.6 U	4.9 U
Isodrin	3.9 U	4.4 U	4.5 U	4.8 U	4.6 U	4.5 U	4.6 U	4.9 U
Kepone (Chlordecone)	200 U	230 U	9 UJ	9.6 UJ	9.1 UJ	9.1 UJ	9.2 UJ	9.8 UJ
Methoxychlor	20 U	23 U	45 U	48 U	46 U	45 U	46 U	49 U
Toxaphene	200 U	230 U	90 U	96 U	91 U	91 U	92 U	98 U
PCBs (ug/kg)								
Aroclor-1016	39 U	44 U	45 U	48 U	46 U	45 U	46 U	49 U
Aroclor-1221	80 U	89 U	45 U	48 U	46 U	45 U	46 U	49 U
Aroclor-1232	39 U	44 U	45 U	48 U	46 U	45 U	46 U	49 U
Aroclor-1242	39 U	44 U	45 U	48 U	46 U	45 U	46 U	49 U
Aroclor-1248	39 U	44 U	45 U	48 U	46 U	45 U	46 U	49 U
Aroclor-1254	39 U	44 U	90 U	96 U	91 U	91 U	92 U	98 U
Aroclor-1260	39 U	44 U	90 U	96 U	91 U	91 U	92 U	98 U

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ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SURFACE SOIL
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	16E-SS06	19E-SS09	1MW01-00	1MW02-00	1SS01	1SS03	2MW03-00	2SB01-00
Date	05-13-2004	05-13-2004	10-29-1996	10-11-1996	10-13-1996	10-10-1996	10-08-1996	10-08-1996
Herbicides (ug/kg)								
2,4,5-T	9.9 U	11 U	38 U	40 U	38 U	38 U	39 U	41 U
2,4,5-TP (Silvex)	9.9 U	11 U	38 U	40 U	38 U	38 U	39 U	41 U
2,4-D	9.9 U	11 U	380 U	400 U	380 U	380 U	390 U	410 U
Dimethoate	390 U	440 U	75 U	79 U	75 U	76 U	78 U	80 U
Disulfoton	390 U	440 U	75 U	79 U	75 U	76 U	78 U	80 U
Famphur	390 U	440 U	75 U	79 U	75 U	76 U	78 U	80 U
Methyl Parathion	390 U	440 U	75 U	79 U	75 U	76 U	78 U	80 U
o,o,o-Triethyl Phosphorothioate	390 U	440 U	75 U	79 U	75 U	76 U	78 U	80 U
Parathion	390 U	440 U	75 U	79 U	75 U	76 U	78 U	80 U
Phorate	390 U	440 U	75 U	79 U	75 U	76 U	78 U	80 U
Sulfotepp	390 U	440 U	75 U	79 U	75 U	76 U	78 U	80 U
Thionazin	390 U	440 U	75 U	79 U	75 U	76 U	78 U	80 U
Explosives (ug/kg)								
1,3,5-Trinitrobenzene	NA	NA	130 U	130 U			130 U	130 U
1,3-Dinitrobenzene	NA	NA	120 U	120 U	120 U	120 U	120 U	120 U
2,4,6-Trinitrotoluene (TNT)	NA	NA	120 U	120 U	120 U	120 U	120 U	120 U
2,4/2,6-Dinitrotoluene Mixture	NA	NA	200 U	200 U	200 U	200 U	200 U	200 U
2-Nitrotoluene	NA	NA	500 U	500 U	500 U	500 U	500 U	500 U
3-Nitrotoluene	NA	NA	500 U	500 U	500 U	500 U	500 U	500 U
4-Amino-2,6-dinitrotoluene	NA	NA	200 U	200 U	200 U	200 U	200 U	200 U
4-Nitrotoluene	NA	NA	1500 U	1500 U	1500 U	1500 U	1500 U	1500 U
HMX	NA	NA	1100 U	1100 U	1100 U	1100 U	1100 U	1100 U
Nitrobenzene	NA	NA	210 U	210 U	210 U	210 U	210 U	210 U
RDX (Cyclonite)	NA	NA	540 U	540 U	540 U	540 U	540 U	540 U
Tetryl	NA	NA	380 U	380 U	380 U	380 U	380 U	380 U
Dioxins (ug/kg)	NA	NA						
HxCDD, 2,3,7,8-	NA	NA	0.08 U	0.31 U	0.1 U	0.06 U	0.29 U	0.33 U
HxCDF, 2,3,7,8-	NA	NA	0.06 U	0.35 U	0.06 U	0.05 U	0.12 U	0.12 U
PeCDD, total	NA	NA	0.06 U	0.16 U	0.08 U	0.05 U	0.09 U	0.22 U
PeCDF, total	NA	NA	0.06 U	0.12 U	0.09 U	0.06 U	0.13 U	0.23 U

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CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	16E-SS06	19E-SS09	1MW01-00	1MW02-00	1SS01	1SS03	2MW03-00	2SB01-00
Date	05-13-2004	05-13-2004	10-29-1996	10-11-1996	10-13-1996	10-10-1996	10-08-1996	10-08-1996
Dioxins, cont. (ug/kg) (Continued)	NA	NA						
TCDD, 2,3,7,8-	NA	NA	0.03 U	0.07 U	0.03 U	0.03 U	0.04 U	0.07 U
TCDD, total	NA	NA	0.03 U	0.07 U	0.03 U	0.03 U	0.04 U	0.07 U
TCDF, total	NA	NA	0.03 U	0.03 U	0.04 U	0.04 U	0.04 U	0.04 U
Metals (mg/kg)								
Antimony	2.2 U	2.5 U	2.4 J	2.8 J	1.3 UJ	1.8 UJ	1.5 UJ	1.5 UJ
Arsenic	1.9	1.5	0.67	0.78 UJ	1.8 U	0.69 UJ	1.1	0.83 U
Barium	16	140	76.2	53.8	90.9	64.2	129	106
Beryllium	0.085 B	0.36 B	0.81	0.32	0.46	0.51	0.33	0.04 U
Cadmium	0.19 B	0.62 U	0.77	0.27	0.2	0.23 U	0.2 U	0.2 U
Chromium	47	34	32.4	30.6	5.9 J	30	31.7 J	37.4 J
Cobalt	13	27	15.2	13.8	14.2	15.6	23.1 J	50.2 J
Copper	43	180	169	19.8	35.2	37.9	109 J	54.7 J
Lead	3.3	21	3.6 R	4.4	3.4	2	60.6	16.1
Mercury	0.012 B	0.092 S	0.02 U	0.05	0.08	0.02 U	0.07 J	0.07 J
Nickel	19	14	16.5	6.8	5.4	12.7	16.1	18.1
Selenium	1.1 U	1.2 U	0.45 J	0.49	0.23 UJ	0.31 U	0.7 UJ	0.93 UJ
Silver	1.1 U	1.2 U	0.19 UJ	0.21 UJ	0.14 UJ	0.2 UJ	0.17 U	0.17 U
Thallium	1.1 U	1.2 U	0.15 U	0.16 U	0.18 U	0.14 U	0.13 U	0.13 U
Tin	2.9 B	4 B	0.94 U	1 U	0.69 U	0.95 U	2.2	0.84 U
Vanadium	74 N*	150	84.2	157	91.6	77.4	153 J	225 J
Zinc	34	120 E	140 J	13.9 J	19.1	23.1 J	108	62
Conventionals (mg/kg)								
Cyanide	0.6 U	0.37 B	0.55 U	0.56 U	0.44 U	0.56 U	0.46 U	0.39 U
Sulfide	30 B	33 U	28.6	27.1 UJ	23 UJ	28.4 UJ	28.8 UJ	29.6 UJ

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ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SURFACE SOIL
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	45MW01-00	8E-SS01	8E-SS03	9BGSS01	9BGSS01D	9BGSS02	9BGSS03	9BGSS04
Date	11-22-1996	05-14-2004	05-14-2004	06-26-1999	06-26-1999	06-26-1999	06-26-1999	06-26-1999
Volatiles (ug/kg)								
1,1,1,2-Tetrachloroethane	11 U	6.2 U	5.8 U	NA	NA	NA	NA	NA
1,1,1-Trichloroethane (TCA)	5 U	6.2 U	5.8 U	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	5 U	6.2 U	5.8 U	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	5 U	6.2 U	5.8 U	NA	NA	NA	NA	NA
1,1-Dichloroethane	5 U	6.2 U	5.8 U	NA	NA	NA	NA	NA
1,1-Dichloroethene	5 U	6.2 U	5.8 U	NA	NA	NA	NA	NA
1,2,3-Trichloropropane	11 U	6.2 U	5.8 U	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane (DBCP)	22 U	12 U	12 U	NA	NA	NA	NA	NA
1,2-Dibromoethane (EDB)	22 U	6.2 U	5.8 U	NA	NA	NA	NA	NA
1,2-Dichloroethane	5 U	6.2 U	5.8 U	NA	NA	NA	NA	NA
1,2-Dichloroethene (total)	5 U	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene (trans)	NA	6.2 U	5.8 U	NA	NA	NA	NA	NA
1,2-Dichloropropane	5 U	6.2 U	5.8 U	NA	NA	NA	NA	NA
1,3-Dichloropropene (cis)	5 U	6.2 U	5.8 U	NA	NA	NA	NA	NA
1,3-Dichloropropene (trans)	5 U	6.2 U	5.8 U	NA	NA	NA	NA	NA
1,4-Dichloro-2-butene (trans)	22 UJ	12 U	12 U	NA	NA	NA	NA	NA
2-Butanone (MEK)	11 U	31 U	29 U	NA	NA	NA	NA	NA
2-Chloro-1,3-butadiene (Chloroprene)	110 R	6.2 U	5.8 U	NA	NA	NA	NA	NA
2-Hexanone (MBK)	11 U	31 U	29 U	NA	NA	NA	NA	NA
3-Chloropropene (Allyl Chloride)	22 UJ	6.2 U	5.8 U	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (MIBK)	11 U	31 U	29 U	NA	NA	NA	NA	NA
Acetone	11 UJ	62 U	58 U	NA	NA	NA	NA	NA
Acetonitrile	110 UJ	250 U	230 U	NA	NA	NA	NA	NA
Acrolein	550 UJ	120 U	120 U	NA	NA	NA	NA	NA
Acrylonitrile	110 UJ	120 U	120 U	NA	NA	NA	NA	NA
Benzene	5 U	6.2 U	5.8 U	NA	NA	NA	NA	NA
Bromodichloromethane	5 U	6.2 U	5.8 U	NA	NA	NA	NA	NA
Bromoform	5 UJ	6.2 U	5.8 U	NA	NA	NA	NA	NA
Bromomethane	11 U	6.2 U	5.8 U	NA	NA	NA	NA	NA
Carbon Disulfide	5 U	6.2 U	5.8 U	NA	NA	NA	NA	NA
Carbon Tetrachloride	5 U	6.2 U	5.8 U	NA	NA	NA	NA	NA
Chlorobenzene	5 U	3.9 J	5.8 U	NA	NA	NA	NA	NA
Chloroethane	11 U	6.2 U	5.8 U	NA	NA	NA	NA	NA
Chloroform	5 U	6.2 U	5.8 U	NA	NA	NA	NA	NA
Chloromethane	11 U	6.2 U	5.8 U	NA	NA	NA	NA	NA
Dibromochloromethane	5 UJ	6.2 U	5.8 U	NA	NA	NA	NA	NA

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ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SURFACE SOIL
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	45MW01-00	8E-SS01	8E-SS03	9BGSS01	9BGSS01D	9BGSS02	9BGSS03	9BGSS04
Date	11-22-1996	05-14-2004	05-14-2004	06-26-1999	06-26-1999	06-26-1999	06-26-1999	06-26-1999
Volatiles (ug/kg) (Continued)								
Dibromomethane	11 UJ	6.2 U	5.8 U	NA	NA	NA	NA	NA
Dichlorodifluoromethane (Freon-12)	22 U	6.2 U	5.8 U	NA	NA	NA	NA	NA
Ethyl Methacrylate	22 UJ	6.2 U	5.8 U	NA	NA	NA	NA	NA
Ethylbenzene	5 U	6.2 U	5.8 U	NA	NA	NA	NA	NA
Iodomethane	11 U	6.2 U	5.8 U	NA	NA	NA	NA	NA
Isobutyl Alcohol	2200 R	250 U	230 U	NA	NA	NA	NA	NA
Methyl Acrylonitrile	22 UJ	120 U	120 U	NA	NA	NA	NA	NA
Methyl Methacrylate	22 U	6.2 U	5.8 U	NA	NA	NA	NA	NA
Methylene Chloride	5 U	6.2 U	5.8 U	NA	NA	NA	NA	NA
Pentachloroethane	22 UJ	31 U	29 U	NA	NA	NA	NA	NA
Propionitrile (Ethyl Cyanide)	55 U	120 U	120 U	NA	NA	NA	NA	NA
Styrene (Ethenylbenzene)	5 U	6.2 U	5.8 U	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)	5 UJ	11	2.7 J	NA	NA	NA	NA	NA
Toluene	5 U	6.2 U	5.8 U	NA	NA	NA	NA	NA
Trichloroethene (TCE)	5 UJ	6.2 U	5.8 U	NA	NA	NA	NA	NA
Trichlorofluoromethane	11 U	6.2 U	5.8 U	NA	NA	NA	NA	NA
Vinyl Acetate	11 UJ	12 U	12 U	NA	NA	NA	NA	NA
Vinyl Chloride	11 U	6.2 U	5.8 U	NA	NA	NA	NA	NA
Xylenes, total	5 U	12 U	12 U	NA	NA	NA	NA	NA
Semivolatiles (ug/kg)								
1,2,4,5-Tetrachlorobenzene	360 U	420 U	400 U	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	360 U	420 U	400 U	NA	NA	NA	NA	NA
1,2-Dichlorobenzene (o-)	360 U	420 U	400 U	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	360 U			NA	NA	NA	NA	NA
1,3,5-Trinitrobenzene	3600 R	420 U	400 U	NA	NA	NA	NA	NA
1,3-Dichlorobenzene (m-)	360 U	420 U	400 U	NA	NA	NA	NA	NA
1,3-Dinitrobenzene	730 U	420 U	400 U	NA	NA	NA	NA	NA
1,4-Dichlorobenzene (p-)	360 U	420 U	400 U	NA	NA	NA	NA	NA
1,4-Dioxane (p-)	730 U	420 U	400 U	NA	NA	NA	NA	NA
1,4-Naphthoquinone	1800 U	420 U	400 U	NA	NA	NA	NA	NA
1,4-Phenylenediamine	730 R	2200 U	2100 U	NA	NA	NA	NA	NA
1-Naphthylamine	730 U	420 U	400 U	NA	NA	NA	NA	NA
2,2'-Oxybis[1-chloropropane]	360 U	420 U	400 U	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	360 U	420 U	400 U	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	1800 U	420 U	400 U	NA	NA	NA	NA	NA

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CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	45MW01-00	8E-SS01	8E-SS03	9BGSS01	9BGSS01D	9BGSS02	9BGSS03	9BGSS04
Date	11-22-1996	05-14-2004	05-14-2004	06-26-1999	06-26-1999	06-26-1999	06-26-1999	06-26-1999
Semivolatiles (ug/kg) (Continued)								
2,4,6-Trichlorophenol	360 U	420 U	400 U	NA	NA	NA	NA	NA
2,4-Dichlorophenol	360 U	420 U	400 U	NA	NA	NA	NA	NA
2,4-Dimethylphenol	360 U	420 U	400 U	NA	NA	NA	NA	NA
2,4-Dinitrophenol	1800 U	2200 U	2100 U	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	360 U	420 U	400 U	NA	NA	NA	NA	NA
2,6-Dichlorophenol	360 U	420 U	400 U	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	360 U	420 U	400 U	NA	NA	NA	NA	NA
2-Acetylaminofluorene	730 U	420 U	400 U	NA	NA	NA	NA	NA
2-Chloronaphthalene	360 U	420 U	400 U	NA	NA	NA	NA	NA
2-Chlorophenol	360 U	420 U	400 U	NA	NA	NA	NA	NA
2-Methyl-5-nitroaniline	730 UJ	420 U	400 U	NA	NA	NA	NA	NA
2-Methylnaphthalene	360 U	420 U	400 U	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)	360 U	420 U	400 U	NA	NA	NA	NA	NA
2-Naphthylamine	910 U	420 U	400 U	NA	NA	NA	NA	NA
2-Nitroaniline	1800 U	2200 U	2100 U	NA	NA	NA	NA	NA
2-Nitrophenol	360 U	420 U	400 U	NA	NA	NA	NA	NA
2-Picoline	360 U	420 U	400 U	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	730 U	840 U	800 U	NA	NA	NA	NA	NA
3,3'-Dimethylbenzidine	1800 UJ	2200 U	2100 U	NA	NA	NA	NA	NA
3-Methylcholanthrene	360 U	420 U	400 U	NA	NA	NA	NA	NA
3-Nitroaniline	1800 U	2200 U	2100 U	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	1800 U	2200 U	2100 U	NA	NA	NA	NA	NA
4-Aminobiphenyl	730 U	420 U	400 U	NA	NA	NA	NA	NA
4-Bromophenyl-phenylether	360 U	420 U	400 U	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	730 U	420 U	400 U	NA	NA	NA	NA	NA
4-Chloroaniline	730 U	840 U	800 U	NA	NA	NA	NA	NA
4-Chlorophenyl-phenylether	360 U	420 U	400 U	NA	NA	NA	NA	NA
4-Dimethylaminoazobenzene	730 U	420 U	400 U	NA	NA	NA	NA	NA
4-Methylphenol (p-Cresol)		420 U	400 U	NA	NA	NA	NA	NA
4-Nitroaniline	1800 U	2200 U	2100 U	NA	NA	NA	NA	NA
4-Nitrophenol	1800 U	2200 U	2100 U	NA	NA	NA	NA	NA
4-Nitroquinoline-1-Oxide	1800 U	4200 U	4000 U	NA	NA	NA	NA	NA
7,12-Dimethylbenz(a)anthracene	730 U	420 U	400 U	NA	NA	NA	NA	NA
a,a-Dimethylphenethylamine	1800 UJ	85000 U	82000 U	NA	NA	NA	NA	NA

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SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	45MW01-00	8E-SS01	8E-SS03	9BGSS01	9BGSS01D	9BGSS02	9BGSS03	9BGSS04
Date	11-22-1996	05-14-2004	05-14-2004	06-26-1999	06-26-1999	06-26-1999	06-26-1999	06-26-1999
Semivolatiles (ug/kg) (Continued)								
Acenaphthene	360 U	420 U	400 U	NA	NA	NA	NA	NA
Acenaphthylene	360 U	420 U	400 U	NA	NA	NA	NA	NA
Acetophenone	360 U	420 U	400 U	NA	NA	NA	NA	NA
Aniline	1800 U	420 U	400 U	NA	NA	NA	NA	NA
Anthracene	360 U	420 U	400 U	NA	NA	NA	NA	NA
Aramite	730 UJ	420 U	400 U	NA	NA	NA	NA	NA
Benzidine	3600 U			NA	NA	NA	NA	NA
Benzo(a)anthracene	360 U	420 U	400 U	NA	NA	NA	NA	NA
Benzo(a)pyrene (BaP)	360 U	420 U	400 U	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	360 U	420 U	400 U	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	360 U	420 U	400 U	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	360 U	420 U	400 U	NA	NA	NA	NA	NA
Benzoic Acid	1800 U			NA	NA	NA	NA	NA
Benzyl Alcohol	360 U	420 U	400 U	NA	NA	NA	NA	NA
Bis(2-chloroethoxy)methane	360 U	420 U	400 U	NA	NA	NA	NA	NA
Bis(2-chloroethyl)ether	360 U	420 U	400 U	NA	NA	NA	NA	NA
Bis(2-ethylhexyl) Phthalate (BEHP)	360 U	420 U	400 U	NA	NA	NA	NA	NA
Butyl Benzyl Phthalate	360 U	420 U	400 U	NA	NA	NA	NA	NA
Carbazole	360 U			NA	NA	NA	NA	NA
Chrysene	360 U	420 U	400 U	NA	NA	NA	NA	NA
Cresol (Mixed Isomers)	360 U			NA	NA	NA	NA	NA
Diallate	360 UJ	420 U	400 U	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	360 U	420 U	400 U	NA	NA	NA	NA	NA
Dibenzofuran	360 U	420 U	400 U	NA	NA	NA	NA	NA
Diethyl Phthalate (DEP)	360 U	420 U	400 U	NA	NA	NA	NA	NA
Dimethyl Phthalate	360 U	420 U	400 U	NA	NA	NA	NA	NA
Di-n-butyl Phthalate (DBP)	360 U	420 U	400 U	NA	NA	NA	NA	NA
Di-n-octyl Phthalate	360 U	420 U	400 U	NA	NA	NA	NA	NA
Dinoseb	730 U	420 U	400 U	NA	NA	NA	NA	NA
Diphenylamine	360 U			NA	NA	NA	NA	NA
Ethyl 4,4'-Dichlorobenzilate (Chlorobenzilate)	360 U	22 U	21 U	NA	NA	NA	NA	NA
Ethyl Methanesulfonate	360 U	420 U	400 U	NA	NA	NA	NA	NA
Fluoranthene	360 U	420 U	400 U	NA	NA	NA	NA	NA
Fluorene	360 U	420 U	400 U	NA	NA	NA	NA	NA
Hexachlorobenzene	360 U	420 U	400 U	NA	NA	NA	NA	NA
Hexachlorobutadiene	360 U	420 U	400 U	NA	NA	NA	NA	NA

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CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	45MW01-00	8E-SS01	8E-SS03	9BGSS01	9BGSS01D	9BGSS02	9BGSS03	9BGSS04
Date	11-22-1996	05-14-2004	05-14-2004	06-26-1999	06-26-1999	06-26-1999	06-26-1999	06-26-1999
Semivolatiles (ug/kg) (Continued)								
Hexachlorocyclopentadiene	360 U	420 U	400 U	NA	NA	NA	NA	NA
Hexachloroethane	360 U	420 U	400 U	NA	NA	NA	NA	NA
Hexachlorophene	3600 U	220000 U	210000 U	NA	NA	NA	NA	NA
Hexachloropropene	1800 U	420 U	400 U	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	360 U	420 U	400 U	NA	NA	NA	NA	NA
Isophorone	360 U	420 U	400 U	NA	NA	NA	NA	NA
Isosafrole	360 U	420 U	400 U	NA	NA	NA	NA	NA
Methapyrilene	910 U	85000 U	82000 U	NA	NA	NA	NA	NA
Methyl Methane Sulfonate	360 U	420 U	400 U	NA	NA	NA	NA	NA
Naphthalene	360 U	420 U	400 U	NA	NA	NA	NA	NA
Nitrobenzene	360 U	420 U	400 U	NA	NA	NA	NA	NA
n-Nitrosodiethylamine	360 U	420 U	400 U	NA	NA	NA	NA	NA
n-Nitrosodimethylamine	360 U	420 U	400 U	NA	NA	NA	NA	NA
n-Nitroso-di-n-butylamine	360 U	420 U	400 U	NA	NA	NA	NA	NA
n-Nitrosodi-n-propylamine	360 U	420 U	400 U	NA	NA	NA	NA	NA
n-Nitrosodiphenylamine	360 U	420 U	400 U	NA	NA	NA	NA	NA
n-Nitrosomethylethylamine	360 UJ	420 U	400 U	NA	NA	NA	NA	NA
n-Nitrosomorpholine	730 U	420 U	400 U	NA	NA	NA	NA	NA
n-Nitrosopiperidine	360 U	420 U	400 U	NA	NA	NA	NA	NA
n-Nitrosopyrrolidine	1800 U	420 U	400 U	NA	NA	NA	NA	NA
o-Toluidine	360 UJ	420 U	400 U	NA	NA	NA	NA	NA
Pentachlorobenzene	360 U	420 U	400 U	NA	NA	NA	NA	NA
Pentachloronitrobenzene	360 U	420 U	400 U	NA	NA	NA	NA	NA
Pentachlorophenol	1800 U	2200 U	2100 U	NA	NA	NA	NA	NA
Phenacetin	360 U	420 U	400 U	NA	NA	NA	NA	NA
Phenanthrene	360 U	420 U	400 U	NA	NA	NA	NA	NA
Phenol	360 U	420 U	400 U	NA	NA	NA	NA	NA
Pronamide	360 U	420 U	400 U	NA	NA	NA	NA	NA
Pyrene	360 U	420 U	400 U	NA	NA	NA	NA	NA
Pyridine	730 U	420 U	400 U	NA	NA	NA	NA	NA
Safrole	360 U	420 U	400 U	NA	NA	NA	NA	NA

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Sample ID	45MW01-00	8E-SS01	8E-SS03	9BGSS01	9BGSS01D	9BGSS02	9BGSS03	9BGSS04
Date	11-22-1996	05-14-2004	05-14-2004	06-26-1999	06-26-1999	06-26-1999	06-26-1999	06-26-1999
Pesticides (ug/kg)								
4,4'-DDD	NA	4.2 U	4 U	NA	NA	NA	NA	NA
4,4'-DDE	NA	1.5 J	4 U	NA	NA	NA	NA	NA
4,4'-DDT	NA	0.64 J	4 U	NA	NA	NA	NA	NA
Aldrin	NA	2.2 U	2.1 U	NA	NA	NA	NA	NA
BHC, alpha-	NA	2.2 U	2.1 U	NA	NA	NA	NA	NA
BHC, beta-	NA	2.2 U	2.1 U	NA	NA	NA	NA	NA
BHC, delta-	NA	2.2 U	2.1 U	NA	NA	NA	NA	NA
BHC, gamma- (Lindane)	NA	2.2 U	2.1 U	NA	NA	NA	NA	NA
Chlordane	NA	22 U	21 U	NA	NA	NA	NA	NA
Chlordane, alpha-	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane, gamma-	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	NA	4.2 U	4 U	NA	NA	NA	NA	NA
Endosulfan I	NA	2.2 U	2.1 U	NA	NA	NA	NA	NA
Endosulfan II	NA	4.2 U	4 U	NA	NA	NA	NA	NA
Endosulfan Sulfate	NA	4.2 U	4 U	NA	NA	NA	NA	NA
Endrin		4.2 U	4 U	NA	NA	NA	NA	NA
Endrin Aldehyde		4.2 U	4 U	NA	NA	NA	NA	NA
Heptachlor		2.2 U	2.1 U	NA	NA	NA	NA	NA
Heptachlor Epoxide		2.2 U	2.1 U	NA	NA	NA	NA	NA
Isodrin		4.2 U	4 U	NA	NA	NA	NA	NA
Kepone (Chlordecone)		220 U	210 U	NA	NA	NA	NA	NA
Methoxychlor		22 U	21 U	NA	NA	NA	NA	NA
Toxaphene		220 U	210 U	NA	NA	NA	NA	NA
PCBs (ug/kg)								
Aroclor-1016	44 U	42 U	40 U	NA	NA	NA	NA	NA
Aroclor-1221	44 U	85 U	82 U	NA	NA	NA	NA	NA
Aroclor-1232	44 U	42 U	40 U	NA	NA	NA	NA	NA
Aroclor-1242	44 U	42 U	40 U	NA	NA	NA	NA	NA
Aroclor-1248	44 U	42 U	40 U	NA	NA	NA	NA	NA
Aroclor-1254	87 U	42 U	40 U	NA	NA	NA	NA	NA
Aroclor-1260	87 U	42 U	40 U	NA	NA	NA	NA	NA

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Sample ID	45MW01-00	8E-SS01	8E-SS03	9BGSS01	9BGSS01D	9BGSS02	9BGSS03	9BGSS04
Date	11-22-1996	05-14-2004	05-14-2004	06-26-1999	06-26-1999	06-26-1999	06-26-1999	06-26-1999
Herbicides (ug/kg)								
2,4,5-T	NA	10 U	10 U	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)	NA	10 U	10 U	NA	NA	NA	NA	NA
2,4-D	NA	10 U	10 U	NA	NA	NA	NA	NA
Dimethoate	NA	420 U	400 U	NA	NA	NA	NA	NA
Disulfoton	NA	420 U	400 U	NA	NA	NA	NA	NA
Famphur	NA	420 U	400 U	NA	NA	NA	NA	NA
Methyl Parathion	NA	420 U	400 U	NA	NA	NA	NA	NA
o,o,o-Triethyl Phosphorothioate	NA	420 U	400 U	NA	NA	NA	NA	NA
Parathion	NA	420 U	400 U	NA	NA	NA	NA	NA
Phorate	NA	420 U	400 U	NA	NA	NA	NA	NA
Sulfotepp	NA	420 U	400 U	NA	NA	NA	NA	NA
Thionazin	NA	420 U	400 U	NA	NA	NA	NA	NA
Explosives (ug/kg)								
1,3,5-Trinitrobenzene	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dinitrobenzene	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trinitrotoluene (TNT)	NA	NA	NA	NA	NA	NA	NA	NA
2,4/2,6-Dinitrotoluene Mixture	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA
4-Amino-2,6-dinitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA
HMX	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	NA	NA	NA	NA	NA	NA	NA	NA
RDX (Cyclonite)	NA	NA	NA	NA	NA	NA	NA	NA
Tetryl	NA	NA	NA	NA	NA	NA	NA	NA
Dioxins (ug/kg)								
HxCDD, 2,3,7,8-	NA	NA	NA	NA	NA	NA	NA	NA
HxCDF, 2,3,7,8-	NA	NA	NA	NA	NA	NA	NA	NA
PeCDD, total	NA	NA	NA	NA	NA	NA	NA	NA
PeCDF, total	NA	NA	NA	NA	NA	NA	NA	NA

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Sample ID	45MW01-00	8E-SS01	8E-SS03	9BGSS01	9BGSS01D	9BGSS02	9BGSS03	9BGSS04
Date	11-22-1996	05-14-2004	05-14-2004	06-26-1999	06-26-1999	06-26-1999	06-26-1999	06-26-1999
Dioxins, cont. (ug/kg) (Continued)								
TCDD, 2,3,7,8-	NA	NA	NA	NA	NA	NA	NA	NA
TCDD, total	NA	NA	NA	NA	NA	NA	NA	NA
TCDF, total	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)								
Antimony	NA	2.3 UN	2.1 UN	0.33 R	0.33 R	0.66 R	0.32 R	0.3 R
Arsenic	0.7 UJ	1.3	1 U	2.2 J	0.8 J	2.5 J	2.3 J	2.1 J
Barium	284	220 N	190 N	91	75	53	110	62
Beryllium	NA	0.37 B	0.58	0.36 J	0.34 J	0.17 J	0.18 J	0.15 J
Cadmium	0.25	1.2 U	1 U	0.061 U	0.062 U	0.92 J	0.059 U	0.18 J
Chromium	24.6	12	12	9.6	9.5	17	10	27
Cobalt	NA	12	11	64	48	29	25	16
Copper	NA	130 N	13 N	78 J	78 J	67 J	100 J	67 J
Lead	2.8 J	18	2	3.9 J	3 J	8.3 J	3.5 J	16 J
Mercury	0.03	0.039	0.038	0.058 J	0.037 J	0.12 J	0.032 J	0.03 J
Nickel	NA	6.4	3.4 B	5.5	5.3	4.6 J	6.6	15
Selenium	0.79 UJ	1.2 U	1 U	2.1 UJ	2.1 UJ	0.41 UJ	1 UJ	0.86 UJ
Silver	0.7 U	1.2 U	1 U	0.073 U	0.074 U	0.15 U	0.071 U	0.067 U
Thallium	NA	1.2 U	1 U	0.22 UJ	0.22 UJ	0.22 UJ	0.21 UJ	0.36 UJ
Tin	NA	3.2 B	1.9 B	1.9 J	2.3 J	1.4 J	2.1 J	2 J
Vanadium	NA	82	35	250	270	230	180	120
Zinc	NA	45 E	6.2 E	36 J	36 J	49 J	67 J	50 J
Conventionals (mg/kg)								
Cyanide	NA	0.61 U	0.6 U	1.2 U	1.2 U	1.2 U	1.2 U	1.1 U
Sulfide	NA	32 U	30 U	30 U	31 U	30 U	29 U	39

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Sample ID	9BGSS05	BGMW01-00	BGMW02-00	BGMW03-00	BGMW04-00
Date	06-27-1999	04-04-1996	04-04-1996	04-04-1996	04-04-1996
Volatiles (ug/kg)					
1,1,1,2-Tetrachloroethane	NA	12 UJ	12 U	12 U	12 U
1,1,1-Trichloroethane (TCA)	NA	6 U	6 U	6 U	6 U
1,1,2,2-Tetrachloroethane	NA	6 UJ	6 U	6 U	6 U
1,1,2-Trichloroethane	NA	6 U	6 U	6 U	6 U
1,1-Dichloroethane	NA	6 U	6 U	6 U	6 U
1,1-Dichloroethene	NA	6 U	6 U	6 U	6 U
1,2,3-Trichloropropane	NA	12 UJ	12 U	12 U	12 U
1,2-Dibromo-3-chloropropane (DBCP)	NA	24 UJ	23 UJ	24 U	24 U
1,2-Dibromoethane (EDB)	NA	24 UJ	23 U	24 U	24 U
1,2-Dichloroethane	NA	6 U	6 U	6 U	6 U
1,2-Dichloroethene (total)	NA	6 U	6 U	6 U	6 U
1,2-Dichloroethene (trans)	NA	NA	NA	NA	NA
1,2-Dichloropropane	NA	6 U	6 U	6 U	6 U
1,3-Dichloropropene (cis)	NA	6 U	6 UJ	6 U	6 U
1,3-Dichloropropene (trans)	NA	6 U	6 UJ	6 U	6 U
1,4-Dichloro-2-butene (trans)	NA	24 UJ	23 U	24 U	24 U
2-Butanone (MEK)	NA	12 U	12 UJ	12 U	12 U
2-Chloro-1,3-butadiene (Chloroprene)	NA	120 UJ	120 U	120 U	120 U
2-Hexanone (MBK)	NA	12 UJ	12 U	12 U	12 U
3-Chloropropene (Allyl Chloride)	NA	24 UJ	23 U	24 U	24 U
4-Methyl-2-pentanone (MIBK)	NA	12 U	12 U	12 U	12 U
Acetone	NA	12 UJ	12 UJ	12 UJ	12 U
Acetonitrile	NA	120 UJ	120 U	120 U	120 U
Acrolein	NA	600 UJ	580 UJ	610 U	590 U
Acrylonitrile	NA	120 UJ	120 U	120 U	120 U
Benzene	NA	6 U	6 U	6 U	6 U
Bromodichloromethane	NA	6 U	6 U	6 U	6 U
Bromoform	NA	6 UJ	6 U	6 U	6 U
Bromomethane	NA	12 U	12 U	12 U	12 U
Carbon Disulfide	NA	6 UJ	6 UJ	6 UJ	6 U
Carbon Tetrachloride	NA	6 U	6 U	6 U	6 U
Chlorobenzene	NA	6 UJ	6 U	6 U	6 U
Chloroethane	NA	12 U	12 U	12 U	12 U
Chloroform	NA	6 U	6 U	6 U	6 U
Chloromethane	NA	12 U	12 U	12 UJ	12 U
Dibromochloromethane	NA	6 UJ	6 U	6 U	6 U

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Sample ID	9BGSS05	BGMW01-00	BGMW02-00	BGMW03-00	BGMW04-00
Date	06-27-1999	04-04-1996	04-04-1996	04-04-1996	04-04-1996
Volatiles (ug/kg) (Continued)					
Dibromomethane	NA	12 UJ	12 U	12 U	12 U
Dichlorodifluoromethane (Freon-12)	NA	24 U	23 UJ	24 UJ	24 U
Ethyl Methacrylate	NA	24 UJ	23 U	24 U	24 U
Ethylbenzene	NA	6 UJ	6 U	6 U	6 U
Iodomethane	NA	12 UJ	12 UJ	12 U	12 U
Isobutyl Alcohol	NA	2400 R	2300 R	2400 R	2400 U
Methyl Acrylonitrile	NA	24 UJ	23 U	24 U	24 U
Methyl Methacrylate	NA	24 UJ	23 U		24 U
Methylene Chloride	NA	6 U	6 UJ	6 U	6 U
Pentachloroethane	NA	24 UJ	23 U	24 U	24 U
Propionitrile (Ethyl Cyanide)	NA	60 UJ	58 R	61 U	59 U
Styrene (Ethenylbenzene)	NA	6 UJ	6 U	6 U	6 U
Tetrachloroethene (PCE)	NA	6 U	6 U	6 UJ	6 U
Toluene	NA	6 U	6 U	6 U	6 U
Trichloroethene (TCE)	NA	6 U	6 U	6 U	6 U
Trichlorofluoromethane	NA	12 UJ	12 U	12 UJ	12 U
Vinyl Acetate	NA	12 UJ	12 UJ	12 UJ	12 U
Vinyl Chloride	NA	12 U	12 U	12 UJ	12 U
Xylenes, total	NA	6 UJ	6 U	6 U	6 U
Semivolatiles (ug/kg)					
1,2,4,5-Tetrachlorobenzene	NA	390 U	380 U	400 U	380 U
1,2,4-Trichlorobenzene	NA	390 U	380 U	400 U	380 U
1,2-Dichlorobenzene (o-)	NA	390 U	380 U	400 U	380 U
1,2-Diphenylhydrazine	NA	390 U	380 U	400 U	380 U
1,3,5-Trinitrobenzene	NA	3900 U	3800 U	4000 UJ	3800 U
1,3-Dichlorobenzene (m-)	NA	390 U	380 U	400 U	380 U
1,3-Dinitrobenzene	NA	780 U	760 U	810 U	770 U
1,4-Dichlorobenzene (p-)	NA	390 U	380 U	400 U	380 U
1,4-Dioxane (p-)	NA	780 UJ	760 UJ	810 UJ	770 UJ
1,4-Naphthoquinone	NA	2000 UJ	1900 UJ	2000 UJ	1900 UJ
1,4-Phenylenediamine	NA	780 R	760 R	810 R	770 R
1-Naphthylamine	NA	390 U	380 U	810 U	380 U
2,2'-Oxybis[1-chloropropane]	NA	390 UJ	380 UJ	400 UJ	380 UJ
2,3,4,6-Tetrachlorophenol	NA	390 UJ	380 UJ	400 UJ	380 UJ
2,4,5-Trichlorophenol	NA	2000 U	1900 U	2000 U	1900 U

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Sample ID	9BGSS05	BGMW01-00	BGMW02-00	BGMW03-00	BGMW04-00
Date	06-27-1999	04-04-1996	04-04-1996	04-04-1996	04-04-1996
Semivolatiles (ug/kg) (Continued)					
2,4,6-Trichlorophenol	NA	390 U	380 U	400 U	380 U
2,4-Dichlorophenol	NA	390 U	380 U	400 U	380 U
2,4-Dimethylphenol	NA	390 U	380 U	400 U	380 U
2,4-Dinitrophenol	NA	2000 UJ	1900 U	2000 U	1900 UJ
2,4-Dinitrotoluene	NA	390 U	380 U	400 U	380 U
2,6-Dichlorophenol	NA	390 UJ	380 UJ	400 UJ	380 UJ
2,6-Dinitrotoluene	NA	390 U	380 U	400 U	380 U
2-Acetylaminofluorene	NA	780 U	760 U	810 U	770 U
2-Chloronaphthalene	NA	390 U	380 U	400 U	380 U
2-Chlorophenol	NA	390 U	380 U	400 U	380 U
2-Methyl-5-nitroaniline	NA	780 U	760 U	810 U	770 U
2-Methylnaphthalene	NA	390 UJ	380 UJ	400 UJ	380 UJ
2-Methylphenol (o-Cresol)	NA	390 U	380 U	400 U	380 U
2-Naphthylamine	NA	390 UJ	380 UJ	1000 UJ	380 UJ
2-Nitroaniline	NA	2000 U	1900 UJ	2000 UJ	1900 U
2-Nitrophenol	NA	390 U	380 U	400 U	380 U
2-Picoline	NA	390 UJ	380 U	400 UJ	380 UJ
3,3'-Dichlorobenzidine	NA	780 U	760 U	810 U	770 U
3,3'-Dimethylbenzidine	NA	780 U	760 UJ	2000 U	770 U
3-Methylcholanthrene	NA	390 U	380 U	400 U	380 U
3-Nitroaniline	NA	2000 U	1900 U	2000 U	1900 U
4,6-Dinitro-2-methylphenol	NA	2000 U	1900 U	2000 U	1900 U
4-Aminobiphenyl	NA	390 U	760 U	810 U	770 U
4-Bromophenyl-phenylether	NA	390 U	380 U	400 U	380 U
4-Chloro-3-methylphenol	NA	780 U	760 U	810 U	770 U
4-Chloroaniline	NA	780 U	760 U	810 U	770 U
4-Chlorophenyl-phenylether	NA	390 U	380 U	400 U	380 U
4-Dimethylaminoazobenzene	NA	780 U	760 U	810 UJ	770 U
4-Methylphenol (p-Cresol)	NA				
4-Nitroaniline	NA	2000 U	1900 U	2000 U	1900 U
4-Nitrophenol	NA	2000 U	1900 UJ	2000 UJ	1900 U
4-Nitroquinoline-1-Oxide	NA	2000 R	1900 R	2000 R	1900 R
7,12-Dimethylbenz(a)anthracene	NA	780 U	760 U	810 U	770 U
a,a-Dimethylphenethylamine	NA	2000 UJ	1900 UJ	2000 UJ	1900 UJ

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Sample ID	9BGSS05	BGMW01-00	BGMW02-00	BGMW03-00	BGMW04-00
Date	06-27-1999	04-04-1996	04-04-1996	04-04-1996	04-04-1996
Semivolatiles (ug/kg) (Continued)					
Acenaphthene	NA	390 U	380 U	400 U	380 U
Acenaphthylene	NA	390 U	380 U	400 U	380 U
Acetophenone	NA	390 UJ	380 U	400 UJ	380 UJ
Aniline	NA	2000 UJ	1900 UJ	2000 UJ	1900 UJ
Anthracene	NA	390 U	380 U	400 U	380 U
Aramite	NA	780 UJ	760 UJ	810 UJ	770 UJ
Benzidine	NA	3900 U	3800 UJ	4000 U	3800 U
Benzo(a)anthracene	NA	390 U	380 U	400 U	380 U
Benzo(a)pyrene (BaP)	NA	390 U	380 U	400 U	380 U
Benzo(b)fluoranthene	NA	390 U	380 U	400 U	380 U
Benzo(g,h,i)perylene	NA	390 U	380 U	400 U	380 U
Benzo(k)fluoranthene	NA	390 U	380 U	400 U	380 U
Benzoic Acid	NA	2000 U	1900 U	2000 U	1900 U
Benzyl Alcohol	NA	390 U	380 UJ	400 UJ	380 U
Bis(2-chloroethoxy)methane	NA	390 U	380 U	400 U	380 U
Bis(2-chloroethyl)ether	NA	390 U	380 U	400 U	380 U
Bis(2-ethylhexyl) Phthalate (BEHP)	NA	92 J	380 U	400 U	380 U
Butyl Benzyl Phthalate	NA	62 J	380 U	400 U	380 U
Carbazole	NA	390 U	380 U	400 U	380 U
Chrysene	NA	390 U	380 U	400 U	380 U
Cresol (Mixed Isomers)	NA	390 U	380 U	400 U	380 U
Diallate	NA	390 U	380 UJ	400 U	380 U
Dibenz(a,h)anthracene	NA	390 U	380 U	400 U	380 U
Dibenzofuran	NA	390 U	380 U	400 U	380 U
Diethyl Phthalate (DEP)	NA	390 U	380 U	400 U	380 U
Dimethyl Phthalate	NA	390 U	380 U	400 U	380 U
Di-n-butyl Phthalate (DBP)	NA	390 U	380 U	400 U	380 U
Di-n-octyl Phthalate	NA	390 U	380 U	400 U	380 U
Dinoseb	NA	780 UJ	760 UJ	810 UJ	770 UJ
Diphenylamine	NA	390 U	380 U	400 U	380 U
Ethyl 4,4'-Dichlorobenzilate (Chlorobenzilate)	NA	390 UJ	380 UJ	400 UJ	380 UJ
Ethyl Methanesulfonate	NA	390 U	380 U	400 U	380 U
Fluoranthene	NA	46 J	380 U	400 U	380 U
Fluorene	NA	390 U	380 U	400 U	380 U
Hexachlorobenzene	NA	390 U	380 U	400 U	380 U
Hexachlorobutadiene	NA	390 U	380 U	400 U	380 U

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ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SURFACE SOIL
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	9BGSS05	BGMW01-00	BGMW02-00	BGMW03-00	BGMW04-00
Date	06-27-1999	04-04-1996	04-04-1996	04-04-1996	04-04-1996
Semivolatiles (ug/kg) (Continued)					
Hexachlorocyclopentadiene	NA	390 U	380 U	400 U	380 U
Hexachloroethane	NA	390 U	380 U	400 U	380 U
Hexachlorophene	NA	3900 UJ	3800 UJ	4000 R	3800 UJ
Hexachloropropene	NA	780 R	760 R	2000 U	770 R
Indeno(1,2,3-cd)pyrene	NA	390 U	380 U	400 U	380 U
Isophorone	NA	390 U	380 U	400 U	380 U
Isosafrole	NA	390 U	380 U	400 U	380 U
Methapyrilene	NA	980 U	950 U	1000 UJ	960 U
Methyl Methane Sulfonate	NA	390 U	380 U	400 U	380 U
Naphthalene	NA	390 U	380 U	400 U	380 U
Nitrobenzene	NA	390 U	380 UJ	400 U	380 U
n-Nitrosodiethylamine	NA	390 U	380 UJ	400 U	380 U
n-Nitrosodimethylamine	NA	390 UJ	380 UJ	400 U	380 UJ
n-Nitroso-di-n-butylamine	NA	390 UJ	380 U	400 U	380 UJ
n-Nitrosodi-n-propylamine	NA	390 U	380 UJ	400 U	380 U
n-Nitrosodiphenylamine	NA	390 U	380 U	400 U	380 U
n-Nitrosomethylethylamine	NA	390 UJ	380 UJ	400 U	380 UJ
n-Nitrosomorpholine	NA	780 UJ	760 U	810 UJ	770 UJ
n-Nitrosopiperidine	NA	390 U	380 UJ	400 U	380 U
n-Nitrosopyrrolidine	NA	2000 UJ	1900 U	2000 UJ	1900 UJ
o-Toluidine	NA	390 R	380 R	400 R	380 R
Pentachlorobenzene	NA	390 U	380 U	400 U	380 U
Pentachloronitrobenzene	NA	390 U	380 U	400 U	380 U
Pentachlorophenol	NA	2000 U	1900 U	2000 U	1900 U
Phenacetin	NA	390 UJ	380 U	400 U	380 UJ
Phenanthrene	NA	390 U	380 U	400 U	380 U
Phenol	NA	390 U	380 U	400 U	380 U
Pronamide	NA	390 U	380 U	400 U	380 U
Pyrene	NA	390 U	380 U	400 U	380 U
Pyridine	NA	780 UJ	760 UJ	810 U	770 UJ
Safrole	NA	390 U	380 UJ	400 U	380 U

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ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SURFACE SOIL
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NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	9BGSS05	BGMW01-00	BGMW02-00	BGMW03-00	BGMW04-00
Date	06-27-1999	04-04-1996	04-04-1996	04-04-1996	04-04-1996
Pesticides (ug/kg)					
4,4'-DDD	NA	19 U	9.2 U	9.6 U	19 U
4,4'-DDE	NA	19 U	9.2 U	9.6 U	19 U
4,4'-DDT	NA	19 U	9.2 U	9.6 U	19 U
Aldrin	NA	9.3 U	4.6 U	4.8 U	9.4 U
BHC, alpha-	NA	9.3 U	4.6 U	4.8 U	9.4 U
BHC, beta-	NA	9.3 U	4.6 U	4.8 U	9.4 U
BHC, delta-	NA	9.3 U	4.6 U	4.8 U	9.4 U
BHC, gamma- (Lindane)	NA	9.3 U	4.6 U	4.8 U	9.4 U
Chlordane	NA	NA	NA	NA	NA
Chlordane, alpha-	NA	93 U	46 U	48 U	94 U
Chlordane, gamma-	NA	93 U	46 U	48 U	94 U
Dieldrin	NA	19 U	9.2 U	9.6 U	19 U
Endosulfan I	NA	9.3 U	4.6 U	4.8 U	9.4 U
Endosulfan II	NA	19 U	9.2 U	9.6 U	19 U
Endosulfan Sulfate	NA	19 U	9.2 U	9.6 U	19 U
Endrin	NA	19 U	9.2 U	9.6 U	19 U
Endrin Aldehyde	NA	19 U	9.2 U	9.6 U	19 U
Heptachlor	NA	9.3 U	4.6 U	4.8 U	9.4 U
Heptachlor Epoxide	NA	9.3 U	4.6 U	4.8 U	9.4 U
Isodrin	NA	9.3 U	4.6 U	4.8 U	9.4 U
Kepone (Chlordecone)	NA	19 U	9.2 U	9.6 U	19 U
Methoxychlor	NA	93 U	46 U	48 U	94 U
Toxaphene	NA	190 U	92 U	96 U	190 U
PCBs (ug/kg)					
Aroclor-1016	NA	93 U	46 U	48 U	94 U
Aroclor-1221	NA	93 U	46 U	48 U	94 U
Aroclor-1232	NA	93 U	46 U	48 U	94 U
Aroclor-1242	NA	93 U	46 U	48 U	94 U
Aroclor-1248	NA	93 U	46 U	48 U	94 U
Aroclor-1254	NA	190 U	92 U	96 U	190 U
Aroclor-1260	NA	190 U	92 U	96 U	190 U

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ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SURFACE SOIL
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	9BGSS05	BGMW01-00	BGMW02-00	BGMW03-00	BGMW04-00
Date	06-27-1999	04-04-1996	04-04-1996	04-04-1996	04-04-1996
Herbicides (ug/kg)					
2,4,5-T	NA	39 U	39 U	40 U	39 U
2,4,5-TP (Silvex)	NA	39 U	39 U	40 U	39 U
2,4-D	NA	390 U	390 U	400 U	390 U
Dimethoate	NA	79 U	77 U	80 U	78 U
Disulfoton	NA	79 U	77 U	80 U	78 U
Famphur	NA	79 U	77 U	80 U	78 U
Methyl Parathion	NA	79 U	77 U	80 U	78 U
o,o,o-Triethyl Phosphorothioate	NA	79 U	77 U	80 U	78 U
Parathion	NA	79 U	77 U	80 U	78 U
Phorate	NA	79 U	77 U	80 U	78 U
Sulfotepp	NA	79 U	77 U	80 U	78 U
Thionazin	NA	79 U	77 U	80 U	78 U
Explosives (ug/kg)					
1,3,5-Trinitrobenzene	NA	NA	NA	NA	NA
1,3-Dinitrobenzene	NA	NA	NA	NA	NA
2,4,6-Trinitrotoluene (TNT)	NA	NA	NA	NA	NA
2,4/2,6-Dinitrotoluene Mixture	NA	NA	NA	NA	NA
2-Nitrotoluene	NA	NA	NA	NA	NA
3-Nitrotoluene	NA	NA	NA	NA	NA
4-Amino-2,6-dinitrotoluene	NA	NA	NA	NA	NA
4-Nitrotoluene	NA	NA	NA	NA	NA
HMX	NA	NA	NA	NA	NA
Nitrobenzene	NA	NA	NA	NA	NA
RDX (Cyclonite)	NA	NA	NA	NA	NA
Tetryl	NA	NA	NA	NA	NA
Dioxins (ug/kg)					
HxCDD, 2,3,7,8-	NA	0.16 U	0.26 U	0.21 U	0.18 U
HxCDF, 2,3,7,8-	NA	0.09 U	0.14 U	0.13 U	0.14 U
PeCDD, total	NA	0.17 U	0.3 U	0.19 U	0.17 U
PeCDF, total	NA	0.15 U	0.21 U	0.17 U	0.22 U

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ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SURFACE SOIL
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	9BGSS05	BGMW01-00	BGMW02-00	BGMW03-00	BGMW04-00
Date	06-27-1999	04-04-1996	04-04-1996	04-04-1996	04-04-1996
Dioxins, cont. (ug/kg) (Continued)					
TCDD, 2,3,7,8-	NA	0.06 U	0.13 U	0.07 U	0.09 U
TCDD, total	NA	0.08 U	0.13 U	0.1 U	0.11 U
TCDF, total	NA	0.09 U	0.1 U	0.11 U	0.09 U
Metals (mg/kg)					
Antimony	0.33 R	2.4 UJ	2.2 UJ	2.3 UJ	2.3 UJ
Arsenic	0.21 J	1.2	0.35 J	1.5	1.8
Barium	66	169	94.1	35.6	63.7
Beryllium	0.32 J	0.36	0.1 U	0.28	0.21
Cadmium	0.061 U	0.28 U	0.26 U	0.27 U	0.27 U
Chromium	34	44.1 J	11 J	33.6 J	29.9 J
Cobalt	33	30.2	27	9.5	21.2
Copper	66 J	98.5	250	57	62.9
Lead	21 J	9.6	2.4	6.6	11.9
Mercury	0.071 J	0.06	0.04 U	0.07	0.07
Nickel	17	10.9	7.8	5.8	8.6
Selenium	1 UJ	0.56 J	0.13 UJ	1.2 J	1.1 J
Silver	0.073 U	0.39 U	0.35 U	0.37 U	0.37 U
Thallium	0.22 UJ	0.1 J	0.08 U	0.09 UJ	0.09 UJ
Tin	2.3 J	1.3 U	1.2 U	1.4	2.2
Vanadium	180	227	123	189	170
Zinc	61 J	106 J	66.2 J	34.2 J	43.9 J
Conventionals (mg/kg)					
Cyanide	1.2 U	0.47 U	0.57 U	0.46 U	0.56 U
Sulfide	44	29.2 U	28.8 U	29.2 U	26.7 U

APPENDIX A.2
Analytical Data, Subsurface Soil

APPENDIX A.2

ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SUBSURFACE SOIL
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	11E-SB01-03	11E-SB02-04	11SB04-01	11SB15-02	12E-SB01-02
Date Sampled	05-09-2004	05-09-2004	09-24-1997	09-19-1997	05-09-2004
Volatiles (ug/kg)					
1,1,1,2-Tetrachloroethane	5.4 U	5.6 U	12 U	13 U	6 U
1,1,1-Trichloroethane (TCA)	5.4 U	5.6 U	6 U	6 U	6 U
1,1,2,2-Tetrachloroethane	5.4 U	5.6 U	6 U	6 U	6 U
1,1,2-Trichloroethane	5.4 U	5.6 U	6 U	6 U	6 U
1,1-Dichloroethane	5.4 U	5.6 U	6 U	6 U	6 U
1,1-Dichloroethene	5.4 U	5.6 U	6 U	6 U	6 U
1,2,3-Trichloropropane	5.4 U	5.6 U	12 U	13 U	6 U
1,2-Dibromo-3-chloropropane (DBCP)	11 U	11 U	24 UJ	25 U	12 U
1,2-Dibromoethane (EDB)	5.4 U	5.6 U	24 U	25 U	6 U
1,2-Dichloroethane	5.4 U	5.6 U	6 U	6 U	6 U
1,2-Dichloroethene (total)	NA	NA	6 U	6 U	NA
1,2-Dichloroethene (trans)	5.4 U	5.6 U	NA	NA	6 U
1,2-Dichloropropane	5.4 U	5.6 U	6 U	6 U	6 U
1,3-Dichloropropene (cis)	5.4 U	5.6 U	6 U	6 U	6 U
1,3-Dichloropropene (trans)	5.4 U	5.6 U	6 U	6 U	6 U
1,4-Dichloro-2-butene (trans)	11 U	11 U	24 UJ	25 U	12 U
2-Butanone (MEK)	27 U	28 U	12 U	13 UJ	30 U
2-Chloro-1,3-butadiene (Chloroprene)	5.4 U	5.6 U	120 U	130 U	6 U
2-Hexanone (MBK)	27 U	28 U	12 U	13 UJ	30 U
3-Chloropropene (Allyl Chloride)	5.4 U	5.6 U	24 U	25 U	6 U
4-Methyl-2-pentanone (MIBK)	27 U	28 U	12 U	13 U	30 U
Acetone	54 U	56 U	12 UJ	13 UJ	60 U
Acetonitrile	210 U	230 U	120 U	130 UJ	240 U
Acrolein	110 U	110 U	590 UJ	630 U	120 U
Acrylonitrile	110 U	110 U	120 U	130 U	120 U
Benzene	5.4 U	5.6 U	6 U	6 U	6 U
Bromodichloromethane	5.4 U	5.6 U	6 U	6 U	6 U
Bromoform	5.4 U	5.6 U	6 U	6 U	6 U
Bromomethane	5.4 U	5.6 U	12 UJ	13 U	6 U

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ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SUBSURFACE SOIL
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	11E-SB01-03	11E-SB02-04	11SB04-01	11SB15-02	12E-SB01-02
Date Sampled	05-09-2004	05-09-2004	09-24-1997	09-19-1997	05-09-2004
Volatiles (ug/kg) (Continued)					
Carbon Disulfide	5.4 U	5.6 U	6 UJ	6 U	6 U
Carbon Tetrachloride	5.4 U	5.6 U	6 U	6 U	6 U
Chlorobenzene	3.4 J	5.6 U	6 U	6 U	6 U
Chloroethane	5.4 U	5.6 U	12 UJ	13 U	6 U
Chloroform	5.4 U	5.6 U	6 U	6 U	6 U
Chloromethane	5.4 U	5.6 U	12 UJ	13 U	6 U
Dibromochloromethane	5.4 U	5.6 U	6 U	6 U	6 U
Dibromomethane	5.4 U	5.6 U	12 U	13 U	6 U
Dichlorodifluoromethane (Freon-12)	5.4 U	5.6 U	24 UJ	25 U	6 U
Ethyl Methacrylate	5.4 U	5.6 U	24 UJ	25 U	6 U
Ethylbenzene	5.4 U	5.6 U	6 U	6 U	6 U
Iodomethane	5.4 U	5.6 U	12 UJ	13 U	6 U
Isobutyl Alcohol	210 U	230 U	2400 R	2500 R	240 U
Methyl Acrylonitrile	110 U	110 U	24 U	25 U	120 U
Methyl Methacrylate	5.4 U	5.6 U	24 U	25 U	6 U
Methylene Chloride	2.8 J	5.6 U	6 U	6 U	2.9 J
Pentachloroethane	27 U	28 U	24 UJ	25 U	30 U
Propionitrile (Ethyl Cyanide)	110 U	110 U	59 R	63 UJ	120 U
Styrene (Ethenylbenzene)	5.4 U	5.6 U	6 U	6 U	6 U
Tetrachloroethene (PCE)	2.2 J	5.6 U	6 U	6 UJ	6 U
Toluene	5.4 U	5.6 U	6 U	6 U	6 U
Trichloroethene (TCE)	5.4 U	5.6 U	6 U	6 U	6 U
Trichlorofluoromethane	5.4 U	5.6 U	12 UJ	13 U	6 U
Vinyl Acetate	11 U	11 U	12 U	13 U	12 U
Vinyl Chloride	5.4 U	5.6 U	12 UJ	13 U	6 U
Xylenes, total	11 U	11 U	6 U	6 U	12 U
Semivolatiles (ug/kg)					
1,2,4,5-Tetrachlorobenzene	420 U	390 U	380 U	410 U	430 U
1,2,4-Trichlorobenzene	420 U	390 U	380 U	410 U	430 U
1,2-Dichlorobenzene (o-)	420 U	390 U	380 U	410 U	430 U
1,2-Diphenylhydrazine	NA	NA	380 U	410 U	NA
1,3,5-Trinitrobenzene	420 U	390 U	3800 UJ	4100 UJ	430 U
1,3-Dichlorobenzene (m-)	420 U	390 U	380 U	410 U	430 U
1,3-Dinitrobenzene	420 U	390 U	770 U	820 U	430 U

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ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SUBSURFACE SOIL
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	11E-SB01-03	11E-SB02-04	11SB04-01	11SB15-02	12E-SB01-02
Date Sampled	05-09-2004	05-09-2004	09-24-1997	09-19-1997	05-09-2004
Semivolatiles (ug/kg) (Continued)					
1,4-Dichlorobenzene (p-)	420 U	390 U	380 U	410 U	430 U
1,4-Dioxane (p-)	420 U	390 U	770 U	820 U	430 U
1,4-Naphthoquinone	420 U	390 U	1900 UJ	2000 UJ	430 U
1,4-Phenylenediamine	2200 U	2000 U	770 R	820 R	2200 U
1-Naphthylamine	420 U	390 U	770 U	820 U	430 U
2,2'-Oxybis[1-chloropropane]	420 U	390 U	380 U	410 U	430 U
2,3,4,6-Tetrachlorophenol	420 U	390 U	380 U	410 U	430 U
2,4,5-Trichlorophenol	420 U	390 U	1900 U	2000 U	430 U
2,4,6-Trichlorophenol	420 U	390 U	380 U	410 U	430 U
2,4-Dichlorophenol	420 U	390 U	380 U	410 U	430 U
2,4-Dimethylphenol	420 U	390 U	380 U	410 U	430 U
2,4-Dinitrophenol	2200 U	2000 U	1900 UJ	2000 UJ	2200 U
2,4-Dinitrotoluene	420 U	390 U	380 U	410 U	430 U
2,6-Dichlorophenol	420 U	390 U	380 UJ	410 UJ	430 U
2,6-Dinitrotoluene	420 U	390 U	380 U	410 U	430 U
2-Acetylaminofluorene	420 U	390 U	770 U	820 U	430 U
2-Chloronaphthalene	420 U	390 U	380 U	410 U	430 U
2-Chlorophenol	420 U	390 U	380 U	410 U	430 U
2-Methyl-5-nitroaniline	420 U	390 U	770 U	820 U	430 U
2-Methylnaphthalene	420 U	390 U	380 U	410 U	430 U
2-Methylphenol (o-Cresol)	420 U	390 U	380 U	410 U	430 U
2-Naphthylamine	420 U	390 U	960 UJ	1000 UJ	430 U
2-Nitroaniline	2200 U	2000 U	1900 U	2000 U	2200 U
2-Nitrophenol	420 U	390 U	380 U	410 U	430 U
2-Picoline	420 U	390 U	380 U	410 U	430 U
3,3'-Dichlorobenzidine	840 U	780 U	770 UJ	820 UJ	870 U
3,3'-Dimethylbenzidine	2200 U	2000 U	1900 U	2000 U	2200 U
3-Methylcholanthrene	420 U	390 U	380 U	410 U	430 U
3-Nitroaniline	2200 U	2000 U	1900 U	2000 U	2200 U
4,6-Dinitro-2-methylphenol	2200 U	2000 U	1900 U	2000 U	2200 U
4-Aminobiphenyl	420 U	390 U	770 U	820 U	430 U
4-Bromophenyl-phenylether	420 U	390 U	380 U	410 U	94 J

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ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SUBSURFACE SOIL
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	11E-SB01-03	11E-SB02-04	11SB04-01	11SB15-02	12E-SB01-02
Date Sampled	05-09-2004	05-09-2004	09-24-1997	09-19-1997	05-09-2004
Semivolatiles (ug/kg) (Continued)					
4-Chloro-3-methylphenol	420 U	390 U	770 U	820 U	430 U
4-Chloroaniline	840 U	780 U	770 U	820 U	870 U
4-Chlorophenyl-phenylether	420 U	390 U	380 U	410 U	430 U
4-Dimethylaminoazobenzene	420 U	390 U	770 U	820 U	430 U
4-Methylphenol (p-Cresol)	420 U	390 U	NA	NA	430 U
4-Nitroaniline	2200 U	2000 U	1900 UJ	2000 UJ	2200 U
4-Nitrophenol	2200 U	2000 U	1900 U	2000 U	2200 U
4-Nitroquinoline-1-Oxide	4200 U	3900 U	1900 R	2000 R	4300 U
7,12-Dimethylbenz(a)anthracene	420 U	390 U	770 U	820 U	430 U
a,a-Dimethylphenethylamine	85000 U	79000 U	1900 UJ	2000 UJ	88000 U
Acenaphthene	420 U	390 U	380 U	410 U	430 U
Acenaphthylene	420 U	390 U	380 U	410 U	430 U
Acetophenone	420 U	390 U	380 U	410 U	430 U
Aniline	420 U	390 U	1900 U	2000 U	430 U
Anthracene	420 U	390 U	380 U	410 U	430 U
Aramite	420 U	390 U	770 R	820 R	430 U
Benzidine	NA	NA	3800 R	4100 R	NA
Benzo(a)anthracene	420 U	390 U	380 U	410 U	430 U
Benzo(a)pyrene (BaP)	420 U	390 U	380 U	410 U	430 U
Benzo(b)fluoranthene	420 U	390 U	380 U	410 U	430 U
Benzo(g,h,i)perylene	420 U	390 U	380 UJ	410 UJ	430 U
Benzo(k)fluoranthene	420 U	390 U	380 U	410 U	430 U
Benzoic Acid	NA	NA	1900 U	2000 U	NA
Benzyl Alcohol	420 U	390 U	380 U	410 U	430 U
Bis(2-chloroethoxy)methane	420 U	390 U	380 U	410 U	430 U
Bis(2-chloroethyl)ether	420 U	390 U	380 U	410 U	430 U
Bis(2-ethylhexyl) Phthalate (BEHP)	420 U	390 U	380 U	410 U	430 U
Butyl Benzyl Phthalate	420 U	390 U	380 U	410 U	430 U
Carbazole	NA	NA	380 U	410 U	NA
Chrysene	420 U	390 U	380 U	410 U	430 U
Cresol (Mixed Isomers)	NA	NA	380 U	410 U	NA

APPENDIX A.2

ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SUBSURFACE SOIL
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	11E-SB01-03	11E-SB02-04	11SB04-01	11SB15-02	12E-SB01-02
Date Sampled	05-09-2004	05-09-2004	09-24-1997	09-19-1997	05-09-2004
Semivolatiles (ug/kg) (Continued)					
Diallate	420 U	390 U	380 U	410 U	430 U
Dibenz(a,h)anthracene	420 U	390 U	380 UJ	410 UJ	430 U
Dibenzofuran	420 U	390 U	380 U	410 U	430 U
Diethyl Phthalate (DEP)	420 U	390 U	380 U	410 U	430 U
Dimethyl Phthalate	420 U	390 U	380 U	410 U	430 U
Di-n-butyl Phthalate (DBP)	420 U	390 U	380 U	410 U	430 U
Di-n-octyl Phthalate	420 U	390 U	380 U	410 U	430 U
Dinoseb	420 U	390 U	770 U	820 U	430 U
Diphenylamine	NA	NA	380 U	410 U	NA
Ethyl 4,4'-Dichlorobenzilate (Chlorobenzilate)	NA	NA	380 U	410 U	NA
Ethyl Methanesulfonate	420 U	390 U	380 U	410 U	430 U
Fluoranthene	420 U	390 U	380 U	410 U	430 U
Fluorene	420 U	390 U	380 U	410 U	430 U
Hexachlorobenzene	420 U	390 U	380 U	410 U	430 U
Hexachlorobutadiene	420 U	390 U	380 U	410 U	430 U
Hexachlorocyclopentadiene	420 U	390 U	380 U	410 U	430 U
Hexachloroethane	420 U	390 U	380 U	410 U	430 U
Hexachlorophene	220000 U	200000 U	3800 UJ	4100 UJ	220000 U
Hexachloropropene	420 U	390 U	1900 U	2000 U	430 U
Indeno(1,2,3-cd)pyrene	420 U	390 U	380 UJ	410 UJ	430 U
Isophorone	420 U	390 U	380 U	410 U	430 U
Isosafrole	420 U	390 U	380 U	410 U	430 U
Methapyrilene	85000 U	79000 U	960 U	1000 U	88000 U
Methyl Methane Sulfonate	420 U	390 U	380 U	410 U	430 U
Naphthalene	420 U	390 U	380 U	410 U	430 U
Nitrobenzene	420 U	390 U	380 U	410 U	430 U
n-Nitrosodiethylamine	420 U	390 U	380 U	410 U	430 U
n-Nitrosodimethylamine	420 U	390 U	380 U	410 U	430 U
n-Nitroso-di-n-butylamine	420 U	390 U	380 U	410 U	430 U
n-Nitrosodi-n-propylamine	420 U	390 U	380 U	410 U	430 U
n-Nitrosodiphenylamine	420 U	390 U	380 U	410 U	430 U
n-Nitrosomethylethylamine	420 U	390 U	380 U	410 U	430 U

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Sample ID	11E-SB01-03	11E-SB02-04	11SB04-01	11SB15-02	12E-SB01-02
Date Sampled	05-09-2004	05-09-2004	09-24-1997	09-19-1997	05-09-2004
Semivolatiles (ug/kg) (Continued)					
n-Nitrosomorpholine	420 U	390 U	770 U	820 U	430 U
n-Nitrosopiperidine	420 U	390 U	380 U	410 U	430 U
n-Nitrosopyrrolidine	420 U	390 U	1900 UJ	2000 UJ	430 U
o-Toluidine	420 U	390 U	380 U	410 U	430 U
Pentachlorobenzene	420 U	390 U	380 U	410 U	430 U
Pentachloronitrobenzene	420 U	390 U	380 R	410 R	430 U
Pentachlorophenol	2200 U	2000 U	1900 U	2000 U	2200 U
Phenacetin	420 U	390 U	380 U	410 U	430 U
Phenanthrene	420 U	390 U	380 U	410 U	430 U
Phenol	420 U	390 U	380 U	410 U	430 U
Pronamide	420 U	390 U	380 U	410 U	430 U
Pyrene	420 U	390 U	380 U	410 U	22 J
Pyridine	420 U	390 U	770 UJ	820 UJ	430 U
Safrole	420 U	390 U	380 U	410 U	430 U
Pesticides (ug/kg)					
4,4'-DDD	NA	NA	NA	NA	NA
4,4'-DDE	NA	NA	NA	NA	NA
4,4'-DDT	NA	NA	NA	NA	NA
Aldrin	NA	NA	NA	NA	NA
BHC, alpha-	NA	NA	NA	NA	NA
BHC, beta-	NA	NA	NA	NA	NA
BHC, delta-	NA	NA	NA	NA	NA
BHC, gamma- (Lindane)	NA	NA	NA	NA	NA
Chlordane	NA	NA	NA	NA	NA
Chlordane, alpha-	NA	NA	NA	NA	NA
Chlordane, gamma-	NA	NA	NA	NA	NA
Dieldrin	NA	NA	NA	NA	NA
Endosulfan I	NA	NA	NA	NA	NA
Endosulfan II	NA	NA	NA	NA	NA
Endosulfan Sulfate	NA	NA	NA	NA	NA
Endrin	NA	NA	NA	NA	NA
Endrin Aldehyde	NA	NA	NA	NA	NA

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Sample ID	11E-SB01-03	11E-SB02-04	11SB04-01	11SB15-02	12E-SB01-02
Date Sampled	05-09-2004	05-09-2004	09-24-1997	09-19-1997	05-09-2004
Pesticides (ug/kg) (Continued)					
Heptachlor	NA	NA	NA	NA	NA
Heptachlor Epoxide	NA	NA	NA	NA	NA
Isodrin	NA	NA	NA	NA	NA
Kepone (Chlordecone)	NA	NA	NA	NA	NA
Methoxychlor	NA	NA	NA	NA	NA
Toxaphene	NA	NA	NA	NA	NA
PCBs (ug/kg)					
Aroclor-1016	NA	NA	46 U	50 U	NA
Aroclor-1221	NA	NA	46 U	50 U	NA
Aroclor-1232	NA	NA	46 U	50 U	NA
Aroclor-1242	NA	NA	46 U	50 U	NA
Aroclor-1248	NA	NA	46 U	50 U	NA
Aroclor-1254	NA	NA	93 U	100 U	NA
Aroclor-1260	NA	NA	93 U	100 U	NA
Herbicides (ug/kg)					
2,4,5-T	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)	NA	NA	NA	NA	NA
2,4-D	NA	NA	NA	NA	NA
Dimethoate	NA	NA	NA	NA	NA
Disulfoton	NA	NA	NA	NA	NA
Famphur	NA	NA	NA	NA	NA
Methyl Parathion	NA	NA	NA	NA	NA
o,o,o-Triethyl Phosphorothioate	420 U	390 U	NA	NA	430 U
Parathion	NA	NA	NA	NA	NA
Phorate	NA	NA	NA	NA	NA
Sulfotepp	NA	NA	NA	NA	NA
Thionazin	NA	NA	NA	NA	NA

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Sample ID	11E-SB01-03	11E-SB02-04	11SB04-01	11SB15-02	12E-SB01-02
Date Sampled	05-09-2004	05-09-2004	09-24-1997	09-19-1997	05-09-2004
TPH (mg/kg)					
Diesel Range Organics (DRO)	3.9 J	2.4 J	7 U	7.7 U	4.3 U
Gasoline Range Organics (GRO)	0.24 U	0.24 U	0.058 U	0.063 U	0.33 U
Explosives (ug/kg)					
1,3,5-Trinitrobenzene	NA	NA	NA	NA	NA
1,3-Dinitrobenzene	NA	NA	NA	NA	NA
2,4,6-Trinitrotoluene (TNT)	NA	NA	NA	NA	NA
2,4/2,6-Dinitrotoluene Mixture	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	NA	NA	NA	NA	NA
2-Amino-4,6-dinitrotoluene	NA	NA	NA	NA	NA
2-Nitrotoluene	NA	NA	NA	NA	NA
3-Nitrotoluene	NA	NA	NA	NA	NA
4-Amino-2,6-dinitrotoluene	NA	NA	NA	NA	NA
4-Amino-2,6-dinitrotoluene	NA	NA	NA	NA	NA
4-Nitrotoluene	NA	NA	NA	NA	NA
HMX	NA	NA	NA	NA	NA
Nitrobenzene	NA	NA	NA	NA	NA
RDX (Cyclonite)	NA	NA	NA	NA	NA
Tetryl	NA	NA	NA	NA	NA
Dioxins (ug/kg)					
HxCDD, 2,3,7,8-	NA	NA	NA	NA	NA
HxCDF, 2,3,7,8-	NA	NA	NA	NA	NA
PeCDD, total	NA	NA	NA	NA	NA
PeCDF, total	NA	NA	NA	NA	NA
TCDD, 2,3,7,8-	NA	NA	NA	NA	NA
TCDD, total	NA	NA	NA	NA	NA
TCDF, total	NA	NA	NA	NA	NA
Metals (mg/kg)					
Antimony	2.4 UN	2.2 UN	0.36 UJ	0.38 UJ	2.3 U
Arsenic	1.2 U	1.6	3.2 J	2.3 J	1.2 U
Barium	21	3.6	12.9 J	33	42
Beryllium	0.052 B	0.3 B	0.06 U	0.06 U	0.14 B

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Sample ID	11E-SB01-03	11E-SB02-04	11SB04-01	11SB15-02	12E-SB01-02
Date Sampled	05-09-2004	05-09-2004	09-24-1997	09-19-1997	05-09-2004
Metals (mg/kg) (Continued)					
Cadmium	0.61 U	0.54 U	0.07 U	0.08 U	0.59 U
Chromium	18	65	18.3	15.1	18
Cobalt	1.2 U	5	6 J	9.7 J	5.4
Copper	18	210	28.4 J	59.4 J	57
Lead	2	3.6	3.8 J	1.4 J	1.5
Mercury	0.013 B	0.023 U	0.02 U	0.02 U	0.097
Nickel	1.7 B	6.3	6.2 J	7 J	4.3 B
Selenium	1.2 U	1.1 U	0.41 R	0.44 R	1.2 U
Silver	1.2 U	1.1 U	0.11 U	0.12 U	0.16 B
Thallium	1.2 U	1.1 U	0.39 UJ	0.42 UJ	1.2 U
Tin	2.9 B	2.1 B	1.7 J	2.2 J	1.8 B
Vanadium	25	410	52.5	63.4	120
Zinc	3.9	24	17.5 R	29.3 R	19
Conventionals (mg/kg)					
Cyanide	NA	NA	NA	NA	NA
Sulfide	NA	NA	NA	NA	NA

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Sample ID	12E-SB02-04	14E-SB01-04	14E-SB02-02	14E-SB03-02	18E-SB03-01	18E-SB04-04
Date Sampled	05-09-2004	05-08-2004	05-08-2004	05-08-2004	05-04-2004	05-04-2004
Volatiles (ug/kg)						
1,1,1,2-Tetrachloroethane	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
1,1,1-Trichloroethane (TCA)	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
1,1,2,2-Tetrachloroethane	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
1,1,2-Trichloroethane	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
1,1-Dichloroethane	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
1,1-Dichloroethene	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
1,2,3-Trichloropropane	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
1,2-Dibromo-3-chloropropane (DBCP)	13 U	12 U	12 U	12 U	9.2 U	11 U
1,2-Dibromoethane (EDB)	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
1,2-Dichloroethane	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
1,2-Dichloroethene (total)	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene (trans)	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
1,2-Dichloropropane	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
1,3-Dichloropropene (cis)	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
1,3-Dichloropropene (trans)	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
1,4-Dichloro-2-butene (trans)	13 U	12 U	12 U	12 U	9.2 U	11 U
2-Butanone (MEK)	33 U	29 U	29 U	31 U	23 U	27 U
2-Chloro-1,3-butadiene (Chloroprene)	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
2-Hexanone (MBK)	33 U	29 U	29 U	31 U	23 U	27 U
3-Chloropropene (Allyl Chloride)	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
4-Methyl-2-pentanone (MIBK)	33 U	29 U	29 U	31 U	23 U	27 U
Acetone	66 U	58 U	58 U	61 U	46 U	54 U
Acetonitrile	260 U	230 U	230 U	240 U	180 U	220 U
Acrolein	130 U	120 U	120 U	120 U	92 U	110 U
Acrylonitrile	130 U	120 U	120 U	120 U	92 U	110 U
Benzene	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
Bromodichloromethane	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
Bromoform	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
Bromomethane	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U

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Sample ID	12E-SB02-04	14E-SB01-04	14E-SB02-02	14E-SB03-02	18E-SB03-01	18E-SB04-04
Date Sampled	05-09-2004	05-08-2004	05-08-2004	05-08-2004	05-04-2004	05-04-2004
Volatiles (ug/kg) (Continued)						
Carbon Disulfide	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
Carbon Tetrachloride	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
Chlorobenzene	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
Chloroethane	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
Chloroform	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
Chloromethane	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
Dibromochloromethane	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
Dibromomethane	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
Dichlorodifluoromethane (Freon-12)	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
Ethyl Methacrylate	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
Ethylbenzene	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
Iodomethane	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
Isobutyl Alcohol	260 U	230 U	230 U	240 U	180 U	220 U
Methyl Acrylonitrile	130 U	120 U	120 U	120 U	92 U	110 U
Methyl Methacrylate	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
Methylene Chloride	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
Pentachloroethane	33 U	29 U	29 U	31 U	23 U	27 U
Propionitrile (Ethyl Cyanide)	130 U	120 U	120 U	120 U	92 U	110 U
Styrene (Ethenylbenzene)	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
Tetrachloroethene (PCE)	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
Toluene	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
Trichloroethene (TCE)	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
Trichlorofluoromethane	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
Vinyl Acetate	13 U	12 U	12 U	12 U	9.2 U	11 U
Vinyl Chloride	6.6 U	5.8 U	5.8 U	6.1 U	4.6 U	5.4 U
Xylenes, total	13 U	12 U	12 U	12 U	9.2 U	11 U
Semivolatiles (ug/kg)						
1,2,4,5-Tetrachlorobenzene	460 U	400 U	400 U	410 U	370 U	370 U
1,2,4-Trichlorobenzene	460 U	400 U	400 U	410 U	370 U	370 U
1,2-Dichlorobenzene (o-)	460 U	400 U	400 U	410 U	370 U	370 U
1,2-Diphenylhydrazine	NA	NA	NA	NA	NA	NA
1,3,5-Trinitrobenzene	460 U	400 U	400 U	410 U	370 U	370 U
1,3-Dichlorobenzene (m-)	460 U	400 U	400 U	410 U	370 U	370 U
1,3-Dinitrobenzene	460 U	400 U	400 U	410 U	370 U	370 U

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Sample ID	12E-SB02-04	14E-SB01-04	14E-SB02-02	14E-SB03-02	18E-SB03-01	18E-SB04-04
Date Sampled	05-09-2004	05-08-2004	05-08-2004	05-08-2004	05-04-2004	05-04-2004
Semivolatiles (ug/kg) (Continued)						
1,4-Dichlorobenzene (p-)	460 U	400 U	400 U	410 U	370 U	370 U
1,4-Dioxane (p-)	460 U	400 U	400 U	410 U	370 U	370 U
1,4-Naphthoquinone	460 U	400 U	400 U	410 U	370 U	370 U
1,4-Phenylenediamine	2400 U	2100 U	2000 U	2100 U	1900 U	1900 U
1-Naphthylamine	460 U	400 U	400 U	410 U	370 U	370 U
2,2'-Oxybis[1-chloropropane]	460 U	400 U	400 U	410 U	370 U	370 U
2,3,4,6-Tetrachlorophenol	460 U	400 U	400 U	410 U	370 U	370 U
2,4,5-Trichlorophenol	460 U	400 U	400 U	410 U	370 U	370 U
2,4,6-Trichlorophenol	460 U	400 U	400 U	410 U	370 U	370 U
2,4-Dichlorophenol	460 U	400 U	400 U	410 U	370 U	370 U
2,4-Dimethylphenol	460 U	400 U	400 U	410 U	370 U	370 U
2,4-Dinitrophenol	2400 U	2100 U	2000 U	2100 U	1900 U	1900 U
2,4-Dinitrotoluene	460 U	400 U	400 U	410 U	370 U	370 U
2,6-Dichlorophenol	460 U	400 U	400 U	410 U	370 U	370 U
2,6-Dinitrotoluene	460 U	400 U	400 U	410 U	370 U	370 U
2-Acetylaminofluorene	460 U	400 U	400 U	410 U	370 U	370 U
2-Chloronaphthalene	460 U	400 U	400 U	410 U	370 U	370 U
2-Chlorophenol	460 U	400 U	400 U	410 U	370 U	370 U
2-Methyl-5-nitroaniline	460 U	400 U	400 U	410 U	370 U	370 U
2-Methylnaphthalene	460 U	400 U	400 U	410 U	370 U	370 U
2-Methylphenol (o-Cresol)	460 U	400 U	400 U	410 U	370 U	370 U
2-Naphthylamine	460 U	400 U	400 U	410 U	370 U	370 U
2-Nitroaniline	2400 U	2100 U	2000 U	2100 U	1900 U	1900 U
2-Nitrophenol	460 U	400 U	400 U	410 U	370 U	370 U
2-Picoline	460 U	400 U	400 U	410 U	370 U	370 U
3,3'-Dichlorobenzidine	920 U	800 U	800 U	820 U	730 U	730 U
3,3'-Dimethylbenzidine	2400 U	2100 U	2000 U	2100 U	1900 U	1900 U
3-Methylcholanthrene	460 U	400 U	400 U	410 U	370 U	370 U
3-Nitroaniline	2400 U	2100 U	2000 U	2100 U	1900 U	1900 U
4,6-Dinitro-2-methylphenol	2400 U	2100 U	2000 U	2100 U	1900 U	1900 U
4-Aminobiphenyl	460 U	400 U	400 U	410 U	370 U	370 U
4-Bromophenyl-phenylether	460 U	400 U	400 U	410 U	370 U	370 U

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Sample ID	12E-SB02-04	14E-SB01-04	14E-SB02-02	14E-SB03-02	18E-SB03-01	18E-SB04-04
Date Sampled	05-09-2004	05-08-2004	05-08-2004	05-08-2004	05-04-2004	05-04-2004
Semivolatiles (ug/kg) (Continued)						
4-Chloro-3-methylphenol	460 U	400 U	400 U	410 U	370 U	370 U
4-Chloroaniline	920 U	800 U	800 U	820 U	730 U	730 U
4-Chlorophenyl-phenylether	460 U	400 U	400 U	410 U	370 U	370 U
4-Dimethylaminoazobenzene	460 U	400 U	400 U	410 U	370 U	370 U
4-Methylphenol (p-Cresol)	460 U	400 U	400 U	410 U	370 U	370 U
4-Nitroaniline	2400 U	2100 U	2000 U	2100 U	1900 U	1900 U
4-Nitrophenol	2400 U	2100 U	2000 U	2100 U	1900 U	1900 U
4-Nitroquinoline-1-Oxide	4600 U	4000 U	4000 U	4100 U	3700 U	3700 U
7,12-Dimethylbenz(a)anthracene	460 U	400 U	400 U	410 U	370 U	370 U
a,a-Dimethylphenethylamine	93000 U	82000 U	81000 U	84000 U	74000 U	74000 U
Acenaphthene	460 U	400 U	400 U	410 U	370 U	370 U
Acenaphthylene	460 U	400 U	400 U	410 U	370 U	370 U
Acetophenone	460 U	400 U	400 U	410 U	370 U	370 U
Aniline	460 U	400 U	400 U	410 U	370 U	370 U
Anthracene	460 U	400 U	400 U	410 U	370 U	370 U
Aramite	460 U	400 U	400 U	410 U	370 U	370 U
Benzidine	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	460 U	400 U	400 U	410 U	370 U	370 U
Benzo(a)pyrene (BaP)	460 U	400 U	400 U	410 U	370 U	370 U
Benzo(b)fluoranthene	460 U	400 U	400 U	410 U	370 U	370 U
Benzo(g,h,i)perylene	460 U	400 U	400 U	410 U	370 U	370 U
Benzo(k)fluoranthene	460 U	400 U	400 U	410 U	370 U	370 U
Benzoic Acid	NA	NA	NA	NA	NA	NA
Benzyl Alcohol	460 U	400 U	400 U	410 U	370 U	370 U
Bis(2-chloroethoxy)methane	460 U	400 U	400 U	410 U	370 U	370 U
Bis(2-chloroethyl)ether	460 U	400 U	400 U	410 U	370 U	370 U
Bis(2-ethylhexyl) Phthalate (BEHP)	460 U	400 U	400 U	410 U	370 U	370 U
Butyl Benzyl Phthalate	460 U	400 U	400 U	410 U	370 U	370 U
Carbazole	NA	NA	NA	NA	NA	NA
Chrysene	460 U	400 U	400 U	410 U	370 U	370 U
Cresol (Mixed Isomers)	NA	NA	NA	NA	NA	NA

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Sample ID	12E-SB02-04	14E-SB01-04	14E-SB02-02	14E-SB03-02	18E-SB03-01	18E-SB04-04
Date Sampled	05-09-2004	05-08-2004	05-08-2004	05-08-2004	05-04-2004	05-04-2004
Semivolatiles (ug/kg) (Continued)						
Diallate	460 U	400 U	400 U	410 U	370 U	370 U
Dibenz(a,h)anthracene	460 U	400 U	400 U	410 U	370 U	370 U
Dibenzofuran	460 U	400 U	400 U	410 U	370 U	370 U
Diethyl Phthalate (DEP)	460 U	400 U	400 U	410 U	370 U	370 U
Dimethyl Phthalate	460 U	400 U	400 U	410 U	370 U	370 U
Di-n-butyl Phthalate (DBP)	460 U	400 U	400 U	410 U	370 U	370 U
Di-n-octyl Phthalate	460 U	400 U	400 U	410 U	370 U	370 U
Dinoseb	460 U	400 U	400 U	410 U	370 U	370 U
Diphenylamine	NA	NA	NA	NA	NA	NA
Ethyl 4,4'-Dichlorobenzilate (Chlorobenzilate)	NA	NA	NA	NA	19 U	19 U
Ethyl Methanesulfonate	460 U	400 U	400 U	410 U	370 U	370 U
Fluoranthene	460 U	400 U	400 U	410 U	370 U	370 U
Fluorene	460 U	400 U	400 U	410 U	370 U	370 U
Hexachlorobenzene	460 U	400 U	400 U	410 U	370 U	370 U
Hexachlorobutadiene	460 U	400 U	400 U	410 U	370 U	370 U
Hexachlorocyclopentadiene	460 U	400 U	400 U	410 U	370 U	370 U
Hexachloroethane	460 U	400 U	400 U	410 U	370 U	370 U
Hexachlorophene	240000 U	210000 U	200000 U	210000 U	190000 U	190000 U
Hexachloropropene	460 U	400 U	400 U	410 U	370 U	370 U
Indeno(1,2,3-cd)pyrene	460 U	400 U	400 U	410 U	370 U	370 U
Isophorone	460 U	400 U	400 U	410 U	370 U	370 U
Isosafrole	460 U	400 U	400 U	410 U	370 U	370 U
Methapyrilene	93000 U	82000 U	81000 U	84000 U	74000 U	74000 U
Methyl Methane Sulfonate	460 U	400 U	400 U	410 U	370 U	370 U
Naphthalene	460 U	400 U	400 U	410 U	370 U	370 U
Nitrobenzene	460 U	400 U	400 U	410 U	370 U	370 U
n-Nitrosodiethylamine	460 U	400 U	400 U	410 U	370 U	370 U
n-Nitrosodimethylamine	460 U	400 U	400 U	410 U	370 U	370 U
n-Nitroso-di-n-butylamine	460 U	400 U	400 U	410 U	370 U	370 U
n-Nitrosodi-n-propylamine	460 U	400 U	400 U	410 U	370 U	370 U
n-Nitrosodiphenylamine	460 U	400 U	400 U	410 U	370 U	370 U
n-Nitrosomethylethylamine	460 U	400 U	400 U	410 U	370 U	370 U

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Sample ID	12E-SB02-04	14E-SB01-04	14E-SB02-02	14E-SB03-02	18E-SB03-01	18E-SB04-04
Date Sampled	05-09-2004	05-08-2004	05-08-2004	05-08-2004	05-04-2004	05-04-2004
Semivolatiles (ug/kg) (Continued)						
n-Nitrosomorpholine	460 U	400 U	400 U	410 U	370 U	370 U
n-Nitrosopiperidine	460 U	400 U	400 U	410 U	370 U	370 U
n-Nitrosopyrrolidine	460 U	400 U	400 U	410 U	370 U	370 U
o-Toluidine	460 U	400 U	400 U	410 U	370 U	370 U
Pentachlorobenzene	460 U	400 U	400 U	410 U	370 U	370 U
Pentachloronitrobenzene	460 U	400 U	400 U	410 U	370 U	370 U
Pentachlorophenol	2400 U	2100 U	2000 U	2100 U	1900 U	1900 U
Phenacetin	460 U	400 U	400 U	410 U	370 U	370 U
Phenanthrene	460 U	400 U	400 U	410 U	370 U	370 U
Phenol	460 U	400 U	400 U	410 U	370 U	370 U
Pronamide	460 U	400 U	400 U	410 U	370 U	370 U
Pyrene	460 U	400 U	400 U	410 U	370 U	370 U
Pyridine	460 U	400 U	400 U	410 U	370 U	370 U
Safrole	460 U	400 U	400 U	410 U	370 U	370 U
Pesticides (ug/kg)						
4,4'-DDD	NA	NA	NA	NA	3.7 U	3.7 U
4,4'-DDE	NA	NA	NA	NA	3.7 U	3.7 U
4,4'-DDT	NA	NA	NA	NA	3.7 U	3.7 U
Aldrin	NA	NA	NA	NA	1.9 U	1.9 U
BHC, alpha-	NA	NA	NA	NA	1.9 U	1.9 U
BHC, beta-	NA	NA	NA	NA	1.9 U	1.9 U
BHC, delta-	NA	NA	NA	NA	1.9 U	1.9 U
BHC, gamma- (Lindane)	NA	NA	NA	NA	1.9 U	1.9 U
Chlordane	NA	NA	NA	NA	19 U	19 U
Chlordane, alpha-	NA	NA	NA	NA	NA	NA
Chlordane, gamma-	NA	NA	NA	NA	NA	NA
Dieldrin	NA	NA	NA	NA	3.7 U	3.7 U
Endosulfan I	NA	NA	NA	NA	1.9 U	1.9 U
Endosulfan II	NA	NA	NA	NA	3.7 U	3.7 U
Endosulfan Sulfate	NA	NA	NA	NA	3.7 U	3.7 U
Endrin	NA	NA	NA	NA	3.7 U	3.7 U
Endrin Aldehyde	NA	NA	NA	NA	3.7 U	3.7 U

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Sample ID	12E-SB02-04	14E-SB01-04	14E-SB02-02	14E-SB03-02	18E-SB03-01	18E-SB04-04
Date Sampled	05-09-2004	05-08-2004	05-08-2004	05-08-2004	05-04-2004	05-04-2004
Pesticides (ug/kg) (Continued)						
Heptachlor	NA	NA	NA	NA	1.9 U	1.9 U
Heptachlor Epoxide	NA	NA	NA	NA	1.9 U	1.9 U
Isodrin	NA	NA	NA	NA	3.7 U	3.7 U
Kepone (Chlordecone)	NA	NA	NA	NA	190 U	190 U
Methoxychlor	NA	NA	NA	NA	19 U	19 U
Toxaphene	NA	NA	NA	NA	190 U	190 U
PCBs (ug/kg)						
Aroclor-1016	NA	NA	NA	NA	37 U	37 U
Aroclor-1221	NA	NA	NA	NA	74 U	74 U
Aroclor-1232	NA	NA	NA	NA	37 U	37 U
Aroclor-1242	NA	NA	NA	NA	37 U	37 U
Aroclor-1248	NA	NA	NA	NA	37 U	37 U
Aroclor-1254	NA	NA	NA	NA	37 U	37 U
Aroclor-1260	NA	NA	NA	NA	37 U	37 U
Herbicides (ug/kg)						
2,4,5-T	NA	NA	NA	NA	9.2 U	9.2 U
2,4,5-TP (Silvex)	NA	NA	NA	NA	9.2 U	9.2 U
2,4-D	NA	NA	NA	NA	9.2 U	9.2 U
Dimethoate	NA	NA	NA	NA	370 U	370 U
Disulfoton	NA	NA	NA	NA	370 U	370 U
Famphur	NA	NA	NA	NA	370 U	370 U
Methyl Parathion	NA	NA	NA	NA	370 U	370 U
o,o,o-Triethyl Phosphorothioate	460 U	400 U	400 U	410 U	370 U	370 U
Parathion	NA	NA	NA	NA	370 U	370 U
Phorate	NA	NA	NA	NA	370 U	370 U
Sulfotepp	NA	NA	NA	NA	370 U	370 U
Thionazin	NA	NA	NA	NA	370 U	370 U

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Sample ID	12E-SB02-04	14E-SB01-04	14E-SB02-02	14E-SB03-02	18E-SB03-01	18E-SB04-04
Date Sampled	05-09-2004	05-08-2004	05-08-2004	05-08-2004	05-04-2004	05-04-2004
TPH (mg/kg)						
Diesel Range Organics (DRO)	3.3 J	2.6 J	2.2 J	2.6 J	NA	NA
Gasoline Range Organics (GRO)	0.35 U	0.3 U	0.3 U	0.26 U	NA	NA
Explosives (ug/kg)						
1,3,5-Trinitrobenzene	NA	NA	NA	NA	NA	NA
1,3-Dinitrobenzene	NA	NA	NA	NA	NA	NA
2,4,6-Trinitrotoluene (TNT)	NA	NA	NA	NA	NA	NA
2,4/2,6-Dinitrotoluene Mixture	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	NA	NA	NA	NA	NA	NA
2-Amino-4,6-dinitrotoluene	NA	NA	NA	NA	NA	NA
2-Nitrotoluene	NA	NA	NA	NA	NA	NA
3-Nitrotoluene	NA	NA	NA	NA	NA	NA
4-Amino-2,6-dinitrotoluene	NA	NA	NA	NA	NA	NA
4-Amino-2,6-dinitrotoluene	NA	NA	NA	NA	NA	NA
4-Nitrotoluene	NA	NA	NA	NA	NA	NA
HMX	NA	NA	NA	NA	NA	NA
Nitrobenzene	NA	NA	NA	NA	NA	NA
RDX (Cyclonite)	NA	NA	NA	NA	NA	NA
Tetryl	NA	NA	NA	NA	NA	NA
Dioxins (ug/kg)						
HxCDD, 2,3,7,8-	NA	NA	NA	NA	NA	NA
HxCDF, 2,3,7,8-	NA	NA	NA	NA	NA	NA
PeCDD, total	NA	NA	NA	NA	NA	NA
PeCDF, total	NA	NA	NA	NA	NA	NA
TCDD, 2,3,7,8-	NA	NA	NA	NA	NA	NA
TCDD, total	NA	NA	NA	NA	NA	NA
TCDF, total	NA	NA	NA	NA	NA	NA
Metals (mg/kg)						
Antimony	2.6 U	2.1 UN	2.2 UN	2.4 UN	2.1 UN	2 UN
Arsenic	1.3 U	1.1 U	1.1 U	1.2 U	1 U	0.99 U
Barium	11	170	51	40	110	54
Beryllium	0.093 B	0.36 B	0.29 B	0.26 B	0.13 B	0.22 B

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Sample ID	12E-SB02-04	14E-SB01-04	14E-SB02-02	14E-SB03-02	18E-SB03-01	18E-SB04-04
Date Sampled	05-09-2004	05-08-2004	05-08-2004	05-08-2004	05-04-2004	05-04-2004
Metals (mg/kg) (Continued)						
Cadmium	0.66 U	0.53 U	0.55 U	0.6 U	0.52 U	0.5 U
Chromium	19	16	28	19	5.8 N	8.6 N
Cobalt	0.83 B	38	7.3	6.6	31	5.9
Copper	53	26 *	48 *	33 *	92	180
Lead	1.3	2.1	1.7	1.9	0.63	0.5 U
Mercury	0.028	0.022	0.029	0.033	0.021 U	0.021 U
Nickel	2.2 B	13	11	6.8	12	11
Selenium	1.3 U	2.1 U	1.1 U	1.2 U	1 U	0.99 U
Silver	1.3 U	1.1 U	1.1 U	1.2 U	1 U	0.99 U
Thallium	1.3 U	1.1 U	1.1 U	2.4 U	1 U	0.99 U
Tin	2.5 B	1.7 B	2 B	2.7 B	1.5 B	2.9 B
Vanadium	180	78	140	120	130	89
Zinc	7.5	61	54	38	36	38
Conventionals (mg/kg)						
Cyanide	NA	NA	NA	NA	0.53 U	0.54 U
Sulfide	NA	NA	NA	NA	28 U	28 U

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Sample ID	1MW01-02	1MW02-03	1SB02-03/04	1SB02-10/11/12	20E-SB07-06	2MW01-01
Date Sampled	10-29-1996	10-28-1996	10-26-1996	10-26-1996	05-11-2004	11-08-1996
Volatiles (ug/kg)						
1,1,1,2-Tetrachloroethane	12 U	12 U	11 U	11 U	5.8 U	14 U
1,1,1-Trichloroethane (TCA)	6 U	6 U	5 U	6 U	5.8 U	7 U
1,1,2,2-Tetrachloroethane	6 UJ	6 U	5 U	6 U	5.8 U	7 UJ
1,1,2-Trichloroethane	6 U	6 U	5 U	6 U	5.8 U	7 U
1,1-Dichloroethane	6 U	6 U	5 U	6 U	5.8 U	7 U
1,1-Dichloroethene	6 U	6 U	5 U	6 U	5.8 U	7 U
1,2,3-Trichloropropane	12 U	12 U	11 U	11 U	5.8 U	14 U
1,2-Dibromo-3-chloropropane (DBCP)	23 UJ	25 U	21 U	22 U	12 U	28 UJ
1,2-Dibromoethane (EDB)	23 U	25 U	21 U	22 U	5.8 U	28 U
1,2-Dichloroethane	6 U	6 U	5 U	6 U	5.8 U	7 U
1,2-Dichloroethene (total)	6 U	6 U	5 U	6 U	NA	7 U
1,2-Dichloroethene (trans)	NA	NA	NA	NA	5.8 U	NA
1,2-Dichloropropane	6 U	6 U	5 U	6 U	5.8 U	7 U
1,3-Dichloropropene (cis)	6 U	6 U	5 U	6 U	5.8 U	7 U
1,3-Dichloropropene (trans)	6 U	6 U	5 U	6 U	5.8 U	7 U
1,4-Dichloro-2-butene (trans)	23 UJ	25 U	21 U	22 U	12 U	28 U
2-Butanone (MEK)	12 UJ	12 U	11 U	11 U	29 U	14 U
2-Chloro-1,3-butadiene (Chloroprene)	120 R	120 R	110 R	110 R	5.8 U	140 R
2-Hexanone (MBK)	12 UJ	12 U	11 U	11 U	29 U	14 U
3-Chloropropene (Allyl Chloride)	23 U	25 U	21 U	22 U	5.8 U	28 U
4-Methyl-2-pentanone (MIBK)	12 U	12 U	11 U	11 U	29 U	14 UJ
Acetone	12 U	12 U	11 U	11 U	58 U	14 U
Acetonitrile	120 U	120 U	110 U	110 U	230 U	140 U
Acrolein	580 U	620 U	530 U	560 U	120 U	710 UJ
Acrylonitrile	120 U	120 U	110 U	110 U	120 U	140 UJ
Benzene	6 U	6 U	5 U	6 U	5.8 U	7 U
Bromodichloromethane	6 U	6 U	5 U	6 U	5.8 U	7 U
Bromoform	6 U	6 U	5 U	6 U	5.8 U	7 U
Bromomethane	12 U	12 U	11 U	11 U	5.8 U	14 U

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NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	1MW01-02	1MW02-03	1SB02-03/04	1SB02-10/11/12	20E-SB07-06	2MW01-01
Date Sampled	10-29-1996	10-28-1996	10-26-1996	10-26-1996	05-11-2004	11-08-1996
Volatiles (ug/kg) (Continued)						
Carbon Disulfide	6 U	6 U	5 U	6 U	5.8 U	7 U
Carbon Tetrachloride	6 U	6 U	5 U	6 U	5.8 U	7 U
Chlorobenzene	6 U	6 U	5 U	6 U	5.8 U	7 U
Chloroethane	12 U	12 U	11 U	11 U	5.8 U	14 U
Chloroform	6 U	6 U	5 U	6 U	5.8 U	7 U
Chloromethane	12 U	12 UJ	11 UJ	11 UJ	5.8 U	14 UJ
Dibromochloromethane	6 U	6 U	5 U	6 U	5.8 U	7 U
Dibromomethane	12 U	12 U	11 U	11 U	5.8 U	14 U
Dichlorodifluoromethane (Freon-12)	23 UJ	25 UJ	21 UJ	22 UJ	5.8 U	28 UJ
Ethyl Methacrylate	23 UJ	25 U	21 U	22 U	5.8 U	28 U
Ethylbenzene	6 U	6 U	5 U	6 U	5.8 U	7 U
Iodomethane	12 U	12 U	11 U	11 U	5.8 U	14 U
Isobutyl Alcohol	2300 R	2500 R	2100 R	2200 R	230 U	2800 R
Methyl Acrylonitrile	23 U	25 U	21 U	22 U	120 U	28 U
Methyl Methacrylate	23 U	25 U	21 U	22 U	5.8 U	28 U
Methylene Chloride	6 U	6 U	5 U	6 U	5.8 U	7 U
Pentachloroethane	23 U	25 U	21 U	22 U	29 U	28 U
Propionitrile (Ethyl Cyanide)	58 R	62 R	53 R	55 R	120 U	71 R
Styrene (Ethenylbenzene)	6 U	6 U	5 U	6 U	5.8 U	7 U
Tetrachloroethene (PCE)	6 U	6 U	5 U	6 U	5.8 U	7 UJ
Toluene	6 U	6 U	5 U	6 U	5.8 U	7 U
Trichloroethene (TCE)	6 U	6 U	5 U	6 U	5.8 U	7 U
Trichlorofluoromethane	12 U	12 U	11 U	11 U	5.8 U	14 UJ
Vinyl Acetate	12 UJ	12 U	11 U	11 U	12 U	14 U
Vinyl Chloride	12 U	12 UJ	11 UJ	11 UJ	5.8 U	14 U
Xylenes, total	6 U	6 U	5 U	6 U	12 U	7 U
Semivolatiles (ug/kg)						
1,2,4,5-Tetrachlorobenzene	380 U	410 U	350 U	360 U	400 U	470 U
1,2,4-Trichlorobenzene	380 U	410 U	350 U	360 U	400 U	470 U
1,2-Dichlorobenzene (o-)	380 U	410 U	350 U	360 U	400 U	470 U
1,2-Diphenylhydrazine	380 U	410 UJ	350 UJ	360 UJ	NA	470 U
1,3,5-Trinitrobenzene	3800 U	4100 U	3500 U	3600 U	400 U	4700 U
1,3-Dichlorobenzene (m-)	380 U	410 U	350 U	360 U	400 U	470 U
1,3-Dinitrobenzene	770 U	810 U	710 U	720 U	400 U	950 U

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NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	1MW01-02	1MW02-03	1SB02-03/04	1SB02-10/11/12	20E-SB07-06	2MW01-01
Date Sampled	10-29-1996	10-28-1996	10-26-1996	10-26-1996	05-11-2004	11-08-1996
Semivolatiles (ug/kg) (Continued)						
1,4-Dichlorobenzene (p-)	380 U	410 U	350 U	360 U	400 U	470 U
1,4-Dioxane (p-)	770 U	810 U	710 U	720 U	400 U	950 U
1,4-Naphthoquinone	1900 U	2000 U	1800 U	1800 U	400 U	2400 U
1,4-Phenylenediamine	770 U	810 R	710 R	720 R	2000 U	950 U
1-Naphthylamine	770 U	810 U	710 U	720 U	400 U	950 U
2,2'-Oxybis[1-chloropropane]	380 U	410 UJ	350 UJ	360 UJ	400 U	470 U
2,3,4,6-Tetrachlorophenol	380 U	410 U	350 U	360 U	400 U	470 U
2,4,5-Trichlorophenol	1900 U	2000 U	1800 U	1800 U	400 U	2400 U
2,4,6-Trichlorophenol	380 U	410 U	350 U	360 U	400 U	470 U
2,4-Dichlorophenol	380 U	410 U	350 U	360 U	400 U	470 U
2,4-Dimethylphenol	380 U	410 U	350 U	360 U	400 U	470 U
2,4-Dinitrophenol	1900 U	2000 U	1800 U	1800 U	2000 U	2400 U
2,4-Dinitrotoluene	380 U	410 U	350 U	360 U	400 U	470 U
2,6-Dichlorophenol	380 U	410 U	350 U	360 U	400 U	470 U
2,6-Dinitrotoluene	380 U	410 U	350 U	360 U	400 U	470 U
2-Acetylaminofluorene	770 U	810 U	710 U	720 U	400 U	950 U
2-Chloronaphthalene	380 U	410 U	350 U	360 U	400 U	470 U
2-Chlorophenol	380 U	410 U	350 U	360 U	400 U	470 U
2-Methyl-5-nitroaniline	770 U	810 U	710 U	720 U	400 U	950 UJ
2-Methylnaphthalene	380 U	410 U	350 U	360 U	400 U	470 U
2-Methylphenol (o-Cresol)	380 U	410 U	350 U	360 U	400 U	470 U
2-Naphthylamine	960 U	1000 U	880 U	900 U	400 U	1200 U
2-Nitroaniline	1900 U	2000 UJ	1800 UJ	1800 UJ	2000 U	2400 U
2-Nitrophenol	380 U	410 U	350 U	360 U	400 U	470 U
2-Picoline	380 U	410 U	350 U	360 U	400 U	470 UJ
3,3'-Dichlorobenzidine	770 U	810 U	710 U	720 U	800 U	950 U
3,3'-Dimethylbenzidine	1900 U	2000 UJ	1800 UJ	1800 UJ	2000 U	2400 U
3-Methylcholanthrene	380 U	410 U	350 U	360 U	400 U	470 U
3-Nitroaniline	1900 U	2000 U	1800 U	1800 U	2000 U	2400 U
4,6-Dinitro-2-methylphenol	1900 U	2000 UJ	1800 UJ	1800 UJ	2000 U	2400 U
4-Aminobiphenyl	770 U	810 U	710 U	720 U	400 U	950 U
4-Bromophenyl-phenylether	380 U	410 U	350 U	360 U	400 U	470 U

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Sample ID	1MW01-02	1MW02-03	1SB02-03/04	1SB02-10/11/12	20E-SB07-06	2MW01-01
Date Sampled	10-29-1996	10-28-1996	10-26-1996	10-26-1996	05-11-2004	11-08-1996
Semivolatiles (ug/kg) (Continued)						
4-Chloro-3-methylphenol	770 U	810 U	710 U	720 U	400 U	950 U
4-Chloroaniline	770 U	810 U	710 U	720 U	800 U	950 UJ
4-Chlorophenyl-phenylether	380 U	410 U	350 U	360 U	400 U	470 U
4-Dimethylaminoazobenzene	770 UJ	810 UJ	710 UJ	720 UJ	400 U	950 U
4-Methylphenol (p-Cresol)	NA	NA	NA	NA	400 U	NA
4-Nitroaniline	1900 U	2000 UJ	1800 UJ	1800 UJ	2000 U	2400 U
4-Nitrophenol	1900 U	2000 UJ	1800 UJ	1800 UJ	2000 U	2400 U
4-Nitroquinoline-1-Oxide	1900 U	2000 R	1800 R	1800 R	4000 U	2400 R
7,12-Dimethylbenz(a)anthracene	770 U	810 U	710 U	720 U	400 U	950 U
a,a-Dimethylphenethylamine	1900 UJ	2000 UJ	1800 UJ	1800 UJ	81000 U	2400 UJ
Acenaphthene	380 U	410 U	350 U	360 U	400 U	470 U
Acenaphthylene	380 U	410 U	350 U	360 U	400 U	470 U
Acetophenone	380 U	410 U	350 U	360 U	400 U	470 U
Aniline	1900 U	2000 UJ	1800 UJ	1800 UJ	400 U	2400 U
Anthracene	380 U	410 U	350 U	360 U	400 U	470 U
Aramite	770 U	810 U	710 U	720 U	400 U	950 U
Benzidine	3800 U	4100 U	3500 U	3600 U	NA	4700 U
Benzo(a)anthracene	380 U	410 U	350 U	360 U	400 U	470 U
Benzo(a)pyrene (BaP)	380 U	410 U	350 U	360 U	400 U	470 U
Benzo(b)fluoranthene	380 U	410 U	350 U	360 U	400 U	470 U
Benzo(g,h,i)perylene	380 U	410 U	350 U	360 U	400 U	470 U
Benzo(k)fluoranthene	380 U	410 U	350 U	360 U	400 U	470 U
Benzoic Acid	1900 U	2000 U	1800 U	1800 U	NA	2400 U
Benzyl Alcohol	380 U	410 U	350 U	360 U	400 U	470 U
Bis(2-chloroethoxy)methane	380 U	410 U	350 U	360 U	400 U	470 U
Bis(2-chloroethyl)ether	380 U	410 U	350 U	360 U	400 U	470 U
Bis(2-ethylhexyl) Phthalate (BEHP)	380 U	410 U	350 U	360 U	400 U	470 U
Butyl Benzyl Phthalate	380 U	410 U	350 U	360 U	400 U	470 U
Carbazole	380 U	410 U	350 U	360 U	NA	470 U
Chrysene	380 U	410 U	350 U	360 U	400 U	470 U
Cresol (Mixed Isomers)	380 U	410 U	350 U	360 U	NA	470 U

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NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	1MW01-02	1MW02-03	1SB02-03/04	1SB02-10/11/12	20E-SB07-06	2MW01-01
Date Sampled	10-29-1996	10-28-1996	10-26-1996	10-26-1996	05-11-2004	11-08-1996
Semivolatiles (ug/kg) (Continued)						
Diallate	380 UJ	410 UJ	350 UJ	360 UJ	400 U	470 U
Dibenz(a,h)anthracene	380 U	410 U	350 U	360 U	400 U	470 U
Dibenzofuran	380 U	410 U	350 U	360 U	400 U	470 U
Diethyl Phthalate (DEP)	380 U	410 U	350 U	360 U	400 U	470 U
Dimethyl Phthalate	380 U	410 U	350 U	360 U	400 U	470 U
Di-n-butyl Phthalate (DBP)	380 U	410 U	350 U	360 U	400 U	470 U
Di-n-octyl Phthalate	380 U	410 U	350 U	360 U	400 U	470 U
Dinoseb	770 U	810 U	710 U	720 U	400 U	950 U
Diphenylamine	380 U	410 U	350 U	360 U	NA	470 U
Ethyl 4,4'-Dichlorobenzilate (Chlorobenzilate)	380 U	410 U	350 U	360 U	NA	470 U
Ethyl Methanesulfonate	380 U	410 U	350 U	360 U	400 U	470 U
Fluoranthene	380 U	410 U	350 U	360 U	400 U	470 U
Fluorene	380 U	410 U	350 U	360 U	400 U	470 U
Hexachlorobenzene	380 U	410 U	350 U	360 U	400 U	470 U
Hexachlorobutadiene	380 U	410 U	350 U	360 U	400 U	470 U
Hexachlorocyclopentadiene	380 U	410 U	350 U	360 U	400 U	470 U
Hexachloroethane	380 U	410 U	350 U	360 U	400 U	470 U
Hexachlorophene	3800 R	4100 U	3500 U	3600 U	200000 U	4700 U
Hexachloropropene	1900 U	2000 U	1800 U	1800 U	400 U	2400 U
Indeno(1,2,3-cd)pyrene	380 U	410 U	350 U	360 U	400 U	470 U
Isophorone	380 U	410 U	350 U	360 U	400 U	470 U
Isosafrole	380 U	410 U	350 U	360 U	400 U	470 U
Methapyrilene	960 UJ	1000 UJ	880 UJ	900 UJ	81000 U	1200 UJ
Methyl Methane Sulfonate	380 U	410 U	350 U	360 U	400 U	470 UJ
Naphthalene	380 U	410 U	350 U	360 U	400 U	470 U
Nitrobenzene	380 U	410 U	350 U	360 U	400 U	470 U
n-Nitrosodiethylamine	380 UJ	410 UJ	350 UJ	360 UJ	400 U	470 UJ
n-Nitrosodimethylamine	380 U	410 UJ	350 UJ	360 UJ	400 U	470 U
n-Nitroso-di-n-butylamine	380 U	410 U	350 U	360 U	400 U	470 U
n-Nitrosodi-n-propylamine	380 U	410 UJ	350 UJ	360 UJ	400 U	470 U
n-Nitrosodiphenylamine	380 U	410 U	350 U	360 U	400 U	470 U
n-Nitrosomethylethylamine	380 UJ	410 UJ	350 UJ	360 UJ	400 U	470 UJ

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Sample ID	1MW01-02	1MW02-03	1SB02-03/04	1SB02-10/11/12	20E-SB07-06	2MW01-01
Date Sampled	10-29-1996	10-28-1996	10-26-1996	10-26-1996	05-11-2004	11-08-1996
Semivolatiles (ug/kg) (Continued)						
n-Nitrosomorpholine	770 UJ	810 UJ	710 UJ	720 UJ	400 U	950 UJ
n-Nitrosopiperidine	380 UJ	410 UJ	350 UJ	360 UJ	400 U	470 UJ
n-Nitrosopyrrolidine	1900 U	2000 U	1800 U	1800 U	400 U	2400 U
o-Toluidine	380 U	410 U	350 U	360 U	400 U	470 U
Pentachlorobenzene	380 U	410 U	350 U	360 U	400 U	470 U
Pentachloronitrobenzene	380 U	410 U	350 U	360 U	400 U	470 U
Pentachlorophenol	1900 U	2000 U	1800 U	1800 U	2000 U	2400 U
Phenacetin	380 U	410 U	350 U	360 U	400 U	470 U
Phenanthrene	380 U	410 U	350 U	360 U	400 U	470 U
Phenol	380 U	410 U	350 U	360 U	400 U	470 U
Pronamide	380 U	410 U	350 U	360 U	400 U	470 U
Pyrene	380 U	410 U	350 U	360 U	400 U	470 U
Pyridine	770 U	810 U	710 U	720 U	400 U	950 U
Safrole	380 U	410 U	350 U	360 U	400 U	470 U
Pesticides (ug/kg)						
4,4'-DDD	9.1 U	9.8 UJ	8.3 UJ	8.8 UJ	NA	22 U
4,4'-DDE	9.1 U	9.8 U	8.3 U	8.8 U	NA	22 U
4,4'-DDT	9.1 U	9.8 UJ	8.3 UJ	8.8 UJ	NA	22 U
Aldrin	4.5 U	4.9 U	4.1 U	4.4 U	NA	11 U
BHC, alpha-	4.5 U	4.9 U	4.1 U	4.4 U	NA	11 U
BHC, beta-	4.5 U	4.9 UJ	4.1 UJ	4.4 UJ	NA	11 U
BHC, delta-	4.5 U	4.9 UJ	4.1 UJ	4.4 UJ	NA	11 U
BHC, gamma- (Lindane)	4.5 U	4.9 U	4.1 U	4.4 U	NA	11 U
Chlordane	NA	NA	NA	NA	NA	NA
Chlordane, alpha-	45 U	49 U	41 U	44 U	NA	110 U
Chlordane, gamma-	45 U	49 U	41 U	44 U	NA	110 U
Dieldrin	9.1 U	9.8 U	8.3 U	8.8 U	NA	22 U
Endosulfan I	4.5 U	4.9 U	4.1 U	4.4 U	NA	11 U
Endosulfan II	9.1 U	9.8 U	8.3 U	8.8 U	NA	22 U
Endosulfan Sulfate	9.1 U	9.8 UJ	8.3 UJ	8.8 UJ	NA	22 U
Endrin	9.1 U	9.8 U	8.3 U	8.8 U	NA	22 U
Endrin Aldehyde	9.1 U	9.8 UJ	8.3 UJ	8.8 UJ	NA	22 U

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Sample ID	1MW01-02	1MW02-03	1SB02-03/04	1SB02-10/11/12	20E-SB07-06	2MW01-01
Date Sampled	10-29-1996	10-28-1996	10-26-1996	10-26-1996	05-11-2004	11-08-1996
Pesticides (ug/kg) (Continued)						
Heptachlor	4.5 U	4.9 U	4.1 U	4.4 U	NA	11 U
Heptachlor Epoxide	4.5 U	4.9 U	4.1 U	4.4 U	NA	11 U
Isodrin	4.5 U	4.9 U	4.1 U	4.4 U	NA	11 U
Kepone (Chlordecone)	9.1 UJ	9.8 UJ	8.3 UJ	8.8 UJ	NA	22 U
Methoxychlor	45 U	49 UJ	41 UJ	44 UJ	NA	110 U
Toxaphene	91 U	98 U	83 U	88 U	NA	220 U
PCBs (ug/kg)						
Aroclor-1016	45 U	49 U	41 U	44 U	NA	110 U
Aroclor-1221	45 U	49 U	41 U	44 U	NA	110 U
Aroclor-1232	45 U	49 U	41 U	44 U	NA	110 U
Aroclor-1242	45 U	49 U	41 U	44 U	NA	110 U
Aroclor-1248	45 U	49 U	41 U	44 U	NA	110 U
Aroclor-1254	91 U	98 U	83 U	88 U	NA	220 U
Aroclor-1260	91 U	98 U	83 U	88 U	NA	220 U
Herbicides (ug/kg)						
2,4,5-T	38 U	40 U	34 U	36 U	NA	46 U
2,4,5-TP (Silvex)	38 U	40 U	34 U	36 U	NA	46 U
2,4-D	380 U	400 U	340 U	360 U	NA	460 U
Dimethoate	76 U	82 U	70 U	74 U	NA	95 U
Disulfoton	76 U	82 U	70 U	74 U	NA	95 U
Famphur	76 U	82 U	70 U	74 U	NA	95 U
Methyl Parathion	76 U	82 U	70 U	74 U	NA	95 U
o,o,o-Triethyl Phosphorothioate	76 U	82 U	70 U	74 U	400 U	95 U
Parathion	76 U	82 U	70 U	74 U	NA	95 U
Phorate	76 U	82 U	70 U	74 U	NA	95 U
Sulfotepp	76 U	82 U	70 U	74 U	NA	95 U
Thionazin	76 U	82 U	70 U	74 U	NA	95 U

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Sample ID	1MW01-02	1MW02-03	1SB02-03/04	1SB02-10/11/12	20E-SB07-06	2MW01-01
Date Sampled	10-29-1996	10-28-1996	10-26-1996	10-26-1996	05-11-2004	11-08-1996
TPH (mg/kg)						
Diesel Range Organics (DRO)	NA	NA	NA	NA	4 U	NA
Gasoline Range Organics (GRO)	NA	NA	NA	NA	0.28 U	NA
Explosives (ug/kg)						
1,3,5-Trinitrobenzene	130 U	130 U	130 U	130 U	NA	130 U
1,3-Dinitrobenzene	120 U	120 U	120 U	120 U	NA	120 U
2,4,6-Trinitrotoluene (TNT)	120 U	120 U	120 U	120 U	NA	120 U
2,4/2,6-Dinitrotoluene Mixture	200 U	200 U	200 U	200 U	NA	200 U
2,4-Dinitrotoluene	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	NA	NA	NA	NA	NA	NA
2-Amino-4,6-dinitrotoluene	NA	NA	NA	NA	NA	NA
2-Nitrotoluene	500 U	500 U	500 U	500 U	NA	500 U
3-Nitrotoluene	500 U	500 U	500 U	500 U	NA	500 U
4-Amino-2,6-dinitrotoluene	NA	NA	NA	NA	NA	NA
4-Amino-2,6-dinitrotoluene	200 U	200 U	200 U	200 U	NA	200 U
4-Nitrotoluene	1500 U	1500 U	1500 U	1500 U	NA	1500 U
HMX	1100 U	1100 U	1100 U	1100 U	NA	1100 U
Nitrobenzene	210 U	210 U	210 U	210 U	NA	210 U
RDX (Cyclonite)	540 U	540 U	540 U	540 U	NA	540 U
Tetryl	380 U	380 U	380 U	380 U	NA	380 U
Dioxins (ug/kg)						
HxCDD, 2,3,7,8-	0.14 U	0.3 U	0.07 U	0.07 U	NA	0.08 U
HxCDF, 2,3,7,8-	0.07 U	0.12 U	0.06 U	0.04 U	NA	0.03 U
PeCDD, total	0.06 U	0.14 U	0.06 U	0.06 U	NA	0.06 U
PeCDF, total	0.06 U	0.09 U	0.05 U	0.06 U	NA	0.04 U
TCDD, 2,3,7,8-	0.04 U	0.1 U	0.03 U	0.04 U	NA	0.03 U
TCDD, total	0.04 U	0.1 U	0.03 U	0.04 U	NA	0.03 U
TCDF, total	0.09 J	0.07 U	0.02 U	0.03 U	NA	0.02 U
Metals (mg/kg)						
Antimony	2.7 J	2.6 J	3.8 J	1.5 UJ	2.2 U	4.6 J
Arsenic	0.31	0.16 UJ	0.7 UJ	0.74 UJ	1.1 U	1.6 J
Barium	76.5	87.9	89.5	95.6	41	67.8 J
Beryllium	0.54	0.87	0.47	0.53	0.18 B	0.05 U

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Sample ID	1MW01-02	1MW02-03	1SB02-03/04	1SB02-10/11/12	20E-SB07-06	2MW01-01
Date Sampled	10-29-1996	10-28-1996	10-26-1996	10-26-1996	05-11-2004	11-08-1996
Metals (mg/kg) (Continued)						
Cadmium	0.19 U	0.21 U	0.18 U	0.19 U	0.55 U	0.33
Chromium	37.1	19.1	28.6	24.8	10	38.5
Cobalt	19.9	13.7	18.4	17.3	17	42.5
Copper	52.6	58.4	85.5	88.9	120	44.8
Lead	1.4 R	0.91 J	0.47 J	0.48 J	1.3	7.8
Mercury	0.03 U	0.02 U	0.02 U	0.02 U	0.023 U	0.06
Nickel	16.5	8.2	19.2	16	13	16.8
Selenium	0.31 J	0.36 UJ	1.6 UJ	1.7 UJ	1.1 U	1 J
Silver	0.16 UJ	0.18 UJ	0.16 UJ	0.17 UJ	1.1 U	0.22 U
Thallium	0.16 U	0.16 U	0.14 U	0.15 U	1.1 U	0.18 U
Tin	0.78 U	0.85 U	0.76 U	0.8 U	2.5 B	1.1 U
Vanadium	111	141	150	134	180	232
Zinc	27.8 J	27.5	27.7	34.1	73	42.6
Conventionals (mg/kg)						
Cyanide	0.46 U	0.49 U	0.48 U	0.48 U	NA	0.7 U
Sulfide	26.9 U	27.8 UJ	25.6 UJ	26.2 UJ	NA	34.2 R

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Sample ID	2MW02-02	2MW02-05	45MW01-02	45MW01-03	5E-SB02-02	5GW03R-03
Date Sampled	11-06-1996	11-06-1996	11-22-1996	11-22-1996	05-03-2004	09-18-1997
Volatiles (ug/kg)						
1,1,1,2-Tetrachloroethane	13 U	12 U	12 U	11 U	5.8 U	12 U
1,1,1-Trichloroethane (TCA)	6 U	6 U	6 U	6 U	5.8 U	6 U
1,1,2,2-Tetrachloroethane	6 UJ	6 UJ	6 U	6 U	5.8 U	6 U
1,1,2-Trichloroethane	6 U	6 U	6 U	6 U	5.8 U	6 U
1,1-Dichloroethane	6 U	6 U	6 U	6 U	5.8 U	6 U
1,1-Dichloroethene	6 U	6 U	6 U	6 U	5.8 U	6 U
1,2,3-Trichloropropane	13 U	12 U	12 U	11 U	5.8 U	12 U
1,2-Dibromo-3-chloropropane (DBCP)	26 UJ	24 UJ	24 U	23 U	12 U	24 U
1,2-Dibromoethane (EDB)	26 U	24 U	24 U	23 U	5.8 U	24 U
1,2-Dichloroethane	6 U	6 U	6 U	6 U	5.8 U	6 U
1,2-Dichloroethene (total)	6 U	6 U	6 U	6 U	NA	6 U
1,2-Dichloroethene (trans)	NA	NA	NA	NA	5.8 U	NA
1,2-Dichloropropane	6 U	6 U	6 U	6 U	5.8 U	6 U
1,3-Dichloropropene (cis)	6 U	6 U	6 U	6 U	5.8 U	6 U
1,3-Dichloropropene (trans)	6 U	6 U	6 U	6 U	5.8 U	6 U
1,4-Dichloro-2-butene (trans)	26 U	24 U	24 UJ	23 UJ	12 U	24 U
2-Butanone (MEK)	13 U	12 U	12 U	11 U	29 U	12 U
2-Chloro-1,3-butadiene (Chloroprene)	130 R	120 R	120 R	110 R	5.8 U	120 U
2-Hexanone (MBK)	13 U	12 U	12 U	11 U	29 U	12 U
3-Chloropropene (Allyl Chloride)	26 U	24 U	24 UJ	23 UJ	5.8 U	24 U
4-Methyl-2-pentanone (MIBK)	13 UJ	12 UJ	12 U	11 U	29 U	12 U
Acetone	13 U	12 U	12 UJ	11 UJ	58 U	12 U
Acetonitrile	130 U	120 U	120 UJ	110 UJ	230 U	120 U
Acrolein	650 UJ	610 UJ	600 UJ	570 U	120 U	600 U
Acrylonitrile	130 UJ	120 UJ	120 UJ	110 UJ	120 U	120 U
Benzene	6 U	6 U	6 U	6 U	5.8 U	6 U
Bromodichloromethane	6 U	6 U	6 U	6 U	5.8 U	6 U
Bromoform	6 U	6 U	6 UJ	6 UJ	5.8 U	6 U
Bromomethane	13 U	12 U	12 U	11 U	5.8 U	12 U

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Sample ID	2MW02-02	2MW02-05	45MW01-02	45MW01-03	5E-SB02-02	5GW03R-03
Date Sampled	11-06-1996	11-06-1996	11-22-1996	11-22-1996	05-03-2004	09-18-1997
Volatiles (ug/kg) (Continued)						
Carbon Disulfide	6 U	6 U	6 U	6 UJ	5.8 U	6 U
Carbon Tetrachloride	6 U	6 U	6 U	6 U	5.8 U	6 U
Chlorobenzene	6 U	6 U	6 U	6 U	5.8 U	6 U
Chloroethane	13 U	12 U	12 U	11 UJ	5.8 U	12 U
Chloroform	6 U	6 U	6 U	6 U	5.8 U	6 U
Chloromethane	13 UJ	12 UJ	12 U	11 U	5.8 U	12 U
Dibromochloromethane	6 U	6 U	6 UJ	6 U	5.8 U	6 U
Dibromomethane	13 U	12 U	12 UJ	11 U	5.8 U	12 U
Dichlorodifluoromethane (Freon-12)	26 UJ	24 UJ	24 U	23 U	5.8 U	24 U
Ethyl Methacrylate	26 U	24 U	24 UJ	23 UJ	5.8 U	24 U
Ethylbenzene	6 U	6 U	6 U	6 U	5.8 U	6 U
Iodomethane	13 U	12 U	12 U	11 U	5.8 U	12 U
Isobutyl Alcohol	2600 R	2400 R	2400 R	2300 R	230 U	2400 U
Methyl Acrylonitrile	26 U	24 U	24 UJ	23 UJ	120 U	24 U
Methyl Methacrylate	26 U	24 U	24 U	23 UJ	5.8 U	24 U
Methylene Chloride	6 U	6 U	6 U	6 U	5.8 U	6 U
Pentachloroethane	26 U	24 U	24 UJ	23 UJ	29 U	24 U
Propionitrile (Ethyl Cyanide)	65 R	61 R	60 U	57 U	120 U	60 U
Styrene (Ethenylbenzene)	6 U	6 U	6 U	6 U	5.8 U	6 U
Tetrachloroethene (PCE)	6 UJ	6 UJ	6 UJ	6 UJ	5.8 U	6 U
Toluene	6 U	6 U	6 U	6 U	5.8 U	6 U
Trichloroethene (TCE)	6 U	6 U	6 UJ	6 UJ	5.8 U	6 U
Trichlorofluoromethane	13 UJ	12 UJ	12 U	11 U	5.8 U	12 U
Vinyl Acetate	13 U	12 U	12 UJ	11 UJ	12 U	12 U
Vinyl Chloride	13 U	12 U	12 U	11 U	5.8 U	12 U
Xylenes, total	6 U	6 U	6 U	6 U	12 U	6 U
Semivolatiles (ug/kg)						
1,2,4,5-Tetrachlorobenzene	430 U	400 U	400 U	370 U	430 U	390 U
1,2,4-Trichlorobenzene	430 U	400 U	400 U	370 U	430 U	390 U
1,2-Dichlorobenzene (o-)	430 U	400 U	400 U	370 U	430 U	390 UJ
1,2-Diphenylhydrazine	430 U	400 U	400 U	370 U	NA	390 U
1,3,5-Trinitrobenzene	4300 U	4000 U	4000 R	3700 R	430 U	3900 UJ
1,3-Dichlorobenzene (m-)	430 U	400 U	400 U	370 U	430 U	390 U
1,3-Dinitrobenzene	870 U	810 U	790 U	740 U	430 U	780 UJ

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Sample ID	2MW02-02	2MW02-05	45MW01-02	45MW01-03	5E-SB02-02	5GW03R-03
Date Sampled	11-06-1996	11-06-1996	11-22-1996	11-22-1996	05-03-2004	09-18-1997
Semivolatiles (ug/kg) (Continued)						
1,4-Dichlorobenzene (p-)	430 U	400 U	400 U	370 U	430 U	390 U
1,4-Dioxane (p-)	870 U	810 U	790 U	740 U	430 U	780 UJ
1,4-Naphthoquinone	2200 U	2000 U	2000 U	1800 U	430 U	2000 R
1,4-Phenylenediamine	870 U	810 U	790 R	740 R	2200 U	780 R
1-Naphthylamine	870 U	810 U	790 U	740 U	430 U	780 UJ
2,2'-Oxybis[1-chloropropane]	430 U	400 U	400 U	370 U	430 U	390 UJ
2,3,4,6-Tetrachlorophenol	430 U	400 U	400 U	370 U	430 U	390 U
2,4,5-Trichlorophenol	2200 U	2000 U	2000 U	1800 U	430 U	2000 U
2,4,6-Trichlorophenol	430 U	400 U	400 U	370 U	430 U	390 U
2,4-Dichlorophenol	430 U	400 U	400 U	370 U	430 U	390 U
2,4-Dimethylphenol	430 U	400 U	400 U	370 U	430 U	390 U
2,4-Dinitrophenol	2200 U	2000 U	2000 U	1800 U	2200 U	2000 UJ
2,4-Dinitrotoluene	430 U	400 U	400 U	370 U	430 U	390 U
2,6-Dichlorophenol	430 U	400 U	400 U	370 U	430 U	390 U
2,6-Dinitrotoluene	430 U	400 U	400 U	370 U	430 U	390 U
2-Acetylaminofluorene	870 U	810 U	790 U	740 U	430 U	780 UJ
2-Chloronaphthalene	430 U	400 U	400 U	370 U	430 U	390 U
2-Chlorophenol	430 U	400 U	400 U	370 U	430 U	390 U
2-Methyl-5-nitroaniline	870 UJ	810 UJ	790 UJ	740 UJ	430 U	780 UJ
2-Methylnaphthalene	430 U	400 U	400 U	370 U	430 U	390 U
2-Methylphenol (o-Cresol)	430 U	400 U	400 U	370 U	430 U	390 UJ
2-Naphthylamine	1100 U	1000 U	990 U	920 U	430 U	980 U
2-Nitroaniline	2200 U	2000 U	2000 U	1800 U	2200 U	2000 U
2-Nitrophenol	430 U	400 U	400 U	370 U	430 U	390 U
2-Picoline	430 UJ	400 U	400 U	370 U	430 U	390 U
3,3'-Dichlorobenzidine	870 U	810 U	790 U	740 U	870 U	780 U
3,3'-Dimethylbenzidine	2200 U	2000 U	2000 UJ	1800 UJ	2200 U	2000 UJ
3-Methylcholanthrene	430 U	400 U	400 U	370 U	430 U	390 UJ
3-Nitroaniline	2200 U	2000 U	2000 U	1800 U	2200 U	2000 U
4,6-Dinitro-2-methylphenol	2200 U	2000 U	2000 U	1800 U	2200 U	2000 UJ
4-Aminobiphenyl	870 U	810 U	790 U	740 U	430 U	780 UJ
4-Bromophenyl-phenylether	430 U	400 U	400 U	370 U	430 U	390 U

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Sample ID	2MW02-02	2MW02-05	45MW01-02	45MW01-03	5E-SB02-02	5GW03R-03
Date Sampled	11-06-1996	11-06-1996	11-22-1996	11-22-1996	05-03-2004	09-18-1997
Semivolatiles (ug/kg) (Continued)						
4-Chloro-3-methylphenol	870 U	810 U	790 U	740 U	430 U	780 U
4-Chloroaniline	870 UJ	810 UJ	790 U	740 U	870 U	780 U
4-Chlorophenyl-phenylether	430 U	400 U	400 U	370 U	430 U	390 U
4-Dimethylaminoazobenzene	870 U	810 U	790 U	740 U	430 U	780 U
4-Methylphenol (p-Cresol)	NA	NA	NA	NA	430 U	NA
4-Nitroaniline	2200 U	2000 U	2000 U	1800 U	2200 U	2000 U
4-Nitrophenol	2200 U	2000 U	2000 U	1800 U	2200 U	2000 U
4-Nitroquinoline-1-Oxide	2200 R	2000 R	2000 U	1800 U	4300 U	2000 R
7,12-Dimethylbenz(a)anthracene	870 U	810 U	790 U	740 U	430 U	780 U
a,a-Dimethylphenethylamine	2200 UJ	2000 UJ	2000 UJ	1800 UJ	88000 U	2000 U
Acenaphthene	430 U	400 U	400 U	370 U	430 U	390 U
Acenaphthylene	430 U	400 U	400 U	370 U	430 U	390 U
Acetophenone	430 U	400 U	400 U	370 U	430 U	390 U
Aniline	2200 U	2000 U	2000 U	1800 U	430 U	2000 U
Anthracene	430 U	400 U	400 U	370 U	430 U	390 U
Aramite	870 U	810 U	790 UJ	740 UJ	430 U	780 U
Benzidine	4300 U	4000 U	4000 U	3700 U	NA	3900 UJ
Benzo(a)anthracene	430 U	400 U	400 U	370 U	430 U	390 U
Benzo(a)pyrene (BaP)	430 U	400 U	400 U	370 U	430 U	390 U
Benzo(b)fluoranthene	430 U	400 U	400 U	370 U	430 U	390 U
Benzo(g,h,i)perylene	430 U	400 U	400 U	370 U	430 U	390 U
Benzo(k)fluoranthene	430 U	400 U	400 U	370 U	430 U	390 U
Benzoic Acid	2200 U	2000 U	2000 U	1800 U	NA	2000 U
Benzyl Alcohol	430 U	400 U	400 U	370 U	430 U	390 U
Bis(2-chloroethoxy)methane	430 U	400 U	400 U	370 U	430 U	390 U
Bis(2-chloroethyl)ether	430 U	400 U	400 U	370 U	430 U	390 U
Bis(2-ethylhexyl) Phthalate (BEHP)	430 U	400 U	400 U	370 U	430 U	390 U
Butyl Benzyl Phthalate	430 U	400 U	400 U	370 U	430 U	390 U
Carbazole	430 U	400 U	400 U	370 U	NA	390 U
Chrysene	430 U	400 U	400 U	370 U	430 U	390 U
Cresol (Mixed Isomers)	430 U	400 U	400 U	370 U	NA	390 U

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Sample ID	2MW02-02	2MW02-05	45MW01-02	45MW01-03	5E-SB02-02	5GW03R-03
Date Sampled	11-06-1996	11-06-1996	11-22-1996	11-22-1996	05-03-2004	09-18-1997
Semivolatiles (ug/kg) (Continued)						
Diallate	430 U	400 U	400 UJ	370 UJ	430 U	390 UJ
Dibenz(a,h)anthracene	430 U	400 U	400 U	370 U	430 U	390 U
Dibenzofuran	430 U	400 U	400 U	370 U	430 U	390 U
Diethyl Phthalate (DEP)	430 U	400 U	400 U	370 U	430 U	390 U
Dimethyl Phthalate	430 U	400 U	400 U	370 U	430 U	390 U
Di-n-butyl Phthalate (DBP)	430 U	400 U	400 U	370 U	430 U	390 U
Di-n-octyl Phthalate	430 U	400 U	400 U	370 U	430 U	390 U
Dinoseb	870 U	810 U	790 U	740 U	430 U	780 UJ
Diphenylamine	430 U	400 U	400 U	370 U	NA	390 U
Ethyl 4,4'-Dichlorobenzilate (Chlorobenzilate)	430 U	400 U	400 U	370 U	22 U	390 UJ
Ethyl Methanesulfonate	430 U	400 UJ	400 U	370 U	430 U	390 U
Fluoranthene	430 U	400 U	400 U	370 U	430 U	390 U
Fluorene	430 U	400 U	400 U	370 U	430 U	390 U
Hexachlorobenzene	430 U	400 U	400 U	370 U	430 U	390 U
Hexachlorobutadiene	430 U	400 U	400 U	370 U	430 U	390 U
Hexachlorocyclopentadiene	430 U	400 U	400 U	370 U	430 U	390 UJ
Hexachloroethane	430 U	400 U	400 U	370 U	430 U	390 UJ
Hexachlorophene	4300 U	4000 U	4000 U	3700 U	220000 U	3900 UJ
Hexachloropropene	2200 U	2000 U	2000 U	1800 U	430 U	2000 UJ
Indeno(1,2,3-cd)pyrene	430 U	400 U	400 U	370 U	430 U	390 U
Isophorone	430 U	400 U	400 U	370 U	430 U	390 U
Isosafrole	430 U	400 U	400 U	370 U	430 U	390 U
Methapyrilene	1100 UJ	1000 UJ	990 U	920 U	88000 U	980 UJ
Methyl Methane Sulfonate	430 UJ	400 UJ	400 U	370 U	430 U	390 UJ
Naphthalene	430 U	400 U	400 U	370 U	430 U	390 U
Nitrobenzene	430 U	400 U	400 U	370 U	430 U	390 U
n-Nitrosodiethylamine	430 UJ	400 UJ	400 U	370 U	430 U	390 UJ
n-Nitrosodimethylamine	430 U	400 U	400 U	370 U	430 U	390 UJ
n-Nitroso-di-n-butylamine	430 U	400 U	400 U	370 U	430 U	390 U
n-Nitrosodi-n-propylamine	430 U	400 U	400 U	370 U	430 U	390 U
n-Nitrosodiphenylamine	430 U	400 U	400 U	370 U	430 U	390 U
n-Nitrosomethylethylamine	430 UJ	400 UJ	400 UJ	370 UJ	430 U	390 U

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Sample ID	2MW02-02	2MW02-05	45MW01-02	45MW01-03	5E-SB02-02	5GW03R-03
Date Sampled	11-06-1996	11-06-1996	11-22-1996	11-22-1996	05-03-2004	09-18-1997
Semivolatiles (ug/kg) (Continued)						
n-Nitrosomorpholine	870 UJ	810 UJ	790 U	740 U	430 U	780 U
n-Nitrosopiperidine	430 UJ	400 UJ	400 U	370 U	430 U	390 UJ
n-Nitrosopyrrolidine	2200 U	2000 U	2000 U	1800 U	430 U	2000 U
o-Toluidine	430 U	400 U	400 UJ	370 UJ	430 U	390 U
Pentachlorobenzene	430 U	400 U	400 U	370 U	430 U	390 U
Pentachloronitrobenzene	430 U	400 U	400 U	370 U	430 U	390 R
Pentachlorophenol	2200 U	2000 U	2000 U	1800 U	2200 U	2000 U
Phenacetin	430 U	400 U	400 U	370 U	430 U	390 U
Phenanthrene	430 U	400 U	400 U	370 U	430 U	390 U
Phenol	430 U	400 U	400 U	370 U	430 U	390 U
Pronamide	430 U	400 U	400 U	370 U	430 U	390 U
Pyrene	430 U	400 U	400 U	370 U	430 U	390 U
Pyridine	870 U	810 U	790 U	740 U	430 U	780 U
Safrole	430 U	400 U	400 U	370 U	430 U	390 U
Pesticides (ug/kg)						
4,4'-DDD	10 U	9.6 U	NA	NA	4.3 U	9.5 U
4,4'-DDE	10 U	9.6 U	NA	NA	4.3 U	9.5 U
4,4'-DDT	10 U	9.6 U	NA	NA	4.3 U	9.5 U
Aldrin	5.1 U	4.8 U	NA	NA	2.2 U	4.8 UJ
BHC, alpha-	5.1 U	4.8 U	NA	NA	2.2 U	4.8 U
BHC, beta-	5.1 U	4.8 U	NA	NA	2.2 U	4.8 U
BHC, delta-	5.1 U	4.8 U	NA	NA	2.2 U	4.8 U
BHC, gamma- (Lindane)	5.1 U	4.8 U	NA	NA	2.2 U	4.8 U
Chlordane	NA	NA	NA	NA	22 U	NA
Chlordane, alpha-	51 U	48 U	NA	NA	NA	48 U
Chlordane, gamma-	51 U	48 U	NA	NA	NA	48 U
Dieldrin	10 U	9.6 U	NA	NA	4.3 U	9.5 U
Endosulfan I	5.1 U	4.8 U	NA	NA	2.2 U	4.8 U
Endosulfan II	10 U	9.6 U	NA	NA	4.3 U	9.5 U
Endosulfan Sulfate	10 U	9.6 U	NA	NA	4.3 U	9.5 U
Endrin	10 U	9.6 U	NA	NA	4.3 U	9.5 U
Endrin Aldehyde	10 U	9.6 U	NA	NA	4.3 U	9.5 U

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Sample ID	2MW02-02	2MW02-05	45MW01-02	45MW01-03	5E-SB02-02	5GW03R-03
Date Sampled	11-06-1996	11-06-1996	11-22-1996	11-22-1996	05-03-2004	09-18-1997
Pesticides (ug/kg) (Continued)						
Heptachlor	5.1 U	4.8 U	NA	NA	2.2 U	4.8 U
Heptachlor Epoxide	5.1 U	4.8 U	NA	NA	2.2 U	4.8 U
Isodrin	5.1 U	4.8 U	NA	NA	4.3 U	4.8 U
Kepone (Chlordecone)	10 UJ	9.6 UJ	NA	NA	220 U	12 U
Methoxychlor	51 U	48 U	NA	NA	22 U	48 U
Toxaphene	100 U	96 U	NA	NA	220 U	95 U
PCBs (ug/kg)						
Aroclor-1016	51 U	48 U	48 U	45 U	43 U	48 U
Aroclor-1221	51 U	48 U	48 U	45 U	88 U	48 U
Aroclor-1232	51 U	48 U	48 U	45 U	43 U	48 U
Aroclor-1242	51 U	48 U	48 U	45 U	43 U	48 U
Aroclor-1248	51 U	48 U	48 U	45 U	43 U	48 U
Aroclor-1254	100 U	96 U	96 U	90 U	43 U	95 U
Aroclor-1260	100 U	96 U	96 U	90 U	43 U	95 U
Herbicides (ug/kg)						
2,4,5-T	43 U	40 U	NA	NA	11 U	40 U
2,4,5-TP (Silvex)	43 U	40 U	NA	NA	11 U	40 U
2,4-D	430 U	400 U	NA	NA	11 U	400 U
Dimethoate	86 U	78 U	NA	NA	430 U	78 U
Disulfoton	86 U	78 U	NA	NA	430 U	78 U
Famphur	86 U	78 U	NA	NA	430 U	78 U
Methyl Parathion	86 U	78 U	NA	NA	430 U	78 U
o,o,o-Triethyl Phosphorothioate	86 U	78 U	NA	NA	430 U	78 U
Parathion	86 U	78 U	NA	NA	430 U	78 U
Phorate	86 U	78 U	NA	NA	430 U	78 U
Sulfotepp	86 U	78 U	NA	NA	430 U	78 U
Thionazin	86 U	78 U	NA	NA	430 U	78 U

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Sample ID	2MW02-02	2MW02-05	45MW01-02	45MW01-03	5E-SB02-02	5GW03R-03
Date Sampled	11-06-1996	11-06-1996	11-22-1996	11-22-1996	05-03-2004	09-18-1997
TPH (mg/kg)						
Diesel Range Organics (DRO)	NA	NA	NA	NA	NA	NA
Gasoline Range Organics (GRO)	NA	NA	NA	NA	NA	NA
Explosives (ug/kg)						
1,3,5-Trinitrobenzene	130 U	130 U	NA	NA	NA	1000 U
1,3-Dinitrobenzene	120 U	120 U	NA	NA	NA	1000 U
2,4,6-Trinitrotoluene (TNT)	120 U	120 U	NA	NA	NA	1000 UJ
2,4/2,6-Dinitrotoluene Mixture	200 U	200 U	NA	NA	NA	NA
2,4-Dinitrotoluene	NA	NA	NA	NA	NA	1000 U
2,6-Dinitrotoluene	NA	NA	NA	NA	NA	2000 U
2-Amino-4,6-dinitrotoluene	NA	NA	NA	NA	NA	2000 U
2-Nitrotoluene	500 U	500 U	NA	NA	NA	2000 U
3-Nitrotoluene	500 U	500 U	NA	NA	NA	2000 U
4-Amino-2,6-dinitrotoluene	NA	NA	NA	NA	NA	2000 U
4-Amino-2,6-dinitrotoluene	200 U	200 U	NA	NA	NA	NA
4-Nitrotoluene	1500 U	1500 U	NA	NA	NA	2000 U
HMX	1100 U	1100 U	NA	NA	NA	1000 U
Nitrobenzene	210 U	210 U	NA	NA	NA	1000 U
RDX (Cyclonite)	540 U	540 U	NA	NA	NA	1000 U
Tetryl	380 U	380 U	NA	NA	NA	2000 UJ
Dioxins (ug/kg)						
HxCDD, 2,3,7,8-	0.05 U	0.06 U	NA	NA	NA	0.03 U
HxCDF, 2,3,7,8-	0.05 U	0.05 U	NA	NA	NA	0.02 U
PeCDD, total	0.05 U	0.06 U	NA	NA	NA	0.02 U
PeCDF, total	0.07 U	0.07 U	NA	NA	NA	0.04 U
TCDD, 2,3,7,8-	0.04 U	0.04 U	NA	NA	NA	0.02 U
TCDD, total	0.04 U	0.04 U	NA	NA	NA	0.02 U
TCDF, total	0.03 U	0.03 U	NA	NA	NA	0.01 U
Metals (mg/kg)						
Antimony	3.6 J	1.9 UJ	NA	NA	2.4 UN	0.32 J
Arsenic	0.73 J	0.2 UJ	3.4 J	0.49 J	1.2 U	0.68 U
Barium	90.8 J	367 J	19.4	30.6	130 N	123
Beryllium	0.05 U	0.05 U	NA	NA	0.18 B	0.19 J

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Sample ID	2MW02-02	2MW02-05	45MW01-02	45MW01-03	5E-SB02-02	5GW03R-03
Date Sampled	11-06-1996	11-06-1996	11-22-1996	11-22-1996	05-03-2004	09-18-1997
Metals (mg/kg) (Continued)						
Cadmium	0.24 U	0.3	0.35	0.33	0.6 U	0.24 U
Chromium	28.8	6.3	9.2	36.1	52	27.5
Cobalt	35.6	73.4	NA	NA	19	15.3 J
Copper	40.1	50.3	NA	NA	79 N	55
Lead	14.2	3.5	1.1 J	2 J	3.3	1.3
Mercury	0.03 U	0.02 U	0.02 U	0.02 U	0.024 UN	0.02 U
Nickel	11.1	13.5	NA	NA	26	11.2 J
Selenium	0.21 J	0.18 UJ	0.89 UJ	0.15 UJ	1.2 U	0.19 U
Silver	0.2 U	0.21 U	0.21 U	0.12 U	1.2 U	0.1 J
Thallium	0.18 U	0.16 U	NA	NA	1.2 U	1.2 U
Tin	0.99 U	1 U	NA	NA	1 B	1.8 J
Vanadium	210	141	NA	NA	120 N	91.9
Zinc	36.3	36.1	NA	NA	80	30
Conventionals (mg/kg)						
Cyanide	0.37 U	0.42 U	NA	NA	0.63 U	NA
Sulfide	31 R	27.6 R	NA	NA	33 U	NA

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Sample ID	8E-SB01-01	9BGSB01-10-12	9BGSB02-8-10	9BGSB03-8-10	9BGSB04-10-12	9BGSB0
Date Sampled	05-14-2004	06-26-1999	06-26-1999	06-26-1999	06-26-1999	06-27
Volatiles (ug/kg)						
1,1,1,2-Tetrachloroethane	4.7 U	NA	NA	NA	NA	NA
1,1,1-Trichloroethane (TCA)	4.7 U	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	4.7 U	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	4.7 U	NA	NA	NA	NA	NA
1,1-Dichloroethane	4.7 U	NA	NA	NA	NA	NA
1,1-Dichloroethene	4.7 U	NA	NA	NA	NA	NA
1,2,3-Trichloropropane	4.7 U	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane (DBCP)	9.5 U	NA	NA	NA	NA	NA
1,2-Dibromoethane (EDB)	4.7 U	NA	NA	NA	NA	NA
1,2-Dichloroethane	4.7 U	NA	NA	NA	NA	NA
1,2-Dichloroethene (total)	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene (trans)	4.7 U	NA	NA	NA	NA	NA
1,2-Dichloropropane	4.7 U	NA	NA	NA	NA	NA
1,3-Dichloropropene (cis)	4.7 U	NA	NA	NA	NA	NA
1,3-Dichloropropene (trans)	4.7 U	NA	NA	NA	NA	NA
1,4-Dichloro-2-butene (trans)	9.5 U	NA	NA	NA	NA	NA
2-Butanone (MEK)	24 U	NA	NA	NA	NA	NA
2-Chloro-1,3-butadiene (Chloroprene)	4.7 U	NA	NA	NA	NA	NA
2-Hexanone (MBK)	24 U	NA	NA	NA	NA	NA
3-Chloropropene (Allyl Chloride)	4.7 U	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (MIBK)	24 U	NA	NA	NA	NA	NA
Acetone	47 U	NA	NA	NA	NA	NA
Acetonitrile	190 U	NA	NA	NA	NA	NA
Acrolein	95 U	NA	NA	NA	NA	NA
Acrylonitrile	95 U	NA	NA	NA	NA	NA
Benzene	4.7 U	NA	NA	NA	NA	NA
Bromodichloromethane	4.7 U	NA	NA	NA	NA	NA
Bromoform	4.7 U	NA	NA	NA	NA	NA
Bromomethane	4.7 U	NA	NA	NA	NA	NA

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Sample ID	8E-SB01-01	9BGSB01-10-12	9BGSB02-8-10	9BGSB03-8-10	9BGSB04-10-12	9BGSB0
Date Sampled	05-14-2004	06-26-1999	06-26-1999	06-26-1999	06-26-1999	06-27
Volatiles (ug/kg) (Continued)						
Carbon Disulfide	4.7 U	NA	NA	NA	NA	NA
Carbon Tetrachloride	4.7 U	NA	NA	NA	NA	NA
Chlorobenzene	4.7 U	NA	NA	NA	NA	NA
Chloroethane	4.7 U	NA	NA	NA	NA	NA
Chloroform	4.7 U	NA	NA	NA	NA	NA
Chloromethane	4.7 U	NA	NA	NA	NA	NA
Dibromochloromethane	4.7 U	NA	NA	NA	NA	NA
Dibromomethane	4.7 U	NA	NA	NA	NA	NA
Dichlorodifluoromethane (Freon-12)	4.7 U	NA	NA	NA	NA	NA
Ethyl Methacrylate	4.7 U	NA	NA	NA	NA	NA
Ethylbenzene	4.7 U	NA	NA	NA	NA	NA
Iodomethane	4.7 U	NA	NA	NA	NA	NA
Isobutyl Alcohol	190 U	NA	NA	NA	NA	NA
Methyl Acrylonitrile	95 U	NA	NA	NA	NA	NA
Methyl Methacrylate	4.7 U	NA	NA	NA	NA	NA
Methylene Chloride	4.7 U	NA	NA	NA	NA	NA
Pentachloroethane	24 U	NA	NA	NA	NA	NA
Propionitrile (Ethyl Cyanide)	95 U	NA	NA	NA	NA	NA
Styrene (Ethenylbenzene)	4.7 U	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)	4.7 U	NA	NA	NA	NA	NA
Toluene	4.7 U	NA	NA	NA	NA	NA
Trichloroethene (TCE)	4.7 U	NA	NA	NA	NA	NA
Trichlorofluoromethane	4.7 U	NA	NA	NA	NA	NA
Vinyl Acetate	9.5 U	NA	NA	NA	NA	NA
Vinyl Chloride	4.7 U	NA	NA	NA	NA	NA
Xylenes, total	9.5 U	NA	NA	NA	NA	NA
Semivolatiles (ug/kg)						
1,2,4,5-Tetrachlorobenzene	350 U	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	350 U	NA	NA	NA	NA	NA
1,2-Dichlorobenzene (o-)	350 U	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	NA	NA	NA	NA	NA	NA
1,3,5-Trinitrobenzene	350 U	NA	NA	NA	NA	NA
1,3-Dichlorobenzene (m-)	350 U	NA	NA	NA	NA	NA
1,3-Dinitrobenzene	350 U	NA	NA	NA	NA	NA

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Sample ID	8E-SB01-01	9BGSB01-10-12	9BGSB02-8-10	9BGSB03-8-10	9BGSB04-10-12	9BGSB0
Date Sampled	05-14-2004	06-26-1999	06-26-1999	06-26-1999	06-26-1999	06-27
Semivolatiles (ug/kg) (Continued)						
1,4-Dichlorobenzene (p-)	350 U	NA	NA	NA	NA	NA
1,4-Dioxane (p-)	350 U	NA	NA	NA	NA	NA
1,4-Naphthoquinone	350 U	NA	NA	NA	NA	NA
1,4-Phenylenediamine	1800 U	NA	NA	NA	NA	NA
1-Naphthylamine	350 U	NA	NA	NA	NA	NA
2,2'-Oxybis[1-chloropropane]	350 U	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	350 U	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	350 U	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	350 U	NA	NA	NA	NA	NA
2,4-Dichlorophenol	350 U	NA	NA	NA	NA	NA
2,4-Dimethylphenol	350 U	NA	NA	NA	NA	NA
2,4-Dinitrophenol	1800 U	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	350 U	NA	NA	NA	NA	NA
2,6-Dichlorophenol	350 U	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	350 U	NA	NA	NA	NA	NA
2-Acetylaminofluorene	350 U	NA	NA	NA	NA	NA
2-Chloronaphthalene	350 U	NA	NA	NA	NA	NA
2-Chlorophenol	350 U	NA	NA	NA	NA	NA
2-Methyl-5-nitroaniline	350 U	NA	NA	NA	NA	NA
2-Methylnaphthalene	350 U	NA	NA	NA	NA	NA
2-Methylphenol (o-Cresol)	350 U	NA	NA	NA	NA	NA
2-Naphthylamine	350 U	NA	NA	NA	NA	NA
2-Nitroaniline	1800 U	NA	NA	NA	NA	NA
2-Nitrophenol	350 U	NA	NA	NA	NA	NA
2-Picoline	350 U	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	700 U	NA	NA	NA	NA	NA
3,3'-Dimethylbenzidine	1800 U	NA	NA	NA	NA	NA
3-Methylcholanthrene	350 U	NA	NA	NA	NA	NA
3-Nitroaniline	1800 U	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	1800 U	NA	NA	NA	NA	NA
4-Aminobiphenyl	350 U	NA	NA	NA	NA	NA
4-Bromophenyl-phenylether	350 U	NA	NA	NA	NA	NA

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NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	8E-SB01-01	9BGSB01-10-12	9BGSB02-8-10	9BGSB03-8-10	9BGSB04-10-12	9BGSB0
Date Sampled	05-14-2004	06-26-1999	06-26-1999	06-26-1999	06-26-1999	06-27
Semivolatiles (ug/kg) (Continued)						
4-Chloro-3-methylphenol	350 U	NA	NA	NA	NA	NA
4-Chloroaniline	700 U	NA	NA	NA	NA	NA
4-Chlorophenyl-phenylether	350 U	NA	NA	NA	NA	NA
4-Dimethylaminoazobenzene	350 U	NA	NA	NA	NA	NA
4-Methylphenol (p-Cresol)	350 U	NA	NA	NA	NA	NA
4-Nitroaniline	1800 U	NA	NA	NA	NA	NA
4-Nitrophenol	1800 U	NA	NA	NA	NA	NA
4-Nitroquinoline-1-Oxide	3500 U	NA	NA	NA	NA	NA
7,12-Dimethylbenz(a)anthracene	350 U	NA	NA	NA	NA	NA
a,a-Dimethylphenethylamine	71000 U	NA	NA	NA	NA	NA
Acenaphthene	350 U	NA	NA	NA	NA	NA
Acenaphthylene	350 U	NA	NA	NA	NA	NA
Acetophenone	350 U	NA	NA	NA	NA	NA
Aniline	350 U	NA	NA	NA	NA	NA
Anthracene	350 U	NA	NA	NA	NA	NA
Aramite	350 U	NA	NA	NA	NA	NA
Benzidine	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	350 U	NA	NA	NA	NA	NA
Benzo(a)pyrene (BaP)	350 U	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	350 U	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	350 U	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	350 U	NA	NA	NA	NA	NA
Benzoic Acid	NA	NA	NA	NA	NA	NA
Benzyl Alcohol	350 U	NA	NA	NA	NA	NA
Bis(2-chloroethoxy)methane	350 U	NA	NA	NA	NA	NA
Bis(2-chloroethyl)ether	350 U	NA	NA	NA	NA	NA
Bis(2-ethylhexyl) Phthalate (BEHP)	350 U	NA	NA	NA	NA	NA
Butyl Benzyl Phthalate	350 U	NA	NA	NA	NA	NA
Carbazole	NA	NA	NA	NA	NA	NA
Chrysene	350 U	NA	NA	NA	NA	NA
Cresol (Mixed Isomers)	NA	NA	NA	NA	NA	NA

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Sample ID	8E-SB01-01	9BGSB01-10-12	9BGSB02-8-10	9BGSB03-8-10	9BGSB04-10-12	9BGSB0
Date Sampled	05-14-2004	06-26-1999	06-26-1999	06-26-1999	06-26-1999	06-27
Semivolatiles (ug/kg) (Continued)						
Diallate	350 U	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	350 U	NA	NA	NA	NA	NA
Dibenzofuran	350 U	NA	NA	NA	NA	NA
Diethyl Phthalate (DEP)	350 U	NA	NA	NA	NA	NA
Dimethyl Phthalate	350 U	NA	NA	NA	NA	NA
Di-n-butyl Phthalate (DBP)	350 U	NA	NA	NA	NA	NA
Di-n-octyl Phthalate	350 U	NA	NA	NA	NA	NA
Dinoseb	350 U	NA	NA	NA	NA	NA
Diphenylamine	NA	NA	NA	NA	NA	NA
Ethyl 4,4'-Dichlorobenzilate (Chlorobenzilate)	18 U	NA	NA	NA	NA	NA
Ethyl Methanesulfonate	350 U	NA	NA	NA	NA	NA
Fluoranthene	350 U	NA	NA	NA	NA	NA
Fluorene	350 U	NA	NA	NA	NA	NA
Hexachlorobenzene	350 U	NA	NA	NA	NA	NA
Hexachlorobutadiene	350 U	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	350 U	NA	NA	NA	NA	NA
Hexachloroethane	350 U	NA	NA	NA	NA	NA
Hexachlorophene	180000 U	NA	NA	NA	NA	NA
Hexachloropropene	350 U	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	350 U	NA	NA	NA	NA	NA
Isophorone	350 U	NA	NA	NA	NA	NA
Isosafrole	350 U	NA	NA	NA	NA	NA
Methapyrilene	71000 U	NA	NA	NA	NA	NA
Methyl Methane Sulfonate	350 U	NA	NA	NA	NA	NA
Naphthalene	350 U	NA	NA	NA	NA	NA
Nitrobenzene	350 U	NA	NA	NA	NA	NA
n-Nitrosodiethylamine	350 U	NA	NA	NA	NA	NA
n-Nitrosodimethylamine	350 U	NA	NA	NA	NA	NA
n-Nitroso-di-n-butylamine	350 U	NA	NA	NA	NA	NA
n-Nitrosodi-n-propylamine	350 U	NA	NA	NA	NA	NA
n-Nitrosodiphenylamine	350 U	NA	NA	NA	NA	NA
n-Nitrosomethylethylamine	350 U	NA	NA	NA	NA	NA

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Sample ID	8E-SB01-01	9BGSB01-10-12	9BGSB02-8-10	9BGSB03-8-10	9BGSB04-10-12	9BGSB0
Date Sampled	05-14-2004	06-26-1999	06-26-1999	06-26-1999	06-26-1999	06-27
Semivolatiles (ug/kg) (Continued)						
n-Nitrosomorpholine	350 U	NA	NA	NA	NA	NA
n-Nitrosopiperidine	350 U	NA	NA	NA	NA	NA
n-Nitrosopyrrolidine	350 U	NA	NA	NA	NA	NA
o-Toluidine	350 U	NA	NA	NA	NA	NA
Pentachlorobenzene	350 U	NA	NA	NA	NA	NA
Pentachloronitrobenzene	350 U	NA	NA	NA	NA	NA
Pentachlorophenol	1800 U	NA	NA	NA	NA	NA
Phenacetin	350 U	NA	NA	NA	NA	NA
Phenanthrene	350 U	NA	NA	NA	NA	NA
Phenol	350 U	NA	NA	NA	NA	NA
Pronamide	350 U	NA	NA	NA	NA	NA
Pyrene	350 U	NA	NA	NA	NA	NA
Pyridine	350 U	NA	NA	NA	NA	NA
Safrole	350 U	NA	NA	NA	NA	NA
Pesticides (ug/kg)						
4,4'-DDD	3.5 U	NA	NA	NA	NA	NA
4,4'-DDE	3.5 U	NA	NA	NA	NA	NA
4,4'-DDT	3.5 U	NA	NA	NA	NA	NA
Aldrin	1.8 U	NA	NA	NA	NA	NA
BHC, alpha-	1.8 U	NA	NA	NA	NA	NA
BHC, beta-	1.8 U	NA	NA	NA	NA	NA
BHC, delta-	1.8 U	NA	NA	NA	NA	NA
BHC, gamma- (Lindane)	1.8 U	NA	NA	NA	NA	NA
Chlordane	18 U	NA	NA	NA	NA	NA
Chlordane, alpha-	NA	NA	NA	NA	NA	NA
Chlordane, gamma-	NA	NA	NA	NA	NA	NA
Dieldrin	3.5 U	NA	NA	NA	NA	NA
Endosulfan I	1.8 U	NA	NA	NA	NA	NA
Endosulfan II	3.5 U	NA	NA	NA	NA	NA
Endosulfan Sulfate	3.5 U	NA	NA	NA	NA	NA
Endrin	3.5 U	NA	NA	NA	NA	NA
Endrin Aldehyde	3.5 U	NA	NA	NA	NA	NA

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Sample ID	8E-SB01-01	9BGSB01-10-12	9BGSB02-8-10	9BGSB03-8-10	9BGSB04-10-12	9BGSB0
Date Sampled	05-14-2004	06-26-1999	06-26-1999	06-26-1999	06-26-1999	06-27
Pesticides (ug/kg) (Continued)						
Heptachlor	1.8 U	NA	NA	NA	NA	NA
Heptachlor Epoxide	1.8 U	NA	NA	NA	NA	NA
Isodrin	3.5 U	NA	NA	NA	NA	NA
Kepone (Chlordecone)	180 U	NA	NA	NA	NA	NA
Methoxychlor	18 U	NA	NA	NA	NA	NA
Toxaphene	180 U	NA	NA	NA	NA	NA
PCBs (ug/kg)						
Aroclor-1016	35 U	NA	NA	NA	NA	NA
Aroclor-1221	71 U	NA	NA	NA	NA	NA
Aroclor-1232	35 U	NA	NA	NA	NA	NA
Aroclor-1242	35 U	NA	NA	NA	NA	NA
Aroclor-1248	35 U	NA	NA	NA	NA	NA
Aroclor-1254	35 U	NA	NA	NA	NA	NA
Aroclor-1260	35 U	NA	NA	NA	NA	NA
Herbicides (ug/kg)						
2,4,5-T	8.8 U	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)	8.8 U	NA	NA	NA	NA	NA
2,4-D	8.8 U	NA	NA	NA	NA	NA
Dimethoate	350 U	NA	NA	NA	NA	NA
Disulfoton	350 U	NA	NA	NA	NA	NA
Famphur	350 U	NA	NA	NA	NA	NA
Methyl Parathion	350 U	NA	NA	NA	NA	NA
o,o,o-Triethyl Phosphorothioate	350 U	NA	NA	NA	NA	NA
Parathion	350 U	NA	NA	NA	NA	NA
Phorate	350 U	NA	NA	NA	NA	NA
Sulfotepp	350 U	NA	NA	NA	NA	NA
Thionazin	350 U	NA	NA	NA	NA	NA

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Sample ID	8E-SB01-01	9BGSB01-10-12	9BGSB02-8-10	9BGSB03-8-10	9BGSB04-10-12	9BGSB0
Date Sampled	05-14-2004	06-26-1999	06-26-1999	06-26-1999	06-26-1999	06-27
TPH (mg/kg)						
Diesel Range Organics (DRO)	NA	NA	NA	NA	NA	NA
Gasoline Range Organics (GRO)	NA	NA	NA	NA	NA	NA
Explosives (ug/kg)						
1,3,5-Trinitrobenzene	NA	NA	NA	NA	NA	NA
1,3-Dinitrobenzene	NA	NA	NA	NA	NA	NA
2,4,6-Trinitrotoluene (TNT)	NA	NA	NA	NA	NA	NA
2,4/2,6-Dinitrotoluene Mixture	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	NA	NA	NA	NA	NA	NA
2-Amino-4,6-dinitrotoluene	NA	NA	NA	NA	NA	NA
2-Nitrotoluene	NA	NA	NA	NA	NA	NA
3-Nitrotoluene	NA	NA	NA	NA	NA	NA
4-Amino-2,6-dinitrotoluene	NA	NA	NA	NA	NA	NA
4-Amino-2,6-dinitrotoluene	NA	NA	NA	NA	NA	NA
4-Nitrotoluene	NA	NA	NA	NA	NA	NA
HMX	NA	NA	NA	NA	NA	NA
Nitrobenzene	NA	NA	NA	NA	NA	NA
RDX (Cyclonite)	NA	NA	NA	NA	NA	NA
Tetryl	NA	NA	NA	NA	NA	NA
Dioxins (ug/kg)						
HxCDD, 2,3,7,8-	NA	NA	NA	NA	NA	NA
HxCDF, 2,3,7,8-	NA	NA	NA	NA	NA	NA
PeCDD, total	NA	NA	NA	NA	NA	NA
PeCDF, total	NA	NA	NA	NA	NA	NA
TCDD, 2,3,7,8-	NA	NA	NA	NA	NA	NA
TCDD, total	NA	NA	NA	NA	NA	NA
TCDF, total	NA	NA	NA	NA	NA	NA
Metals (mg/kg)						
Antimony	1.9 UN	0.33 R	0.36 R	0.67 R	0.43 R	0.28
Arsenic	0.97 U	0.54 J	0.53 J	0.85 J	1.5 J	0.28
Barium	180 N	54	9.3	150	53	82
Beryllium	0.77	0.077 J	0.21 J	0.93	0.1 J	0.38

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Sample ID	8E-SB01-01	9BGSB01-10-12	9BGSB02-8-10	9BGSB03-8-10	9BGSB04-10-12	9BGSB0
Date Sampled	05-14-2004	06-26-1999	06-26-1999	06-26-1999	06-26-1999	06-27
Metals (mg/kg) (Continued)						
Cadmium	0.97 U	0.061 U	0.066 U	0.12 U	0.079 U	0.099
Chromium	2.7	3.9	10	6	8.7	24
Cobalt	11	78	2.5	8.9	6.5	23
Copper	22 N	160 J	130 J	260 J	89 J	200
Lead	0.93	0.27 J	3 J	4.5 J	2.7 J	2
Mercury	0.18 U	0.0055 UJ	0.006 UJ	0.0051 UJ	0.024 J	0.0052
Nickel	1.6 B	5.9	1.1 J	2.1 J	2.4 J	17
Selenium	0.97 U	0.94 UJ	0.22 UJ	3.8 J	1.8 J	0.98
Silver	0.97 U	0.073 U	0.079 U	0.074 U	0.095 U	0.063
Thallium	0.97 U	0.2 UJ	0.24 UJ	0.2 UJ	0.29 J	0.21
Tin	2.4 B	2.2 J	2.6 J	2.4 J	2.2 J	2.5
Vanadium	24	200	360	410	110	160
Zinc	14 E	52 J	27 U	98 J	40 J	76
Conventionals (mg/kg)						
Cyanide	0.52 U	1.2 U	1.3 U	1.2 U	1.6 U	1.1
Sulfide	27 U	30 U	33 U	31 U	40 U	37

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Sample ID	)5-15-17	9BGSB05-21-23	BGMW01-04	BGMW01-06	BGMW02-05	BGMW02-08	BGMW03-03
Date Sampled	-1999	06-27-1999	04-23-1996	04-23-1996	04-22-1996	04-22-1996	04-12-1996
Volatiles (ug/kg)							
1,1,1,2-Tetrachloroethane		NA	13 U	15 U	16 U	14 U	14 U
1,1,1-Trichloroethane (TCA)		NA	7 U	7 U	8 U	7 U	7 U
1,1,2,2-Tetrachloroethane		NA	7 U	7 U	8 U	7 U	7 U
1,1,2-Trichloroethane		NA	7 U	7 U	8 U	7 U	7 U
1,1-Dichloroethane		NA	7 U	7 U	8 U	7 U	7 U
1,1-Dichloroethene		NA	7 U	7 U	8 U	7 U	7 U
1,2,3-Trichloropropane		NA	13 U	15 U	16 U	14 U	14 U
1,2-Dibromo-3-chloropropane (DBCP)		NA	27 UJ	30 UJ	33 UJ	28 UJ	28 U
1,2-Dibromoethane (EDB)		NA	27 U	30 U	33 U	28 U	28 U
1,2-Dichloroethane		NA	7 U	7 U	8 U	7 U	7 U
1,2-Dichloroethene (total)		NA	7 U	7 U	8 U	7 U	7 U
1,2-Dichloroethene (trans)		NA	NA	NA	NA	NA	NA
1,2-Dichloropropane		NA	7 U	7 U	8 U	7 U	7 U
1,3-Dichloropropene (cis)		NA	7 UJ	7 UJ	8 UJ	7 UJ	7 U
1,3-Dichloropropene (trans)		NA	7 U	7 U	8 U	7 U	7 U
1,4-Dichloro-2-butene (trans)		NA	27 U	30 U	33 U	28 U	28 U
2-Butanone (MEK)		NA	13 UJ	15 UJ	16 UJ	14 UJ	14 UJ
2-Chloro-1,3-butadiene (Chloroprene)		NA	130 U	150 U	160 U	140 U	140 U
2-Hexanone (MBK)		NA	13 U	15 U	16 U	14 U	14 UJ
3-Chloropropene (Allyl Chloride)		NA	27 U	30 U	33 U	28 U	28 U
4-Methyl-2-pentanone (MIBK)		NA	13 U	15 U	16 U	14 U	14 U
Acetone		NA	13 UJ	15 UJ	16 UJ	14 UJ	14 UJ
Acetonitrile		NA	130 U	150 U	160 U	140 U	140 U
Acrolein		NA	670 UJ	740 UJ	820 UJ	710 UJ	690 U
Acrylonitrile		NA	130 U	150 U	160 U	140 U	140 UJ
Benzene		NA	7 U	7 U	8 U	7 U	7 U
Bromodichloromethane		NA	7 U	7 U	8 U	7 U	7 U
Bromoform		NA	7 U	7 U	8 U	7 U	7 U
Bromomethane		NA	13 U	15 U	16 U	14 U	14 U

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NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	)5-15-17	9BGSB05-21-23	BGMW01-04	BGMW01-06	BGMW02-05	BGMW02-08	BGMW03-03
Date Sampled	-1999	06-27-1999	04-23-1996	04-23-1996	04-22-1996	04-22-1996	04-12-1996
Volatiles (ug/kg) (Continued)							
Carbon Disulfide		NA	7 U	7 U	8 U	7 U	7 UJ
Carbon Tetrachloride		NA	7 U	7 U	8 U	7 U	7 U
Chlorobenzene		NA	7 U	7 U	8 U	7 U	7 U
Chloroethane		NA	13 U	15 U	16 U	14 U	14 U
Chloroform		NA	7 U	7 U	8 U	7 U	7 U
Chloromethane		NA	13 U	15 U	16 U	14 U	14 UJ
Dibromochloromethane		NA	7 U	7 U	8 U	7 U	7 U
Dibromomethane		NA	13 UJ	15 UJ	16 UJ	14 UJ	14 U
Dichlorodifluoromethane (Freon-12)		NA	27 UJ	30 UJ	33 UJ	28 UJ	28 UJ
Ethyl Methacrylate		NA	27 U	30 U	33 U	28 U	28 U
Ethylbenzene		NA	7 U	7 U	8 U	7 U	7 U
Iodomethane		NA	13 UJ	15 UJ	16 UJ	14 UJ	14 U
Isobutyl Alcohol		NA	2700 R	3000 R	3300 R	2800 R	2800 R
Methyl Acrylonitrile		NA	27 U	30 U	33 U	28 U	28 U
Methyl Methacrylate		NA	27 U	30 U	33 U	28 U	28 U
Methylene Chloride		NA	7 UJ	7 UJ	8 UJ	7 UJ	7 UJ
Pentachloroethane		NA	27 U	30 U	33 U	28 U	28 UJ
Propionitrile (Ethyl Cyanide)		NA	67 U	74 U	82 U	71 U	69 R
Styrene (Ethenylbenzene)		NA	7 U	7 U	8 U	7 U	7 U
Tetrachloroethene (PCE)		NA	7 U	7 U	8 U	7 U	7 U
Toluene		NA	7 U	7 U	8 U	7 U	7 U
Trichloroethene (TCE)		NA	7 U	7 U	8 U	7 U	7 U
Trichlorofluoromethane		NA	13 U	15 U	16 U	14 U	14 U
Vinyl Acetate		NA	13 UJ	15 UJ	16 UJ	14 UJ	14 UJ
Vinyl Chloride		NA	13 U	15 U	16 U	14 U	14 U
Xylenes, total		NA	2 J	3 J	8 U	7 U	7 U
Semivolatiles (ug/kg)							
1,2,4,5-Tetrachlorobenzene		NA	440 U	490 U	540 U	470 U	460 U
1,2,4-Trichlorobenzene		NA	440 U	490 U	540 U	470 U	460 U
1,2-Dichlorobenzene (o-)		NA	440 U	490 U	540 U	470 U	460 U
1,2-Diphenylhydrazine		NA	440 U	490 U	540 U	470 U	460 U
1,3,5-Trinitrobenzene		NA	4400 U	4900 U	5400 U	4700 U	4600 U
1,3-Dichlorobenzene (m-)		NA	440 U	490 U	540 U	470 U	460 U
1,3-Dinitrobenzene		NA	880 U	980 U	1100 U	940 U	910 U

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Sample ID	)5-15-17	9BGSB05-21-23	BGMW01-04	BGMW01-06	BGMW02-05	BGMW02-08	BGMW03-03
Date Sampled	-1999	06-27-1999	04-23-1996	04-23-1996	04-22-1996	04-22-1996	04-12-1996
Semivolatiles (ug/kg) (Continued)							
1,4-Dichlorobenzene (p-)		NA	440 U	490 U	540 U	470 U	460 U
1,4-Dioxane (p-)		NA	880 R	980 R	1100 R	940 R	910 U
1,4-Naphthoquinone		NA	2200 UJ	2400 UJ	2700 UJ	2300 UJ	2300 UJ
1,4-Phenylenediamine		NA	880 R	980 R	1100 R	940 R	910 UJ
1-Naphthylamine		NA	880 U	980 U	1100 U	940 U	910 U
2,2'-Oxybis[1-chloropropane]		NA	440 U	490 U	540 U	470 U	460 U
2,3,4,6-Tetrachlorophenol		NA	440 UJ	490 UJ	540 UJ	470 UJ	460 U
2,4,5-Trichlorophenol		NA	2200 U	2400 U	2700 U	2300 U	2300 U
2,4,6-Trichlorophenol		NA	440 U	490 U	540 U	470 U	460 U
2,4-Dichlorophenol		NA	440 U	490 U	540 U	470 U	460 U
2,4-Dimethylphenol		NA	440 U	490 U	540 U	470 U	460 U
2,4-Dinitrophenol		NA	2200 U	2400 U	2700 U	2300 U	2300 U
2,4-Dinitrotoluene		NA	440 U	490 U	540 U	470 U	460 U
2,6-Dichlorophenol		NA	440 U	490 U	540 U	470 U	460 U
2,6-Dinitrotoluene		NA	440 U	490 U	540 U	470 U	460 U
2-Acetylaminofluorene		NA	880 U	980 U	1100 U	940 U	910 U
2-Chloronaphthalene		NA	440 U	490 U	540 U	470 U	460 U
2-Chlorophenol		NA	440 U	490 U	540 U	470 U	460 U
2-Methyl-5-nitroaniline		NA	880 U	980 U	1100 U	940 U	910 U
2-Methylnaphthalene		NA	440 U	490 U	540 U	470 U	460 U
2-Methylphenol (o-Cresol)		NA	440 U	490 U	540 U	470 U	460 U
2-Naphthylamine		NA	1100 U	1200 U	1300 U	1200 U	1100 U
2-Nitroaniline		NA	2200 U	2400 U	2700 U	2300 U	2300 U
2-Nitrophenol		NA	440 U	490 U	540 U	470 U	460 U
2-Picoline		NA	440 UJ	490 UJ	540 UJ	470 UJ	460 U
3,3'-Dichlorobenzidine		NA	880 U	980 U	1100 U	940 U	910 U
3,3'-Dimethylbenzidine		NA	2200 U	2400 U	2700 U	2300 U	2300 R
3-Methylcholanthrene		NA	440 U	490 U	540 U	470 U	460 U
3-Nitroaniline		NA	2200 U	2400 U	2700 U	2300 U	2300 U
4,6-Dinitro-2-methylphenol		NA	2200 U	2400 U	2700 U	2300 U	2300 U
4-Aminobiphenyl		NA	880 U	980 U	1100 U	940 U	910 U
4-Bromophenyl-phenylether		NA	440 U	490 U	540 U	470 U	460 U

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NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	)5-15-17	9BGSB05-21-23	BGMW01-04	BGMW01-06	BGMW02-05	BGMW02-08	BGMW03-03
Date Sampled	-1999	06-27-1999	04-23-1996	04-23-1996	04-22-1996	04-22-1996	04-12-1996
Semivolatiles (ug/kg) (Continued)							
4-Chloro-3-methylphenol		NA	880 U	980 U	1100 U	940 U	910 U
4-Chloroaniline		NA	880 U	980 U	1100 U	940 U	910 U
4-Chlorophenyl-phenylether		NA	440 U	490 U	540 U	470 U	460 U
4-Dimethylaminoazobenzene		NA	880 UJ	980 UJ	1100 UJ	940 UJ	910 U
4-Methylphenol (p-Cresol)		NA	NA	NA	NA	NA	NA
4-Nitroaniline		NA	2200 U	2400 U	2700 U	2300 U	2300 U
4-Nitrophenol		NA	2200 UJ	2400 UJ	2700 UJ	2300 UJ	2300 U
4-Nitroquinoline-1-Oxide		NA	2200 R	2400 R	2700 R	2300 R	2300 R
7,12-Dimethylbenz(a)anthracene		NA	880 U	980 U	1100 U	940 U	910 U
a,a-Dimethylphenethylamine		NA	2200 UJ	2400 UJ	2700 UJ	2300 UJ	2300 UJ
Acenaphthene		NA	440 U	490 U	540 U	470 U	460 U
Acenaphthylene		NA	440 U	490 U	540 U	470 U	460 U
Acetophenone		NA	440 U	490 U	540 U	470 U	460 U
Aniline		NA	2200 U	2400 U	2700 U	2300 U	2300 U
Anthracene		NA	440 U	490 U	540 U	470 U	460 U
Aramite		NA	880 UJ	980 UJ	1100 UJ	940 UJ	910 U
Benzidine		NA	4400 U	4900 U	5400 U	4700 U	4600 UJ
Benzo(a)anthracene		NA	440 U	490 U	540 U	470 U	460 U
Benzo(a)pyrene (BaP)		NA	440 U	490 U	540 U	470 U	460 U
Benzo(b)fluoranthene		NA	440 U	490 U	540 U	470 U	460 U
Benzo(g,h,i)perylene		NA	440 U	490 U	540 U	470 U	460 U
Benzo(k)fluoranthene		NA	440 U	490 U	540 U	470 U	460 U
Benzoic Acid		NA	2200 U	2400 U	2700 U	2300 U	2300 U
Benzyl Alcohol		NA	440 U	490 U	540 U	470 U	460 U
Bis(2-chloroethoxy)methane		NA	440 U	490 U	540 U	470 U	460 U
Bis(2-chloroethyl)ether		NA	440 U	490 U	540 U	470 U	460 U
Bis(2-ethylhexyl) Phthalate (BEHP)		NA	440 U	490 U	540 U	470 U	460 U
Butyl Benzyl Phthalate		NA	440 U	490 U	540 U	470 U	460 U
Carbazole		NA	440 U	490 U	540 U	470 U	460 U
Chrysene		NA	440 U	490 U	540 U	470 U	460 U
Cresol (Mixed Isomers)		NA	440 U	490 U	540 U	470 U	460 U

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Sample ID	)5-15-17	9BGSB05-21-23	BGMW01-04	BGMW01-06	BGMW02-05	BGMW02-08	BGMW03-03
Date Sampled	-1999	06-27-1999	04-23-1996	04-23-1996	04-22-1996	04-22-1996	04-12-1996
Semivolatiles (ug/kg) (Continued)							
Diallate		NA	440 U	490 U	540 U	470 U	460 U
Dibenz(a,h)anthracene		NA	440 U	490 U	540 U	470 U	460 U
Dibenzofuran		NA	440 U	490 U	540 U	470 U	460 U
Diethyl Phthalate (DEP)		NA	440 U	490 U	540 U	470 U	460 U
Dimethyl Phthalate		NA	440 U	490 U	540 U	470 U	460 U
Di-n-butyl Phthalate (DBP)		NA	440 U	490 U	320 J	470 U	460 U
Di-n-octyl Phthalate		NA	440 U	490 U	540 U	470 U	460 U
Dinoseb		NA	880 UJ	980 UJ	1100 UJ	940 UJ	910 U
Diphenylamine		NA	440 U	490 U	540 U	470 U	460 U
Ethyl 4,4'-Dichlorobenzilate (Chlorobenzilate)		NA	440 UJ	490 UJ	540 UJ	470 UJ	460 U
Ethyl Methanesulfonate		NA	440 U	490 U	540 U	470 U	460 U
Fluoranthene		NA	440 U	490 U	540 U	470 U	460 U
Fluorene		NA	440 U	490 U	540 U	470 U	460 U
Hexachlorobenzene		NA	440 U	490 U	540 U	470 U	460 U
Hexachlorobutadiene		NA	440 U	490 U	540 U	470 U	460 U
Hexachlorocyclopentadiene		NA	440 U	490 U	540 U	470 U	460 UJ
Hexachloroethane		NA	440 U	490 U	540 U	470 U	460 U
Hexachlorophene		NA	4400 R	4900 R	5400 R	4700 R	4600 U
Hexachloropropene		NA	2200 U	2400 U	2700 U	2300 U	2300 U
Indeno(1,2,3-cd)pyrene		NA	440 U	490 U	540 U	470 U	460 U
Isophorone		NA	440 U	490 U	540 U	470 U	460 U
Isosafrole		NA	440 U	490 U	540 U	470 U	460 U
Methapyrilene		NA	1100 UJ	1200 UJ	1300 UJ	1200 UJ	1100 U
Methyl Methane Sulfonate		NA	440 U	490 U	540 U	470 U	460 U
Naphthalene		NA	440 U	490 U	540 U	470 U	460 U
Nitrobenzene		NA	440 U	490 U	540 U	470 U	460 U
n-Nitrosodiethylamine		NA	440 U	490 U	540 U	470 U	460 U
n-Nitrosodimethylamine		NA	440 UJ	490 UJ	540 UJ	470 UJ	460 U
n-Nitroso-di-n-butylamine		NA	440 U	490 U	540 U	470 U	460 U
n-Nitrosodi-n-propylamine		NA	440 U	490 U	540 U	470 U	460 U
n-Nitrosodiphenylamine		NA	440 U	490 U	540 U	470 U	460 U
n-Nitrosomethylethylamine		NA	440 U	490 U	540 U	470 U	460 U

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Sample ID	)5-15-17	9BGSB05-21-23	BGMW01-04	BGMW01-06	BGMW02-05	BGMW02-08	BGMW03-03
Date Sampled	-1999	06-27-1999	04-23-1996	04-23-1996	04-22-1996	04-22-1996	04-12-1996
Semivolatiles (ug/kg) (Continued)							
n-Nitrosomorpholine		NA	880 U	980 U	1100 U	940 U	910 U
n-Nitrosopiperidine		NA	440 U	490 U	540 U	470 U	460 U
n-Nitrosopyrrolidine		NA	2200 U	2400 U	2700 U	2300 U	2300 U
o-Toluidine		NA	440 R	490 R	540 R	470 R	460 U
Pentachlorobenzene		NA	440 U	490 U	540 U	470 U	460 U
Pentachloronitrobenzene		NA	440 U	490 U	540 U	470 U	460 R
Pentachlorophenol		NA	2200 U	2400 U	2700 U	2300 U	2300 U
Phenacetin		NA	440 U	490 U	540 U	470 U	460 U
Phenanthrene		NA	440 U	490 U	540 U	470 U	460 U
Phenol		NA	440 U	490 U	540 U	470 U	460 U
Pronamide		NA	440 U	490 U	540 U	470 U	460 U
Pyrene		NA	440 U	490 U	540 U	470 U	460 U
Pyridine		NA	880 U	980 U	1100 U	940 U	910 U
Safrole		NA	440 U	490 U	540 U	470 U	460 U
Pesticides (ug/kg)							
4,4'-DDD		NA	10 U	12 U	13 U	11 U	11 U
4,4'-DDE		NA	10 U	12 U	13 U	11 U	11 U
4,4'-DDT		NA	10 U	12 U	13 U	11 U	11 U
Aldrin		NA	5.3 U	5.8 U	6.4 U	5.6 U	5.4 U
BHC, alpha-		NA	5.3 U	5.8 U	6.4 U	5.6 U	5.4 U
BHC, beta-		NA	5.3 U	5.8 U	6.4 U	5.6 U	5.4 U
BHC, delta-		NA	5.3 U	5.8 U	6.4 U	5.6 U	5.4 U
BHC, gamma- (Lindane)		NA	5.3 U	5.8 U	6.4 U	5.6 U	5.4 U
Chlordane		NA	NA	NA	NA	NA	NA
Chlordane, alpha-		NA	53 U	58 U	64 U	56 U	54 U
Chlordane, gamma-		NA	53 U	58 U	64 U	56 U	54 U
Dieldrin		NA	10 U	12 U	13 U	11 U	11 U
Endosulfan I		NA	5.3 U	5.8 U	6.4 U	5.6 U	5.4 U
Endosulfan II		NA	10 U	12 U	13 U	11 U	11 U
Endosulfan Sulfate		NA	10 U	12 U	13 U	11 U	11 U
Endrin		NA	10 U	12 U	13 U	11 U	11 U
Endrin Aldehyde		NA	10 U	12 U	13 U	11 U	11 U

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Sample ID	)5-15-17	9BGSB05-21-23	BGMW01-04	BGMW01-06	BGMW02-05	BGMW02-08	BGMW03-03
Date Sampled	-1999	06-27-1999	04-23-1996	04-23-1996	04-22-1996	04-22-1996	04-12-1996
Pesticides (ug/kg) (Continued)							
Heptachlor		NA	5.3 U	5.8 U	6.4 U	5.6 U	5.4 U
Heptachlor Epoxide		NA	5.3 U	5.8 U	6.4 U	5.6 U	5.4 U
Isodrin		NA	5.3 U	5.8 U	6.4 U	5.6 U	5.4 U
Kepone (Chlordecone)		NA	10 U	12 U	13 U	11 U	11 UJ
Methoxychlor		NA	53 U	58 U	64 U	56 U	54 U
Toxaphene		NA	100 U	120 U	130 U	110 U	110 U
PCBs (ug/kg)							
Aroclor-1016		NA	53 U	58 U	64 U	56 U	54 U
Aroclor-1221		NA	53 U	58 U	64 U	56 U	54 U
Aroclor-1232		NA	53 U	58 U	64 U	56 U	54 U
Aroclor-1242		NA	53 U	58 U	64 U	56 U	54 U
Aroclor-1248		NA	53 U	58 U	64 U	56 U	54 U
Aroclor-1254		NA	100 U	120 U	130 U	110 U	110 U
Aroclor-1260		NA	100 U	120 U	130 U	110 U	110 U
Herbicides (ug/kg)							
2,4,5-T		NA	44 U	27 J	53 U	47 U	46 U
2,4,5-TP (Silvex)		NA	44 U	48 U	53 U	47 U	46 U
2,4-D		NA	440 U	480 U	530 U	470 U	460 U
Dimethoate		NA	89 U	98 U	110 U	93 U	92 U
Disulfoton		NA	89 U	98 U	110 U	93 U	92 U
Famphur		NA	89 U	98 U	110 U	93 U	92 U
Methyl Parathion		NA	89 U	98 U	110 U	93 U	92 U
o,o,o-Triethyl Phosphorothioate		NA	89 U	98 U	110 U	93 U	92 U
Parathion		NA	89 U	98 U	110 U	93 U	92 U
Phorate		NA	89 U	98 U	110 U	93 U	92 U
Sulfotepp		NA	89 U	98 U	110 U	93 U	92 U
Thionazin		NA	89 U	98 U	110 U	93 U	92 U

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Sample ID	)5-15-17	9BGSB05-21-23	BGMW01-04	BGMW01-06	BGMW02-05	BGMW02-08	BGMW03-03
Date Sampled	-1999	06-27-1999	04-23-1996	04-23-1996	04-22-1996	04-22-1996	04-12-1996
TPH (mg/kg)							
Diesel Range Organics (DRO)		NA	NA	NA	NA	NA	NA
Gasoline Range Organics (GRO)		NA	NA	NA	NA	NA	NA
Explosives (ug/kg)							
1,3,5-Trinitrobenzene		NA	NA	NA	NA	NA	NA
1,3-Dinitrobenzene		NA	NA	NA	NA	NA	NA
2,4,6-Trinitrotoluene (TNT)		NA	NA	NA	NA	NA	NA
2,4/2,6-Dinitrotoluene Mixture		NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene		NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene		NA	NA	NA	NA	NA	NA
2-Amino-4,6-dinitrotoluene		NA	NA	NA	NA	NA	NA
2-Nitrotoluene		NA	NA	NA	NA	NA	NA
3-Nitrotoluene		NA	NA	NA	NA	NA	NA
4-Amino-2,6-dinitrotoluene		NA	NA	NA	NA	NA	NA
4-Amino-2,6-dinitrotoluene		NA	NA	NA	NA	NA	NA
4-Nitrotoluene		NA	NA	NA	NA	NA	NA
HMX		NA	NA	NA	NA	NA	NA
Nitrobenzene		NA	NA	NA	NA	NA	NA
RDX (Cyclonite)		NA	NA	NA	NA	NA	NA
Tetryl		NA	NA	NA	NA	NA	NA
Dioxins (ug/kg)							
HxCDD, 2,3,7,8-		NA	0.14 U	0.23 U	0.3 U	0.13 U	0.31 J
HxCDF, 2,3,7,8-		NA	0.12 U	0.19 U	0.16 U	0.09 U	0.25 U
PeCDD, total		NA	0.16 U	0.28 U	0.29 U	0.22 U	0.32 U
PeCDF, total		NA	0.16 U	0.2 U	0.21 U	0.15 U	0.26 U
TCDD, 2,3,7,8-		NA	0.11 U	0.11 U	0.13 U	0.1 U	0.22 U
TCDD, total		NA	0.11 U	0.11 U	0.13 U	0.1 U	0.22 U
TCDF, total		NA	0.1 U	0.14 U	0.17 U	0.1 U	0.22 U
Metals (mg/kg)							
Antimony	R	0.28 R	2.6 R	3 R	3.4 R	2.8 R	2.8 UJ
Arsenic	J	0.15 UJ	1.7	0.22 UJ	0.71 J	1	2.4 J
Barium		45	13 J	243 J	178 J	178 J	9.7
Beryllium	J	0.35 J	0.29	0.7	0.37	0.74	0.15

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Sample ID	)5-15-17	9BGSB05-21-23	BGMW01-04	BGMW01-06	BGMW02-05	BGMW02-08	BGMW03-03
Date Sampled	-1999	06-27-1999	04-23-1996	04-23-1996	04-22-1996	04-22-1996	04-12-1996
Metals (mg/kg) (Continued)							
Cadmium	J	0.33 J	0.46	0.44	0.4 U	0.62	0.33 UJ
Chromium		28	101 J	84.1 J	148 J	29.1 J	58.9 R
Cobalt		25	3.7	14	15.7	42.4	2
Copper	J	210 J	65.3	120	144	131	72.9 R
Lead	J	1.9 J	4.8	4.9	3.3	2.6	4.1 J
Mercury	UJ	0.0057 UJ	0.05 U	0.06 U	0.06 U	0.05 U	0.06 UJ
Nickel		18	7.2	39.9	35.6	23	3.7
Selenium	UJ	0.98 J	0.22 J	0.17 UJ	0.19 UJ	0.16 UJ	1.2 J
Silver	U	0.063 U	0.42 U	0.48 U	0.55 U	0.46 U	0.46 U
Thallium	J	0.21 UJ	0.59 UJ	0.13 UJ	0.15 UJ	0.13 UJ	0.11 UJ
Tin	J	3.6 J	1.4 UJ	3.1 J	1.9 UJ	3.4 J	1.5 UJ
Vanadium		190	206	256	373	232	204
Zinc	J	83 J	24.1 J	64.6 J	55.7 J	98.5 J	14 J
Conventionals (mg/kg)							
Cyanide	U	1.1 U	0.57 U	0.7 U	0.76 U	0.69 U	0.46 U
Sulfide		29 U	30.4 U	32.7 U	36.1 U	33.6 U	33.1 U

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Sample ID	BGMW03-04	BGMW04-02	BGMW04-04
Date Sampled	04-12-1996	04-24-1996	04-24-1996
Volatiles (ug/kg)			
1,1,1,2-Tetrachloroethane	14 U	13 U	14 U
1,1,1-Trichloroethane (TCA)	7 U	6 U	7 U
1,1,2,2-Tetrachloroethane	7 U	6 U	7 U
1,1,2-Trichloroethane	7 U	6 U	7 U
1,1-Dichloroethane	7 U	6 U	7 U
1,1-Dichloroethene	7 U	6 U	7 U
1,2,3-Trichloropropane	14 U	13 U	14 U
1,2-Dibromo-3-chloropropane (DBCP)	27 U	26 UJ	27 UJ
1,2-Dibromoethane (EDB)	27 U	26 U	27 U
1,2-Dichloroethane	7 U	6 U	7 U
1,2-Dichloroethene (total)	7 U	6 U	7 U
1,2-Dichloroethene (trans)	NA	NA	NA
1,2-Dichloropropane	7 U	6 U	7 U
1,3-Dichloropropene (cis)	7 U	6 UJ	7 U
1,3-Dichloropropene (trans)	7 U	6 U	7 U
1,4-Dichloro-2-butene (trans)	27 U	26 U	27 U
2-Butanone (MEK)	14 UJ	13 UJ	14 U
2-Chloro-1,3-butadiene (Chloroprene)	140 U	130 U	140 U
2-Hexanone (MBK)	14 UJ	13 U	14 U
3-Chloropropene (Allyl Chloride)	27 U	26 U	27 U
4-Methyl-2-pentanone (MIBK)	14 U	13 U	14 U
Acetone	14 UJ	13 UJ	14 U
Acetonitrile	140 U	130 U	140 U
Acrolein	680 U	640 UJ	680 UJ
Acrylonitrile	140 UJ	130 U	140 U
Benzene	7 U	6 U	7 U
Bromodichloromethane	7 U	6 U	7 U
Bromoform	7 U	6 U	7 U
Bromomethane	14 U	13 U	14 UJ

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NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	BGMW03-04	BGMW04-02	BGMW04-04
Date Sampled	04-12-1996	04-24-1996	04-24-1996
Volatiles (ug/kg) (Continued)			
Carbon Disulfide	7 UJ	6 U	7 U
Carbon Tetrachloride	7 U	6 U	7 U
Chlorobenzene	7 U	6 U	7 U
Chloroethane	14 U	13 U	14 U
Chloroform	7 U	6 U	7 U
Chloromethane	14 UJ	13 U	14 U
Dibromochloromethane	7 U	6 U	7 U
Dibromomethane	14 U	13 UJ	14 UJ
Dichlorodifluoromethane (Freon-12)	27 UJ	26 UJ	27 UJ
Ethyl Methacrylate	27 U	26 U	27 U
Ethylbenzene	7 U	6 U	7 U
Iodomethane	14 U	13 UJ	14 UJ
Isobutyl Alcohol	2700 R	2600 R	2700 R
Methyl Acrylonitrile	27 U	26 U	27 U
Methyl Methacrylate	27 U	26 U	27 U
Methylene Chloride	7 UJ	6 UJ	7 UJ
Pentachloroethane	27 UJ	26 U	27 U
Propionitrile (Ethyl Cyanide)	68 R	64 U	68 R
Styrene (Ethenylbenzene)	7 U	6 U	7 U
Tetrachloroethene (PCE)	7 U	6 U	7 U
Toluene	7 U	6 U	7 U
Trichloroethene (TCE)	7 U	6 U	7 U
Trichlorofluoromethane	14 U	13 U	14 U
Vinyl Acetate	14 UJ	13 UJ	14 U
Vinyl Chloride	14 U	13 U	14 U
Xylenes, total	2 J	6 U	7 U
Semivolatiles (ug/kg)			
1,2,4,5-Tetrachlorobenzene	440 U	420 U	420 U
1,2,4-Trichlorobenzene	440 U	420 U	420 U
1,2-Dichlorobenzene (o-)	440 U	420 U	420 U
1,2-Diphenylhydrazine	440 U	420 U	420 U
1,3,5-Trinitrobenzene	4400 U	4200 U	4200 U
1,3-Dichlorobenzene (m-)	440 U	420 U	420 U
1,3-Dinitrobenzene	880 U	840 U	850 U

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NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	BGMW03-04	BGMW04-02	BGMW04-04
Date Sampled	04-12-1996	04-24-1996	04-24-1996
Semivolatiles (ug/kg) (Continued)			
1,4-Dichlorobenzene (p-)	440 U	420 U	420 U
1,4-Dioxane (p-)	880 U	840 R	850 R
1,4-Naphthoquinone	2200 UJ	2100 UJ	2100 UJ
1,4-Phenylenediamine	880 UJ	840 R	850 R
1-Naphthylamine	880 U	840 U	850 U
2,2'-Oxybis[1-chloropropane]	440 U	420 U	420 U
2,3,4,6-Tetrachlorophenol	440 U	420 UJ	420 UJ
2,4,5-Trichlorophenol	2200 U	2100 U	2100 U
2,4,6-Trichlorophenol	440 U	420 U	420 U
2,4-Dichlorophenol	440 U	420 U	420 U
2,4-Dimethylphenol	440 U	420 U	420 U
2,4-Dinitrophenol	2200 U	2100 U	2100 U
2,4-Dinitrotoluene	440 U	420 U	420 U
2,6-Dichlorophenol	440 U	420 U	420 U
2,6-Dinitrotoluene	440 U	420 U	420 U
2-Acetylaminofluorene	880 U	840 U	850 U
2-Chloronaphthalene	440 U	420 U	420 U
2-Chlorophenol	440 U	420 U	420 U
2-Methyl-5-nitroaniline	880 U	840 U	850 U
2-Methylnaphthalene	440 U	420 U	420 U
2-Methylphenol (o-Cresol)	440 U	420 U	420 U
2-Naphthylamine	1100 U	1000 U	1000 U
2-Nitroaniline	2200 U	2100 U	2100 U
2-Nitrophenol	440 U	420 U	420 U
2-Picoline	440 U	420 UJ	420 UJ
3,3'-Dichlorobenzidine	880 U	840 U	850 U
3,3'-Dimethylbenzidine	2200 R	2100 U	2100 U
3-Methylcholanthrene	440 U	420 U	420 U
3-Nitroaniline	2200 U	2100 U	2100 U
4,6-Dinitro-2-methylphenol	2200 U	2100 U	2100 U
4-Aminobiphenyl	880 U	840 U	850 U
4-Bromophenyl-phenylether	440 U	420 U	420 U

APPENDIX A.2

ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SUBSURFACE SOIL
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	BGMW03-04	BGMW04-02	BGMW04-04
Date Sampled	04-12-1996	04-24-1996	04-24-1996
Semivolatiles (ug/kg) (Continued)			
4-Chloro-3-methylphenol	880 U	840 U	850 U
4-Chloroaniline	880 U	840 U	850 U
4-Chlorophenyl-phenylether	440 U	420 U	420 U
4-Dimethylaminoazobenzene	880 U	840 UJ	850 UJ
4-Methylphenol (p-Cresol)	NA	NA	NA
4-Nitroaniline	2200 U	2100 U	2100 U
4-Nitrophenol	2200 U	2100 UJ	2100 UJ
4-Nitroquinoline-1-Oxide	2200 R	2100 R	2100 R
7,12-Dimethylbenz(a)anthracene	880 U	840 U	850 U
a,a-Dimethylphenethylamine	2200 UJ	2100 UJ	2100 UJ
Acenaphthene	440 U	420 U	420 U
Acenaphthylene	440 U	420 U	420 U
Acetophenone	440 U	420 U	420 U
Aniline	2200 U	2100 U	2100 U
Anthracene	440 U	420 U	420 U
Aramite	880 U	840 UJ	850 UJ
Benzidine	4400 UJ	4200 U	4200 U
Benzo(a)anthracene	440 U	420 U	420 U
Benzo(a)pyrene (BaP)	440 U	420 U	420 U
Benzo(b)fluoranthene	440 U	420 U	420 U
Benzo(g,h,i)perylene	440 U	420 U	420 U
Benzo(k)fluoranthene	440 U	420 U	420 U
Benzoic Acid	2200 U	2100 U	2100 U
Benzyl Alcohol	440 U	420 U	420 U
Bis(2-chloroethoxy)methane	440 U	420 U	420 U
Bis(2-chloroethyl)ether	440 U	420 U	420 U
Bis(2-ethylhexyl) Phthalate (BEHP)	440 U	420 U	420 U
Butyl Benzyl Phthalate	440 U	420 U	420 U
Carbazole	440 U	420 U	420 U
Chrysene	440 U	420 U	420 U
Cresol (Mixed Isomers)	440 U	420 U	420 U

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ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SUBSURFACE SOIL
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
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NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	BGMW03-04	BGMW04-02	BGMW04-04
Date Sampled	04-12-1996	04-24-1996	04-24-1996
Semivolatiles (ug/kg) (Continued)			
Diallate	440 U	420 U	420 U
Dibenz(a,h)anthracene	440 U	420 U	420 U
Dibenzofuran	440 U	420 U	420 U
Diethyl Phthalate (DEP)	440 U	420 U	420 U
Dimethyl Phthalate	440 U	420 U	420 U
Di-n-butyl Phthalate (DBP)	440 U	420 U	420 U
Di-n-octyl Phthalate	440 U	420 U	420 U
Dinoseb	880 U	840 UJ	850 UJ
Diphenylamine	440 U	420 U	420 U
Ethyl 4,4'-Dichlorobenzilate (Chlorobenzilate)	440 U	420 UJ	420 UJ
Ethyl Methanesulfonate	440 U	420 U	420 U
Fluoranthene	440 U	420 U	420 U
Fluorene	440 U	420 U	420 U
Hexachlorobenzene	440 U	420 U	420 U
Hexachlorobutadiene	440 U	420 U	420 U
Hexachlorocyclopentadiene	440 UJ	420 U	420 U
Hexachloroethane	440 U	420 U	420 U
Hexachlorophene	4400 U	4200 R	4200 R
Hexachloropropene	2200 U	2100 U	2100 U
Indeno(1,2,3-cd)pyrene	440 U	420 U	420 U
Isophorone	440 U	420 U	420 U
Isosafrole	440 U	420 U	420 U
Methapyrilene	1100 U	1000 UJ	1000 UJ
Methyl Methane Sulfonate	440 U	420 U	420 U
Naphthalene	440 U	420 U	420 U
Nitrobenzene	440 U	420 U	420 U
n-Nitrosodiethylamine	440 U	420 U	420 U
n-Nitrosodimethylamine	440 U	420 UJ	420 UJ
n-Nitroso-di-n-butylamine	440 U	420 U	420 U
n-Nitrosodi-n-propylamine	440 U	420 U	420 U
n-Nitrosodiphenylamine	440 U	420 U	420 U
n-Nitrosomethylethylamine	440 U	420 U	420 U

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ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SUBSURFACE SOIL
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NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	BGMW03-04	BGMW04-02	BGMW04-04
Date Sampled	04-12-1996	04-24-1996	04-24-1996
Semivolatiles (ug/kg) (Continued)			
n-Nitrosomorpholine	880 U	840 U	850 U
n-Nitrosopiperidine	440 U	420 U	420 U
n-Nitrosopyrrolidine	2200 U	2100 U	2100 U
o-Toluidine	440 U	420 R	420 R
Pentachlorobenzene	440 U	420 U	420 U
Pentachloronitrobenzene	440 R	420 U	420 U
Pentachlorophenol	2200 U	2100 U	2100 U
Phenacetin	440 U	420 U	420 U
Phenanthrene	440 U	420 U	420 U
Phenol	440 U	420 U	420 U
Pronamide	440 U	420 U	420 U
Pyrene	440 U	420 U	420 U
Pyridine	880 U	840 U	850 U
Safrole	440 U	420 U	420 U
Pesticides (ug/kg)			
4,4'-DDD	11 U	10 U	10 U
4,4'-DDE	11 U	10 U	10 U
4,4'-DDT	11 U	10 U	10 U
Aldrin	5.5 U	5 U	5.3 U
BHC, alpha-	5.5 U	5 U	5.3 U
BHC, beta-	5.5 U	5 U	5.3 U
BHC, delta-	5.5 U	5 U	5.3 U
BHC, gamma- (Lindane)	5.5 U	5 U	5.3 U
Chlordane	NA	NA	NA
Chlordane, alpha-	55 U	50 U	53 U
Chlordane, gamma-	55 U	50 U	53 U
Dieldrin	11 U	10 U	10 U
Endosulfan I	5.5 U	5 U	5.3 U
Endosulfan II	11 U	10 U	10 U
Endosulfan Sulfate	11 U	10 U	10 U
Endrin	11 U	10 U	10 U
Endrin Aldehyde	11 U	10 U	10 U

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NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	BGMW03-04	BGMW04-02	BGMW04-04
Date Sampled	04-12-1996	04-24-1996	04-24-1996
Pesticides (ug/kg) (Continued)			
Heptachlor	5.5 U	5 U	5.3 U
Heptachlor Epoxide	5.5 U	5 U	5.3 U
Isodrin	5.5 U	5 U	5.3 U
Kepone (Chlordecone)	11 UJ	10 U	10 U
Methoxychlor	55 U	50 U	53 U
Toxaphene	110 U	100 U	100 U
PCBs (ug/kg)			
Aroclor-1016	55 U	50 U	53 U
Aroclor-1221	55 U	50 U	53 U
Aroclor-1232	55 U	50 U	53 U
Aroclor-1242	55 U	50 U	53 U
Aroclor-1248	55 U	50 U	53 U
Aroclor-1254	110 U	100 U	100 U
Aroclor-1260	110 U	100 U	100 U
Herbicides (ug/kg)			
2,4,5-T	45 U	42 U	45 U
2,4,5-TP (Silvex)	45 U	42 U	45 U
2,4-D	450 U	420 U	450 U
Dimethoate	91 U	84 U	90 U
Disulfoton	91 U	84 U	90 U
Famphur	91 U	84 U	90 U
Methyl Parathion	91 U	84 U	90 U
o,o,o-Triethyl Phosphorothioate	91 U	84 U	90 U
Parathion	91 U	84 U	90 U
Phorate	91 U	84 U	90 U
Sulfotepp	91 U	84 U	90 U
Thionazin	91 U	84 U	90 U

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ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SUBSURFACE SOIL
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
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NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	BGMW03-04	BGMW04-02	BGMW04-04
Date Sampled	04-12-1996	04-24-1996	04-24-1996
TPH (mg/kg)			
Diesel Range Organics (DRO)	NA	NA	NA
Gasoline Range Organics (GRO)	NA	NA	NA
Explosives (ug/kg)			
1,3,5-Trinitrobenzene	NA	NA	NA
1,3-Dinitrobenzene	NA	NA	NA
2,4,6-Trinitrotoluene (TNT)	NA	NA	NA
2,4/2,6-Dinitrotoluene Mixture	NA	NA	NA
2,4-Dinitrotoluene	NA	NA	NA
2,6-Dinitrotoluene	NA	NA	NA
2-Amino-4,6-dinitrotoluene	NA	NA	NA
2-Nitrotoluene	NA	NA	NA
3-Nitrotoluene	NA	NA	NA
4-Amino-2,6-dinitrotoluene	NA	NA	NA
4-Amino-2,6-dinitrotoluene	NA	NA	NA
4-Nitrotoluene	NA	NA	NA
HMX	NA	NA	NA
Nitrobenzene	NA	NA	NA
RDX (Cyclonite)	NA	NA	NA
Tetryl	NA	NA	NA
Dioxins (ug/kg)			
HxCDD, 2,3,7,8-	0.26 U	0.35 U	0.42 U
HxCDF, 2,3,7,8-	0.29 U	0.34 U	0.39 U
PeCDD, total	0.39 U	0.47 U	0.47 U
PeCDF, total	0.33 U	0.48 U	0.39 U
TCDD, 2,3,7,8-	0.26 U	0.38 U	0.24 U
TCDD, total	0.26 U	0.38 U	0.24 U
TCDF, total	0.21 U	0.32 U	0.34 U
Metals (mg/kg)			
Antimony	2.8 UJ	2.6 R	2.7 R
Arsenic	0.76 J	0.72	0.79
Barium	3.5	246 J	17.3 J
Beryllium	0.25	0.33	0.13

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ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SUBSURFACE SOIL
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NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	BGMW03-04	BGMW04-02	BGMW04-04
Date Sampled	04-12-1996	04-24-1996	04-24-1996
Metals (mg/kg) (Continued)			
Cadmium	0.33 UJ	0.48	0.43
Chromium	63.6 R	34.7 J	10.9 J
Cobalt	4.3	33.8	4.1
Copper	94.5 R	107	37.6
Lead	3.4 J	5	6.6
Mercury	0.17 J	0.06 U	0.06 U
Nickel	5.8	10.2	2.2
Selenium	0.3 UJ	0.37 J	0.16 UJ
Silver	0.45 U	0.42 U	0.43 U
Thallium	0.11 UJ	0.12 UJ	0.12 UJ
Tin	1.5 UJ	1.4 UJ	1.5 J
Vanadium	260	234	83.9
Zinc	23 J	56.2 J	18.4 J
Conventionals (mg/kg)			
Cyanide	0.61 U	0.59 U	0.64 U
Sulfide	33.9 U	28.3 U	32.5 U

APPENDIX A.3
Analytical Data, Groundwater

APPENDIX A.3

ANALYTICAL DATA FOR BACKGROUND LOCATIONS - GROUNDWATER
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
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NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

	11GW24	11GW24D	1GW05	45MW01	5GW01	5GW03R	5GW04	9BGGW01
	09-22-1997	09-22-1997	10-01-1997	11-25-1996	11-06-1996	10-01-1997	11-05-1996	06-29-1999
Volatiles (ug/L)								
1,1,1,2-Tetrachloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
1,1,1-Trichloroethane (TCA)	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-Trichloropropane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
1,2-Dibromo-3-chloropropane (DBCP)	20 U	20 U	20 U	20 UJ	20 UJ	20 U	20 UJ	NA
1,2-Dibromoethane (EDB)	20 U	20 U	20 U	20 U	20 U	20 U	20 U	NA
1,2-Dichloroethane	5 U	5 U	5 U	5 U	5 UJ	5 U	5 UJ	5 U
1,2-Dichloroethene (cis)	NA	NA	NA	NA	NA	NA	NA	5 U
1,2-Dichloroethene (total)	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA
1,2-Dichloroethene (trans)	NA	NA	NA	NA	NA	NA	NA	5 U
1,2-Dichloropropane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,3-Dichloropropene (cis)	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,3-Dichloropropene (trans)	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,4-Dichloro-2-butene (trans)	20 U	20 U	20 U	20 UJ	20 UJ	20 U	20 UJ	NA
2-Butanone (MEK)	10 U	10 U	10 U	10 U	10 U	10 U	10 U	25 U
2-Chloro-1,3-butadiene (Chloroprene)	100 U	100 U	100 U	100 R	100 R	100 U	100 R	NA
2-Hexanone (MBK)	10 U	10 U	10 U	10 U	10 U	10 U	10 U	25 U
3-Chloropropene (Allyl Chloride)	20 U	20 U	20 U	20 UJ	20 U	20 U	20 U	NA
4-Methyl-2-pentanone (MIBK)	10 U	10 U	10 U	10 U	10 U	10 U	10 U	25 U
Acetone	10 U	10 U	10 U	10 UJ	10 UJ	27 U	10 UJ	50 U
Acetonitrile	100 R	100 UJ	100 UJ	100 UJ	100 U	100 UJ	100 U	NA
Acrolein	500 U	500 U	500 U	500 U	500 U	500 U	500 U	NA
Acrylonitrile	100 U	100 U	100 UJ	100 U	100 U	100 UJ	100 U	NA
Benzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromodichloromethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromoform	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromomethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U
Carbon Tetrachloride	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloromethane	10 UJ	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U

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ANALYTICAL DATA FOR BACKGROUND LOCATIONS - GROUNDWATER
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CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

	11GW24	11GW24D	1GW05	45MW01	5GW01	5GW03R	5GW04	9BGGW01
	09-22-1997	09-22-1997	10-01-1997	11-25-1996	11-06-1996	10-01-1997	11-05-1996	06-29-1999
Volatiles (ug/L) (Continued)								
Dibromochloromethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dibromomethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Dichlorodifluoromethane (Freon-12)	20 UJ	20 UJ	20 U	20 U	20 U	20 U	20 U	NA
Ethyl Methacrylate	20 U	20 U	20 U	20 UJ	20 UJ	20 U	20 UJ	NA
Ethylbenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Iodomethane	10 U	10 U	10 U	10 U	10 UJ	10 U	10 UJ	NA
Isobutyl Alcohol	2000 R	2000 R	2000 R	2000 R	2000 R	2000 R	2000 R	NA
Methyl Acrylonitrile	20 U	20 U	20 U	20 U	20 U	20 U	20 U	NA
Methyl Methacrylate	20 U	20 U	20 U	20 U	20 U	20 U	20 U	NA
Methylene Chloride	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Pentachloroethane	20 U	20 U	20 UJ	20 U	20 UJ	20 UJ	20 UJ	NA
Propionitrile (Ethyl Cyanide)	50 U	50 R	50 R	50 R	50 R	50 R	50 R	NA
Styrene (Ethenylbenzene)	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene (PCE)	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Toluene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene (TCE)	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Trichlorofluoromethane	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U	NA
Vinyl Acetate	10 UJ	10 UJ	10 U	10 UJ	10 UJ	10 U	10 UJ	NA
Vinyl Chloride	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Xylenes, total	5 UJ	5 U	5 U	5 U	5 U	5 U	5 U	10 U
Semivolatiles (ug/L)								
1,2,4,5-Tetrachlorobenzene	10 UJ	10 U	10 U	10 U	11 U	10 U	10 U	NA
1,2,4-Trichlorobenzene	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
1,2-Dichlorobenzene (o-)	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
1,2-Diphenylhydrazine	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
1,3,5-Trinitrobenzene	100 UJ	98 U	100 U	100 R	110 U	100 U	100 U	NA
1,3-Dichlorobenzene (m-)	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
1,3-Dinitrobenzene	20 UJ	20 U	21 U	20 U	0.094 U	21 U	0.37 U	NA
1,4-Dichlorobenzene (p-)	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
1,4-Dioxane (p-)	20 UJ	20 UJ	21 U	20 U	23 U	21 U	20 U	NA
1,4-Naphthoquinone	50 R	49 U	53 UJ	50 U	57 U	52 UJ	50 U	NA
1,4-Phenylenediamine	20 R	20 R	21 R	20 R	23 U	21 R	20 U	NA
1-Naphthylamine	20 UJ	20 U	21 U	20 U	23 U	21 U	20 U	NA
2,2'-Oxybis[1-chloropropane]	10 UJ	10 U	10 UJ	10 U	11 U	10 UJ	10 U	NA
2,3,4,6-Tetrachlorophenol	10 U	10 UJ	10 UJ	10 U	11 U	10 UJ	10 U	NA
2,4,5-Trichlorophenol	50 U	49 U	53 U	50 U	57 U	52 U	50 U	NA

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	11GW24	11GW24D	1GW05	45MW01	5GW01	5GW03R	5GW04	9BGGW01
	09-22-1997	09-22-1997	10-01-1997	11-25-1996	11-06-1996	10-01-1997	11-05-1996	06-29-1999
Semivolatiles (ug/L) (Continued)								
2,4,6-Trichlorophenol	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
2,4-Dichlorophenol	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
2,4-Dimethylphenol	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
2,4-Dinitrophenol	50 UJ	49 UJ	53 U	50 U	57 U	52 U	50 U	NA
2,4-Dinitrotoluene	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
2,6-Dichlorophenol	10 U	10 UJ	10 UJ	10 U	11 U	10 UJ	10 U	NA
2,6-Dinitrotoluene	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
2-Acetylaminofluorene	20 UJ	20 U	21 U	20 U	23 UJ	21 U	20 U	NA
2-Chloronaphthalene	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
2-Chlorophenol	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
2-Methyl-5-nitroaniline	20 UJ	20 U	21 UJ	20 UJ	23 U	21 UJ	20 U	NA
2-Methylnaphthalene	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
2-Methylphenol (o-Cresol)	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
2-Naphthylamine	25 UJ	24 U	26 U	25 U	29 U	26 U	25 U	NA
2-Nitroaniline	50 U	49 U	53 U	50 U	57 U	52 U	50 U	NA
2-Nitrophenol	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
2-Picoline	10 UJ	10 UJ	10 U	10 U	11 U	10 U	10 U	NA
3,3'-Dichlorobenzidine	20 U	20 U	21 U	20 U	23 U	21 U	20 U	NA
3,3'-Dimethylbenzidine	50 R	49 U	53 UJ	50 UJ	57 U	52 UJ	50 U	NA
3-Methylcholanthrene	10 U	10 U	10 UJ	10 U	11 U	10 UJ	10 U	NA
3-Methylphenol (m-Cresol)	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	50 UJ	49 U	53 UJ	50 U	57 U	52 UJ	50 U	NA
4,6-Dinitro-2-methylphenol	50 UJ	49 U	53 U	50 U	57 U	52 U	50 U	NA
4-Aminobiphenyl	20 UJ	20 U	21 UJ	20 U	23 U	21 UJ	20 U	NA
4-Bromophenyl-phenylether	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
4-Chloro-3-methylphenol	20 U	20 U	21 U	20 U	23 U	21 U	20 U	NA
4-Chloroaniline	20 UJ	20 U	21 UJ	20 U	23 U	21 UJ	20 U	NA
4-Chlorophenyl-phenylether	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
4-Dimethylaminoazobenzene	20 UJ	20 U	21 U	20 U	23 U	21 U	20 U	NA
4-Nitroaniline	50 U	49 U	53 UJ	50 U	57 U	52 UJ	50 U	NA
4-Nitrophenol	50 U	49 U	53 U	50 U	57 U	52 U	50 U	NA
4-Nitroquinoline-1-Oxide	50 R	49 R	53 U	50 U	57 U	52 R	50 U	NA
7,12-Dimethylbenz(a)anthracene	20 UJ	20 U	21 U	20 U	23 U	21 U	20 U	NA
a,a-Dimethylphenethylamine	50 UJ	49 UJ	53 UJ	50 UJ	57 UJ	52 UJ	50 UJ	NA
Acenaphthene	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Acenaphthylene	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA

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	11GW24	11GW24D	1GW05	45MW01	5GW01	5GW03R	5GW04	9BGGW01
	09-22-1997	09-22-1997	10-01-1997	11-25-1996	11-06-1996	10-01-1997	11-05-1996	06-29-1999
Semivolatiles (ug/L) (Continued)								
Acetophenone	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Aniline	50 U	49 U	53 U	50 U	57 U	52 U	50 U	NA
Anthracene	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Aramite	20 R	20 UJ	21 UJ	20 UJ	23 U	21 UJ	20 U	NA
Benzidine	100 U	98 R	100 UJ	100 U	110 U	100 UJ	100 U	NA
Benzo(a)anthracene	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Benzo(a)pyrene (BaP)	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Benzo(b)fluoranthene	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Benzo(g,h,i)perylene	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Benzo(k)fluoranthene	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Benzoic Acid	50 UJ	49 U	53 U	50 U	57 U	52 U	50 U	NA
Benzyl Alcohol	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Bis(2-chloroethoxy)methane	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Bis(2-chloroethyl)ether	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Bis(2-ethylhexyl) Phthalate (BEHP)	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Butyl Benzyl Phthalate	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Carbazole	10 UJ	10 U	10 U	10 U	11 U	10 U	10 U	NA
Chrysene	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Cresol (Mixed Isomers)	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Diallate	10 U	10 UJ	10 U	10 UJ	11 U	10 U	10 UJ	NA
Dibenz(a,h)anthracene	10 U	10 UJ	10 U	10 U	11 U	10 U	10 U	NA
Dibenzofuran	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Diethyl Phthalate (DEP)	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Dimethyl Phthalate	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Di-n-butyl Phthalate (DBP)	10 UJ	10 U	10 U	10 U	11 U	10 U	10 U	NA
Di-n-octyl Phthalate	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Dinoseb	20 UJ	20 U	21 U	20 U	23 U	21 U	20 U	NA
Diphenylamine	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Ethyl 4,4'-Dichlorobenzilate (Chlorobenzilate)	10 UJ	10 U	10 U	10 U	11 U	10 U	10 U	NA
Ethyl Methanesulfonate	10 UJ	10 U	10 U	10 U	11 U	10 U	10 U	NA
Fluoranthene	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Fluorene	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Hexachlorobenzene	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Hexachlorobutadiene	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Hexachlorocyclopentadiene	10 U	10 UJ	10 U	10 U	11 U	10 U	10 U	NA
Hexachloroethane	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA

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	09-22-1997	09-22-1997	10-01-1997	11-25-1996	11-06-1996	10-01-1997	11-05-1996	06-29-1999
Semivolatiles (ug/L) (Continued)								
Hexachlorophene	100 UJ	98 UJ	100 UJ	100 U	110 R	100 UJ	100 U	NA
Hexachloropropene	50 U	49 U	53 U	50 U	57 U	52 U	50 U	NA
Indeno(1,2,3-cd)pyrene	10 U	10 UJ	10 U	10 U	11 U	10 U	10 U	NA
Isophorone	10 U	10 U	10 U	10 U	11 UJ	10 U	10 U	NA
Isosafrole	10 U	10 UJ	10 U	10 U	11 U	10 U	10 U	NA
Methapyrilene	25 UJ	24 U	26 U	25 U	29 UJ	26 U	25 UJ	NA
Methyl Methane Sulfonate	10 UJ	10 U	10 U	10 U	11 U	10 U	10 U	NA
Naphthalene	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Nitrobenzene	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
n-Nitrosodiethylamine	10 UJ	10 U	10 U	10 U	11 UJ	10 U	10 UJ	NA
n-Nitrosodimethylamine	10 U	10 U	10 UJ	10 U	11 UJ	10 UJ	10 U	NA
n-Nitroso-di-n-butylamine	10 UJ	10 U	10 U	10 U	11 U	10 U	10 U	NA
n-Nitrosodi-n-propylamine	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
n-Nitrosodiphenylamine	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
n-Nitrosomethylethylamine	10 UJ	10 UJ	10 U	10 UJ	11 UJ	10 U	10 UJ	NA
n-Nitrosomorpholine	20 U	20 U	21 U	20 U	23 U	21 U	20 UJ	NA
n-Nitrosopiperidine	10 UJ	10 UJ	10 U	10 U	11 UJ	10 U	10 UJ	NA
n-Nitrosopyrrolidine	50 U	49 U	53 U	50 U	57 U	52 U	50 U	NA
o-Toluidine	10 U	10 U	10 U	10 UJ	11 U	10 U	10 U	NA
Pentachlorobenzene	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Pentachloronitrobenzene	10 U	10 R	10 U	10 U	11 U	10 R	10 U	NA
Pentachlorophenol	50 U	49 U	53 U	50 U	57 U	52 U	50 U	NA
Phenacetin	10 UJ	10 U	10 U	10 U	11 U	10 U	10 U	NA
Phenanthrene	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Phenol	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Pronamide	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Pyrene	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Pyridine	20 UJ	20 U	21 U	20 U	23 U	21 U	20 U	NA
Safrole	10 U	10 U	10 U	10 U	11 U	10 U	10 U	NA
Pesticides (ug/L)								
4,4'-DDD	NA	NA	0.11 U	NA	0.095 U	0.12 U	0.1 U	NA
4,4'-DDE	NA	NA	0.11 U	NA	0.095 U	0.12 U	0.1 U	NA
4,4'-DDT	NA	NA	0.11 U	NA	0.095 U	0.12 U	0.1 U	NA
Aldrin	NA	NA	0.053 U	NA	0.048 U	0.059 U	0.05 U	NA
BHC, alpha-	NA	NA	0.053 U	NA	0.048 U	0.059 U	0.05 U	NA
BHC, beta-	NA	NA	0.053 U	NA	0.048 U	0.059 U	0.05 U	NA

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	09-22-1997	09-22-1997	10-01-1997	11-25-1996	11-06-1996	10-01-1997	11-05-1996	06-29-1999
Pesticides (ug/L) (continued)								
BHC, delta-	NA	NA	0.053 U	NA	0.048 U	0.059 U	0.05 U	NA
BHC, gamma- (Lindane)	NA	NA	0.053 U	NA	0.048 U	0.059 U	0.05 U	NA
Chlordane, alpha-	NA	NA	0.53 U	NA	0.48 U	0.59 U	0.5 U	NA
Chlordane, gamma-	NA	NA	0.53 U	NA	0.48 U	0.59 U	0.5 U	NA
Dieldrin	NA	NA	0.11 U	NA	0.095 U	0.12 U	0.1 U	NA
Endosulfan I	NA	NA	0.053 U	NA	0.048 U	0.059 U	0.05 U	NA
Endosulfan II	NA	NA	0.11 U	NA	0.095 U	0.12 U	0.1 U	NA
Endosulfan Sulfate	NA	NA	0.11 U	NA	0.095 U	0.12 U	0.1 U	NA
Endrin	NA	NA	0.11 U	NA	0.095 U	0.12 U	0.1 U	NA
Endrin Aldehyde	NA	NA	0.11 U	NA	0.095 U	0.12 U	0.1 U	NA
Heptachlor	NA	NA	0.053 U	NA	0.048 U	0.059 U	0.05 U	NA
Heptachlor Epoxide	NA	NA	0.053 U	NA	0.048 U	0.059 U	0.05 U	NA
Isodrin	NA	NA	0.053 U	NA	0.048 U	0.059 U	0.05 U	NA
Kepone (Chlordecone)	NA	NA	0.32 U	NA	0.095 R	0.35 U	0.1 R	NA
Methoxychlor	NA	NA	0.53 UJ	NA	0.48 U	0.59 UJ	0.5 U	NA
Toxaphene	NA	NA	1.1 U	NA	0.95 U	1.2 U	1 U	NA
PCBs (ug/L)								
Aroclor-1016	0.53 U	0.49 U	0.53 U	0.51 U	0.48 U	0.59 U	0.5 U	NA
Aroclor-1221	0.53 U	0.49 U	0.53 U	0.51 U	0.48 U	0.59 U	0.5 U	NA
Aroclor-1232	0.53 U	0.49 U	0.53 U	0.51 U	0.48 U	0.59 U	0.5 U	NA
Aroclor-1242	0.53 U	0.49 U	0.53 U	0.51 U	0.48 U	0.59 U	0.5 U	NA
Aroclor-1248	0.53 U	0.49 U	0.53 U	0.51 U	0.48 U	0.59 U	0.5 U	NA
Aroclor-1254	1 U	0.98 U	1.1 U	1 U	0.95 U	1.2 U	1 U	NA
Aroclor-1260	1 U	0.98 U	1.1 U	1 U	0.95 U	1.2 U	1 U	NA
Herbicides (ug/L)								
2,4,5-T	NA	NA	0.11 U	NA	0.11 U	0.11 U	1.2 U	NA
2,4,5-TP (Silvex)	NA	NA	0.11 U	NA	0.11 U	0.11 U	1.2 U	NA
2,4-D	NA	NA	1.1 U	NA	1.1 U	1.1 U	12 U	NA
Dimethoate	NA	NA	2.3 U	NA	1.9 U	2.1 U	2 U	NA
Disulfoton	NA	NA	2.3 U	NA	1.9 U	2.1 U	2 U	NA
Famphur	NA	NA	2.3 U	NA	1.9 U	2.1 U	2 U	NA
Methyl Parathion	NA	NA	2.3 U	NA	1.9 U	2.1 U	2 U	NA
o,o,o-Triethyl Phosphorothioate	NA	NA	2.3 U	NA	1.9 U	2.1 U	2 U	NA

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	09-22-1997	09-22-1997	10-01-1997	11-25-1996	11-06-1996	10-01-1997	11-05-1996	06-29-1999
Herbicides (ug/L) (continued)								
Parathion	NA	NA	2.3 U	NA	1.9 U	2.1 U	2 U	NA
Phorate	NA	NA	2.3 U	NA	1.9 U	2.1 U	2 U	NA
Sulfotepp	NA	NA	2.3 U	NA	1.9 U	2.1 U	2 U	NA
Thionazin	NA	NA	2.3 U	NA	1.9 U	2.1 U	2 U	NA
TPH (ug/L)								
Diesel Range Organics (DRO)	130 U	120 U	NA	NA	NA	NA	NA	NA
Gasoline Range Organics (GRO)	50 U	50 U	NA	NA	NA	NA	NA	NA
Explosives (ug/L)								
1,3,5-Trinitrobenzene	NA	NA	1.6 U	NA	NA	1.6 U	NA	NA
1,3-Dinitrobenzene	NA	NA	1.6 U	20 U	23 U	1.6 U	20 U	NA
2,4,6-Trinitrotoluene (TNT)	NA	NA	1.6 UJ	NA	0.097 U	1.6 UJ	0.39 U	NA
2,4/2,6-Dinitrotoluene Mixture	NA	NA	NA	NA	0.16 U	NA	0.62 U	NA
2,4-Dinitrotoluene	NA	NA	1.6 U	NA	NA	1.6 U	NA	NA
2,6-Dinitrotoluene	NA	NA	3.1 U	NA	NA	3.1 U	NA	NA
2-Amino-4,6-dinitrotoluene	NA	NA	3.1 U	NA	NA	3.1 U	NA	NA
2-Nitrotoluene	NA	NA	3.1 U	NA	0.39 U	3.1 U	1.6 U	NA
3-Nitrotoluene	NA	NA	3.1 U	NA	0.39 UJ	3.1 U	1.6 UJ	NA
4-Amino-2,6-dinitrotoluene	NA	NA	3.1 U	NA	NA	3.1 U	NA	NA
4-Nitrotoluene	NA	NA	3.1 U	NA	1.2 U	3.1 U	4.7 U	NA
Amino Dinitrotoluenes	NA	NA	NA	NA	0.16 U	NA	0.62 U	NA
HMX	NA	NA	1.6 U	NA	0.86 U	1.6 U	3.4 U	NA
Nitrobenzene	NA	NA	1.6 U	NA	0.16 U	1.6 U	0.65 U	NA
RDX (Cyclonite)	NA	NA	1.6 U	NA	0.42 U	1.6 U	1.7 U	NA
Tetryl	NA	NA	3.1 UJ	NA	0.3 U	3.1 UJ	1.2 U	NA
Dixions (ug/L)								
HxCDD, 2,3,7,8-	NA	NA	0.0004 U	NA	0.0005 U	0.00036 U	0.0006 U	NA
HxCDF, 2,3,7,8-	NA	NA	0.00028 U	NA	0.0003 U	0.00025 U	0.0005 U	NA
PeCDD, total	NA	NA	0.0003 U	NA	0.0003 U	0.00027 U	0.0005 U	NA
PeCDF, total	NA	NA	0.00031 U	NA	0.0003 U	0.00041 U	0.0003 U	NA
TCDD, 2,3,7,8-	NA	NA	0.00013 U	NA	0.0002 U	0.00023 U	0.0002 U	NA
TCDD, total	NA	NA	0.00013 U	NA	0.0002 U	0.00023 U	0.0002 U	NA
TCDF, total	NA	NA	0.00013 U	NA	0.0001 U	0.00014 U	0.0002 U	NA

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	09-22-1997	09-22-1997	10-01-1997	11-25-1996	11-06-1996	10-01-1997	11-05-1996	06-29-1999
Dissolved Metals (ug/L)								
Antimony	2.3 J	1.9 U	1.4 J	NA	16 U	1.3 J	80 U	2.7 U
Arsenic	3.6 J	2.6 U	2.1 U	2.5 J	26 R	2.1 U	26 R	9.3 J
Barium	23.6 J	22.3 J	19.8 J	50.6	158	74.3 J	53.9	114
Beryllium	0.3 U	0.3 U	0.3 U	NA	0.4 U	0.3 U	2 U	0.1 U
Cadmium	0.4 U	0.4 U	0.3 U	2.1 U	2.1 UJ	0.3 U	33.8 J	1.7 J
Chromium	0.7 U	0.7 U	3.2 J	1.7 U	1.7 U	4.3 J	8.5 U	0.8 U
Cobalt	0.7 U	0.7 U	0.93 J	NA	2.8 U	0.8 U	83.8	6.6 J
Copper	0.5 U	0.5 U	1.3 U	NA	3.3	1.3 U	7.5 U	6.2 J
Lead	9.2 R	1.5 U	1.3 U	1.6	26 R	1.3 U	26 R	0.9 UJ
Mercury	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.13 J
Nickel	0.8 U	0.8 U	0.91 J	NA	6.7 U	0.6 U	71.7	2.6 J
Selenium	2.2 U	2.2 U	2 UJ	1.8 R	36 R	2 UJ	36 R	17 U
Silver	0.6 U	0.6 U	0.7 U	1.8 UJ	1.8 UJ	0.7 U	9 UJ	1.8 J
Thallium	2.1 U	2.1 U	1.9 U	NA	16 UJ	1.9 U	16 UJ	1.8 R
Tin	1.8 U	1.8 U	2.4 U	NA	8.7 U	2.4 U	43.5 U	1.7 U
Vanadium	0.8 U	0.8 U	32.6 J	NA	42.2	71.1	8.5 U	29.3 J
Zinc	2.8 J	1.9 J	5.4 J	NA	6.8	1.6 J	26.6	2.4 U
Total Metals (ug/L)								
Antimony	3.1 J	2 J	2.5 J	NA	16 U	1.4 J	80 U	14.2 J
Arsenic	2.8 J	2.5 J	2.1 U	13.4 J	26 R	2.1 U	26 R	5.8 J
Barium	25.6 J	23.1 J	350	483	177	690	69.7	156 J
Beryllium	0.3 U	0.3 U	0.82 J	NA	0.4 U	0.67 J	2 U	0.83 J
Cadmium	0.4 U	0.4 U	0.3 U	5.4 J	5.5 J	0.3 U	24.6 J	2.5 U
Chromium	1.2 J	0.7 U	113	182	1.7 U	59.1	8.5 U	4 U
Cobalt	0.7 U	0.7 U	104	NA	2.8 U	59.1	77.2	11.1 J
Copper	0.5 U	0.5 U	81.9	NA	9.8	199	8.5	52.5 J
Lead	1.5 U	1.5 U	6.3	22.8	26 R	4.9	26 R	0.9 U
Mercury	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	0.8 U	0.8 U	86.9	NA	6.7 U	41.5	35.9	12.6 J
Selenium	2.2 U	2.2 U	2 UJ	9 R	36 R	2 UJ	36 R	17 U
Silver	0.6 U	0.6 U	0.82 J	1.8 UJ	1.8 UJ	0.7 U	9 UJ	3 U
Thallium	2.1 U	2.1 U	1.9 U	NA	16 UJ	1.9 U	16 UJ	1.8 R
Tin	1.8 U	1.8 U	2.5 J	NA	8.7 U	2.8 J	43.5 U	10.9 J
Vanadium	1.7 J	0.8 U	330	NA	50.4	344	8.5 U	73.3
Zinc	3.1 J	1.3 J	182	NA	12.5	134	23.8	24.9 U

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	09-22-1997	09-22-1997	10-01-1997	11-25-1996	11-06-1996	10-01-1997	11-05-1996	06-29-1999
Conventionals (mg/L)								
Cyanide	NA	NA	NA	NA	0.01 U	NA	0.01 U	0.01 U
Sulfide	NA	NA	NA	NA	1 U	NA	1 U	0.1 U

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	9BGGW02	9BGGW03	9BGGW03D	BGMW01	BGMW02	BGMW03	BGMW04
	06-29-1999	06-28-1999	06-29-1999	04-27-1996	04-27-1996	04-16-1996	04-12-1996
Volatiles (ug/L)							
1,1,1,2-Tetrachloroethane	NA	NA	NA	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane (TCA)	5 U	5 U	NA	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	5 U	5 U	NA	5 UJ	5 UJ	5 U	5 U
1,1,2-Trichloroethane	5 U	5 U	NA	5 U	5 U	5 U	5 U
1,1-Dichloroethane	5 U	5 U	NA	5 U	5 U	5 U	5 U
1,1-Dichloroethene	5 U	5 U	NA	5 U	5 U	5 U	5 U
1,2,3-Trichloropropane	NA	NA	NA	10 UJ	10 UJ	10 U	10 U
1,2-Dibromo-3-chloropropane (DBCP)	NA	NA	NA	20 UJ	20 UJ	20 U	20 U
1,2-Dibromoethane (EDB)	NA	NA	NA	20 UJ	20 UJ	20 U	20 U
1,2-Dichloroethane	5 U	5 U	NA	5 U	5 U	5 U	5 U
1,2-Dichloroethene (cis)	5 U	5 U	NA	NA	NA	NA	NA
1,2-Dichloroethene (total)	NA	NA	NA	5 U	5 U	5 U	5 U
1,2-Dichloroethene (trans)	5 U	5 U	NA	NA	NA	NA	NA
1,2-Dichloropropane	5 U	5 U	NA	5 U	5 U	5 U	5 U
1,3-Dichloropropene (cis)	5 U	5 U	NA	5 U	5 U	5 U	5 U
1,3-Dichloropropene (trans)	5 U	5 U	NA	5 U	5 U	5 U	5 U
1,4-Dichloro-2-butene (trans)	NA	NA	NA	20 UJ	20 UJ	20 U	20 U
2-Butanone (MEK)	25 U	25 U	NA	10 UJ	10 UJ	10 U	10 U
2-Chloro-1,3-butadiene (Chloroprene)	NA	NA	NA	100 U	100 U	100 U	100 U
2-Hexanone (MBK)	25 U	25 U	NA	10 UJ	10 UJ	10 U	10 U
3-Chloropropene (Allyl Chloride)	NA	NA	NA	20 U	20 U	20 U	20 U
4-Methyl-2-pentanone (MIBK)	25 U	25 U	NA	10 UJ	10 UJ	10 U	10 U
Acetone	50 U	50 U	NA	10 UJ	10 UJ	10 U	10 UJ
Acetonitrile	NA	NA	NA	100 UJ	100 UJ	100 U	100 U
Acrolein	NA	NA	NA	500 UJ	500 UJ	500 U	500 U
Acrylonitrile	NA	NA	NA	100 UJ	100 UJ	100 U	100 UJ
Benzene	5 U	5 U	NA	5 U	5 U	5 U	5 U
Bromodichloromethane	5 U	5 U	NA	5 U	5 U	5 U	5 U
Bromoform	5 U	5 U	NA	5 U	5 U	5 U	5 U
Bromomethane	10 U	10 U	NA	10 U	10 U	10 U	10 U
Carbon Disulfide	5 U	5 U	NA	5 U	5 U	5 U	5 UJ
Carbon Tetrachloride	5 U	5 U	NA	5 U	5 U	5 U	5 U
Chlorobenzene	5 U	5 U	NA	5 U	5 U	5 U	5 U
Chloroethane	10 U	10 U	NA	10 U	10 U	10 U	10 U
Chloroform	5 U	5 U	NA	5 U	5 U	5 U	5 U
Chloromethane	10 U	10 U	NA	10 U	10 U	10 U	10 U

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	9BGGW02 06-29-1999	9BGGW03 06-28-1999	9BGGW03D 06-29-1999	BGMW01 04-27-1996	BGMW02 04-27-1996	BGMW03 04-16-1996	BGMW04 04-12-1996
Volatiles (ug/L) (Continued)							
Dibromochloromethane	5 U	5 U	NA	5 U	5 U	5 U	5 U
Dibromomethane	NA	NA	NA	10 U	10 U	10 U	10 U
Dichlorodifluoromethane (Freon-12)	NA	NA	NA	20 U	20 U	20 UJ	20 U
Ethyl Methacrylate	NA	NA	NA	20 UJ	20 UJ	20 U	20 UJ
Ethylbenzene	5 U	5 U	NA	5 U	5 U	5 U	5 U
Iodomethane	NA	NA	NA	10 U	10 U	10 U	10 U
Isobutyl Alcohol	NA	NA	NA	2000 R	2000 R	2000 R	2000 R
Methyl Acrylonitrile	NA	NA	NA	20 UJ	20 UJ	20 U	20 U
Methyl Methacrylate	NA	NA	NA	20 UJ	20 UJ	20 U	20 U
Methylene Chloride	5 U	5 U	NA	5 U	5 U	5 U	5 U
Pentachloroethane	NA	NA	NA	20 U	20 U	20 U	20 U
Propionitrile (Ethyl Cyanide)	NA	NA	NA	50 R	50 R	50 R	50 R
Styrene (Ethenylbenzene)	5 U	5 U	NA	5 U	5 U	5 U	5 U
Tetrachloroethene (PCE)	5 U	5 U	NA	5 U	5 U	5 U	5 U
Toluene	5 U	5 U	NA	5 U	5 U	5 U	5 U
Trichloroethene (TCE)	5 U	5 U	NA	5 U	5 U	5 U	5 U
Trichlorofluoromethane	NA	NA	NA	10 UJ	10 UJ	10 U	10 U
Vinyl Acetate	NA	NA	NA	10 UJ	10 UJ	10 UJ	10 UJ
Vinyl Chloride	10 U	10 U	NA	10 U	10 U	10 U	10 U
Xylenes, total	10 U	10 U	NA	5 U	5 U	5 U	5 U
Semivolatiles (ug/L)							
1,2,4,5-Tetrachlorobenzene	NA	NA	NA	11 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	10 U	10 U	NA	11 U	10 U	10 U	10 U
1,2-Dichlorobenzene (o-)	10 U	10 U	NA	11 U	10 U	10 U	10 U
1,2-Diphenylhydrazine	NA	NA	NA	11 U	10 U	10 U	10 U
1,3,5-Trinitrobenzene	NA	NA	NA	110 UJ	100 UJ	100 UJ	97 U
1,3-Dichlorobenzene (m-)	10 U	10 U	NA	11 U	10 U	10 U	10 U
1,3-Dinitrobenzene	NA	NA	NA	22 UJ	21 UJ	21 U	19 U
1,4-Dichlorobenzene (p-)	10 U	10 U	NA	11 U	10 U	10 U	10 U
1,4-Dioxane (p-)	NA	NA	NA	22 R	21 R	21 U	19 UJ
1,4-Naphthoquinone	NA	NA	NA	54 UJ	53 UJ	52 UJ	48 UJ
1,4-Phenylenediamine	NA	NA	NA	22 R	21 R	21 R	19 R
1-Naphthylamine	NA	NA	NA	22 U	21 U	21 U	10 U
2,2'-Oxybis[1-chloropropane]	10 UJ	10 UJ	NA	11 U	10 U	10 U	10 U
2,3,4,6-Tetrachlorophenol	NA	NA	NA	11 U	10 U	10 U	10 UJ
2,4,5-Trichlorophenol	10 U	10 U	NA	54 U	53 U	52 U	48 U

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	06-29-1999	06-28-1999	06-29-1999	04-27-1996	04-27-1996	04-16-1996	04-12-1996
Semivolatiles (ug/L) (Continued)							
2,4,6-Trichlorophenol	10 U	10 U	NA	11 U	10 U	10 U	10 U
2,4-Dichlorophenol	10 U	10 U	NA	11 U	10 U	10 U	10 U
2,4-Dimethylphenol	10 U	10 U	NA	11 U	10 U	10 U	10 U
2,4-Dinitrophenol	50 U	50 U	NA	54 U	53 U	52 R	48 U
2,4-Dinitrotoluene	10 U	10 U	NA	11 U	10 U	10 U	10 UJ
2,6-Dichlorophenol	NA	NA	NA	11 U	10 U	10 U	10 U
2,6-Dinitrotoluene	10 U	10 U	NA	11 U	10 U	10 U	10 U
2-Acetylaminofluorene	NA	NA	NA	22 U	21 U	21 U	19 U
2-Chloronaphthalene	10 U	10 U	NA	11 U	10 U	10 U	10 U
2-Chlorophenol	10 U	10 U	NA	11 U	10 U	10 U	10 U
2-Methyl-5-nitroaniline	NA	NA	NA	22 U	21 U	21 U	19 UJ
2-Methylnaphthalene	10 U	10 U	NA	11 U	10 U	10 U	10 U
2-Methylphenol (o-Cresol)	10 UJ	10 UJ	NA	11 U	10 U	10 U	10 U
2-Naphthylamine	NA	NA	NA	27 U	26 U	26 U	10 U
2-Nitroaniline	50 U	50 U	NA	54 U	53 U	52 U	48 U
2-Nitrophenol	10 U	10 U	NA	11 U	10 U	10 U	10 U
2-Picoline	NA	NA	NA	11 UJ	10 UJ	10 U	10 UJ
3,3'-Dichlorobenzidine	20 U	20 U	NA	22 U	21 U	21 U	19 U
3,3'-Dimethylbenzidine	NA	NA	NA	54 U	53 U	52 R	19 U
3-Methylcholanthrene	NA	NA	NA	11 U	10 U	10 U	10 UJ
3-Methylphenol (m-Cresol)	10 UJ	10 UJ	NA	NA	NA	NA	NA
3-Nitroaniline	50 UJ	50 UJ	NA	54 U	53 U	52 U	48 U
4,6-Dinitro-2-methylphenol	50 U	50 U	NA	54 U	53 U	52 UJ	48 U
4-Aminobiphenyl	NA	NA	NA	22 U	21 U	21 U	10 U
4-Bromophenyl-phenylether	10 U	10 U	NA	11 U	10 U	10 U	10 U
4-Chloro-3-methylphenol	10 U	10 U	NA	22 U	21 U	21 U	19 U
4-Chloroaniline	20 U	20 U	NA	22 U	21 U	21 U	19 U
4-Chlorophenyl-phenylether	10 U	10 U	NA	11 U	10 U	10 U	10 U
4-Dimethylaminoazobenzene	NA	NA	NA	22 U	21 U	21 U	19 U
4-Nitroaniline	50 UJ	50 UJ	NA	54 U	53 U	52 U	48 U
4-Nitrophenol	50 U	50 U	NA	54 U	53 U	52 UJ	48 U
4-Nitroquinoline-1-Oxide	NA	NA	NA	54 R	53 R	52 R	48 UJ
7,12-Dimethylbenz(a)anthracene	NA	NA	NA	22 U	21 U	21 U	19 UJ
a,a-Dimethylphenethylamine	NA	NA	NA	54 UJ	53 UJ	52 UJ	48 U
Acenaphthene	10 U	10 U	NA	11 U	10 U	10 U	10 U
Acenaphthylene	10 U	10 U	NA	11 U	10 U	10 U	10 U

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	06-29-1999	06-28-1999	06-29-1999	04-27-1996	04-27-1996	04-16-1996	04-12-1996
Semivolatiles (ug/L) (Continued)							
Acetophenone	NA	NA	NA	11 U	10 U	1 J	10 U
Aniline	NA	NA	NA	54 U	53 U	52 UJ	48 U
Anthracene	10 U	10 U	NA	11 U	10 U	10 U	10 UJ
Aramite	NA	NA	NA	22 UJ	21 UJ	21 U	19 UJ
Benzidine	80 U	80 U	NA	110 UJ	100 UJ	100 U	97 UJ
Benzo(a)anthracene	10 U	10 U	NA	11 U	10 U	10 U	10 U
Benzo(a)pyrene (BaP)	10 U	10 U	NA	11 U	10 U	10 U	10 U
Benzo(b)fluoranthene	10 U	10 U	NA	11 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	10 U	10 U	NA	11 U	10 U	10 U	10 U
Benzo(k)fluoranthene	10 U	10 U	NA	11 U	10 U	10 U	10 U
Benzoic Acid	50 U	50 U	NA	54 U	53 U	52 U	48 U
Benzyl Alcohol	10 U	10 U	NA	11 U	10 U	10 UJ	10 UJ
Bis(2-chloroethoxy)methane	10 U	10 U	NA	11 U	10 U	10 U	10 U
Bis(2-chloroethyl)ether	10 UJ	10 UJ	NA	11 U	10 U	10 U	10 U
Bis(2-ethylhexyl) Phthalate (BEHP)	10 U	10 U	NA	11 U	10 U	7 J	10 U
Butyl Benzyl Phthalate	10 U	10 U	NA	11 U	10 U	10 U	10 U
Carbazole	NA	NA	NA	11 U	10 U	10 U	10 U
Chrysene	10 U	10 U	NA	11 U	10 U	10 U	10 U
Cresol (Mixed Isomers)	NA	NA	NA	11 U	10 U	10 U	10 U
Diallate	NA	NA	NA	11 U	10 U	10 UJ	10 UJ
Dibenz(a,h)anthracene	10 U	10 U	NA	11 U	10 U	10 U	10 U
Dibenzofuran	10 U	10 U	NA	11 U	10 U	10 U	10 U
Diethyl Phthalate (DEP)	10 U	10 U	NA	11 U	10 U	10 U	10 U
Dimethyl Phthalate	10 U	10 U	NA	11 U	1 J	3 J	10 U
Di-n-butyl Phthalate (DBP)	10 U	10 U	NA	11 U	10 U	10 U	10 U
Di-n-octyl Phthalate	10 U	10 U	NA	11 U	10 U	10 U	10 U
Dinoseb	NA	NA	NA	22 UJ	21 UJ	21 U	19 UJ
Diphenylamine	10 U	10 U	NA	11 UJ	10 UJ	10 U	10 U
Ethyl 4,4'-Dichlorobenzilate (Chlorobenzilate)	NA	NA	NA	11 U	10 U	10 U	10 UJ
Ethyl Methanesulfonate	NA	NA	NA	11 U	10 U	10 U	10 U
Fluoranthene	10 U	10 U	NA	11 U	10 U	10 U	10 U
Fluorene	10 U	10 U	NA	11 U	10 U	10 U	10 U
Hexachlorobenzene	10 U	10 U	NA	11 U	10 U	10 U	10 U
Hexachlorobutadiene	10 U	10 U	NA	11 U	10 U	10 U	10 U
Hexachlorocyclopentadiene	10 U	10 U	NA	11 U	10 U	10 U	10 U
Hexachloroethane	10 U	10 U	NA	11 U	10 U	10 U	10 U

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Semivolatiles (ug/L) (Continued)							
Hexachlorophene	NA	NA	NA	110 U	100 U	100 UJ	97 R
Hexachloropropene	NA	NA	NA	54 UJ	53 UJ	52 U	19 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	NA	11 U	10 U	10 U	10 U
Isophorone	10 U	10 U	NA	11 U	10 U	10 U	10 U
Isosafrole	NA	NA	NA	11 U	10 U	10 U	10 U
Methapyrilene	NA	NA	NA	27 U	26 U	26 UJ	24 U
Methyl Methane Sulfonate	NA	NA	NA	11 U	10 U	10 U	10 U
Naphthalene	10 U	10 U	NA	11 U	10 U	10 U	10 U
Nitrobenzene	10 U	10 U	NA	11 U	10 U	10 U	10 U
n-Nitrosodiethylamine	NA	NA	NA	11 UJ	10 UJ	10 U	10 U
n-Nitrosodimethylamine	10 UJ	10 UJ	NA	11 U	10 U	10 U	10 U
n-Nitroso-di-n-butylamine	NA	NA	NA	11 UJ	10 UJ	10 U	10 UJ
n-Nitrosodi-n-propylamine	10 U	10 U	NA	11 U	10 U	10 U	10 UJ
n-Nitrosodiphenylamine	NA	NA	NA	11 U	10 U	10 U	10 U
n-Nitrosomethylethylamine	NA	NA	NA	11 U	10 U	10 U	10 U
n-Nitrosomorpholine	NA	NA	NA	22 UJ	21 UJ	21 U	19 UJ
n-Nitrosopiperidine	NA	NA	NA	11 U	10 U	10 U	10 U
n-Nitrosopyrrolidine	NA	NA	NA	54 UJ	53 UJ	52 U	48 UJ
o-Toluidine	NA	NA	NA	11 U	10 U	10 UJ	10 U
Pentachlorobenzene	NA	NA	NA	11 U	10 U	10 U	10 U
Pentachloronitrobenzene	NA	NA	NA	11 UJ	10 UJ	10 U	10 U
Pentachlorophenol	50 U	50 U	NA	54 U	53 U	52 U	48 U
Phenacetin	NA	NA	NA	11 U	10 U	10 U	10 U
Phenanthrene	10 U	10 U	NA	11 U	10 U	10 U	10 UJ
Phenol	10 U	10 U	NA	11 U	10 U	10 U	10 U
Pronamide	NA	NA	NA	11 U	10 U	10 U	10 U
Pyrene	10 U	10 U	NA	11 U	10 U	10 U	10 UJ
Pyridine	NA	NA	NA	22 U	21 U	21 U	19 U
Safrole	NA	NA	NA	11 U	10 U	10 U	10 U
Pesticides (ug/L)							
4,4'-DDD	NA	NA	NA	0.1 U	0.1 U	0.1 U	0.11 U
4,4'-DDE	NA	NA	NA	0.1 U	0.1 U	0.1 U	0.11 U
4,4'-DDT	NA	NA	NA	0.1 U	0.1 U	0.1 U	0.11 U
Aldrin	NA	NA	NA	0.052 U	0.052 U	0.052 U	0.053 U
BHC, alpha-	NA	NA	NA	0.052 U	0.052 U	0.052 U	0.053 U
BHC, beta-	NA	NA	NA	0.052 U	0.052 U	0.052 U	0.053 U

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Pesticides (ug/L) (continued)							
BHC, delta-	NA	NA	NA	0.052 U	0.052 U	0.052 U	0.053 U
BHC, gamma- (Lindane)	NA	NA	NA	0.052 U	0.052 U	0.052 U	0.053 U
Chlordane, alpha-	NA	NA	NA	0.52 U	0.52 U	0.52 U	0.53 U
Chlordane, gamma-	NA	NA	NA	0.52 U	0.52 U	0.52 U	0.53 U
Dieldrin	NA	NA	NA	0.1 U	0.1 U	0.1 U	0.11 U
Endosulfan I	NA	NA	NA	0.052 U	0.052 U	0.052 U	0.053 U
Endosulfan II	NA	NA	NA	0.1 U	0.1 U	0.1 U	0.11 U
Endosulfan Sulfate	NA	NA	NA	0.1 U	0.1 U	0.1 UJ	0.11 U
Endrin	NA	NA	NA	0.1 U	0.1 U	0.1 U	0.11 U
Endrin Aldehyde	NA	NA	NA	0.1 U	0.1 U	0.1 U	0.11 U
Heptachlor	NA	NA	NA	0.052 U	0.052 U	0.052 U	0.053 U
Heptachlor Epoxide	NA	NA	NA	0.052 U	0.052 U	0.052 U	0.053 U
Isodrin	NA	NA	NA	0.052 U	0.052 U	0.052 U	0.053 U
Kepone (Chlordecone)	NA	NA	NA	0.1 U	0.1 U	0.1 UJ	0.11 U
Methoxychlor	NA	NA	NA	0.52 U	0.52 U	0.52 U	0.53 U
Toxaphene	NA	NA	NA	1 U	1 U	1 U	1.1 U
PCBs (ug/L)							
Aroclor-1016	NA	NA	NA	0.52 U	0.52 U	0.52 U	0.53 U
Aroclor-1221	NA	NA	NA	0.52 U	0.52 U	0.52 U	0.53 U
Aroclor-1232	NA	NA	NA	0.52 U	0.52 U	0.52 U	0.53 U
Aroclor-1242	NA	NA	NA	0.52 U	0.52 U	0.52 U	0.53 U
Aroclor-1248	NA	NA	NA	0.52 U	0.52 U	0.52 U	0.53 U
Aroclor-1254	NA	NA	NA	1 U	1 U	1 U	1.1 U
Aroclor-1260	NA	NA	NA	1 U	1 U	1 U	1.1 U
Herbicides (ug/L)							
2,4,5-T	NA	NA	NA	0.11 U	0.11 U	0.11 U	0.11 U
2,4,5-TP (Silvex)	NA	NA	NA	0.11 U	0.11 U	0.11 U	0.11 U
2,4-D	NA	NA	NA	1.1 U	1.1 U	1.1 U	1.1 U
Dimethoate	NA	NA	NA	2.1 UJ	2.1 UJ	2 UJ	2.2 UJ
Disulfoton	NA	NA	NA	2.1 UJ	2.1 UJ	2 UJ	2.2 UJ
Famphur	NA	NA	NA	2.1 UJ	2.1 UJ	2 UJ	2.2 UJ
Methyl Parathion	NA	NA	NA	2.1 UJ	2.1 UJ	2 UJ	2.2 UJ
o,o,o-Triethyl Phosphorothioate	NA	NA	NA	2.1 UJ	2.1 UJ	2 UJ	2.2 UJ

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Herbicides (ug/L) (continued)							
Parathion	NA	NA	NA	2.1 UJ	2.1 UJ	2 UJ	2.2 UJ
Phorate	NA	NA	NA	2.1 UJ	2.1 UJ	2 UJ	2.2 UJ
Sulfotepp	NA	NA	NA	2.1 UJ	2.1 UJ	2 UJ	2.2 UJ
Thionazin	NA	NA	NA	2.1 UJ	2.1 UJ	2 UJ	2.2 UJ
TPH (ug/L)							
Diesel Range Organics (DRO)	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics (GRO)	NA	NA	NA	NA	NA	30 U	NA
Explosives (ug/L)							
1,3,5-Trinitrobenzene	NA	NA	NA	NA	NA	NA	NA
1,3-Dinitrobenzene	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trinitrotoluene (TNT)	NA	NA	NA	NA	NA	NA	NA
2,4/2,6-Dinitrotoluene Mixture	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA
2-Amino-4,6-dinitrotoluene	NA	NA	NA	NA	NA	NA	NA
2-Nitrotoluene	NA	NA	NA	NA	NA	NA	NA
3-Nitrotoluene	NA	NA	NA	NA	NA	NA	NA
4-Amino-2,6-dinitrotoluene	NA	NA	NA	NA	NA	NA	NA
4-Nitrotoluene	NA	NA	NA	NA	NA	NA	NA
Amino Dinitrotoluenes	NA	NA	NA	NA	NA	NA	NA
HMX	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	NA	NA	NA	NA	NA	NA	NA
RDX (Cyclonite)	NA	NA	NA	NA	NA	NA	NA
Tetryl	NA	NA	NA	NA	NA	NA	NA
Dixions (ug/L)							
HxCDD, 2,3,7,8-	NA	NA	NA	0.0018 U	0.002 U	0.0021 U	0.0032 U
HxCDF, 2,3,7,8-	NA	NA	NA	0.0021 U	0.0019 U	0.0017 U	0.0021 U
PeCDD, total	NA	NA	NA	0.0036 U	0.0034 U	0.0033 U	0.0041 U
PeCDF, total	NA	NA	NA	0.0027 U	0.0023 U	0.0024 U	0.0024 U
TCDD, 2,3,7,8-	NA	NA	NA	0.0018 U	0.0017 U	0.0014 U	0.0024 U
TCDD, total	NA	NA	NA	0.0018 U	0.0017 U	0.0014 U	0.0024 U
TCDF, total	NA	NA	NA	0.002 U	0.0019 U	0.0014 U	0.0021 U

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	06-29-1999	06-28-1999	06-29-1999	04-27-1996	04-27-1996	04-16-1996	04-12-1996
Dissolved Metals (ug/L)							
Antimony	13.5 U	2.7 U	3.8 J	24.6 UJ	24.6 UJ	24.6 UJ	24.6 UJ
Arsenic	2.6 UJ	17.7 J	8.7 J	1.8 U	1.8 U	1.2 UJ	1.8 U
Barium	271	146	236	82	148	121	126
Beryllium	0.5 U	0.1 J	1.1 J	1.1 U	1.1 U	1.1 U	1.1 U
Cadmium	15.4 J	36	33.6	2.9 U	2.9 U	2.9 U	2.9 U
Chromium	4 U	1.3 J	8 J	2.6 U	2.6 U	3.7	2.6 U
Cobalt	501	591	533	59.4	44.4	11.5	3.9 U
Copper	84.8 J	373	496 J	32	2.2 U	2.2 U	2.2 U
Lead	0.9 J	0.9 UJ	0.9 UJ	0.9 UJ	0.9 UJ	1.2 U	0.9 UJ
Mercury	0.11 J	0.1 U	0.2 J	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	80.1 J	52.2	57.7	34.1	35.6	11.1 U	11.1 U
Selenium	27.3 J	18.2 J	13 J	2.8 UJ	1.4 UJ	1.4 UJ	1.4 UJ
Silver	3 U	1.9 J	1.7 J	4 U	4 U	4 U	4 U
Thallium	1.8 R	1.8 R	1.8 R	1.6 U	1.6 U	1 U	1.6 U
Tin	8.5 U	1.7 U	2 J	13.5 U	13.5 U	13.5 U	13.5 U
Vanadium	3 U	1.2 U	265	2.6 U	2.6 U	2.6 U	8.1
Zinc	582	253	492	82.6	60.6	4.4 J	3.8
Total Metals (ug/L)							
Antimony	13.5 R	5.7 U	13.5 R	24.6 UJ	24.6 UJ	24.6 UJ	24.6 UJ
Arsenic	2.6 UJ	22.4 J	13.3 J	1.8 U	1.8 U	1.7 J	3.6
Barium	315 J	1870 J	191 J	275	212	313	612
Beryllium	1.3 J	7.8	0.99 J	2	1.1 U	1.1 U	2.3
Cadmium	14.8 J	53.1	32.4	7.5	2.9 U	2.9 U	2.9 U
Chromium	6.9 J	112	4 U	54.1	3.1 R	29.4	92
Cobalt	507	778	428	91.8	54.3	55.4	83.4
Copper	200	2700	223	120	24	102	352
Lead	0.9 U	32.5 J	0.9 U	4.3 J	0.9 UJ	2.5 J	7 J
Mercury	0.12 J	0.21	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	79.7 J	158	44 J	73.7	40	26.4	39.4
Selenium	42.7 J	17 UJ	8.5 U	2.8 UJ	1.4 UJ	1.4 UJ	3.1 J
Silver	3 U	30.1	3 U	4 U	4 U	4 U	4 U
Thallium	1.8 R	180 R	1.8 R	1.6 UJ	1.6 U	1 U	1.6 UJ
Tin	8.5 U	15.5 J	8.5 U	13.5 U	13.5 U	13.5 U	13.5 U
Vanadium	218	3000	70.8	159	26.8	103	549
Zinc	695	2410	299	178	95.7	128	320

APPENDIX A.3

ANALYTICAL DATA FOR BACKGROUND LOCATIONS - GROUNDWATER
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

	9BGGW02	9BGGW03	9BGGW03D	BGMW01	BGMW02	BGMW03	BGMW04
	06-29-1999	06-28-1999	06-29-1999	04-27-1996	04-27-1996	04-16-1996	04-12-1996
Conventionals (mg/L)							
Cyanide	0.01 U	0.01 U	NA	0.01 U	0.01 U	0.01 R	0.01 U
Sulfide	0.1 U	0.1 U	NA	1 U	1 U	1 U	1 U

APPENDIX A.4
Analytical Data, Surface Water

ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SURFACE WATER
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	01EWSSW01	01EWSSW02	01EWSSW03	01EWSSW04	01EWSSW05	01EWSSW05D	01EWSSW06	01EWSSW07	01EWSSW08	01EWSSW09	01OWSW01	01OWSW02
Date Sampled	07-26-2003	07-26-2003	07-26-2003	07-25-2003	07-26-2003	07-26-2003	07-26-2003	07-26-2003	07-25-2003	07-26-2003	07-24-2003	07-24-2003
Volatiles (ug/L)												
2-Butanone (MEK)	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	2 J
Acetone	25 U	4.9 J	25 U	25 U	6.1 J	6.2 J	4.4 J	11 J	25 U	8.1 J	20 UJ	20 UJ
Benzene	1 U	1 U	1 U	1 U	1 U	0.21 J	1 U	1 U	1 U	1 U	1 UJ	1 UJ
Bromoform	1 UJ	1 UJ	1 UJ	1 UJ	1 U	1 UJ	1 U	1 U	1 UJ	1 U	0.24 J	1 UJ
Carbon Disulfide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 UJ
Chloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 UJ
Ethylbenzene	1 U	1 U	1 U	1 U	0.13 J	1 U	1 U	1 U	1 U	1 U	1 UJ	1 UJ
Methylene Chloride	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 UJ	5 UJ
Styrene (Ethenylbenzene)	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 UJ
Toluene	1 U	1 U	1 U	1 U	0.12 J	0.2 J	1 U	1 U	1 U	1 U	1 UJ	1 UJ
Xylenes, total	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 UJ	2 UJ
Semivolatiles (ug/L)												
Acetophenone	10 UJ	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 UJ	10 UJ	10 U	10 U
Anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene (BaP)	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzoic Acid	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl) Phthalate (BEHP)	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Butyl Benzyl Phthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butyl Phthalate (DBP)	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 UJ
Di-n-octyl Phthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methapyrilene	2000 R	2000 R	2000 R	2000 U	2000 R	2000 R	2000 R	2000 R	2000 U	2000 U	2000 R	2000 R
Phenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Phenols, total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SURFACE WATER
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	01EWSSW01	01EWSSW02	01EWSSW03	01EWSSW04	01EWSSW05	01EWSSW05D	01EWSSW06	01EWSSW07	01EWSSW08	01EWSSW09	01OWSW01	01OWSW02
Date Sampled	07-26-2003	07-26-2003	07-26-2003	07-25-2003	07-26-2003	07-26-2003	07-26-2003	07-26-2003	07-25-2003	07-26-2003	07-24-2003	07-24-2003
PAHs (ug/L)												
2-Methylnaphthalene	0.033 J	0.2 U	0.033 J	0.031 J	0.033 J	0.035 J	0.2 U	0.032 J	0.2 U	0.032 J	0.2 U	0.2 U
Acenaphthene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Anthracene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Benzo(b)fluoranthene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.55	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Fluoranthene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Naphthalene	0.2 U	0.2 U	0.2 U	0.035 J	0.2 U	0.042 J	0.2 U	0.037 J	0.2 U	0.2 U	0.2 U	0.2 U
Phenanthrene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Pyrene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Pesticides / PCBs (ug/L)												
4,4'-DDE	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 U	0.1 U
BHC, beta-	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U	0.05 U
Dioxins / Furans (ug/L)												
HxCDF, total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH (mg/L)												
Diesel Range Organics (DRO)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics (GRO)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dissolved Metals (ug/L)												
Antimony	2 J	2.6	1.7 J	0.79 J	0.51 J	0.53 J	1.4 J	1.7 J	1.3 J	0.63 J	0.25 J	0.22 J
Arsenic	2.1 J	2.9 J	1.9 J	1.7 J	1.9 J	1.6 J	2.4 J	2 J	2.3 J	1.8 J	5 U	5 U
Barium	33	35	31	17	14	14	31	32	23	15	8	8.5
Cadmium	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Chromium	0.95 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cobalt	1.9 J	2.1 J	1.7 J	1.6 J	1.4 J	1.5 J	1.7 J	1.8 J	1.8 J	1.6 J	0.85 J	0.87 J
Copper	2.4 J	2.4 J	4.8 J	1.5 J	2.7 J	1.8 J	1.8 J	2.2 J	1.4 J	1.9 J	0.77 J	0.71 J
Lead	0.11 J	0.2 J	0.11 J	1.5 U	1.5 U	1.5 U	0.11 J	0.12 J	1.5 U	1.5 U	1.5 U	1.5 U
Mercury	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	0.83 J	0.83 J	0.91 J	0.58 J	0.54 J	0.49 J	0.53 J	0.72 J	0.68 J	0.64 J	0.3 J	0.17 J
Selenium	0.36 J	0.3 J	0.26 J	0.32 J	0.28 J	0.26 J	0.27 J	0.38 J	0.29 J	0.28 J	2.5 U	0.16 J
Thallium	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tin	0.49 J	0.16 J	0.22 J	0.33 J	0.18 J	5 U	0.16 J	5 U	0.27 J	5 U	0.36 J	0.32 J
Vanadium	7.2	10	7.2	9.8	12	12	5.4	9.5	8.3	15	1.7 J	1.9 J
Zinc	20	21	21	18	17	17	21	20	20	19	12	13

APPENDIX A.4

Revised: September 15, 2006

ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SURFACE WATER
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	01EWSSW01	01EWSSW02	01EWSSW03	01EWSSW04	01EWSSW05	01EWSSW05D	01EWSSW06	01EWSSW07	01EWSSW08	01EWSSW09	01OWSW01	01OWSW02
Date Sampled	07-26-2003	07-26-2003	07-26-2003	07-25-2003	07-26-2003	07-26-2003	07-26-2003	07-26-2003	07-25-2003	07-26-2003	07-24-2003	07-24-2003
Total Metals (ug/L)												
Antimony	2.1 J	2.5 J	1.7 J	0.84 J	0.52 J	0.49 J	1.6 J	1.7 J	1.3 J	0.64 J	0.3 J	0.32 J
Arsenic	2.7 J	3.4 J	2.1 J	2.3 J	1.8 J	1.8 J	3.2 J	2.7 J	3 J	2.1 J	5 U	5 U
Barium	33	36	32	22	15	15	34	32	27	16	8.9	7.7
Beryllium	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Cadmium	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Chromium	2.1 J	3.8 J	1.4 J	4.3 J	2.3 J	1.9 J	2.5 J	2.1 J	3.6 J	3.4 J	5 U	5 U
Cobalt	2 J	2.5 J	1.8 J	2.3 J	1.8 J	1.7 J	2.4 J	2 J	2.3 J	2.2 J	0.8 J	0.89 J
Copper	8.1	13	6.3	10	9.2	4.2 J	19	9.1	14	7.8	1.3 J	1.2 J
Cyanide	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Lead	1.8	2.5	0.87 J	1.2 J	0.74 J	0.46 J	1.9	0.98 J	1.2 J	0.94 J	0.24 J	0.086 J
Mercury	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	1.5 J	2.6 J	1.3 J	1.8 J	1.2 J	1.1 J	2.4 J	1.5 J	2 J	1.7 J	0.31 J	0.48 J
Selenium	0.49 J	0.44 J	0.31 J	0.32 J	0.27 J	0.24 J	0.43 J	0.36 J	0.4 J	0.24 J	0.21 J	0.16 J
Silver	5 U	0.066 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Thallium	0.28 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.24 J	0.28 J
Tin	0.34 J	0.29 J	5 U	0.25 J	0.16 J	5 U	0.21 J	0.2 J	0.28 J	0.15 J	1.9 J	0.78 J
Vanadium	13	21	13	22	19	17	13	14	18	25	2 J	2.2 J
Zinc	21	25	19	21	19	16	30	20	23	19	11	12

NA - not analyzed

ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SURFACE WATER
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	01OWSW03	01OWSW04	01OWSW05	01OWSW05D	01OWSW06	01OWSW07	01OWSW08	01OWSW09	02OWSW01	02OWSW02	02OWSW03	02OWSW04
Date Sampled	07-25-2003	07-25-2003	07-25-2003	07-25-2003	07-24-2003	07-24-2003	07-25-2003	07-25-2003	7/27/2003	7/27/2003	07-28-2003	07-28-2003
Volatiles (ug/L)												
2-Butanone (MEK)	10 U	10 U	10 U	10 U	1.6 J	1.5 J	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	8.8 J	3 J	3.1 J	25 U	20 UJ	20 UJ	25 U	25 U	25 U	25 U	25 U	25 U
Benzene	1 U	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U	1 UJ	1 UJ	1 UJ	1 UJ	1 U	1 U	1 U	1 U
Carbon Disulfide	1 U	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	7.2	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride	5 U	5 U	5 U	5 U	5 UJ	5 UJ	5 U	5 U	5 U	5 U	5 U	5 U
Styrene (Ethenylbenzene)	1 U	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	1 U	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes, total	2 U	2 U	2 U	2 U	2 UJ	2 UJ	2 U	2 U	2 U	2 U	2 U	2 U
Semivolatiles (ug/L)												
Acetophenone	10 UJ	10 UJ	10 UJ	10 U	10 U	10 U	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene (BaP)	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzoic Acid	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl) Phthalate (BEHP)	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Butyl Benzyl Phthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butyl Phthalate (DBP)	10 U	10 U	10 U	10 U	10 UJ	5.9 J	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-octyl Phthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	10 U	10 U	10 U	10 U	10 U	14	10 U	10 U	10 U	10 U	10 U	10 U
Methapyrilene	2000 U	2000 U	2000 U	2000 UJ	2000 R	2000 R	3.8 J	2000 U	2000 UJ	2000 UJ	2000 UJ	2000 UJ
Phenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Phenols, total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SURFACE WATER
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	01OWSW03	01OWSW04	01OWSW05	01OWSW05D	01OWSW06	01OWSW07	01OWSW08	01OWSW09	02OWSW01	02OWSW02	02OWSW03	02OWSW04
Date Sampled	07-25-2003	07-25-2003	07-25-2003	07-25-2003	07-24-2003	07-24-2003	07-25-2003	07-25-2003	7/27/2003	7/27/2003	07-28-2003	07-28-2003
PAHs (ug/L)												
2-Methylnaphthalene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Acenaphthene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Anthracene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Benzo(b)fluoranthene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Fluoranthene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Naphthalene	0.048 J	0.042 J	0.048 J	0.039 J	0.2 U	0.2 U	0.04 J	0.035 J	0.2 U	0.2 U	0.2 U	0.2 U
Phenanthrene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Pyrene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Pesticides / PCBs (ug/L)												
4,4'-DDE	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
BHC, beta-	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.0072 J	0.05 U	0.05 U
Dioxins / Furans (ug/L)												
HxCDF, total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH (mg/L)												
Diesel Range Organics (DRO)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics (GRO)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dissolved Metals (ug/L)												
Antimony	0.2 J	0.17 J	0.22 J	0.24 J	0.22 J	0.26 J	0.22 J	0.2 J	0.21 J	0.22 J	0.2 J	0.19 J
Arsenic	5 U	5 U	1.4 J	5 U	5 U	5 U	1.4 J	5 U	1.6 J	1.8 J	1.5 J	1.5 J
Barium	7.9	8.1	7.5	7.6	7.9	7.7	7.6	7.9	10	13	7.3	7.4
Cadmium	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Chromium	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.84 J	0.9 J	0.77 J
Cobalt	1 J	1.1 J	1.1 J	1.1 J	0.89 J	0.85 J	1.1 J	1.1 J	0.97 J	0.98 J	1 J	0.96 J
Copper	0.64 J	1.2 J	0.8 J	0.69 J	0.83 J	0.86 J	0.91 J	0.98 J	0.98 J	1.6	1.1 J	0.89 J
Lead	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	0.086 J	1.5 U
Mercury	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	0.29 J	0.27 J	0.31 J	0.28 J	0.25 J	0.19 J	0.23 J	0.25 J	0.31 J	0.3 J	0.73 J	0.19 J
Selenium	0.16 J	0.19 J	0.21 J	0.35 J	0.15 J	0.16 J	0.15 J	0.2 J	0.16 J	2.5 U	2.5 U	0.23 J
Thallium	1 U	1 U	1 U	0.81 J	1 U	1 U	0.21 J	1 U	1 U	1 U	1 U	1 U
Tin	5 U	5 U	5 U	0.66 J	0.27 J	0.22 J	0.41 J	0.37 J	0.28 J	0.26 J	0.29 J	0.32 J
Vanadium	1.9 J	2 J	2.1 J	2.1 J	1.7 J	1.9 J	2 J	2.2 J	2.1 J	2.4 J	2 J	2 J
Zinc	16	16	16	16	13	13	16	16	16	18	17	17

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Sample ID	01OWSW03	01OWSW04	01OWSW05	01OWSW05D	01OWSW06	01OWSW07	01OWSW08	01OWSW09	02OWSW01	02OWSW02	02OWSW03	02OWSW04
Date Sampled	07-25-2003	07-25-2003	07-25-2003	07-25-2003	07-24-2003	07-24-2003	07-25-2003	07-25-2003	7/27/2003	7/27/2003	07-28-2003	07-28-2003
Total Metals (ug/L)												
Antimony	0.22 J	0.18 J	0.22 J	0.21 J	0.26 J	0.25 J	0.2 J	0.21 J	0.27 J	0.26 J	0.24 J	0.22 J
Arsenic	1.5 J	5 U	5 U	1.5 J	5 U	5 U	5 U	5 U	2 J	1.9 J	1.4 J	5 U
Barium	8.2	7.3	8	8.4	9	8.1	8	7.7	12	8.4	7.5	7.7
Beryllium	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Cadmium	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Chromium	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	4.4 J	0.8 J	1.2 J	0.95 J
Cobalt	1 J	0.89 J	0.97 J	0.94 J	0.8 J	0.8 J	0.93 J	0.94 J	1.1 J	1.1 J	0.93 J	0.99 J
Copper	3.9 J	1.3 J	14	0.91 J	1.8 J	0.92 J	0.97 J	1.1 J	4.5 J	1.4 J	0.89 J	1 J
Cyanide	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Lead	0.21 J	1.5 U	0.67 J	0.074 J	0.099 J	0.082 J	1.5 U	1.5 U	0.19 J	0.12 J	1.5 U	1.5 U
Mercury	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	0.26 J	0.24 J	0.28 J	0.29 J	0.29 J	1 J	0.21 J	0.17 J	0.42 J	0.28 J	0.33 J	0.28 J
Selenium	0.18 J	2.5 U	0.21 J	0.28 J	0.14 J	0.15 J	0.24 J	0.28 J	0.26 J	0.43 J	0.16 J	0.22 J
Silver	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.088 J	0.079 J	5 U	5 U
Thallium	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.27 J	0.44 J	0.28 J	1 U
Tin	5 U	5 U	5 U	0.56 J	0.49 J	0.41 J	0.39 J	0.28 J	0.32 J	0.68 J	0.27 J	0.27 J
Vanadium	2.4 J	2 J	2.3 J	2.2 J	1.9 J	1.9 J	2.1 J	2.3 J	3.2 J	2.6 J	2.1 J	2 J
Zinc	15	12	21	15	12	13	18	13	17	16	14	15

NA - not analyzed

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Sample ID	02OWSW05	02OWSW05D	02OWSW06	02OWSW07	02OWSW08	02OWSW09	16E-SW01	2E-SW01	5SW4	6E-SW01	6E-SW01D	6E-SW02	6E-SV
Date Sampled	07-28-2003	07-28-2003	07-27-2003	07-27-2003	07-28-2003	07-28-2003	05-14-2004	05-15-2004	11-28-1985	05-14-2004	05-14-2004	05-14-2004	05-14
Volatiles (ug/L)													
2-Butanone (MEK)	10 U	10 U	10 U	10 U	0.74 J	10 U	10 U	10 U	13 U	10 U	10 U	10 U	10
Acetone	25 U	2.8 J	25 U	25 U	25 UJ	25 UJ	25 U	25 U		25 U	25 U	25 U	25
Benzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1
Bromoform	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.8 U	1 U	1 U	1 U	1
Carbon Disulfide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U	1 U	1 U	1
Chloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.4 U	1 U	1 U	1 U	1
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.51 U	1 U	1 U	1 U	1
Methylene Chloride	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	2.5 U	5 U	5 U	5 U	5
Styrene (Ethenylbenzene)	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U		1 U	1 U	1 U	1
Toluene	1 U	1 U	1 U	0.22 J	1 U	1 U	1 U	1 U	0.36 U	1 U	1 U	1 U	1
Xylenes, total	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U		2 U	2 U	2 U	2
Semivolatiles (ug/L)													
Acetophenone	10 UJ	10 UJ	10 U	10 U	10 UJ	10 UJ	10 U	10 U		10 U	10 U	10 U	10
Anthracene	NA	NA	NA	NA	NA	NA	10 U	10 U	1 U	10 U	10 U	10 U	10
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	10 U	10 U	1 U	10 U	10 U	10 U	10
Benzo(a)pyrene (BaP)	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	1 U	10 U	10 U	10 U	10
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	10 U	10 U	1 U	10 U	10 U	10 U	10
Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	10 U	10 U	1 U	10 U	10 U	10 U	10
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	10 U	10 U	1 U	10 U	10 U	10 U	10
Benzoic Acid	NA	NA	NA	NA	NA	NA							
Bis(2-ethylhexyl) Phthalate (BEHP)	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	1 U	10 U	10 U	10 U	10
Butyl Benzyl Phthalate	10 U	0.88 J	10 U	10 U	10 U	10 UJ	10 U	10 U	1 U	10 U	10 U	10 U	10
Chrysene	NA	NA	NA	NA	NA	NA	10 U	10 U	1 U	10 U	10 U	10 U	10
Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	10 U	10 U	1 U	10 U	10 U	10 U	10
Di-n-butyl Phthalate (DBP)	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	1 U	10 U	10 U	10 U	10
Di-n-octyl Phthalate	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	1 U	10 U	10 U	10 U	10
Fluoranthene	NA	NA	NA	NA	NA	NA	10 U	10 U	1 U	10 U	10 U	10 U	10
Fluorene	NA	NA	NA	NA	NA	NA	10 U	10 U	1 U	10 U	10 U	10 U	10
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	10 U	10 U	1 U	10 U	10 U	10 U	10
Isophorone	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	1 U	10 U	10 U	10 U	10
Methapyrilene	2000 UJ	2000 UJ	2000 R	2000 R	2000 UJ	2000 UJ	2000 U	2000 U		2000 U	2000 U	2000 U	2000
Phenol	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	1 U	10 U	10 U	10 U	10
Phenols, total	NA	NA	NA	NA	NA	NA							
Pyrene	NA	NA	NA	NA	NA	NA	10 U	10 U	1 U	10 U	10 U	10 U	10

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Sample ID	02OWSW05	02OWSW05D	02OWSW06	02OWSW07	02OWSW08	02OWSW09	16E-SW01	2E-SW01	5SW4	6E-SW01	6E-SW01D	6E-SW02	6E-SV
Date Sampled	07-28-2003	07-28-2003	07-27-2003	07-27-2003	07-28-2003	07-28-2003	05-14-2004	05-15-2004	11-28-1985	05-14-2004	05-14-2004	05-14-2004	05-14
PAHs (ug/L)													
2-Methylnaphthalene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA	NA	NA	NA	NA
Anthracene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA	NA	NA	NA	NA
Naphthalene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA	NA	NA	NA	NA
Pyrene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA	NA	NA	NA	NA
Pesticides / PCBs (ug/L)													
4,4'-DDE	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	NA	0.025 U	0.1 U	0.1 U	0.1 U	0.1
BHC, beta-	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	NA	0.015 U	0.05 U	0.05 U	0.05 U	0.05
Dioxins / Furans (ug/L)													
HxCDF, total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH (mg/L)													
Diesel Range Organics (DRO)	NA	NA	NA	NA	NA	NA	NA	0.1 U	NA	NA	NA	NA	NA
Gasoline Range Organics (GRO)	NA	NA	NA	NA	NA	NA	NA	0.05 U	NA	NA	NA	NA	NA
Dissolved Metals (ug/L)													
Antimony	0.17 J	0.21 J	0.21 J	0.21 J	0.21 J	0.21 J	NA	NA	NA	NA	NA	NA	NA
Arsenic	1.4 J	1.6 J	1.5 J	1.6 J	1.6 J	1.5 J	NA	NA	NA	NA	NA	NA	NA
Barium	7.4	7.3	8.4	7.7	7.1	7.3	NA	NA	NA	NA	NA	NA	NA
Cadmium	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	NA	NA	NA	NA	NA	NA	NA
Chromium	0.82 J	0.78 J	0.74 J	5 U	0.9 J	0.86 J	NA	NA	NA	NA	NA	NA	NA
Cobalt	1 J	1 J	0.99 J	1 J	1 J	1 J	NA	NA	NA	NA	NA	NA	NA
Copper	0.6 J	1 J	0.86 J	1.5 J	0.72 J	0.52 J	NA	NA	NA	NA	NA	NA	NA
Lead	1.5 U	1.5 U	1.5 U	0.088 J	1.5 U	1.5 U	NA	NA	NA	NA	NA	NA	NA
Mercury	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA	NA	NA	NA	NA
Nickel	0.28 J	0.25 J	0.22 J	0.27 J	0.28 J	0.31 J	NA	NA	NA	NA	NA	NA	NA
Selenium	2.5 U	0.17 J	2.5 U	0.15 J	0.18 J	0.23 J	NA	NA	NA	NA	NA	NA	NA
Thallium	1 U	0.42 J	1 U	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA
Tin	0.24 J	0.67 J	0.21 J	0.21 J	0.51 J	0.38 J	NA	NA	NA	NA	NA	NA	NA
Vanadium	2 J	2 J	2.6 J	2.6 J	2.2 J	2.1 J	NA	NA	NA	NA	NA	NA	NA
Zinc	16	18	17	18	16	17	NA	NA	NA	NA	NA	NA	NA

APPENDIX A.4

Revised: September 15, 2006

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Sample ID	02OWSW05	02OWSW05D	02OWSW06	02OWSW07	02OWSW08	02OWSW09	16E-SW01	2E-SW01	5SW4	6E-SW01	6E-SW01D	6E-SW02	6E-SV
Date Sampled	07-28-2003	07-28-2003	07-27-2003	07-27-2003	07-28-2003	07-28-2003	05-14-2004	05-15-2004	11-28-1985	05-14-2004	05-14-2004	05-14-2004	05-14
Total Metals (ug/L)													
Antimony	0.18 J	0.26 J	0.23 J	0.22 J	0.22 J	0.18 J	200 U	20 U	24 U	100 U	100 U	100 U	100
Arsenic	1.6 J	1.5 J	1.6 J	1.9 J	1.7 J	1.6 J	100 U	10 U	96	10 UN	10 UN	10 UN	10
Barium	7.5	7.3	14	8	7.5	7.4	6.8 B	19		7 B	6.9 B	6.9 B	7.2
Beryllium	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	4 U	4 U	3 U	4 U	4 U	4 U	4
Cadmium	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	5 U	5 U	3 U	5 U	5 U	5 U	5
Chromium	5 U	0.85 J	0.84 J	1.1 J	0.79 J	0.9 J	10 U	10 U	6	10 U	10 U	10 U	10
Cobalt	0.91 J	0.98 J	0.98 J	1 J	1 J	1.1 J	10 U	10 U		10 U	10 U	10 U	10
Copper	0.86 J	3.6 J	2.5 J	3.1 J	0.92 J	2.5 J	200 U	20 U	3 U	100 U	100 U	100 U	100
Cyanide	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U		10 U	10 U	10 U	10
Lead	1.5 U	0.15 J	0.19 J	0.27 J	1.5 U	0.098 J	5 U	5 U	24 U	25 U	5 U	5 U	5
Mercury	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2
Nickel	0.44 J	0.31 J	0.34 J	0.47 J	0.3 J	0.3 J	40 U	40 U	6 U	40 U	40 U	40 U	40
Selenium	0.15 J	0.24 J	0.15 J	0.21 J	0.18 J	0.18 J	100 U	10 U	39 U	50 U	50 U	50 U	50
Silver	5 U	5 U	5 U	5 U	5 U	5 U	100 U	5 U	6 U	50 UN	50 UN	50 UN	50
Thallium	1 U	0.42 J	1 U	1 U	1 U	1 U	10 U	10 U	116	10 U	10 U	10 U	10
Tin	0.2 J	0.83 J	0.52 J	0.44 J	0.47 J	0.41 J	500 U	50 U		250 U	250 U	250 U	250
Vanadium	2.1 J	2.3 J	2.6 J	3.1 J	2.2 J	2.2 J	100 U	1.5 B		50 U	4.3 B	50 U	50
Zinc	14	16	18	20	15	16	25	1.8 B	19.9	38	25	25	2.2

NA - not analyzed

ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SURFACE WATER
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	W02D	7SW2	7SW5	7SW6	7SW7	7SW8	7SW9
Date Sampled	-2004	01-15-2002	1/16/2002	1/17/2002	1/16/2002	1/16/2002	1/16/2002
Volatiles (ug/L)							
2-Butanone (MEK)	U	25 U	25 U	25 U	25 U	25 U	25 U
Acetone	U	50 U	50 U	50 U	50 U	50 U	50 U
Benzene	U	5 U	5 U	5 U	5 U	5 U	5 U
Bromoform	U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon Disulfide	U	3.3 J	5 U	2.9 J	5 U	5 U	5 U
Chloroethane	U	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	U	5 U	5 U	5 U	5 U	5 U	5 U
Methylene Chloride	U	5 U	5 U	5 U	5 U	5 U	5 U
Styrene (Ethenylbenzene)	U	5 U	5 U	5 U	5 U	5 U	5 U
Toluene	U	5 U	5 U	5 U	5 U	5 U	5 U
Xylenes, total	U	10 U	10 U	10 U	10 U	10 U	10 U
Semivolatiles (ug/L)							
Acetophenone	U	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene	U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene (BaP)	U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	U	10 U	10 U	10 U	10 U	10 U	10 U
Benzoic Acid							
Bis(2-ethylhexyl) Phthalate (BEHP)	U	10 U	10 U	10 U	10 U	10 U	10 U
Butyl Benzyl Phthalate	U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	U	10 U	10 U	10 U	10 U	10 U	10 U
Dibenz(a,h)anthracene	U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-butyl Phthalate (DBP)	U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-octyl Phthalate	U	10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene	U	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	U	10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	U	10 U	10 U	10 U	10 U	10 U	10 U
Isophorone	U	10 U	10 U	10 U	10 U	10 U	10 U
Methapyrilene	U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U
Phenol	U	10 U	10 U	10 U	10 U	10 U	10 U
Phenols, total							
Pyrene	U	10 U	10 U	10 U	10 U	10 U	10 U

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CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	W02D	7SW2	7SW5	7SW6	7SW7	7SW8	7SW9
Date Sampled	-2004	01-15-2002	1/16/2002	1/17/2002	1/16/2002	1/16/2002	1/16/2002
PAHs (ug/L)							
2-Methylnaphthalene		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Acenaphthene		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Anthracene		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Benzo(b)fluoranthene		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Fluoranthene		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Naphthalene		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Phenanthrene		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Pyrene		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Pesticides / PCBs (ug/L)							
4,4'-DDE	U	NA	NA	NA	NA	NA	NA
BHC, beta-	U	NA	NA	NA	NA	NA	NA
Dioxins / Furans (ug/L)							
HxCDF, total		NA	NA	NA	NA	NA	NA
TPH (mg/L)							
Diesel Range Organics (DRO)		NA	NA	NA	NA	NA	NA
Gasoline Range Organics (GRO)		NA	NA	NA	NA	NA	NA
Dissolved Metals (ug/L)							
Antimony		20 U	20 U	20 U	20 U	20 U	20 U
Arsenic		7.1 J	10 U	3.2 J	10 U	10 U	7.7 J
Barium		8.9 J	9.4 J	7.5 J	8.9 J	8.6 J	8.2 J
Cadmium		0.95 J	5 U	5 U	5 U	5 U	5 U
Chromium		10 U	10 U	10 U	10 U	10 U	10 U
Cobalt		10 U	10 U	10 U	10 U	10 U	10 U
Copper		3.8 J	2.3 J	2.1 J	3.4 J	2.3 J	2.7 J
Lead		5 U	5 U	5 U	5 U	5 U	5 U
Mercury		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel		40 U	40 U	40 U	40 U	40 U	40 U
Selenium		10 U	10 U	10 U	10 U	10 U	10 U
Thallium		10 UJ	10 U	4.9 J	10 U	10 U	10 U
Tin		50 U	9.1 J	6.6 J	8.6 J	7.3 J	50 U
Vanadium		20 U	20 U	6.2 J	5.2 J	20 U	4.5 J
Zinc		20 U	20 U	20 U	20 U	20 U	20 U

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Sample ID	W02D	7SW2	7SW5	7SW6	7SW7	7SW8	7SW9
Date Sampled	-2004	01-15-2002	1/16/2002	1/17/2002	1/16/2002	1/16/2002	1/16/2002
Total Metals (ug/L)							
Antimony	U	20 U	20 U	5.4 J	20 U	20 U	20 U
Arsenic	UN	4 J	7 J	10 U	4.2 J	4.6 J	10 U
Barium	B	9 J	9.3 J	8.8 J	8.4 J	8.6 J	8.6 J
Beryllium	U	4 U	4 U	4 U	4 U	4 U	4 U
Cadmium	U	5 U	5 U	5 U	5 U	5 U	5 U
Chromium	U	10 U	10 U	10 U	10 U	10 U	10 U
Cobalt	U	10 U	10 U	10 U	10 U	10 U	10 U
Copper	U	3.8 J	2.2 J	2.9 J	2.2 J	2.6 J	2.1 J
Cyanide	U						
Lead	U	5 U	1.7 J	5 U	5 U	5 U	5 U
Mercury	U	0.2 U	0.2 U	0.2 U	0.2 U	0.081 J	0.2 U
Nickel	U	40 U	40 U	40 U	40 U	40 U	40 U
Selenium	U	10 U	10 U	10 U	10 U	6.3 J	10 U
Silver	UN	10 U	10 U	10 U	10 U	10 U	10 U
Thallium	U	10 UJ	10 U	10 U	10 U	10 U	10 U
Tin	U	50 U	6.8 J	50 U	50 U	50 U	50 U
Vanadium	U	10 J	9.2 J	6.4 J	4.6 J	7.7 J	6.1 J
Zinc	B	20 U	20 U	20 U	20 U	20 U	20 U

NA - not analyzed

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Sample ID	9SW05	9SW08	9SW08D	9SW08F	9SW09	9SW09F	9SW10	9SW10F	9SW11	9SW11F	9SW12	9SW12F	9SW24
Date Sampled	06-29-1999	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000
Volatiles (ug/L)													
2-Butanone (MEK)	25 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	50 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene (Ethenylbenzene)	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes, total	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatiles (ug/L)													
Acetophenone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene (BaP)	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzoic Acid	50 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl) Phthalate (BEHP)	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl Benzyl Phthalate	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butyl Phthalate (DBP)	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl Phthalate	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methapyrilene		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenols, total		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PAHs (ug/L)													
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Sample ID	9SW05	9SW08	9SW08D	9SW08F	9SW09	9SW09F	9SW10	9SW10F	9SW11	9SW11F	9SW12	9SW12F	9SW24
Date Sampled	06-29-1999	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000
Pesticides / PCBs (ug/L)													
4,4'-DDE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BHC, beta-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dioxins / Furans (ug/L)													
HxCDF, total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH (ug/L)													
Diesel Range Organics (DRO)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics (GRO)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dissolved Metals (ug/L)													
Antimony	NA	NA	NA	20 U	NA	20 U	NA	20 U	NA	5.5 J	NA	10 J	NA
Arsenic	NA	NA	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA	3.8 J	NA
Barium	NA	NA	NA	25	NA	27	NA	21	NA	22	NA	24	NA
Cadmium	NA	NA	NA	5 U	NA	5 U	NA	5 U	NA	5 U	NA	5 U	NA
Chromium	NA	NA	NA	2.2 J	NA	10 U	NA	10 U	NA	2.2 J	NA	10 U	NA
Cobalt	NA	NA	NA	3 J	NA	2.2 J	NA	10 U	NA	1.9 J	NA	4.6 J	NA
Copper	NA	NA	NA	2 J	NA	20 U	NA	2.9 J	NA	2.9 J	NA	2.4 J	NA
Lead	NA	NA	NA	5 U	NA	5 U	NA	5 U	NA	5 U	NA	5 U	NA
Mercury	NA	NA	NA	0.083 J	NA	0.2 U	NA	0.2 U	NA	0.2 U	NA	0.2 U	NA
Nickel	NA	NA	NA	40 U	NA	40 U	NA	40 U	NA	40 U	NA	40 U	NA
Selenium	NA	NA	NA	4.2 J	NA	10 U	NA	10 U	NA	4.3 J	NA	5.2 J	NA
Thallium	NA	NA	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
Tin	NA	NA	NA	50 U	NA	50 U	NA	50 U	NA	50 U	NA	50 U	NA
Vanadium	NA	NA	NA	50 U	NA	50 U	NA	50 U	NA	50 U	NA	50 U	NA
Zinc	NA	NA	NA	8.6 J	NA	20 U	NA	14 J	NA	20 U	NA	21	NA
Total Metals (ug/L)													
Antimony	2.7 U	20 U	20 U	NA	20 U	NA	20 U	NA	20 U	NA	6 J	NA	20 U
Arsenic	35.1 J	10 U	10 U	NA	3.3 J	NA	4.2 J	NA	4.5 J	NA	10 U	NA	10 U
Barium	55.9	27	27	NA	32	NA	22	NA	23	NA	24	NA	16
Beryllium	0.1 U	4 U	4 U	NA	4 U	NA	4 U	NA	4 U	NA	4 U	NA	4 U
Cadmium	0.5 U	5 U	5 U	NA	5 U	NA	5 U	NA	5 U	NA	5 U	NA	5 U
Chromium	9.1 J	2.2 J	3.8 J	NA	4.4 J	NA	2.6 J	NA	5 J	NA	3.2 J	NA	2 J
Cobalt	3.2 J	5.6 J	6.3 J	NA	4.9 J	NA	10 U	NA	2.8 J	NA	7.1 J	NA	10 U
Copper	42.3 U	14 J	17 J	NA	7.9 J	NA	7.1 J	NA	12 J	NA	6.4 J	NA	2.3 J
Lead	4.5 UJ	5 U	5 U	NA	5 U	NA	2 J	NA	5 U	NA	5 U	NA	5 U
Mercury	0.1 U	0.2 U	0.2 U	NA	0.086 J	NA	0.2 U	NA	0.2 U	NA	0.091 J	NA	0.2 U
Nickel	1.4 U	40 U	40 U	NA	40 U	NA	40 U	NA	40 U	NA	40 U	NA	40 U
Selenium	17 UJ	5.7 J	4.6 J	NA	10 U	NA	7.5 J	NA	5.5 J	NA	10 U	NA	10 U
Silver	0.6 U	10 U	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
Thallium	180 R	10 U	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
Tin	2.7 J	50 U	50 U	NA	50 U	NA	50 U	NA	50 U	NA	50 U	NA	50 U
Vanadium	48.4 J	12 J	21 J	NA	14 J	NA	24 J	NA	23 J	NA	50 U	NA	50 U
Zinc	11.9 J	8.1 J	8.6 J	NA	6 J	NA	20 U	NA	7.3 J	NA	6.2 J	NA	20 U

NA - not analyzed

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Sample ID	9SW24D	9SW24DF	9SW24F	9SW25	9SW25F	9SW26	9SW26F	9SW27	9SW27F	9SW28	9SW28F	BGOWSW01	BGOWSW02
Date Sampled	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	01-17-2002	01-17-2002
Volatiles (ug/L)													
2-Butanone (MEK)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	25 U	25 U
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	50 U	50 U
Benzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5 U	5 U
Bromoform	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5 U	5 U
Carbon Disulfide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5 U	5 U
Chloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 U	10 U
Ethylbenzene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5 U	5 U
Methylene Chloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5 U	5 U
Styrene (Ethenylbenzene)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5 U	5 U
Toluene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5 U	5 U
Xylenes, total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 U	10 U
Semivolatiles (ug/L)													
Acetophenone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 U	10 U
Anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 U	10 U
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 U	10 U
Benzo(a)pyrene (BaP)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 U	10 U
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 U	10 U
Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 U	10 U
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 U	10 U
Benzoic Acid	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Bis(2-ethylhexyl) Phthalate (BEHP)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 U	10 U
Butyl Benzyl Phthalate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 U	10 U
Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 U	10 U
Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 U	10 U
Di-n-butyl Phthalate (DBP)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 U	10 U
Di-n-octyl Phthalate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 U	10 U
Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 U	10 U
Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 U	10 U
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 U	10 U
Isophorone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 U	10 U
Methapyrilene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2000 U	2000 U
Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 U	10 U
Phenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 U	10 U
Phenols, total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10 U	10 U
PAHs (ug/L)													
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.2 U	0.2 U
Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.2 U	0.2 U
Anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.2 U	0.2 U
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.2 U	0.2 U
Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.2 U	0.2 U
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.2 U	0.2 U
Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.2 U	0.2 U
Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.2 U	0.2 U

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Sample ID	9SW24D	9SW24DF	9SW24F	9SW25	9SW25F	9SW26	9SW26F	9SW27	9SW27F	9SW28	9SW28F	BGOWSW01	BGOWSW02
Date Sampled	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	01-17-2002	01-17-2002
Pesticides / PCBs (ug/L)													
4,4'-DDE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.1 U	0.1 U
BHC, beta-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.05 U	0.05 U
Dioxins / Furans (ug/L)													
HxCDF, total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.005 U	0.005 U
TPH (ug/L)													
Diesel Range Organics (DRO)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics (GRO)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dissolved Metals (ug/L)													
Antimony	NA	20 U	20 U	NA	6.1 J	NA	20 U	NA	8.1 J	NA	5.6 J	20 U	20 U
Arsenic	NA	10 U	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	10 U	6.7 J
Barium	NA	15	15	NA	15	NA	17	NA	22	NA	16	8.6 J	8.5 J
Cadmium	NA	5 U	5 U	NA	5 U	NA	5 U	NA	5 U	NA	5 U	5 U	0.89 J
Chromium	NA	10 U	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	10 U	10 U
Cobalt	NA	10 U	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	10 U	10 U
Copper	NA	20 U	20 U	NA	2 J	NA	1.4 J	NA	20 U	NA	1.1 J	9.9 J	3.2 J
Lead	NA	5 U	5 U	NA	5 U	NA	5 U	NA	5 U	NA	5 U	5 U	5 U
Mercury	NA	0.2 U	0.2 U	NA	0.11 J	NA	0.2 U	NA	0.2 U	NA	0.2 U	0.2 U	0.2 U
Nickel	NA	40 U	40 U	NA	40 U	NA	40 U	NA	40 U	NA	40 U	40 U	40 U
Selenium	NA	7.2 J	10 U	NA	5 J	NA	10 U	NA	7.7 J	NA	7.4 J	10 U	10 U
Thallium	NA	10 U	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	10 UJ	10 UJ
Tin	NA	50 U	50 U	NA	50 U	NA	50 U	NA	50 U	NA	50 U	50 U	50 U
Vanadium	NA	50 U	50 U	NA	50 U	NA	50 U	NA	50 U	NA	50 U	20 U	8.9 J
Zinc	NA	20 U	20 U	NA	20 U	NA	14 J	NA	7.6 J	NA	20 U	7.7 J	20 U
Total Metals (ug/L)													
Antimony	20 U	NA	NA	5.5 J	NA	20 U	NA	20 U	NA	20 U	NA	20 U	20 U
Arsenic	10 U	NA	NA	4.7 J	NA	6.1 J	NA	10 U	NA	3.3 J	NA	10 U	6.9 J
Barium	16	NA	NA	16	NA	18	NA	25	NA	16	NA	8.7 J	8.2 J
Beryllium	4 U	NA	NA	4 U	NA	4 U	NA	4 U	NA	4 U	NA	4 U	4 U
Cadmium	5 U	NA	NA	5 U	NA	5 U	NA	5 U	NA	5 U	NA	5 U	5 U
Chromium	10 U	NA	NA	1.9 J	NA	10 U	NA	2.1 J	NA	2.2 J	NA	10 U	10 U
Cobalt	10 U	NA	NA	1.8 J	NA	10 U	NA	2.3 J	NA	1.5 J	NA	10 U	10 U
Copper	2.7 J	NA	NA	3.6 J	NA	2.6 J	NA	4.5 J	NA	2.5 J	NA	2.5 J	2.2 J
Lead	5 U	NA	NA	5 U	NA	5 U	NA	5 U	NA	5 U	NA	5 U	5 U
Mercury	0.2 U	NA	NA	0.2 U	NA	0.2 U	NA	0.2 U	NA	0.2 U	NA	0.2 U	0.2 U
Nickel	40 U	NA	NA	40 U	NA	40 U	NA	40 U	NA	40 U	NA	40 U	40 U
Selenium	10 U	NA	NA	10 U	NA	10 U	NA	10 U	NA	6 J	NA	10 U	10 U
Silver	10 U	NA	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	10 U
Thallium	10 U	NA	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 UJ	10 UJ
Tin	50 U	NA	NA	50 U	NA	50 U	NA	50 U	NA	50 U	NA	50 U	6.5 J
Vanadium	50 U	NA	NA	50 U	NA	50 U	NA	50 U	NA	50 U	NA	20 U	20 U
Zinc	20 U	NA	NA	20 U	NA	20 U	NA	6.5 J	NA	20 U	NA	20 U	20 U

NA - not analyzed

ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SURFACE WATER
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	BGOWSW03	BGOWSW03D	BGOWSW04	BGOWSW05	BGOWSW06	BGOWSW07	BGOWSW08	BGOWSW09
Date Sampled	01-17-2002	01-17-2002	01-17-2002	01-17-2002	01-17-2002	01-17-2002	01-17-2002	01-17-2002
Volatiles (ug/L)								
2-Butanone (MEK)	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Acetone	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Benzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromoform	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon Disulfide	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methylene Chloride	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Styrene (Ethenylbenzene)	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Toluene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Xylenes, total	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Semivolatiles (ug/L)								
Acetophenone	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene (BaP)	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzoic Acid								
Bis(2-ethylhexyl) Phthalate (BEHP)	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Butyl Benzyl Phthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibenz(a,h)anthracene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-butyl Phthalate (DBP)	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-octyl Phthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	10 U	10 U	10 U	10 U	0.46 J	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Isophorone	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methapyrilene	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U	2000 U
Phenanthrene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Phenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Phenols, total								
Pyrene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
PAHs (ug/L)								
2-Methylnaphthalene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Acenaphthene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Anthracene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Benzo(b)fluoranthene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Fluoranthene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Naphthalene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Phenanthrene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Pyrene	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U

ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SURFACE WATER
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PR

Sample ID	BGOWSW03	BGOWSW03D	BGOWSW04	BGOWSW05	BGOWSW06	BGOWSW07	BGOWSW08	BGOWSW09
Date Sampled	01-17-2002	01-17-2002	01-17-2002	01-17-2002	01-17-2002	01-17-2002	01-17-2002	01-17-2002
Pesticides / PCBs (ug/L)								
4,4'-DDE	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
BHC, beta-	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Dioxins / Furans (ug/L)								
HxCDF, total	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
TPH (ug/L)								
Diesel Range Organics (DRO)	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics (GRO)	NA	NA	NA	NA	NA	NA	NA	NA
Dissolved Metals (ug/L)								
Antimony	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Arsenic	4.4 J	3.6 J	10 U	5.5 J	10 U	3.3 J	7.1 J	4.1 J
Barium	8.6 J	7.9 J	8.6 J	8.9 J	8 J	8 J	8.2 J	7.8 J
Cadmium	0.83 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chromium	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cobalt	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Copper	2.9 J	2.9 J	2.9 J	3.3 J	2.9 J	3.4 J	3 J	2.7 J
Lead	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Mercury	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U
Selenium	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Thallium	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Tin	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Vanadium	6.5 J	20 U	7 J	6 J	5 J	7 J	5.3 J	20 U
Zinc	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Total Metals (ug/L)								
Antimony	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Arsenic	10 U	9.4 J	4.5 J	7.4 J	10 U	10 U	4.2 J	10 U
Barium	8.6 J	9.5 J	9.4 J	9.8 J	8.7 J	8.5 J	9 J	8.7 J
Beryllium	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
Cadmium	5 U	5 U	5 U	5 U	5 U	5 U	0.94 J	5 U
Chromium	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cobalt	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Copper	1.7 J	2 J	1.9 J	2 J	2.4 J	1.8 J	1.9 J	1.8 J
Lead	5 U	5 U	3.3 J	5 U	5 U	5 U	5 U	5 U
Mercury	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U
Selenium	10 U	10 U	10 U	10 U	6 J	10 U	10 U	10 U
Silver	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Thallium	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Tin	50 U	50 U	50 U	50 U	7.3 J	50 U	50 U	50 U
Vanadium	20 U	4.7 J	4.6 J	8.2 J	6.8 J	20 U	20 U	12 J
Zinc	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U

NA - not analyzed

APPENDIX A.5
Analytical Data, Sediment

ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SEDIMENT
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID	01EWSSD01	01EWSSD02	01EWSSD03	01EWSSD04	01EWSSD05	01EWSSD05D	01EWSSD06	01EWSSD07	01EWSSD08	01EWSSD09	01OWSD01	01OWSD02	01OWSD03	01OWSD04
Date Sampled	07-26-2003	07-26-2003	07-26-2003	07-25-2003	07-26-2003	07-26-2003	07-26-2003	07-26-2003	07-25-2003	07-26-2003	07-24-2003	07-24-2003	07-25-2003	07-25-2003
Volatiles (ug/kg)														
2-Butanone (MEK)	88 U	59 J	44 U	49 J	39 J	260 U	39 J	34 J	520 UJ	37 J	17 J	22 J	24 J	43 J
2-Hexanone (MBK)	88 U	88 U	44 U	78 U	89 UJ	260 UJ	130 U	110 U	520 UJ	110 U	67 UJ	67 UJ	71 U	100 U
Acetone	110 J	220	44 J	330	150 J	85 J	160 J	130 J	1000 R	150 J	69 J	150 J	140 J	310
Benzene	31	18 U	2 J	16 U	18 U	52 U	3.4 J	21 U	100 U	22 U	13 U	13 U	14 U	20 U
Carbon Disulfide	12 J	8.5 J	2.7 J	4.8 J	33 J	52 UJ	2.4 J	6.2 J	100 U	9.2 J	8.2 J	8.7 J	20	20
Chlorobenzene	3.4 J	18 UJ	8.7 U	16 UJ	18 U	52 U	5.8 J	21 U	100 U	22 U	13 U	13 U	14 U	20 U
Ethylbenzene	2.5 J	3 J	1.2 J	16 UJ	18 U	52 U	26 U	21 U	100 U	22 U	13 U	13 U	14 U	20 U
Isobutyl Alcohol	710 R	740 R	350 R	620 R	710 R	2100 R	1000 R	850 R	4200 R	860 R	530 R	540 R	560 R	800 R
Methylene Chloride	18 U	18 U	8.7 U	16 U	18 U	52 U	26 U	21 U	100 U	22 U	13 U	13 U	14 U	20 U
Styrene (Ethenylbenzene)	18 U	18 UJ	8.7 U	16 UJ	18 U	52 U	26 U	21 U	100 U	22 U	13 U	13 U	14 U	20 U
Tetrachloroethene (PCE)	18 U	18 U	8.7 U	16 U	18 U	52 U	26 U	21 U	100 U	22 U	13 U	13 U	14 U	20 U
Toluene	3.1 J	18 U	8.7 U	16 U	18 U	52 U	3.7 J	21 U	100 U	22 U	13 U	13 U	14 U	20 U
Xylenes, total	35 U	35 UJ	17 U	31 UJ	36 U	100 U	51 U	42 U	210 U	43 U	27 U	27 U	28 U	40 U
Semivolatiles (ug/kg)														
1,4-Dioxane (p-)	14000 U	1200 U	610 U	1100 U	1200 U	820 U	1600 U	1400 U	1600 U	1600 U	920 U	870 U	1100 U	1500 U
2,4-Dinitrotoluene	14000 U	1200 U	610 U	1100 UJ	1200 U	820 UJ	1600 U	1400 U	1600 UJ	1600 U	920 UJ	870 U	1100 U	1500 U
2-Acetylaminofluorene	14000 U	1200 U	610 U	1100 U	1200 U	820 U	1600 U	1400 U	1600 U	1600 U	920 U	870 U	1100 U	1500 U
2-Methyl-5-nitroaniline	14000 U	1200 UJ	610 UJ	1100 U	1200 UJ	820 U	1600 UJ	1400 UJ	1600 U	1600 UJ	920 U	870 U	1100 UJ	1500 UJ
2-Nitroaniline	71000 U	6100 U	3100 U	5500 UJ	6100 U	4200 UJ	8500 U	7100 U	8500 UJ	8100 U	4700 U	4500 U	5900 U	7700 U
4-Chlorophenyl-phenylether	14000 U	1200 U	610 U	1100 U	1200 U	820 U	1600 U	1400 U	1600 U	1600 U	920 U	870 U	1100 U	1500 U
4-Dimethylaminoazobenzene (p-)	14000 U	1200 U	610 U	1100 U	1200 U	820 U	1600 U	1400 U	1600 U	1600 U	920 UJ	870 UJ	1100 U	1500 U
4-Methylphenol (p-Cresol)														
4-Nitroaniline	71000 U	6100 U	3100 U	5500 UJ	6100 U	4200 U	8500 U	7100 U	8500 U	8100 U	4700 UJ	4500 U	5900 U	7700 U
Acenaphthylene														
Acetophenone	14000 U	1200 UJ	610 UJ	1100 U	1200 UJ	820 U	1600 UJ	1400 UJ	1600 U	1600 UJ	920 U	870 UJ	1100 UJ	1500 UJ
Anthracene														
Benzo(a)anthracene														
Benzo(a)pyrene (BaP)	14000 U	1200 U	610 U	1100 U	1200 U	820 U	1600 U	1400 U	1600 U	1600 U	920 U	870 U	1100 U	1500 U
Benzo(b)fluoranthene														
Benzo(g,h,i)perylene														
Benzo(k)fluoranthene														
Benzoic Acid														
Bis(2-ethylhexyl) Phthalate (BEHP)	14000 U	1200 U	610 U	1100 U	1200 U	820 U	1600 U	1400 U	1600 U	1600 U	920 U	870 U	1100 U	1500 U
Butyl Benzyl Phthalate	14000 U	1200 U	610 U	1100 U	1200 U	820 U	1600 U	1400 U	1600 U	1600 U	920 U	870 U	1100 U	1500 U
Carbazole														
Chrysene														
Dibenz(a,h)anthracene														
Di-n-butyl Phthalate (DBP)	14000 U	1200 U	610 U	1100 U	1200 U	820 U	1600 U	1400 U	1600 U	1600 U	920 UJ	610 J	1100 U	1500 U
Di-n-octyl Phthalate	14000 U	1200 U	610 U	1100 UJ	1200 U	820 UJ	1600 U	1400 U	1600 UJ	1600 U	920 U	870 U	1100 U	1500 U
Ethyl 4,4'-Dichlorobenzilate (Chlorobenzilate)														
Fluoranthene														
Fluorene														
Indeno(1,2,3-cd)pyrene														
Methyl Methane Sulfonate	14000 U	1200 UJ	610 UJ	1100 UJ	1200 UJ	820 UJ	1600 UJ	1400 U	1600 UJ	1600 UJ	920 U	870 U	1100 UJ	1500 UJ

ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SEDIMENT
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CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID	01EWSSD01	01EWSSD02	01EWSSD03	01EWSSD04	01EWSSD05	01EWSSD05D	01EWSSD06	01EWSSD07	01EWSSD08	01EWSSD09	01OWSD01	01OWSD02	01OWSD03	01OWSD04
Date Sampled	07-26-2003	07-26-2003	07-26-2003	07-25-2003	07-26-2003	07-26-2003	07-26-2003	07-26-2003	07-25-2003	07-26-2003	07-24-2003	07-24-2003	07-25-2003	07-25-2003
n-Nitrosodi-n-propylamine	14000 U	1200 U	610 U	1100 U	1200 U	820 U	1600 U	1400 U	1600 U	1600 U	920 U	870 U	1100 U	1500 U
n-Nitrosomethylethylamine	14000 U	1200 U	610 U	1100 U	1200 U	820 U	1600 U	1400 U	1600 U	1600 U	920 U	870 U	1100 U	1500 U
n-Nitrosomorpholine	14000 U	1200 UJ	610 UJ	1100 UJ	1200 UJ	820 UJ	1600 UJ	1400 UJ	1600 UJ	1600 UJ	920 UJ	870 U	1100 UJ	1500 U
Pentachlorophenol	71000 U	6100 U	3100 U	5500 U	6100 U	4200 U	8500 U	7100 U	8500 U	8100 U	4700 U	4500 U	5900 U	7700 U
Phenanthrene														
Phenol	14000 U	1200 U	610 U	1100 U	1200 U	820 U	1600 U	1400 U	1600 U	1600 U	920 U	870 U	1100 U	1500 U
Phenols, total														
Pyrene														
PAHs (ug/kg)														
1-Methylnaphthalene	28 U	24 U	12 U	22 U	24 U	17 U	34 U	28 U	34 U	32 U	19 U	18 U	23 U	30 U
2-Methylnaphthalene	28 U	24 U	12 U	22 U	24 U	17 U	34 U	28 U	34 U	32 U	19 U	18 U	23 U	30 U
Acenaphthene	28 U	24 U	12 U	22 U	24 U	17 U	34 U	28 U	34 U	32 U	19 U	18 U	23 U	30 U
Acenaphthylene	28 U	24 U	12 U	22 U	24 U	17 U	34 U	28 U	34 U	32 U	19 U	18 U	23 U	30 U
Anthracene	28 U	24 U	12 U	22 UJ	24 U	17 U	34 U	28 U	34 U	32 U	19 U	18 U	23 U	30 UJ
Benzo(a)anthracene	28 U	24 U	12 U	22 U	24 U	17 U	34 U	28 U	34 U	32 U	5.1 J	2.6 J	5.6 J	30 U
Benzo(a)pyrene (BaP)	28 U	24 UJ	12 U	22 U	24 U	17 U	34 U	28 U	34 U	32 U	8.9 J	18 U	23 U	30 U
Benzo(b)fluoranthene	28 U	24 UJ	12 U	22 U	24 U	17 U	34 U	28 U	34 U	32 U	19 U	18 U	23 U	30 U
Benzo(g,h,i)perylene	28 U	24 UJ	12 U	22 U	24 U	17 U	34 U	28 U	34 U	32 U	3.2 J	18 U	7 J	30 U
Benzo(k)fluoranthene	28 U	24 UJ	12 U	22 U	24 U	17 U	34 U	28 U	34 U	32 U	19	9.2 J	26	30 U
Chrysene	28 U	24 U	12 U	22 U	24 U	17 U	34 U	28 U	34 U	32 U	7.5 J	4 J	6 J	30 U
Dibenz(a,h)anthracene	28 U	24 UJ	12 U	22 U	24 U	17 U	34 U	28 U	34 U	32 U	19 U	18 U	23 U	30 U
Fluoranthene	8.3 J	24 U	12 U	22 U	24 U	17 U	34 U	4.1 J	34 U	32 U	3.9 J	18 U	5.1 J	30 UJ
Fluorene	28 U	24 U	12 U	22 UJ	24 U	17 U	34 U	28 U	34 U	32 U	19 U	18 U	23 U	30 U
Indeno(1,2,3-cd)pyrene	28 U	24 UJ	12 U	22 U	24 U	17 U	34 U	28 U	34 U	32 U	19 U	18 U	23 U	30 U
Naphthalene	28 U	24 U	12 U	22 U	24 U	17 U	34 U	28 U	34 U	32 U	19 U	18 U	23 U	30 U
Phenanthrene	28 U	24 U	12 U	22 UJ	24 U	17 U	34 U	28 U	34 U	32 U	19 U	18 U	23 U	30 UJ
Pyrene	8.8 J	220	12 U	22 U	24 U	17 U	34 U	28 U	34 U	32 U	19 U	18 U	5.6 J	30 U

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NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID	01EWSSD01	01EWSSD02	01EWSSD03	01EWSSD04	01EWSSD05	01EWSSD05D	01EWSSD06	01EWSSD07	01EWSSD08	01EWSSD09	01OWSD01	01OWSD02	01OWSD03	01OWSD04
Date Sampled	07-26-2003	07-26-2003	07-26-2003	07-25-2003	07-26-2003	07-26-2003	07-26-2003	07-26-2003	07-25-2003	07-26-2003	07-24-2003	07-24-2003	07-25-2003	07-25-2003
Pesticides / PCBs (ug/kg)														
4,4'-DDD	63 J	190	6.1 U	11 U	12 U	8.2 U	16 U	14 U	16 U	16 U	9.2 U	8.7 U	11 U	15 UJ
4,4'-DDE	250 J	130 J	6.1 U	11 U	12 U	8.2 U	24 J	14 U	16 U	16 U	9.2 U	8.7 U	11 U	15 UJ
4,4'-DDT	14 U	12 U	6.1 U	11 U	12 U	8.2 U	16 U	14 U	16 U	16 U	9.2 U	8.7 U	11 U	15 UJ
BHC, beta-	7.1 U	6.1 U	3.1 U	5.5 U	6.1 U	4.2 U	8.5 U	7.1 U	8.5 U	8.1 U	4.7 U	4.5 U	5.9 U	7.7 UJ
BHC, delta-	7.1 U	6.1 U	3.1 U	5.5 U	6.1 U	4.2 U	8.5 U	7.1 U	8.5 U	8.1 U	4.7 U	4.5 U	5.9 U	7.7 UJ
Chlordane, alpha-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane, gamma-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	14 U	12 U	6.1 U	11 U	12 U	8.2 U	16 U	14 U	16 U	16 U	9.2 U	8.7 U	11 U	15 UJ
Ethyl 4,4'-Dichlorobenzilate (Chlorobenzilate)	71 U	61 U	31 U	55 U	61 U	42 U	85 U	71 U	85 U	81 U	47 U	45 U	59 U	77 UJ
Heptachlor Epoxide	7.1 U	6.1 U	3.1 U	5.5 U	6.1 U	4.2 U	8.5 U	7.1 U	8.5 U	8.1 U	4.7 U	4.5 U	5.9 U	7.7 UJ
Methoxychlor	71 U	61 U	31 U	55 U	61 U	42 U	85 U	71 U	85 U	81 U	47 U	45 U	59 U	77 UJ
Aroclor-1260	140 U	120 U	61 U	110 U	120 U	82 U	160 U	140 U	160 U	160 U	92 U	87 U	110 U	150 UJ
Herbicides (ug/kg)														
2,4,5-T	34 U	30 U	15 U	27 U	30 U	21 U	42 U	2.5 J	42 U	40 U	2.2 J	22 U	29 U	38 U
2,4,5-TP (Silvex)	34 U	30 U	15 U	27 U	30 U	21 U	42 U	34 U	42 U	40 U	23 U	22 U	29 U	38 U
2,4-D	34 U	30 U	15 U	4 J	9.6 J	21 U	42 U	34 U	42 U	40 U	23 U	22 U	29 U	38 U
Dioxins (ug/kg)														
HxCDD, total	2.1 U	1.8 U	0.92 U	1.6 U	1.8 U	1.2 U	2.5 U	2.1 U	2.5 U	2.4 U	1.4 U	1.3 U	1.7 U	2.3 U
HxCDF, total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PeCDD, total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PeCDF, total	2.1 U	1.8 U	0.92 U	1.6 U	1.8 U	1.2 U	2.5 U	2.1 U	2.5 U	2.4 U	1.4 U	1.3 U	1.7 U	2.3 U
TCDF, total	2.1 U	1.8 U	0.92 U	1.6 U	1.8 U	1.2 U	2.5 U	2.1 U	2.5 U	2.4 U	1.4 U	1.3 U	1.7 U	2.3 U
TPH (mg/kg)														
Diesel Range Organics (DRO)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)														
Antimony	2.7	1.6 J	0.21 J	0.37 J	0.35 J	0.44 J	0.99 J	0.17 J	0.31 J	0.3 J	0.24 J	0.28 J	0.77 J	0.66 J
Arsenic	4.5	5.8	1.7	5.1	5.3	2.2 J	6.3	2 J	3.6 J	3.8 J	8.3	6.7	8.7	6.5
Barium	14	13	28	15	13	30	13	13	12	12	11	8.4	9.6	13
Beryllium	0.29 J	0.23 J	0.31	0.25 J	0.3 J	0.3	0.17 J	0.088 J	0.15 J	0.25 J	0.056 J	0.051 J	0.082 J	0.42 U
Cadmium	1.9 U	0.39 J	0.83 U	1.5 U	1.7 U	1.2 U	0.95 J	2 U	2.4 U	2.3 U	1.3 U	1.2 U	0.15 J	2.1 U
Chromium	38	28	39	43	52	82	27	24	26	54	13	11	17	13
Cobalt	5.3	6.6	7.2	8.2	13	17	10	2.2 J	4.9	9.4	1.7 J	1.6 J	3.3	2.7 J
Copper	130	90	66	88	100	140	91	32	65	89	14	12	26	21
Lead	38	17	4.3	4.7	8.9	13	17	1.2	5.3	8.2	2.6	2.3	5.4	3.1
Mercury	0.26	0.13	0.046	0.074	0.095	0.07	0.12	0.037 J	0.12	0.081	0.034 J	0.029 J	0.062 J	0.085 U
Nickel	12	12	9.6	14	18	29	13	5	9.3	17	4.3	4	8	6.6
Selenium	0.83 J	0.73 J	0.33 J	0.73 J	0.64 J	0.26 J	1.1 J	0.34 J	0.68 J	0.94 J	0.61 J	0.77 J	1.1 J	1.2 J
Silver	0.76 J	0.47 J	0.052 J	3 U	3.4 U	0.032 J	0.32 J	4 U	4.8 U	4.5 U	0.042 J	0.041 J	0.076 J	0.054 J
Thallium	0.75 U	0.66 U	0.33 U	0.59 U	0.68 U	0.46 U	0.96 U	0.81 U	0.95 U	0.91 U	0.5 U	0.48 U	0.082 J	0.85 U
Tin	10 J	7.1 J	3.4 J	5.7 J	6.3 J	4.6 J	8.8 J	6.9 J	7.8 J	8.4 J	4.7 J	4.3 J	6.1 J	7.2 J
Vanadium	120	110	130	130	140	230	93	74	79	170	16	18	53	58
Zinc	77	76	43	37	61	89	83	15	29	52	18	16	32	25

NA - not analyzed

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Sample ID	01OWSD05	01OWSD05D	01OWSD06	01OWSD07	01OWSD08	01OWSD09	02EWSSD04	02EWSSD05	02EWSSD06	02EWSSD07	02EWSSD07D	02EWSSD08	02EWSSD09	02OWSD01	02OWSD02	02OWSD03	02OWSD04
Date Sampled	07-25-2003	07-25-2003	07-24-2003	07-24-2003	07-25-2003	07-25-2003	07-27-2003	07-27-2003	07-27-2003	07-27-2003	07-27-2003	07-27-2003	07-27-2003	07-27-2003	07-27-2003	07-28-2003	07-28-2003
Volatiles (ug/kg)																	
2-Butanone (MEK)	17 J	27 J	11 J	34 J	15 J	34 J	26 UJ	34 UJ	7.5 J	24 UJ	24 UJ	24 UJ	23 UJ	8.9 J	8 J	14 J	48 UJ
2-Hexanone (MBK)	50 U	65 U	54 UJ	73 UJ	45 U	96 U	26 UJ	34 UJ	26 UJ	24 UJ	24 UJ	24 UJ	23 UJ	24 UJ	24 UJ	59 UJ	48 UJ
Acetone	100 J	180 J	59 J	170 J	100	260	51 UJ	11 J	33 J	18 J	21 J	48 UJ	5.1 J	33 J	31 J	62 J	41 J
Benzene	10 U	13 U	11 U	14 U	9.1 U	19 U	5.1 UJ	6.7 UJ	5.2 UJ	4.7 UJ	4.9 UJ	4.8 UJ	4.5 UJ	4.7 UJ	4.9 UJ	12 UJ	9.6 UJ
Carbon Disulfide	5.2 J	15 J	3.3 J	19	6.3 J	14 J	5.1 UJ	6.7 UJ	2.5 J	0.38 J	0.51 J	4.8 UJ	4.5 UJ	6.2 J	4.8 J	6.6 J	4.5 J
Chlorobenzene	10 U	13 U	11 U	14 U	9.1 U	19 U	5.1 UJ	6.7 UJ	5.2 UJ	4.7 UJ	4.9 UJ	4.8 UJ	4.5 UJ	4.7 UJ	4.9 UJ	12 UJ	9.6 UJ
Ethylbenzene	10 U	13 U	11 U	14 U	9.1 U	1.6 J	5.1 UJ	6.7 UJ	5.2 UJ	4.7 UJ	4.9 UJ	4.8 UJ	4.5 UJ	4.7 UJ	4.9 UJ	12 UJ	9.6 UJ
Isobutyl Alcohol	400 R	520 R	430 R	580 R	360 R	770 R	200 R	270 R	210 R	190 R	200 R	190 R	97 J	190 R	200 R	470 R	380 R
Methylene Chloride	10 U	13 U	11 U	14 U	9.1 U	19 U	5.1 UJ	6.7 UJ	1.1 J	4.7 UJ	0.9 J	4.8 UJ	4.5 UJ	1.2 J	4.9 UJ	12 UJ	9.6 UJ
Styrene (Ethenylbenzene)	10 U	13 U	11 U	14 U	9.1 U	19 U	5.1 UJ	6.7 UJ	5.2 UJ	4.7 UJ	4.9 UJ	4.8 UJ	4.5 UJ	4.7 UJ	4.9 UJ	12 UJ	9.6 UJ
Tetrachloroethene (PCE)	10 U	13 U	11 U	14 U	9.1 U	19 U	5.1 UJ	6.7 UJ	5.2 UJ	4.7 UJ	4.9 UJ	4.8 UJ	4.5 UJ	4.7 UJ	4.9 UJ	12 UJ	9.6 UJ
Toluene	10 U	13 U	11 U	14 U	9.1 U	19 U	5.1 UJ	6.7 UJ	5.2 UJ	4.7 UJ	4.9 UJ	4.8 UJ	4.5 UJ	4.7 UJ	4.9 UJ	12 UJ	9.6 UJ
Xylenes, total	20 U	26 U	22 U	29 U	18 U	38 U	10 UJ	13 UJ	10 UJ	9.4 UJ	9.8 UJ	9.6 UJ	9.1 UJ	9.4 UJ	9.8 UJ	24 UJ	19 UJ
Semivolatiles (ug/kg)																	
1,4-Dioxane (p-)	770 U	8200 U	850 U	940 U	630 U	1300 U	590 UJ	480 U	820 UJ	570 UJ	560 U	500 UJ	560 U	690 UJ	1100 UJ	850 UJ	650 UJ
2,4-Dinitrotoluene	770 U	5500 J	850 U	940 U	630 UJ	1300 UJ	590 U	480 U	820 U	570 U	560 U	500 U	560 U	690 U	1100 U	850 U	650 U
2-Acetylaminofluorene	770 U	8200 U	850 U	940 U	630 U	1300 U	590 U	480 U	820 U	570 U	560 U	500 U	400 J	690 U	1100 U	850 U	650 U
2-Methyl-5-nitroaniline	770 U	8200 U	850 U	940 U	630 U	1300 U	590 U	480 U	820 U	570 U	560 U	500 U	330 J	690 U	1100 U	850 UJ	650 UJ
2-Nitroaniline	4000 U	7100 J	4400 U	4800 U	3300 UJ	6500 UJ	3000 U	2500 U	4200 U	2900 U	2900 U	2600 U	2900 U	3500 U	5700 U	4400 U	3300 U
4-Chlorophenyl-phenylether	770 U	680 J	850 U	940 U	630 U	1300 U	590 U	480 U	820 U	570 U	560 U	500 U	560 U	690 U	1100 U	850 U	650 U
4-Dimethylaminoazobenzene (p-)	770 U	8200 U	850 UJ	940 U	630 U	1300 U	590 UJ	480 UJ	820 UJ	570 UJ	560 UJ	500 UJ	86 J	690 UJ	1100 UJ	850 UJ	650 UJ
4-Methylphenol (p-Cresol)																	
4-Nitroaniline	4000 U	2800 J	4400 U	4800 U	3300 U	6500 U	3000 U	2500 U	4200 U	2900 U	2900 U	2600 U	2900 U	3500 U	5700 U	4400 U	3300 U
Acenaphthylene																	
Acetophenone	770 U	8200 U	850 UJ	940 U	630 U	1300 U	590 UJ	480 UJ	820 UJ	570 UJ	560 UJ	500 UJ	560 UJ	690 UJ	1100 UJ	850 U	650 U
Anthracene																	
Benzo(a)anthracene																	
Benzo(a)pyrene (BaP)	770 U	8200 U	850 U	940 U	630 U	1300 U	590 U	480 U	820 U	570 U	560 U	500 U	560 U	690 U	1100 U	850 U	650 U
Benzo(b)fluoranthene																	
Benzo(g,h,i)perylene																	
Benzo(k)fluoranthene																	
Benzoic Acid																	
Bis(2-ethylhexyl) Phthalate (BEHP)	770 U	8200 U	850 U	940 U	630 U	1300 U	590 U	480 U	820 U	570 U	560 U	500 U	560 U	690 U	1100 U	850 U	650 U
Butyl Benzyl Phthalate	770 U	8200 U	850 U	940 U	630 U	1300 U	590 U	480 U	820 U	570 U	560 U	500 U	560 U	690 U	1100 U	850 U	650 U
Carbazole																	
Chrysene																	
Dibenz(a,h)anthracene																	
Di-n-butyl Phthalate (DBP)	770 U	8200 U	590 J	940 U	630 U	1300 U	590 U	340 J	820 U	570 U	560 U	500 U	560 U	690 U	1100 U	610 J	460 J
Di-n-octyl Phthalate	770 U	2500 J	850 U	940 U	630 UJ	1300 UJ	590 U	480 U	820 U	570 U	560 U	500 U	560 U	690 U	1100 U	850 U	650 U
Ethyl 4,4'-Dichlorobenzilate (Chlorobenzilate)																	
Fluoranthene																	
Fluorene																	
Indeno(1,2,3-cd)pyrene																	
Methyl Methane Sulfonate	770 U	8200 U	850 U	940 U	630 UJ	1300 UJ	590 U	480 U	820 U	570 U	560 U	500 U	54 J	690 U	1100 U	850 U	650 U

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Date Sampled	07-25-2003	07-25-2003	07-24-2003	07-24-2003	07-25-2003	07-25-2003	07-27-2003	07-27-2003	07-27-2003	07-27-2003	07-27-2003	07-27-2003	07-27-2003	07-27-2003	07-27-2003	07-28-2003	07-28-2003
n-Nitrosodi-n-propylamine	770 U	8200 U	850 U	940 U	630 U	1300 U	590 U	480 U	820 U	570 U	560 U	500 U	560 U	690 U	1100 U	850 U	320 J
n-Nitrosomethylethylamine	770 U	8200 U	850 U	940 U	630 U	1300 U	590 U	480 U	820 U	570 U	560 U	500 U	120 J	690 U	1100 U	850 U	650 U
n-Nitrosomorpholine	770 U	8200 U	850 U	940 U	630 UJ	1300 UJ	590 U	480 U	820 U	570 U	560 U	500 U	240 J	690 U	1100 U	850 U	650 U
Pentachlorophenol	4000 U	42000 U	4400 U	4800 U	3300 U	6500 U	3000 U	250 J	4200 U	2900 U	2900 U	2600 U	2900 U	3500 U	5700 U	4400 U	3300 U
Phenanthrene																	
Phenol	3400	8200 U	850 U	940 U	630 U	1300 U	590 U	480 U	820 U	570 U	560 U	500 U	560 U	690 U	1100 U	850 U	320 J
Phenols, total																	
Pyrene																	
PAHs (ug/kg)																	
1-Methylnaphthalene	16 U	17 U	17 U	19 U	13 U	26 U	12 U	9.7 U	17 U	12 U	11 U	10 U	11 U	14 U	22 U	17 U	13 U
2-Methylnaphthalene	16 U	17 U	17 U	19 U	13 U	26 U	12 U	9.7 U	17 U	12 U	11 U	10 U	11 U	14 U	22 U	17 U	13 U
Acenaphthene	16 U	17 U	17 U	19 U	13 U	26 U	12 U	9.7 U	17 U	12 U	11 U	10 U	11 U	14 U	22 U	17 U	13 U
Acenaphthylene	16 U	17 U	17 U	19 U	13 U	26 U	12 U	9.7 U	17 U	12 U	11 U	10 U	11 U	14 U	22 U	17 U	13 U
Anthracene	16 U	17 U	17 U	19 U	13 U	26 U	12 U	9.7 U	17 U	12 U	11 U	10 U	11 U	14 U	22 U	17 U	13 U
Benzo(a)anthracene	16 U	2.8 J	3 J	19 U	2.8 J	26 U	12 U	9.7 U	17 U	12 U	11 U	10 U	11 U	14 U	22 U	17 U	2.7 J
Benzo(a)pyrene (BaP)	16 U	17 U	17 U	19 U	13 U	26 U	12 U	9.7 U	17 U	12 U	11 U	10 U	11 U	14 U	22 U	17 U	10 J
Benzo(b)fluoranthene	16 U	17 U	17 U	19 U	13 U	26 U	12 U	9.7 U	17 U	12 U	11 U	10 U	11 U	14 U	22 U	17 U	13 U
Benzo(g,h,i)perylene	16 U	17 U	17 U	19 U	13 U	26 U	12 U	9.7 U	17 U	12 U	11 U	10 U	11 U	14 U	22 U	17 U	5.8 J
Benzo(k)fluoranthene	8.5 J	14 J	16 J	19 U	6.5 J	26 U	12 U	9.7 U	7.8 J	2.8 J	11 U	2 J	11 U	14 U	22 U	5.8 J	20
Chrysene	16 U	3.4 J	6.3 J	19 U	2.4 J	26 U	12 U	9.7 U	17 U	12 U	11 U	10 U	11 U	14 U	22 U	17 U	3.3 J
Dibenz(a,h)anthracene	16 U	17 U	17 U	19 U	13 U	26 U	12 U	9.7 U	17 U	12 U	11 U	10 U	11 U	14 U	22 U	17 U	13 U
Fluoranthene	16 U	4.2 J	2.3 J	19 U	4.4 J	26 U	12 U	9.7 U	6 J	12 U	11 U	10 U	11 U	14 U	22 U	17 U	13 U
Fluorene	16 U	17 U	17 U	19 U	13 U	26 U	12 U	9.7 U	17 U	12 U	11 U	10 U	11 U	14 U	22 U	17 U	13 U
Indeno(1,2,3-cd)pyrene	16 U	17 U	17 U	19 U	13 U	26 U	12 U	9.7 U	17 U	12 U	11 U	10 U	11 U	14 U	22 U	17 U	6.5 J
Naphthalene	16 U	17 U	17 U	19 U	13 U	26 U	12 U	9.7 U	17 U	12 U	11 U	10 U	11 U	14 U	22 U	17 U	13 U
Phenanthrene	16 U	17 U	17 U	19 U	1.8 J	26 U	12 U	9.7 U	17 U	12 U	11 U	10 U	11 U	14 U	22 U	17 U	13 U
Pyrene	16 U	4.3 J	17 U	19 U	3.8 J	26 U	12 U	9.7 U	5.1 J	12 U	11 U	10 U	11 U	14 U	22 U	17 U	3.2 J

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Date Sampled	07-25-2003	07-25-2003	07-24-2003	07-24-2003	07-25-2003	07-25-2003	07-27-2003	07-27-2003	07-27-2003	07-27-2003	07-27-2003	07-27-2003	07-27-2003	07-27-2003	07-27-2003	07-28-2003	07-28-2003
Pesticides / PCBs (ug/kg)																	
4,4'-DDD	7.7 UJ	8.2 U	8.5 U	9.4 U	6.3 U	13 U	5.9 U	4.8 U	8.2 U	5.7 U	5.6 U	5 U	5.6 U	6.9 U	11 U	8.5 U	6.5 U
4,4'-DDE	7.7 UJ	8.2 U	8.5 U	9.4 U	6.3 U	13 U	5.9 U	4.8 U	8.2 U	5.7 U	5.6 U	5 U	5.6 U	6.9 U	11 U	8.5 U	6.5 U
4,4'-DDT	7.7 UJ	8.2 U	8.5 U	9.4 U	6.3 U	13 U	5.9 U	4.8 U	8.2 U	5.7 U	5.6 U	5 U	5.6 U	6.9 U	11 U	8.5 U	6.5 U
BHC, beta-	4 UJ	4.2 U	4.4 U	4.8 U	3.3 U	6.5 U	3 U	2.5 U	4.2 U	2.9 U	2.9 U	2.6 U	2.9 U	3.5 U	5.7 U	4.4 U	3.3 U
BHC, delta-	4 UJ	4.2 U	4.4 U	4.8 U	3.3 U	6.5 U	3 U	2.5 U	4.2 U	2.9 U	2.9 U	2.6 U	2.9 U	3.5 U	5.7 U	4.4 U	3.3 U
Chlordane, alpha-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane, gamma-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	7.7 UJ	8.2 U	8.5 U	9.4 U	6.3 U	13 U	5.9 U	4.8 U	8.2 U	5.7 U	5.6 U	5 U	5.6 U	6.9 U	11 U	8.5 U	6.5 U
Ethyl 4,4'-Dichlorobenzilate (Chlorobenzilate)	40 UJ	42 U	44 U	48 U	33 U	65 U	30 U	25 U	42 U	29 U	29 U	26 U	29 U	35 U	57 U	44 U	33 U
Heptachlor Epoxide	4 UJ	4.2 U	4.4 U	4.8 U	3.3 U	6.5 U	3 U	2.5 U	4.2 U	2.9 U	2.9 U	2.6 U	2.9 U	3.5 U	5.7 U	4.4 U	3.3 U
Methoxychlor	40 UJ	42 U	44 U	48 U	33 U	65 U	30 U	25 U	42 U	29 U	29 U	26 U	29 U	35 U	57 U	44 U	33 U
Aroclor-1260	77 UJ	82 U	85 U	94 U	63 U	130 U	59 U	48 U	82 U	57 U	56 U	50 U	56 U	69 U	110 U	85 U	65 U
Herbicides (ug/kg)																	
2,4,5-T	19 U	21 U	21 U	24 U	16 U	32 U	15 U	12 U	21 U	14 U	14 U	12 U	14 U	17 U	28 U	21 U	16 U
2,4,5-TP (Silvex)	19 U	21 U	21 U	24 U	16 U	32 U	15 U	12 U	21 U	14 U	14 U	12 U	14 U	17 U	28 U	21 U	16 U
2,4-D	19 U	21 U	21 U	24 U	16 U	32 U	15 U	12 U	21 U	14 U	14 U	12 U	14 U	17 U	28 U	21 U	16 U
Dioxins (ug/kg)																	
HxCDD, total	1.2 U	1.2 U	1.3 U	1.4 U	0.96 U	1.9 U	0.89 U	0.72 U	1.2 U	0.86 U	0.85 U	0.76 U	0.85 U	1 U	1.7 U	1.3 U	0.98 U
HxCDF, total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PeCDD, total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PeCDF, total	1.2 U	1.2 U	1.3 U	1.4 U	0.96 U	1.9 U	0.89 U	0.72 U	1.2 U	0.86 U	0.85 U	0.76 U	0.85 U	1 U	1.7 U	1.3 U	0.98 U
TCDF, total	1.2 U	1.2 U	1.3 U	1.4 U	0.96 U	1.9 U	0.89 U	0.72 U	1.2 U	0.86 U	0.85 U	0.76 U	0.85 U	1 U	1.7 U	1.3 U	0.98 U
TPH (mg/kg)																	
Diesel Range Organics (DRO)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)																	
Antimony	0.34 J	0.44 J	0.21 J	0.3 J	0.54 J	0.35 J	0.13 J	0.25 J	0.51 J	0.17 J	0.23 J	0.13 J	0.22 J	0.23 J	0.34 J	0.34 J	0.66 J
Arsenic	3.7	5.3	6.2	5.8	8.5	5.3	2.5	14	3.9	2.1	4.4	2	7.4	8.6	9.2	9.3	10
Barium	9.3	9	9.2	7.9	13	9.9	15	11	17	13	15	14	12	9	9.4	10	8.5
Beryllium	0.031 J	0.05 J	0.05 J	0.067 J	0.055 J	0.045 J	0.089 J	0.074 J	0.15 J	0.074 J	0.11 J	0.089 J	0.089 J	0.062 J	0.067 J	0.082 J	0.038 J
Cadmium	0.078 J	0.1 J	1.2 U	1.4 U	0.91 U	1.8 U	0.83 U	0.66 U	0.1 J	0.84 U	0.76 U	0.71 U	0.77 U	0.99 U	1.5 U	1.2 U	0.88 U
Chromium	7.3	11	12	12	9.7	14	14	16	25	17	22	13	17	11	12	14	7.6
Cobalt	1.7 J	3	1.6 J	1.8 J	2.8	2.5 J	4.1	3.2	6.6	2.9	3.5	3.3	3.5	2.8	2.3 J	3.2	1.9
Copper	12	23	13	19	21	26	20	11	69	17	20	14	14	15	16	19	8
Lead	1.8	8.1	2.1	4.5	1.8	3.8	3.7	2.2	23	3.3	4	2.7	2.4	3.4	3.7	4.6	48
Mercury	0.052	0.066	0.032 J	0.024 J	0.023 J	0.031 J	0.022 J	0.027 J	0.21	0.025 J	0.028 J	0.015 J	0.022 J	0.033 J	0.025 J	0.034	0.016 J
Nickel	4.3	5.5	4.2	4.4	4.7	6.3	4.7	4.9	9.3	4.7	5.9	4.1	5.1	3.5	3.9	4.3	2.6
Selenium	0.74 J	0.7 J	0.53 J	0.6 J	0.75 J	1 J	0.29 J	0.35 J	0.52 J	0.42 J	0.45 J	0.21 J	0.33 J	0.29 J	0.42 J	0.43 J	0.38 J
Silver	0.031 J	0.056 J	0.032 J	0.048 J	0.024 J	0.06 J	0.026 J	1.3 U	0.045 J	0.025 J	0.019 J	0.021 J	1.5 U	0.028 J	3.1 U	0.041 J	0.025 J
Thallium	0.45 U	0.47 U	0.49 U	0.55 U	0.16 J	0.72 U	0.33 U	0.27 U	0.46 U	0.33 U	0.3 U	0.29 U	0.31 U	0.4 U	0.61 U	0.49 U	0.043 J
Tin	3.9 J	4.7 J	4.4 J	4.7 J	3.3 J	6.7 J	2.9 J	2.3 J	4.5 J	2.8 J	2.8 J	2.5 J	2.7 J	3.5 J	5.2 J	4.4 J	3 J
Vanadium	38	33	18	20	54	40	33	30	55	30	36	23	30	23	23	29	15
Zinc	11	32	17	27	13	30	21	13	66	16	18	16	14	19	25	29	12

NA - not analyzed

ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SEDIMENT
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID	02OWSD05	02OWSD05D	02OWSD06	02OWSD07	02OWSD08	02OWSD09
Date Sampled	07-28-2003	07-28-2003	07-27-2003	07-27-2003	07-28-2003	07-28-2003
Volatiles (ug/kg)						
2-Butanone (MEK)	8.9 J	51 UJ	11 J	9.4 J	52 UJ	20 J
2-Hexanone (MBK)	52 UJ	51 UJ	21 UJ	24 UJ	52 UJ	69 UJ
Acetone	42 J	49 J	42 UJ	44 J	79 J	91 J
Benzene	10 UJ	10 UJ	4.2 UJ	4.7 UJ	10 UJ	14 UJ
Carbon Disulfide	2.5 J	1.6 J	6.5 J	2.9 J	5.8 J	4.7 J
Chlorobenzene	10 UJ	10 UJ	4.2 UJ	4.7 UJ	10 UJ	14 UJ
Ethylbenzene	10 UJ	10 UJ	4.2 UJ	4.7 UJ	10 UJ	14 UJ
Isobutyl Alcohol	420 R	410 R	170 J	120 J	420 R	550 R
Methylene Chloride	10 UJ	10 UJ	0.82 J	4.7 UJ	10 UJ	14 UJ
Styrene (Ethenylbenzene)	10 UJ	10 UJ	4.2 UJ	4.7 UJ	10 UJ	14 UJ
Tetrachloroethene (PCE)	10 UJ	10 UJ	4.2 UJ	4.7 UJ	10 UJ	14 UJ
Toluene	10 UJ	10 UJ	4.2 UJ	4.7 UJ	10 UJ	14 UJ
Xylenes, total	21 UJ	20 UJ	8.5 UJ	9.4 UJ	21 UJ	28 UJ
Semivolatiles (ug/kg)						
1,4-Dioxane (p-)	700 UJ	700 UJ	670 UJ	870 UJ	700 UJ	890 UJ
2,4-Dinitrotoluene	700 U	700 U	670 U	870 U	700 U	890 U
2-Acetylaminofluorene	700 U	700 U	670 U	870 U	700 U	890 U
2-Methyl-5-nitroaniline	700 UJ	700 UJ	670 U	870 U	700 UJ	890 UJ
2-Nitroaniline	3600 U	3600 U	3500 U	4500 U	3600 U	4600 U
4-Chlorophenyl-phenylether	700 U	700 U	670 U	870 U	700 U	890 U
4-Dimethylaminoazobenzene (p-)	700 UJ	700 UJ	670 UJ	870 UJ	700 UJ	890 UJ
4-Methylphenol (p-Cresol)						
4-Nitroaniline	3600 U	3600 U	3500 U	4500 U	3600 U	4600 U
Acenaphthylene						
Acetophenone	700 U	700 U	670 UJ	870 UJ	700 U	890 U
Anthracene						
Benzo(a)anthracene						
Benzo(a)pyrene (BaP)	700 U	700 U	670 U	870 U	700 U	890 U
Benzo(b)fluoranthene						
Benzo(g,h,i)perylene						
Benzo(k)fluoranthene						
Benzoic Acid						
Bis(2-ethylhexyl) Phthalate (BEHP)	700 U	700 U	670 U	870 U	700 U	890 U
Butyl Benzyl Phthalate	700 U	700 U	670 U	870 U	700 U	890 U
Carbazole						
Chrysene						
Dibenz(a,h)anthracene						
Di-n-butyl Phthalate (DBP)	700 U	500 J	670 U	870 U	500 J	890 U
Di-n-octyl Phthalate	700 U	700 U	670 U	870 U	700 U	890 U
Ethyl 4,4'-Dichlorobenzilate (Chlorobenzilate)						
Fluoranthene						
Fluorene						
Indeno(1,2,3-cd)pyrene						
Methyl Methane Sulfonate	700 U	700 U	670 U	870 U	700 U	890 U

ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SEDIMENT
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID	02OWSD05	02OWSD05D	02OWSD06	02OWSD07	02OWSD08	02OWSD09
Date Sampled	07-28-2003	07-28-2003	07-27-2003	07-27-2003	07-28-2003	07-28-2003
n-Nitrosodi-n-propylamine	700 U	700 U	670 U	870 U	700 U	890 U
n-Nitrosomethylethylamine	700 U	700 U	670 U	870 U	700 U	890 U
n-Nitrosomorpholine	700 U	700 U	670 U	870 U	700 U	890 U
Pentachlorophenol	3600 U	3600 U	3500 U	4500 U	3600 U	4600 U
Phenanthrene						
Phenol	700 U	700 U	670 U	870 U	700 U	890 U
Phenols, total						
Pyrene						
PAHs (ug/kg)						
1-Methylnaphthalene	14 U	14 U	14 U	18 U	14 U	18 U
2-Methylnaphthalene	14 U	14 U	14 U	18 U	14 U	18 U
Acenaphthene	14 U	14 U	14 U	18 U	14 U	18 U
Acenaphthylene	14 U	14 U	14 U	18 U	3.3 J	18 U
Anthracene	4.1 J	14 U	14 U	18 U	3.3 J	18 U
Benzo(a)anthracene	250 J	14 UJ	14 U	2.2 J	13 J	3.6 J
Benzo(a)pyrene (BaP)	190 J	14 UJ	14 U	4.3 J	25	15 J
Benzo(b)fluoranthene	350 J	14 UJ	14 U	18 U	14 U	18 U
Benzo(g,h,i)perylene	72 J	14 UJ	14 U	18 U	16	8 J
Benzo(k)fluoranthene	14 U	14 U	14 U	11 J	48	27
Chrysene	180 J	14 UJ	14 U	3.1 J	18	7.5 J
Dibenz(a,h)anthracene	14 U	14 U	14 U	18 U	14 U	18 U
Fluoranthene	290 J	14 UJ	14 U	18 U	9.4 J	18 U
Fluorene	14 U	14 U	14 U	18 U	14 U	18 U
Indeno(1,2,3-cd)pyrene	95 J	14 UJ	14 U	18 U	15	8 J
Naphthalene	14 U	14 U	14 U	18 U	14 U	18 U
Phenanthrene	9 J	14 U	14 U	18 U	2 J	18 U
Pyrene	220 J	14 UJ	14 U	18 U	8.1 J	18 U

ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SEDIMENT
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID	02OWSD05	02OWSD05D	02OWSD06	02OWSD07	02OWSD08	02OWSD09
Date Sampled	07-28-2003	07-28-2003	07-27-2003	07-27-2003	07-28-2003	07-28-2003
Pesticides / PCBs (ug/kg)						
4,4'-DDD	7 U	7 U	6.7 U	8.7 U	7 U	8.9 U
4,4'-DDE	7 U	7 U	6.7 U	8.7 U	7 U	8.9 U
4,4'-DDT	7 U	7 U	6.7 U	8.7 U	7 U	8.9 U
BHC, beta-	3.6 U	3.6 U	3.5 U	4.5 U	3.6 U	4.6 U
BHC, delta-	3.6 U	3.6 U	3.5 U	4.5 U	3.6 U	4.6 U
Chlordane, alpha-	NA	NA	NA	NA	NA	NA
Chlordane, gamma-	NA	NA	NA	NA	NA	NA
Dieldrin	7 U	7 U	6.7 U	8.7 U	7 U	8.9 U
Ethyl 4,4'-Dichlorobenzilate (Chlorobenzilate)	36 U	36 U	35 U	45 U	36 U	46 U
Heptachlor Epoxide	3.6 U	3.6 U	3.5 U	4.5 U	3.6 U	4.6 U
Methoxychlor	36 U	36 U	35 U	5.2 J	36 U	46 U
Aroclor-1260	70 U	70 U	67 U	87 U	70 U	89 U
Herbicides (ug/kg)						
2,4,5-T	18 U	18 U	17 U	22 U	18 U	22 U
2,4,5-TP (Silvex)	18 U	18 U	17 U	22 U	18 U	22 U
2,4-D	18 U	18 U	17 U	22 U	18 U	22 U
Dioxins (ug/kg)						
HxCDD, total	1.1 U	1.1 U	1 U	1.3 U	1.1 U	1.4 U
HxCDF, total	NA	NA	NA	NA	NA	NA
PeCDD, total	NA	NA	NA	NA	NA	NA
PeCDF, total	1.1 U	1.1 U	1 U	1.3 U	1.1 U	1.4 U
TCDF, total	1.1 U	1.1 U	1 U	1.3 U	1.1 U	1.4 U
TPH (mg/kg)						
Diesel Range Organics (DRO)	NA	NA	NA	NA	NA	NA
Metals (mg/kg)						
Antimony	0.14 J	0.14 J	0.23 J	0.39 J	0.25 J	0.21 J
Arsenic	6.8	6	6.1	11	7.9	3.5
Barium	11	9.7	8.9	12	9.1	7.7
Beryllium	0.075 J	0.079 J	0.033 J	0.059 J	0.066 J	0.25 U
Cadmium	1 U	1 U	0.93 U	0.091 J	0.95 U	1.2 U
Chromium	17	15	8.4	12	12	6
Cobalt	2	1.9 J	2.1	2.6	2.9	1.4 J
Copper	13	12	11	13	16	10
Lead	2	2.1	2.6	4.5	3.6	2.1
Mercury	0.03 J	0.022 J	0.0094 J	0.047 U	0.027 J	0.018 J
Nickel	5.4	4.7	2.6	3.3	4	2.1 J
Selenium	0.51 J	0.45 J	0.3 J	0.33 J	0.36 J	0.27 J
Silver	0.033 J	0.053 J	0.043 J	0.041 J	0.035 J	2.5 U
Thallium	0.4 U	0.41 U	0.37 U	0.5 U	0.12 J	0.49 U
Tin	4.3 J	3.6 J	3.1 J	4.4 J	3.3 J	4.1 J
Vanadium	19	16	19	26	29	13
Zinc	15	15	19	23	18	21

NA - not analyzed

ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SEDIMENT
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID	2SD03	3SD01	3SD01D	3SD02	3SD03	3SD04	3SD05	3SD06	3SD07	3SD08
Date Sampled	11-11-1996	10-29-1995	10-29-1995	10-29-1995	10-29-1995	10-27-1995	10-27-1995	10-27-1995	10-27-1995	10-27-1995
Volatiles (ug/kg)										
2-Butanone (MEK)	12 U	14 U	14 U	15 U	16 U	17 U	15 U	15 U	16 U	20 U
2-Hexanone (MBK)	12 U	14 U	14 U	15 U	16 U	17 U	15 U	15 U	16 U	20 U
Acetone	12 UJ	14 U	14 U	19 U	20 U	17 U	26 U	15 U	18 U	26 U
Benzene	6 U	7 U	7 U	8 U	8 U	9 U	8 U	7 U	8 U	10 U
Carbon Disulfide	6 U	7 U	7 U	8 U	8 U	9 U	8 U	7 U	8 U	10 U
Chlorobenzene	6 U	7 U	7 U	8 U	8 U	9 U	8 U	7 U	8 U	10 U
Ethylbenzene	6 U	7 U	7 U	8 U	8 U	9 U	8 U	7 U	8 U	10 U
Isobutyl Alcohol	2400 R	2700 R	2700 R	3100 R	3200 R	3400 R	3100 R	2900 R	3200 R	4000 R
Methylene Chloride	6 U	7 U	7 U	8 U	8 U	9 U	8 U	7 U	8 U	10 U
Styrene (Ethenylbenzene)	6 U	7 U	7 U	8 U	8 U	9 U	8 U	7 U	8 U	10 U
Tetrachloroethene (PCE)	6 U	7 U	7 U	8 U	8 U	9 U	8 U	7 U	8 U	10 U
Toluene	6 U	7 U	7 U	8 U	8 U	9 U	8 U	7 U	8 U	10 U
Xylenes, total	6 U	7 U	7 U	8 U	8 U	9 U	8 U	7 U	8 U	10 U
Semivolatiles (ug/kg)										
1,4-Dioxane (p-)	800 U	1800 U	1800 U	2000 U	2100 U	2300 U	2100 U	1900 U	2100 U	2600 U
2,4-Dinitrotoluene	400 U	450 U	450 U	500 U	520 U	560 U	510 U	480 U	520 U	660 U
2-Acetylaminofluorene	800 UJ	900 U	900 U	1000 U	1000 U	1100 U	1000 U	950 U	1000 U	1300 U
2-Methyl-5-nitroaniline	800 U	900 U	900 U	1000 U	1000 U	1100 U	1000 U	950 U	1000 U	1300 U
2-Nitroaniline	2000 U	2300 U	2300 U	2500 U	2600 U	2800 U	2600 U	2400 U	2600 U	3300 U
4-Chlorophenyl-phenylether	400 U	450 U	450 U	500 U	520 U	560 U	510 U	480 U	520 U	660 U
4-Dimethylaminoazobenzene (p-)	800 U	900 U	900 U	1000 U	1000 U	1100 U	1000 U	950 U	1000 U	1300 U
4-Methylphenol (p-Cresol)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	2000 U	2300 U	2300 U	2500 U	2600 U	2800 U	2600 U	2400 U	2600 U	3300 U
Acenaphthylene	400 U	450 U	450 U	500 U	520 U	560 U	510 U	480 U	520 U	660 U
Acetophenone	400 U	450 U	450 U	500 U	520 U	560 U	510 U	480 U	520 U	660 U
Anthracene	400 U	450 U	450 U	500 U	520 U	560 U	510 U	480 U	520 U	660 U
Benzo(a)anthracene	400 U	450 U	450 U	500 U	520 U	560 U	510 U	480 U	520 U	660 U
Benzo(a)pyrene (BaP)	400 U	450 U	450 U	500 U	520 U	560 U	510 U	480 U	520 U	660 U
Benzo(b)fluoranthene	400 U	450 U	450 U	500 U	520 U	560 U	510 U	480 U	520 U	660 U
Benzo(g,h,i)perylene	400 U	450 U	450 U	500 U	520 U	560 U	510 U	480 U	520 U	660 U
Benzo(k)fluoranthene	400 U	450 U	450 U	500 U	520 U	560 U	510 U	480 U	520 U	660 U
Benzoic Acid	2000 U	2300 U	2300 U	2500 U	2600 U	3600	770 J	770 J	570 J	3300 U
Bis(2-ethylhexyl) Phthalate (BEHP)	400 U	450 U	450 U	500 U	520 U	560 U	510 U	480 U	520 U	660 U
Butyl Benzyl Phthalate	400 U	450 U	450 U	500 U	520 U	560 U	510 U	480 U	520 U	660 U
Carbazole	400 U	450 U	450 U	500 U	520 U	560 U	510 U	480 U	520 U	660 U
Chrysene	400 U	450 U	450 U	500 U	520 U	560 U	510 U	480 U	520 U	660 U
Dibenz(a,h)anthracene	400 U	450 U	450 U	500 U	520 U	560 U	510 U	480 U	520 U	660 U
Di-n-butyl Phthalate (DBP)	400 U	450 U	450 U	500 U	520 U	560 U	510 U	480 U	520 U	660 U
Di-n-octyl Phthalate	400 U	450 U	450 U	500 U	520 U	560 U	510 U	480 U	520 U	660 U
Ethyl 4,4'-Dichlorobenzilate (Chlorobenzilate)	400 U	450 U	450 U	500 U	520 U	560 U	510 U	480 U	520 U	660 U
Fluoranthene	400 U	450 U	450 U	500 U	520 U	560 U	510 U	480 U	520 U	660 U
Fluorene	400 U	450 U	450 U	500 U	520 U	560 U	510 U	480 U	520 U	660 U
Indeno(1,2,3-cd)pyrene	400 U	450 U	450 U	500 U	520 U	560 U	510 U	480 U	520 U	660 U
Methyl Methane Sulfonate	400 U	450 U	450 U	500 U	520 U	560 U	510 U	480 U	520 U	660 U

ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SEDIMENT
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID	2SD03	3SD01	3SD01D	3SD02	3SD03	3SD04	3SD05	3SD06	3SD07	3SD08
Date Sampled	11-11-1996	10-29-1995	10-29-1995	10-29-1995	10-29-1995	10-27-1995	10-27-1995	10-27-1995	10-27-1995	10-27-1995
n-Nitrosodi-n-propylamine	400 U	450 U	450 U	500 U	520 U	560 U	510 U	480 U	520 U	660 U
n-Nitrosomethylethylamine	400 U	450 U	450 U	500 U	520 U	560 U	510 U	480 U	520 U	660 U
n-Nitrosomorpholine	800 U	900 U	900 U	1000 U	1000 U	1100 U	1000 U	950 U	1000 U	1300 U
Pentachlorophenol	2000 U	2300 U	2300 U	2500 U	2600 U	2800 U	2600 U	2400 U	2600 U	3300 U
Phenanthrene	400 U	450 U	450 U	500 U	520 U	560 U	510 U	480 U	520 U	660 U
Phenol	400 U	450 U	450 U	500 U	520 U	560 U	510 U	480 U	520 U	660 U
Phenols, total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	400 U	450 U	450 U	500 U	520 U	560 U	510 U	480 U	520 U	660 U
PAHs (ug/kg)										
1-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene (BaP)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SEDIMENT
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID	2SD03	3SD01	3SD01D	3SD02	3SD03	3SD04	3SD05	3SD06	3SD07	3SD08
Date Sampled	11-11-1996	10-29-1995	10-29-1995	10-29-1995	10-29-1995	10-27-1995	10-27-1995	10-27-1995	10-27-1995	10-27-1995
Pesticides / PCBs (ug/kg)										
4,4'-DDD	19 U	53 U	54 U	60 U	63 U	66 U	61 U	57 U	64 U	79 U
4,4'-DDE	19 U	53 U	54 U	60 U	63 U	66 U	61 U	57 U	64 U	79 U
4,4'-DDT	19 U	53 U	54 U	60 U	63 U	66 U	61 U	57 U	64 U	79 U
BHC, beta-	9.7 U	26 U	27 U	30 U	31 U	33 U	31 U	28 U	32 U	39 U
BHC, delta-	9.7 U	26 U	27 U	30 U	31 U	33 U	31 U	28 U	32 U	39 U
Chlordane, alpha-	97 U	260 U	270 U	300 U	310 U	330 U	310 U	280 U	320 U	390 U
Chlordane, gamma-	97 U	260 U	270 U	300 U	310 U	330 U	310 U	280 U	320 U	390 U
Dieldrin	19 U	53 U	54 U	60 U	63 U	66 U	61 U	57 U	64 U	79 U
Ethyl 4,4'-Dichlorobenzilate (Chlorobenzilate)										
Heptachlor Epoxide	9.7 U	26 U	27 U	30 U	31 U	33 U	31 U	28 U	32 U	39 U
Methoxychlor	97 U	260 U	270 U	300 U	310 U	330 U	310 U	280 U	320 U	390 U
Aroclor-1260	190 U	530 U	540 U	600 U	630 U	660 U	610 U	570 U	640 U	790 U
Herbicides (ug/kg)										
2,4,5-T	40 U	84 U	84 U	99 U	100 U	110 U	100 U	94 U	100 U	130 U
2,4,5-TP (Silvex)	40 U	84 U	84 U	99 U	100 U	110 U	100 U	94 U	100 U	130 U
2,4-D	400 U	420 U	420 U	500 U	520 U	570 U	500 U	470 U	520 U	660 U
Dioxins (ug/kg)										
HxCDD, total	0.07 U	0.19 U	0.16 U	0.18 U	0.12 U	0.21 U	0.27 U	0.17 U	0.12 U	0.28 U
HxCDF, total	0.06 U	0.17 U	0.18 U	0.18 U	0.11 U	0.18 U	0.27 U	0.14 U	0.14 U	0.25 U
PeCDD, total	0.05 U	0.18 U	0.12 U	0.18 U	0.14 U	0.19 U	0.29 U	0.15 U	0.15 U	0.27 U
PeCDF, total	0.04 U	0.09 U	0.12 U	0.12 U	0.07 U	0.11 U	0.12 U	0.08 U	0.12 U	0.2 U
TCDF, total	0.02 U	0.08 U	0.08 U	0.09 U	0.05 U	0.1 U	0.09 U	0.07 U	0.06 U	0.19 U
TPH (mg/kg)										
Diesel Range Organics (DRO)										
Metals (mg/kg)										
Antimony	3.3 J	7.4 U		7.7 U	8.2 U	8.5 U	8.8 U	6.6 U	7.1 U	7.8 U
Arsenic	2.6 J	1.8		5 J	4.3	1.4	0.89 U	0.94 U	1.1	2.1
Barium	136 J	9.3		9.1	9.1	7.5	8.2	6.3	8.4	8.3
Beryllium	0.07	0.18 U		0.19 U	0.2 U	0.21 U	0.21 U	0.16 U	0.2	0.19 U
Cadmium	0.32	2.5 U		2.6 U	2.8 U	2.9 U	3 U	2.3 U	2.4 U	2.6 U
Chromium	25.3 J	5.1		14.7	15.3	5	5.8	3.7	8.2	3.9
Cobalt	34.7	1.3		4.7	4.6	1.5 U	1.6	1.2 U	1.7	1.4 U
Copper	62.4	13.8		28	29.1	19.3	14.8	11.4	20.9	16.6
Lead	49.7 J	1.2 J		1.8 J	1.7 J	1.8 J	0.36 J	0.7 J	0.96 J	1.2 J
Mercury	0.05	0.06 U		0.08 U	0.073 U	0.074 U	0.055 U	0.073 U	0.059 U	0.08 U
Nickel	14	2.2 U		4.2	4.3	2.6 U	2.6 U	2 U	2.1 U	2.3 U
Selenium	0.45 J	0.61 UJ		0.9 UJ	1.6 UJ	1.6 UJ	1.8 J	1.4 UJ	1.4 UJ	2.2 UJ
Silver	0.12 UJ	1.9 UJ		2 UJ	2.1 UJ	2.2 UJ	2.3 UJ	1.7 UJ	1.8 UJ	2 UJ
Thallium	0.14 U	0.66 UJ		0.98 UJ	0.87 UJ	0.84 UJ	0.73 UJ	0.15 UJ	0.76 UJ	0.24 UJ
Tin	0.59 U	6.8 U		7.1 U	7.5 U	7.8 U	8.1 U	6.1 U	6.5 U	7.1 U
Vanadium	154 J	6.2		33.6	27.7	7.2	5	7.1	19.7	12.7
Zinc	92.8	2.9		18.4	20.2	7.9	3	3.6	8.3	6.4

NA - Not analyzed

ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SEDIMENT
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID	3SD09	3SD16	3SD17	9SD05	9SD08	9SD08D	9SD09	9SD10	9SD11	9SD12
Date Sampled	10-28-1995	9/18/1997	9/18/1997	06-29-1999	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000
Volatiles (ug/kg)										
2-Butanone (MEK)	18 U	13 UJ	16 UJ	61 U	NA	NA	NA	NA	NA	NA
2-Hexanone (MBK)	18 U	13 UJ	16 UJ	61 U	NA	NA	NA	NA	NA	NA
Acetone	18 U	13 UJ	16 UJ	140	NA	NA	NA	NA	NA	NA
Benzene	9 U	6 U	8 U	12 U	NA	NA	NA	NA	NA	NA
Carbon Disulfide	9 U	6 U	8 U	12 U	NA	NA	NA	NA	NA	NA
Chlorobenzene	9 U	6 U	8 U	12 U	NA	NA	NA	NA	NA	NA
Ethylbenzene	9 U	6 U	8 U	12 U	NA	NA	NA	NA	NA	NA
Isobutyl Alcohol	3600 R	2600 R	3300 R		NA	NA	NA	NA	NA	NA
Methylene Chloride	9 U	6 U	8 U	12 U	NA	NA	NA	NA	NA	NA
Styrene (Ethenylbenzene)	9 U	6 U	8 U	12 U	NA	NA	NA	NA	NA	NA
Tetrachloroethene (PCE)	9 U	6 UJ	8 UJ	12 U	NA	NA	NA	NA	NA	NA
Toluene	9 U	6 U	8 U	12 U	NA	NA	NA	NA	NA	NA
Xylenes, total	9 U	6 U	8 U	24 U	NA	NA	NA	NA	NA	NA
Semivolatiles (ug/kg)										
1,4-Dioxane (p-)	2400 U	840 UJ	1100 UJ	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	590 U	420 U	530 U	800 U	NA	NA	NA	NA	NA	NA
2-Acetylaminofluorene	1200 U	840 UJ	1100 UJ	NA	NA	NA	NA	NA	NA	NA
2-Methyl-5-nitroaniline	1200 U	840 UJ	1100 UJ	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	3000 U	2100 U	2700 U	4100 U	NA	NA	NA	NA	NA	NA
4-Chlorophenyl-phenylether	590 U	420 U	530 U	800 U	NA	NA	NA	NA	NA	NA
4-Dimethylaminoazobenzene (p-)	1200 U	840 U	1100 U	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol (p-Cresol)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	3000 U	2100 U	2700 U	4100 U	NA	NA	NA	NA	NA	NA
Acenaphthylene	590 U	420 U	530 U	800 U	NA	NA	NA	NA	NA	NA
Acetophenone	590 U	420 U	530 U	NA	NA	NA	NA	NA	NA	NA
Anthracene	590 U	420 U	530 U	800 U	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	590 U	420 U	530 U	800 U	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene (BaP)	590 U	420 U	530 U	800 U	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	590 U	420 U	530 U	800 U	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	590 U	420 U	530 U	800 U	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	590 U	420 U	530 U	800 U	NA	NA	NA	NA	NA	NA
Benzoic Acid	3000 U	2100 U	2700 U	4100 U	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl) Phthalate (BEHP)	590 U	420 U	530 U	800 U	NA	NA	NA	NA	NA	NA
Butyl Benzyl Phthalate	590 U	420 U	530 U	800 U	NA	NA	NA	NA	NA	NA
Carbazole	590 U	420 U	530 U	NA	NA	NA	NA	NA	NA	NA
Chrysene	590 U	420 U	530 U	800 U	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	590 U	420 U	530 U	800 U	NA	NA	NA	NA	NA	NA
Di-n-butyl Phthalate (DBP)	590 U	420 U	530 U	800 U	NA	NA	NA	NA	NA	NA
Di-n-octyl Phthalate	590 U	420 U	530 U	800 U	NA	NA	NA	NA	NA	NA
Ethyl 4,4'-Dichlorobenzilate (Chlorobenzilate)	590 U	420 UJ	530 UJ	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	590 U	420 U	530 U	800 U	NA	NA	NA	NA	NA	NA
Fluorene	590 U	420 U	530 U	800 U	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	590 U	420 U	530 U	800 U	NA	NA	NA	NA	NA	NA
Methyl Methane Sulfonate	590 U	420 UJ	530 UJ	NA	NA	NA	NA	NA	NA	NA

ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SEDIMENT
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID	3SD09	3SD16	3SD17	9SD05	9SD08	9SD08D	9SD09	9SD10	9SD11	9SD12
Date Sampled	10-28-1995	9/18/1997	9/18/1997	06-29-1999	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000
n-Nitrosodi-n-propylamine	590 U	420 U	530 U	800 U	NA	NA	NA	NA	NA	NA
n-Nitrosomethylethylamine	590 U	420 U	530 U	NA	NA	NA	NA	NA	NA	NA
n-Nitrosomorpholine	1200 U	840 U	1100 U	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	3000 U	2100 U	2700 U	4100 U	NA	NA	NA	NA	NA	NA
Phenanthrene	590 U	420 U	530 U	800 U	NA	NA	NA	NA	NA	NA
Phenol	590 U	420 U	530 U	800 U	NA	NA	NA	NA	NA	NA
Phenols, total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	590 U	420 U	530 U	800 U	NA	NA	NA	NA	NA	NA
PAHs (ug/kg)										
1-Methylnaphthalene	NA	NA	NA	NA	93 U	93 U	130 U	180 U	91 U	72 U
2-Methylnaphthalene	NA	NA	NA	NA	93 U	93 U	130 U	180 U	91 U	72 U
Acenaphthene	NA	NA	NA	NA	93 U	93 U	130 U	180 U	91 U	72 U
Acenaphthylene	NA	NA	NA	NA	93 U	93 U	130 U	180 U	91 U	72 U
Anthracene	NA	NA	NA	NA	93 U	93 U	130 U	180 U	91 U	72 U
Benzo(a)anthracene	NA	NA	NA	NA	93 U	93 U	130 U	180 U	91 U	72 U
Benzo(a)pyrene (BaP)	NA	NA	NA	NA	93 U	93 U	130 U	180 U	91 U	72 U
Benzo(b)fluoranthene	NA	NA	NA	NA	93 U	93 U	130 U	180 U	91 U	72 U
Benzo(g,h,i)perylene	NA	NA	NA	NA	93 U	93 U	130 U	180 U	91 U	72 U
Benzo(k)fluoranthene	NA	NA	NA	NA	93 U	93 U	130 U	180 U	91 U	72 U
Chrysene	NA	NA	NA	NA	93 U	93 U	130 U	180 U	91 U	72 U
Dibenz(a,h)anthracene	NA	NA	NA	NA	93 U	93 U	130 U	180 U	91 U	72 U
Fluoranthene	NA	NA	NA	NA	93 U	93 U	130 U	180 U	91 U	72 U
Fluorene	NA	NA	NA	NA	93 U	93 U	130 U	180 U	91 U	72 U
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	93 U	93 U	130 U	180 U	91 U	72 U
Naphthalene	NA	NA	NA	NA	93 U	93 U	130 U	180 U	91 U	72 U
Phenanthrene	NA	NA	NA	NA	93 U	93 U	130 U	180 U	91 U	72 U
Pyrene	NA	NA	NA	NA	93 U	93 U	130 U	180 U	91 U	72 U

ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SEDIMENT
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID	3SD09	3SD16	3SD17	9SD05	9SD08	9SD08D	9SD09	9SD10	9SD11	9SD12
Date Sampled	10-28-1995	9/18/1997	9/18/1997	06-29-1999	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000	12-20-2000
Pesticides / PCBs (ug/kg)										
4,4'-DDD	71 U	51 U	130 U	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	71 U	51 U	130 U	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	71 U	51 U	130 U	NA	NA	NA	NA	NA	NA	NA
BHC, beta-	36 U	26 UJ	66 UJ	NA	NA	NA	NA	NA	NA	NA
BHC, delta-	36 U	26 UJ	66 UJ	NA	NA	NA	NA	NA	NA	NA
Chlordane, alpha-	360 U	260 U	660 U	NA	NA	NA	NA	NA	NA	NA
Chlordane, gamma-	360 U	260 U	660 U	NA	NA	NA	NA	NA	NA	NA
Dieldrin	71 U	51 U	130 U	NA	NA	NA	NA	NA	NA	NA
Ethyl 4,4'-Dichlorobenzilate (Chlorobenzilate)				NA	NA	NA	NA	NA	NA	NA
Heptachlor Epoxide	36 U	26 U	66 U	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	360 U	260 UJ	660 UJ	NA	NA	NA	NA	NA	NA	NA
Aroclor-1260	710 U	510 U	1300 U	NA	NA	NA	NA	NA	NA	NA
Herbicides (ug/kg)										
2,4,5-T	120 U	43 U	54 U	NA	NA	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)	120 U	43 U	54 U	NA	NA	NA	NA	NA	NA	NA
2,4-D	590 U	430 U	540 U	NA	NA	NA	NA	NA	NA	NA
Dioxins (ug/kg)										
HxCDD, total	0.31 U	0.06 U	0.06 U	NA	NA	NA	NA	NA	NA	NA
HxCDF, total	0.26 U	0.04 U	0.03 U	NA	NA	NA	NA	NA	NA	NA
PeCDD, total	0.26 U	0.04 U	0.04 U	NA	NA	NA	NA	NA	NA	NA
PeCDF, total	0.11 U	0.05 U	0.03 U	NA	NA	NA	NA	NA	NA	NA
TCDF, total	0.13 U	0.01 U	0.02 U	NA	NA	NA	NA	NA	NA	NA
TPH (mg/kg)										
Diesel Range Organics (DRO)										
Metals (mg/kg)										
Antimony	8.4 U	0.31 J	0.4 J	0.66 UJ	4.2 UJ	4.2 UJ	6.7 UJ	7.6 UJ	4.1 UJ	3.2 UJ
Arsenic	3.2	2 J	2.4 J	1.3 J	4	3.3	4.8	3.8 J	4.8	5
Barium	8.6	7.8 J	7.1 J	8.1	6.9	6.5	4.6	5.7	11	15
Beryllium	0.2 U	0.05 U	0.05 U	0.047 J	0.18 J	0.14 J	1.3 U	1.5 U	0.16 J	0.25 J
Cadmium	2.9 U	0.11 J	0.07 U	0.12 U	0.32 J	0.27 J	1.7 U	1.9 U	0.55 J	0.69 J
Chromium	3.1 U	5.8	3.3	16	13 J	11 J	11 J	13 J	25 J	33 J
Cobalt	1.5 U	1.6	0.11 U	4.7	18	16	6.4	3.1 J	23	27
Copper	15.2	7.8 J	0.71 J	58 J	78	68	56	39	73	53
Lead	0.76 J	0.73	1	4.6 J	5.5	5	1.7	1.8 J	10	13
Mercury	0.075 U	0.02 U	0.03 U	0.041 J	0.072	0.08	0.12	0.14	0.066	0.057
Nickel	2.5 U	1.2 J	0.13 U	4.8 J	7.2 J	6.5 J	4 J	3.9 J	9.8	10
Selenium	1.7 UJ	0.45 UJ	0.9 UJ	0.75 UJ	0.93 J	2.1 U	2 J	2.1 J	1.4 J	1.6 U
Silver	2.2 UJ	0.09 U	0.1 U	0.15 U	2.1 U	2.1 U	3.3 U	3.8 U	2.1 U	1.6 U
Thallium	0.94 UJ	0.32 U	0.34 U	0.4 UJ	2.1 UJ	2.1 UJ	3.3 UJ	3.8 UJ	2.1 UJ	1.6 UJ
Tin	7.7 U	1 J	1.9 J	4.2 J	11 U	11 U	17 U	19 U	10 U	8.1 U
Vanadium	13.4	19.3	3.6 J	110	140 J	120 J	150 J	120 J	200 J	220 J
Zinc	6.8	6	1.7 J	29 U	43	37	21	20	63	62

NA - Not analyzed

ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SEDIMENT
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID	BGEWSSD05/ 9SD05	BGEWSSD08/ 9SD08	BGEWSSD08D/ 9SD08D	BGEWSSD09/ 9SD09	BGEWSSD10/ 9SD10	BGEWSSD11/ 9SD11	BGEWSSD12/ 9SD12	BGOWSD01	BGOWSD02
Date Sampled	07-16-2003	07-16-2003	07-16-2003	07-16-2003	07-16-2003	07-16-2003	07-16-2003	01-17-2002	01-17-2002
Volatiles (ug/kg)									
2-Butanone (MEK)	NA	NA	NA	NA	NA	NA	NA	38 U	34 U
2-Hexanone (MBK)	NA	NA	NA	NA	NA	NA	NA	38 U	34 U
Acetone	NA	NA	NA	NA	NA	NA	NA	77 UJ	68 UJ
Benzene	NA	NA	NA	NA	NA	NA	NA	7.7 U	6.8 U
Carbon Disulfide	NA	NA	NA	NA	NA	NA	NA	7.7 U	6.8 U
Chlorobenzene	NA	NA	NA	NA	NA	NA	NA	7.7 U	6.8 U
Ethylbenzene	NA	NA	NA	NA	NA	NA	NA	7.7 U	6.8 U
Isobutyl Alcohol	NA	NA	NA	NA	NA	NA	NA	310 R	270 R
Methylene Chloride	NA	NA	NA	NA	NA	NA	NA	7.7 U	6.8 U
Styrene (Ethenylbenzene)	NA	NA	NA	NA	NA	NA	NA	7.7 U	6.8 U
Tetrachloroethene (PCE)	NA	NA	NA	NA	NA	NA	NA	7.7 U	6.8 U
Toluene	NA	NA	NA	NA	NA	NA	NA	8.7 U	7.4 U
Xylenes, total	NA	NA	NA	NA	NA	NA	NA	7.7 U	6.8 U
Semivolatiles (ug/kg)									
1,4-Dioxane (p-)	1200 UJ	870 U	940 U	780 U	1100 UJ	650 U	650 U	510 U	480 U
2,4-Dinitrotoluene	1200 U	870 U	940 U	780 U	1100 U	650 U	650 U	510 U	480 U
2-Acetylaminofluorene	1200 U	870 U	940 U	780 U	1100 U	650 U	650 U	510 U	480 U
2-Methyl-5-nitroaniline	1200 U	870 U	940 U	780 U	1100 U	650 U	670 U	510 U	480 U
2-Nitroaniline	6300 U	4500 U	4800 U	4000 U	5900 U	3300 U	3500 U	2600 U	2500 U
4-Chlorophenyl-phenylether	1200 U	870 U	940 U	780 U	1100 U	650 U	670 U	510 U	480 U
4-Dimethylaminoazobenzene (p-)	1200 UJ	870 U	940 U	780 U	1100 UJ	650 U	670 U	510 U	480 U
4-Methylphenol (p-Cresol)	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	6300 U	4500 U	4800 U	4000 U	5900 U	3300 U	NA U	2600 U	2500 U
Acenaphthylene	NA	NA	NA	NA	NA	NA	NA	510 U	480 U
Acetophenone	1200 U	870 U	940 U	780 U	1100 U	650 U	670 U	510 U	480 U
Anthracene	NA	NA	NA	NA	NA	NA	NA	510 U	480 U
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	510 U	480 U
Benzo(a)pyrene (BaP)	1200 U	870 U	940 U	780 U	1100 U	650 U	670 U	510 U	480 U
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	510 U	480 U
Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA	510 U	480 U
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	510 U	480 U
Benzoic Acid	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl) Phthalate (BEHP)	1200 U	870 U	940 U	780 U	1100 U	650 U	670 U	510 U	480 U
Butyl Benzyl Phthalate	1200 U	870 U	940 U	780 U	1100 U	650 U	670 U	510 U	480 U
Carbazole	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	NA	NA	NA	NA	NA	NA	NA	510 U	480 U
Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	510 U	480 U
Di-n-butyl Phthalate (DBP)	1200 U	870 U	940 UJ	780 U	1100 U	650 U	670 UJ	510 U	480 U
Di-n-octyl Phthalate	1200 U	870 U	940 U	780 U	1100 U	650 U	670 U	510 U	480 U
Ethyl 4,4'-Dichlorobenzilate (Chlorobenzilate)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	NA	NA	NA	NA	NA	NA	NA	510 U	480 U
Fluorene	NA	NA	NA	NA	NA	NA	NA	510 U	480 U
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	510 U	480 U
Methyl Methane Sulfonate	1200 U	870 U	940 U	780 U	1100 U	650 U	670 U	510 U	480 U

ANALYTICAL DATA FOR BACKGROUND LOCATIONS - SEDIMENT
SUMMARY REPORT FOR ENVIRONMENTAL BACKGROUND CONCENTRATIONS
CTO-0121
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO

Sample ID	BGEWSSD05/ 9SD05	BGEWSSD08/ 9SD08	BGEWSSD08D/ 9SD08D	BGEWSSD09/ 9SD09	BGEWSSD10/ 9SD10	BGEWSSD11/ 9SD11	BGEWSSD12/ 9SD12	BGOWSD01	BGOWSD02
Date Sampled	07-16-2003	07-16-2003	07-16-2003	07-16-2003	07-16-2003	07-16-2003	07-16-2003	01-17-2002	01-17-2002
n-Nitrosodi-n-propylamine	1200 U	870 U	940 U	780 U	1100 U	650 U	670 U	510 U	480 U
n-Nitrosomethylethylamine	1200 U	870 U	940 U	780 U	1100 U	650 U	670 U	510 U	480 U
n-Nitrosomorpholine	1200 U	870 U	940 UJ	780 U	1100 U	650 U	670 UJ	510 U	480 U
Pentachlorophenol	6300 U	4500 U	4800 U	4000 U	5900 U	3300 U	3500 U	2600 U	2500 U
Phenanthrene	NA	NA	NA	NA	NA	NA	NA	510 U	480 U
Phenol	1200 U	870 U	940 U	780 U	1100 U	650 U	670 U	510 U	480 U
Phenols, total	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA	NA	NA	NA	510 U	480 U
PAHs (ug/kg)									
1-Methylnaphthalene	25 U	18 U	19 U	16 U	23 U	13 U	14 U	10 U	9.7 U
2-Methylnaphthalene	25 U	18 U	19 U	16 U	23 U	13 U	14 U	10 U	9.7 U
Acenaphthene	25 U	18 U	19 U	16 U	23 U	13 U	14 U	10 U	9.7 U
Acenaphthylene	25 U	18 U	19 U	16 U	23 U	13 U	14 U	10 U	9.7 U
Anthracene	25 U	18 U	19 U	16 U	23 U	13 U	14 U	10 U	9.7 U
Benzo(a)anthracene	25 U	18 U	19 U	16 U	23 U	13 U	14 U	10 U	9.7 U
Benzo(a)pyrene (BaP)	25 U	18 U	19 U	16 U	23 U	13 U	14 U	10 U	9.7 U
Benzo(b)fluoranthene	25 U	18 U	19 U	16 U	23 U	13 U	14 U	10 U	9.7 U
Benzo(g,h,i)perylene	25 U	18 U	19 U	16 U	23 U	13 U	14 U	10 U	9.7 U
Benzo(k)fluoranthene	25 U	18 U	19 U	16 U	23 U	13 U	14 U	10 U	9.7 U
Chrysene	25 U	18 U	19 U	16 U	23 U	13 U	14 U	10 U	9.7 U
Dibenz(a,h)anthracene	25 U	18 U	19 U	16 U	23 U	13 U	14 U	10 U	9.7 U
Fluoranthene	25 U	18 U	19 U	16 U	23 U	13 U	14 U	10 U	9.7 U
Fluorene	25 U	18 U	19 U	16 U	23 U	13 U	14 U	10 U	9.7 U
Indeno(1,2,3-cd)pyrene	25 U	18 U	19 U	16 U	23 U	13 U	14 U	10 U	9.7 U
Naphthalene	25 U	18 U	19 U	16 U	23 U	13 U	14 U	10 U	9.7 U
Phenanthrene	25 U	18 U	19 U	16 U	23 U	13 U	14 U	10 U	9.7 U
Pyrene	25 U	18 U	19 U	16 U	23 U	13 U	14 U	10 U	9.7 U

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Sample ID	BGEWSSD05/ 9SD05	BGEWSSD08/ 9SD08	BGEWSSD08D/ 9SD08D	BGEWSSD09/ 9SD09	BGEWSSD10/ 9SD10	BGEWSSD11/ 9SD11	BGEWSSD12/ 9SD12	BGOWSD01	BGOWSD02
Date Sampled	07-16-2003	07-16-2003	07-16-2003	07-16-2003	07-16-2003	07-16-2003	07-16-2003	01-17-2002	01-17-2002
Pesticides / PCBs (ug/kg)									
4,4'-DDD	500	4.2 J	9.4 U	6.2 J	10 J	6.5 U	6.7 U	5.1 U	4.8 U
4,4'-DDE	460	20	29	27	33	3.8 J	5 J	5.1 U	4.8 U
4,4'-DDT	24 U	8.7 U	9.4 U	7.8 U	11 U	6.5 U	6.7 U	5.1 U	4.8 U
BHC, beta-	12 U	4.5 U	4.8 U	4 U	5.9 U	3.3 U	3.5 U	2.6 U	2.5 U
BHC, delta-	12 U	4.5 U	4.8 U	4 U	5.9 U	3.3 U	3.5 U	2.6 UJ	2.5 UJ
Chlordane, alpha-								2.6 UJ	2.5 UJ
Chlordane, gamma-								2.6 U	2.5 U
Dieldrin	24 U	8.7 U	9.4 U	7.8 U	11 U	6.5 U	6.7 U	5.1 U	4.8 U
Ethyl 4,4'-Dichlorobenzilate (Chlorobenzilate)	120 U	45 U	48 U	40 U	43 J	33 U	35 U	26 U	25 U
Heptachlor Epoxide	12 U	4.5 U	4.8 U	4 U	8.3 J	3.3 U	3.5 U	2.6 U	2.5 U
Methoxychlor	120 U	45 U	48 U	40 U	59 U	33 U	35 U	26 U	25 U
Aroclor-1260	240 U	87 U	94 U	78 U	110 U	65 U	67 U	51 U	48 U
Herbicides (ug/kg)									
2,4,5-T	31 U	22 U	24 U	20 U	29 U	16 U	17 U	13 U	12 U
2,4,5-TP (Silvex)	31 U	22 U	24 U	20 U	29 U	16 U	17 U	13 U	12 U
2,4-D	31 U	22 U	24 U	20 U	29 U	16 U	17 U	13 U	12 U
Dioxins (ug/kg)									
HxCDD, total	1.8 U	1.3 U	1.4 U	1.2 U	1.7 U	0.98 U	1 U	0.77 U	0.72 U
HxCDF, total	NA	NA	NA	NA	NA	NA	NA	0.77 U	0.72 U
PeCDD, total	NA	NA	NA	NA	NA	NA	NA	0.77 U	0.72 U
PeCDF, total	1.8 U	1.3 U	1.4 U	1.2 U	1.7 U	0.98 U	1 U	0.77 U	0.72 U
TCDF, total	1.8 U	1.3 U	1.4 U	1.2 U	1.7 U	0.98 U	1 U	0.77 U	0.72 U
TPH (mg/kg)									
Diesel Range Organics (DRO)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)									
Antimony	NA	NA	NA	NA	NA	NA	NA	2.6 UJ	2.6 UJ
Arsenic	NA	NA	NA	NA	NA	NA	NA	1.8	1.9
Barium	NA	NA	NA	NA	NA	NA	NA	7.2	7.6
Beryllium	NA	NA	NA	NA	NA	NA	NA	0.51 U	0.53 U
Cadmium	NA	NA	NA	NA	NA	NA	NA	0.64 U	0.66 U
Chromium	NA	NA	NA	NA	NA	NA	NA	2.6	3.3
Cobalt	NA	NA	NA	NA	NA	NA	NA	0.35 J	0.93 J
Copper	NA	NA	NA	NA	NA	NA	NA	2.2 J	3
Lead	NA	NA	NA	NA	NA	NA	NA	0.63 J	0.66 UJ
Mercury	NA	NA	NA	NA	NA	NA	NA	0.031 U	0.0062 J
Nickel	NA	NA	NA	NA	NA	NA	NA	5.1 U	5.3 U
Selenium	NA	NA	NA	NA	NA	NA	NA	1.3 U	1.3 U
Silver	NA	NA	NA	NA	NA	NA	NA	1.3 U	1.3 U
Thallium	NA	NA	NA	NA	NA	NA	NA	1.3 U	1.3 U
Tin	NA	NA	NA	NA	NA	NA	NA	6.4 U	6.6 U
Vanadium	NA	NA	NA	NA	NA	NA	NA	3.6	8.3
Zinc	NA	NA	NA	NA	NA	NA	NA	2.6	4.3

NA - not analyzed

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Sample ID	BGOWSD03	BGOWSD03D	BGOWSD04	BGOWSD05	BGOWSD06	BGOWSD07	BGOWSD08	BGOWSD09
Date Sampled	01-17-2002	01-17-2002	01-17-2002	01-17-2002	01-17-2002	01-17-2002	01-17-2002	01-17-2002
Volatiles (ug/kg)								
2-Butanone (MEK)	36 U	33 U	35 U	33 U	29 U	26 U	38 U	27 U
2-Hexanone (MBK)	36 U	33 U	35 U	33 U	29 U	26 U	38 U	27 U
Acetone	72 UJ	65 UJ	70 UJ	66 UJ	57 UJ	52 UJ	76 UJ	55 UJ
Benzene	7.2 U	6.5 U	7 U	6.6 U	5.7 U	5.2 U	7.6 U	5.5 U
Carbon Disulfide	7.2 U	6.5 U	7 U	6.6 U	5.7 U	5.2 U	7.6 U	5.5 U
Chlorobenzene	7.2 U	6.5 U	7 U	6.6 U	5.7 U	5.2 U	7.6 U	5.5 U
Ethylbenzene	7.2 U	6.5 U	7 U	6.6 U	5.7 U	5.2 U	7.6 U	5.5 U
Isobutyl Alcohol	290 R	260 R	280 R	260 R	230 R	210 R	300 R	220 R
Methylene Chloride	7.2 U	6.5 U	7 U	6.6 U	5.7 U	5.2 U	7.6 U	5.5 U
Styrene (Ethenylbenzene)	7.2 U	6.5 U	7 U	6.6 U	5.7 U	5.2 U	7.6 U	5.5 U
Tetrachloroethene (PCE)	7.2 U	6.5 U	7 U	6.6 U	5.7 U	5.2 U	7.6 U	5.5 U
Toluene	7.2 U	7.5 U	8.1 U	7 U	5.7 U	5.2 U	7.6 U	6.3 U
Xylenes, total	7.2 U	6.5 U	7 U	6.6 U	5.7 U	5.2 U	7.6 U	5.5 U
Semivolatiles (ug/kg)								
1,4-Dioxane (p-)	510 U	460 U	500 U	480 U	520 U	470 U	530 U	470 U
2,4-Dinitrotoluene	510 U	460 U	500 U	480 U	520 U	470 U	530 U	470 U
2-Acetylaminofluorene	510 U	460 U	500 U	480 U	520 U	470 U	530 U	470 U
2-Methyl-5-nitroaniline	510 U	460 U	500 U	480 U	520 U	470 U	530 U	470 U
2-Nitroaniline	2600 U	2400 U	2600 U	2500 U	2600 U	2400 U	2700 U	2400 U
4-Chlorophenyl-phenylether	510 U	460 U	500 U	480 U	520 U	470 U	530 U	470 U
4-Dimethylaminoazobenzene (p-)	510 U	460 U	500 U	480 U	520 U	470 U	530 U	470 U
4-Methylphenol (p-Cresol)	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	2600 U	2400 U	2600 U	2500 U	2600 U	2400 U	2700 U	2400 U
Acenaphthylene	510 U	460 U	500 U	480 U	520 U	470 U	530 U	470 U
Acetophenone	510 U	460 U	500 U	480 U	520 U	470 U	530 U	470 U
Anthracene	510 U	460 U	500 U	480 U	520 U	470 U	530 U	470 U
Benzo(a)anthracene	510 U	460 U	500 U	480 U	520 U	470 U	530 U	470 U
Benzo(a)pyrene (BaP)	510 U	460 U	500 U	480 U	520 U	470 U	530 U	470 U
Benzo(b)fluoranthene	510 U	460 U	500 U	480 U	520 U	470 U	530 U	470 U
Benzo(g,h,i)perylene	510 U	460 U	500 U	480 U	520 U	470 U	530 U	470 U
Benzo(k)fluoranthene	510 U	460 U	500 U	480 U	520 U	470 U	530 U	470 U
Benzoic Acid	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl) Phthalate (BEHP)	510 U	460 U	500 U	480 U	520 U	470 U	530 U	470 U
Butyl Benzyl Phthalate	510 U	460 U	500 U	480 U	520 U	470 U	530 U	470 U
Carbazole	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	510 U	460 U	500 U	480 U	520 U	470 U	530 U	470 U
Dibenz(a,h)anthracene	510 U	460 U	500 U	480 U	520 U	470 U	530 U	470 U
Di-n-butyl Phthalate (DBP)	510 U	460 U	500 U	480 U	520 U	470 U	530 U	470 U
Di-n-octyl Phthalate	510 U	460 U	500 U	480 U	520 U	470 U	530 U	470 U
Ethyl 4,4'-Dichlorobenzilate (Chlorobenzilate)	NA	NA	NA	NA	NA	NA	NA	
Fluoranthene	510 U	460 U	500 U	NA U	520 U	470 U	530 U	470 U
Fluorene	510 U	460 U	500 U	480 U	520 U	470 U	530 U	470 U
Indeno(1,2,3-cd)pyrene	510 U	460 U	500 U	480 U	520 U	470 U	530 U	470 U
Methyl Methane Sulfonate	510 U	460 U	500 U	480 U	520 U	470 U	530 U	470 U

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Sample ID	BGOWSD03	BGOWSD03D	BGOWSD04	BGOWSD05	BGOWSD06	BGOWSD07	BGOWSD08	BGOWSD09
Date Sampled	01-17-2002	01-17-2002	01-17-2002	01-17-2002	01-17-2002	01-17-2002	01-17-2002	01-17-2002
n-Nitrosodi-n-propylamine	510 U	460 U	500 U	480 U	520 U	470 U	530 U	470 U
n-Nitrosomethylethylamine	510 U	460 U	500 U	480 U	520 U	470 U	530 U	470 U
n-Nitrosomorpholine	510 U	460 U	500 U	480 U	520 U	470 U	530 U	470 U
Pentachlorophenol	2600 U	2400 U	2600 U	2500 U	2600 U	2400 U	2700 U	2400 U
Phenanthrene	510 U	460 U	500 U	480 U	520 U	470 U	530 U	470 U
Phenol	510 U	460 U	500 U	480 U	520 U	470 U	530 U	470 U
Phenols, total	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	510 U	460 U	500 U	480 U	520 U	470 U	530 U	470 U
PAHs (ug/kg)								
1-Methylnaphthalene	10 U	9.4 U	10 U	9.7 U	10 U	9.6 U	11 U	9.6 U
2-Methylnaphthalene	10 U	9.4 U	10 U	9.7 U	10 U	9.6 U	11 U	9.6 U
Acenaphthene	10 U	9.4 U	10 U	9.7 U	10 U	9.6 U	11 U	9.6 U
Acenaphthylene	10 U	9.4 U	10 U	9.7 U	10 U	9.6 U	11 U	9.6 U
Anthracene	10 U	9.4 U	10 U	9.7 U	10 U	9.6 U	11 U	9.6 U
Benzo(a)anthracene	10 U	9.4 U	10 U	9.7 U	10 U	9.6 U	11 U	9.6 U
Benzo(a)pyrene (BaP)	10 U	9.4 U	10 U	9.7 U	10 U	9.6 U	2.5 J	9.6 U
Benzo(b)fluoranthene	3.4 J	9.4 U	10 U	9.7 U	10 U	9.6 U	11 U	9.6 U
Benzo(g,h,i)perylene	2.4 J	9.4 U	2.8 J	2.3 J	10 U	9.6 U	16	9.6 U
Benzo(k)fluoranthene	10 U	9.4 U	10 U	9.7 U	10 U	9.6 U	11 U	9.6 U
Chrysene	10 U	9.4 U	10 U	9.7 U	10 U	9.6 U	11 U	9.6 U
Dibenz(a,h)anthracene	10 U	9.4 U	10 U	9.7 U	10 U	9.6 U	11 U	9.6 U
Fluoranthene	3.7 J	9.4 U	10 U	9.7 U	10 U	9.6 U	11 U	9.6 U
Fluorene	10 U	9.4 U	10 U	9.7 U	10 U	9.6 U	11 U	9.6 U
Indeno(1,2,3-cd)pyrene	10 U	9.4 U	10 U	9.7 U	10 U	9.6 U	1.9 J	9.6 U
Naphthalene	2.6 J	2 J	10 U	9.7 U	2.4 J	2.6 J	11 U	9.6 U
Phenanthrene	10 U	9.4 U	10 U	9.7 U	10 U	9.6 U	11 U	9.6 U
Pyrene	3.6 J	9.4 U	10 U	9.7 U	10 U	9.6 U	11 U	9.6 U

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Date Sampled	01-17-2002	01-17-2002	01-17-2002	01-17-2002	01-17-2002	01-17-2002	01-17-2002	01-17-2002
Pesticides / PCBs (ug/kg)								
4,4'-DDD	5.1 U	4.6 U	5 U	4.8 U	1.3 J	4.7 U	5.3 U	4.7 U
4,4'-DDE	5.1 U	4.6 U	5 U	4.8 U	5.2 U	4.7 U	5.3 U	4.7 U
4,4'-DDT	5.1 U	4.6 U	5 U	4.8 U	5.2 U	4.7 U	5.3 U	4.7 U
BHC, beta-	2.6 U	2.4 U	2.6 U	2.5 U	2.6 U	2.4 U	2.7 U	2.4 U
BHC, delta-	2.6 UJ	2.4 UJ	2.6 UJ	2.5 UJ	2.6 UJ	2.4 UJ	2.7 UJ	2.4 UJ
Chlordane, alpha-	2.6 UJ	2.4 UJ	2.6 UJ	2.5 UJ	2.6 UJ	2.4 UJ	2.7 UJ	2.4 UJ
Chlordane, gamma-	2.6 U	2.4 U	2.6 U	2.5 U	2.6 U	2.4 U	2.7 U	2.4 U
Dieldrin	5.1 U	4.6 U	5 U	4.8 U	5.2 U	4.7 U	5.3 U	4.7 U
Ethyl 4,4'-Dichlorobenzilate (Chlorobenzilate)	26 U	24 U	26 U	25 U	26 U	24 U	27 U	24 U
Heptachlor Epoxide	2.6 U	2.4 U	2.6 U	2.5 U	2.6 U	2.4 U	2.7 U	2.4 U
Methoxychlor	26 U	24 U	26 U	25 U	26 U	24 U	27 U	24 U
Aroclor-1260	51 U	46 U	50 U	48 U	52 U	47 U	53 U	47 U
Herbicides (ug/kg)								
2,4,5-T	13 U	12 U	12 U	12 U	13 U	12 UJ	13 UJ	12 UJ
2,4,5-TP (Silvex)	13 U	12 U	12 U	12 U	13 U	12 UJ	13 UJ	12 UJ
2,4-D	13 U	9 NJ	18 J	12 U	13 U	12 UJ	13 UJ	12 UJ
Dioxins (ug/kg)								
HxCDD, total	0.77 U	0.7 U	0.76 U	0.72 U	0.78 U	0.71 U	0.81 U	0.71 U
HxCDF, total	0.77 U	0.7 U	0.76 U	0.72 U	0.78 U	0.71 U	0.81 U	0.71 U
PeCDD, total	0.77 U	0.7 U	0.76 U	0.72 U	0.78 U	0.71 U	0.81 U	0.71 U
PeCDF, total	0.77 U	0.7 U	0.76 U	0.72 U	0.78 U	0.71 U	0.81 U	0.71 U
TCDF, total	0.77 U	0.7 U	0.76 U	0.72 U	0.78 U	0.71 U	0.81 U	0.71 U
TPH (mg/kg)								
Diesel Range Organics (DRO)	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)								
Antimony	3.1 UJ	2.6 UJ	2.8 UJ	2.9 UJ	2.6 UJ	2.4 UJ	2.7 UJ	2.6 UJ
Arsenic	1.4 J	1.8	2.7	3	1.9	2.3	3	2.7
Barium	8.1	7	7.9	7.6	7.6	6.8	7.5	7.3
Beryllium	0.62 U	0.51 U	0.55 U	0.58 U	0.52 U	0.48 U	0.54 U	0.52 U
Cadmium	0.77 U	0.64 U	0.69 U	0.72 U	0.65 U	0.6 U	0.67 U	0.65 U
Chromium	3.1	3.1	3.1	3.5	2.5	3.5	3.5	3.1
Cobalt	0.56 J	0.77 J	0.66 J	0.8 J	0.54 J	0.93 J	0.7 J	0.91 J
Copper	2.6 J	2.7	2.7 J	3.1	2.4 J	3	3.2	3.1
Lead	0.74 J	0.56 J	0.69 UJ	0.72 UJ	0.65 UJ	0.57 J	0.66 J	0.57 J
Mercury	0.026 U	0.026 U	0.0043 J	0.029 U	0.028 U	0.0052 J	0.0042 J	0.0056 J
Nickel	6.2 U	5.1 U	5.5 U	5.8 U	5.2 U	0.58 J	5.4 U	5.2 U
Selenium	1.5 U	1.3 U	1.4 U	1.4 U	1.3 U	1.2 U	1.3 U	1.3 U
Silver	1.5 U	1.3 U	1.4 U	1.4 U	1.3 U	1.2 U	1.3 U	1.3 U
Thallium	0.91 J	1.3 U	1.4 U	1.4 U	1.3 U	1.2 U	1.3 U	1.3 U
Tin	7.7 U	6.4 U	6.9 U	7.2 U	6.5 U	6 U	6.7 U	6.5 U
Vanadium	6	7.2	5.7	9.1	4.1	9.6	8.1	9.1
Zinc	3.4	3.8	3.5	4.3	2.8	4.4	4.2	4.5

NA - not analyzed

Appendix B:
Box and Whisker Plots

APPENDIX B.1
Box and Whisker Plot Explanation

The Math Forum @ Drexel DONATE

THE MATH FORUM ASK DR. MATH
QUESTIONS & ANSWERS FROM OUR ARCHIVES

Box and Whisker Plots

Date: 02/13/2000 at 21:39:15
From: Ramiro Martinez
Subject: Box and Whisker Plots

I don't understand box and whisker plots. All I know is that a box and whisker plot is used to display data. I can't find information on this anywhere else.

Sincerely,
Ramiro Martinez

Date: 02/14/2000 at 12:03:38
From: Doctor TWE
Subject: Re: Box and Whisker Plots

Hi Ramiro - thanks for writing to Dr. Math.

A box-and-whisker plot (often simply called a box plot) is a graphical way of showing data. It is useful for quickly finding outliers - data points out of line with the rest of the data set.

Suppose we want to construct a box plot of the following test scores:

```
     50, 60, 73, 77, 80, 81, 82, 83, 84, 84, 84, 85, 88, 95, 100
```

If they're not already in numerical order, it's best to arrange them in ascending order.

First, we need to construct the "box." To do so, we must find the upper and lower quartiles and the median. The median is the number in the middle of our set (when arranged in numerical order). The upper and lower quartiles are the values 1/4 of the way from the top or bottom of our set. In our example:

```
     50, 60, 73, 77, 80, 81, 82, 83, 84, 84, 84, 85, 88, 95, 100
                  ^               ^               ^
                 L.Q.           Median           U.Q.
```

To draw the box, we'll put a scale on the x-axis and draw a box from the lower quartile to the upper quartile. We'll add a vertical line to mark the median, like so:

```
                              LQ     M UQ
                               +-------+
                               |     | |
                               +-------+
   ^.........^.........^.........^.........^.........^.........^
   50       60        70        80        90        100       110
```

```
     where LQ = Lower Quartile, M = Median, UQ = Upper Quartile.
```

Now we add "fences." First, we compute the inner quartile range (IQR). The IQR = UQ - LQ. So in our example IQR = 85 - 77 = 8. The inner fences are 1.5*IQR below the L.Q. and 1.5*IQR above the U.Q. For our example, the inner fences are at:

```
              77 - 1.5*8 = 77 - 12 = 65
     and at   85 + 1.5*8 = 85 + 12 = 97
```

We'll mark these with a dotted line (I'll use colons ":"). Sometimes the fences are not drawn on the box plot, but we'll put them in so we can see where they are:

```
                 LIF         LQ     M UQ         UIF
                  :           +-------+           :
                  :           |     | |           :
                  :           +-------+           :
   ^.........^.........^.........^.........^.........^.........^
   50       60        70        80        90        100       110

     where LIF = Lower Inner Fence, UIF = Upper Inner Fence.
```

There is also a set of outer fences. These are 3*IQR below the L.Q. and 3*IQR above the U.Q. For our example, the outer fences are at:

```
              77 - 3*8 = 77 - 24 = 53
     and at   85 + 3*8 = 85 + 24 = 109
```

We'll mark these with another dotted line. These are always twice as far out as the inner fences. Here's what we have so far:

```
     LOF         LIF         LQ     M UQ         UIF         UOF
      :           :           +-------+           :           :
      :           :           |     | |           :           :
      :           :           +-------+           :           :
   ^.........^.........^.........^.........^.........^.........^
   50       60        70        80        90        100       110

     where LOF = Lower Outer Fence, UOF = Upper Outer Fence.
```

Now we add the "whiskers." Find the first value above (to the right of) the Lower Inner Fence. Mark it with an X and draw a line connecting it to the box. Similarly, find the first value below (to the left of) the Upper Inner Fence. Mark it with an X and draw a line connecting it to the box as well. In our example, the end values for our whiskers are at 73 (the first value above 65) and 95 (the first value below 97.) Our plot now looks like this:

```
     LOF         LIF         LQ     M UQ         UIF         UOF
      :           :           +-------+           :           :
      :           :       X---|     | |---------X :           :
      :           :           +-------+           :           :
   ^.........^.........^.........^.........^.........^.........^
   50       60        70        80        90        100       110
```

Finally, we have to mark the outliers. Values between the inner and outer fences are called "suspect outliers." We mark them with an asterisk "*".

Values outside the outer fences are called "highly suspect outliers."

We mark them with an "o". In our example, we have two suspect outliers: the 60 and the 100. We also have one highly suspect outlier: the 50. Once we mark these on our plot, we're finished:

```
     LOF         LIF         LQ     M UQ         UIF         UOF
      :           :           +-------+           :           :
   o  :      *    :       X---|     | |---------X :  *        :
      :           :           +-------+           :           :
   ^.........^.........^.........^.........^.........^.........^
   50       60        70        80        90        100       110
```

We could "erase" the fences and labels, but I'd probably leave them in so that the person looking at the graph can see where they are. If we erase them, we'll have:

```
                               +-------+
   o         *            X---|     | |---------X    *
                               +-------+
   ^.........^.........^.........^.........^.........^.........^
   50       60        70        80        90        100       110
```

As you can see, this plot quickly gives an idea of what our data look like. Half the numbers are between 77 and 85, the middle of the data set is at 83, the "reasonable" range of the data goes from 73 to 95, and we have three suspect data values at 50, 60, and 100.

A nice feature of this kind of plot is that all the computations are relatively simple. We never had to do anything more than add, subtract, and multiply by 1.5 and 3.

I hope this helps! If you have any more questions, write back.

- Doctor TWE, The Math Forum
  http://mathforum.org/dr.math/

For more on the meanings of "quartile" and mathematicians' disagreements about them, see

  Defining Quartiles
  http://mathforum.org/library/drmath/view/60969.html

- Doctor Melissa, The Math Forum
  http://mathforum.org/dr.math/

Associated Topics:
College Statistics
High School Statistics
Middle School Statistics

Search the Dr. Math Library:

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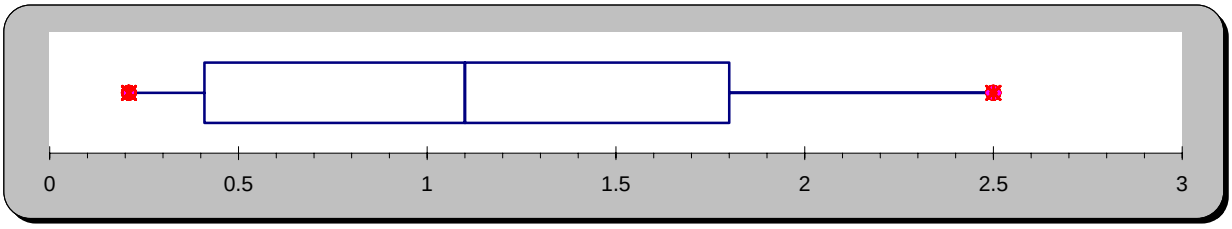
APPENDIX B.2
Box and Whisker Plot, Surface Soil

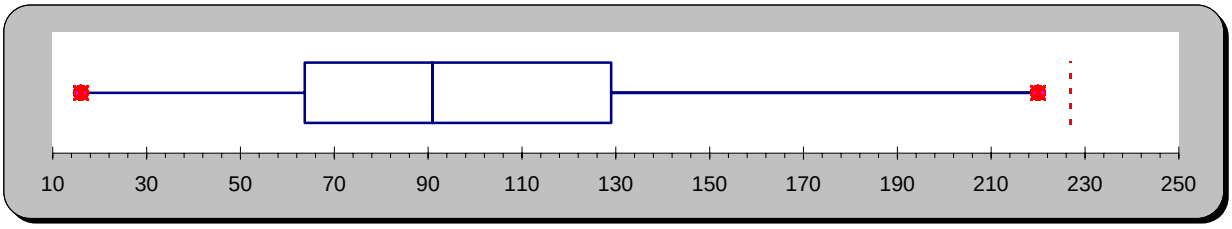
Box and Whisker Plot

Arsenic, Surface Soil				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
0.21	0.41	1.1	1.8	2.5



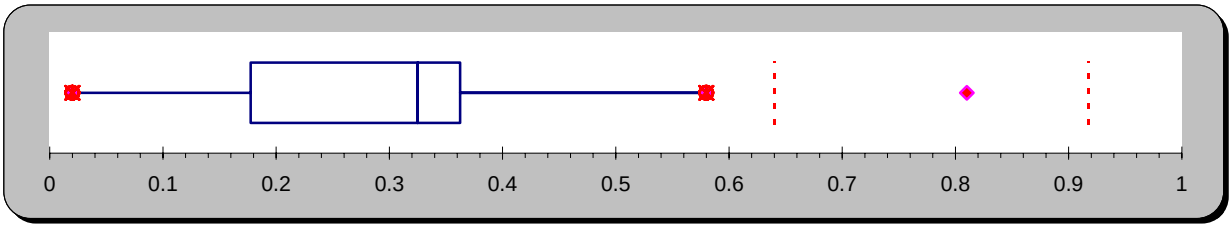
Box and Whisker Plot

Barium, Surface Soil				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
16	63.7	90.9	129	220



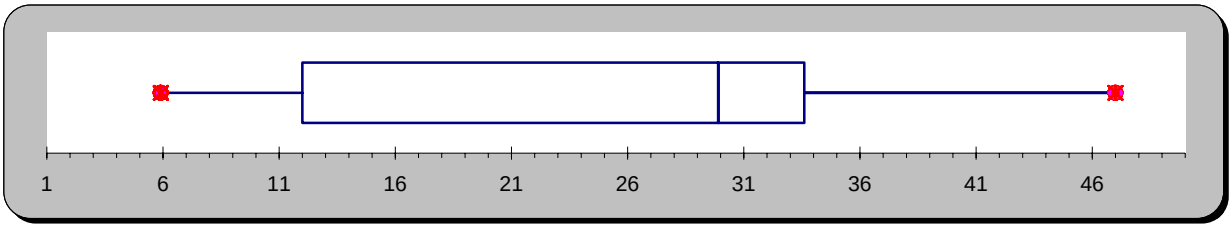
Box and Whisker Plot

Beryllium, Surface Soil				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
0.02	0.1775	0.325	0.3625	0.58



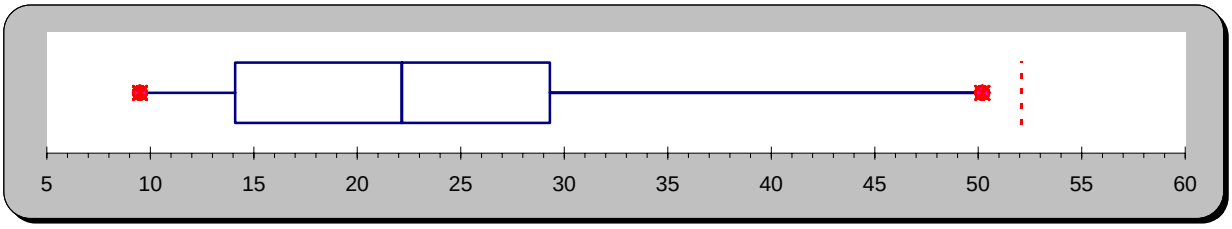
Box and Whisker Plot

Chromium, Surface Soil				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
5.9	12	29.9	33.6	47



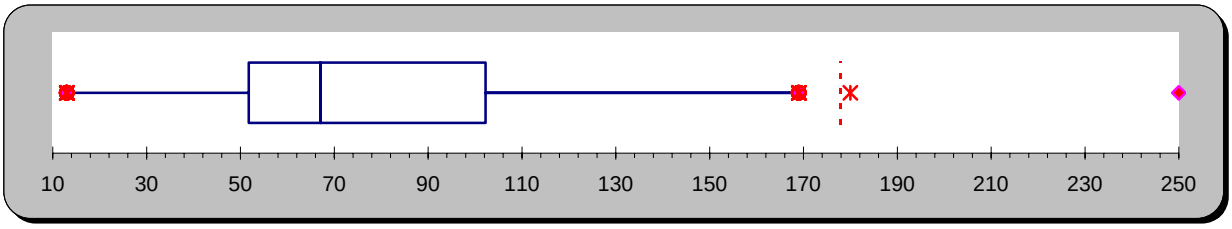
Box and Whisker Plot

Cobalt, Surface Soil				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
9.5	14.1	22.15	29.3	50.2



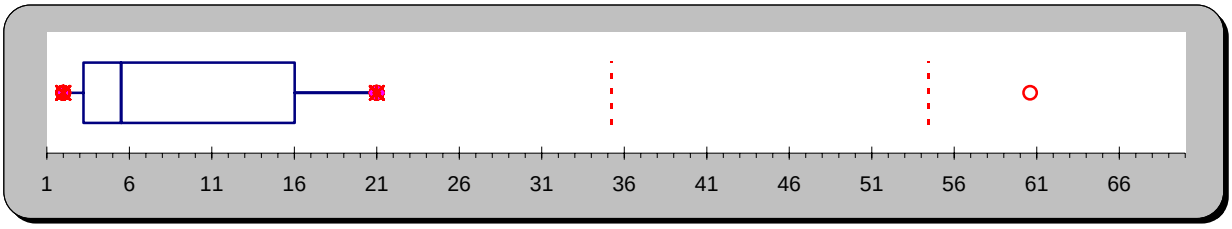
Box and Whisker Plot

Copper, Surface Soil				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
13	51.775	67	102.25	169



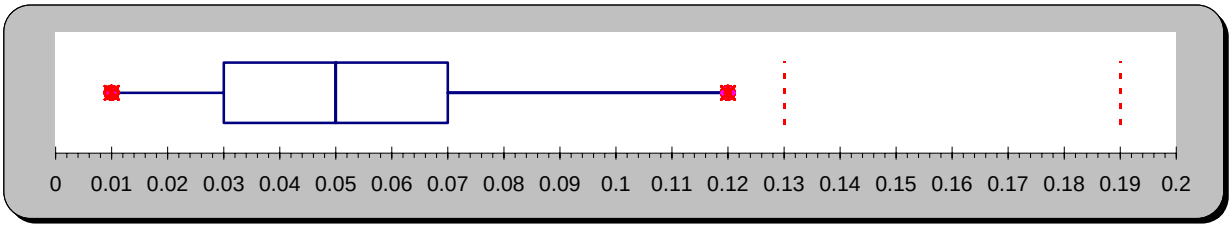
Box and Whisker Plot

Lead, Surface Soil				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
2	3.225	5.5	16.025	21



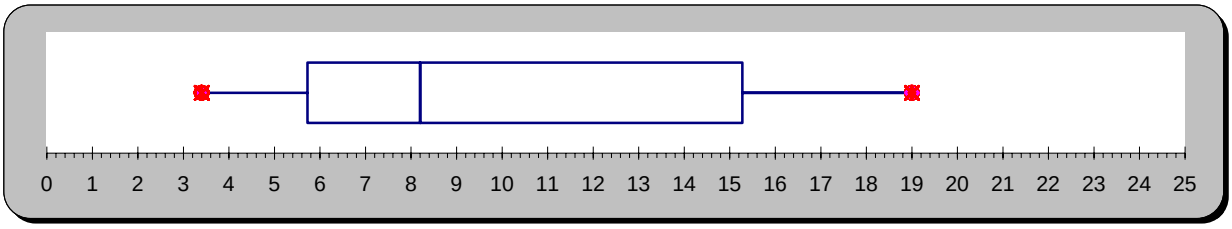
Box and Whisker Plot

Mercury, Surface Soil				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
0.01	0.03	0.05	0.07	0.12



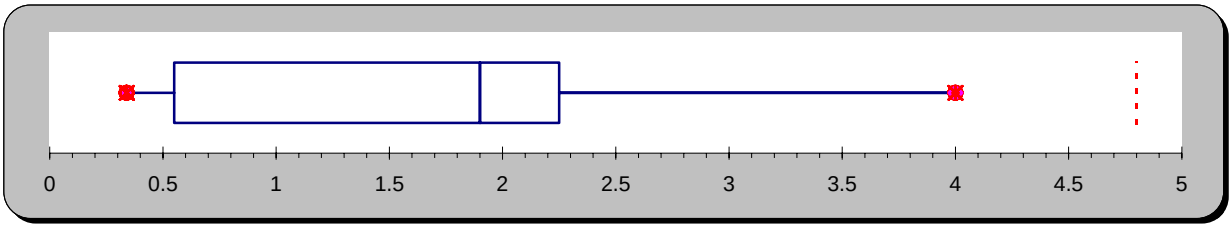
Box and Whisker Plot

Nickel, Surface Soil				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
3.4	5.725	8.2	15.275	19



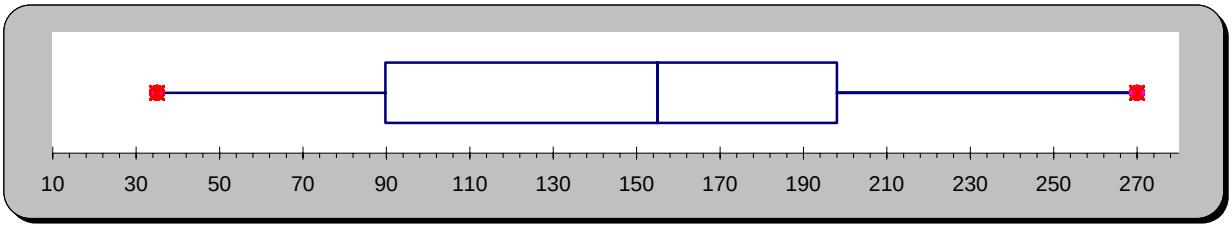
Box and Whisker Plot

Tin, Surface Soil				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
0.34	0.55	1.9	2.25	4



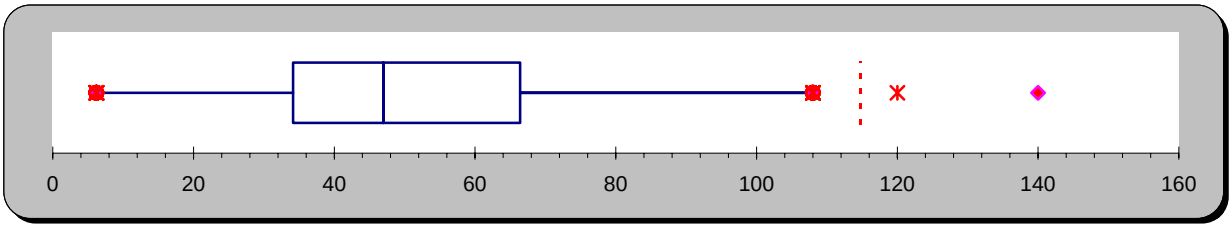
Box and Whisker Plot

Vanadium, Surface Soil				
Lower Whisker	**Lower Hinge**	**Median**	**Upper Hinge**	**Upper Whisker**
35	89.75	155	198	270



Box and Whisker Plot

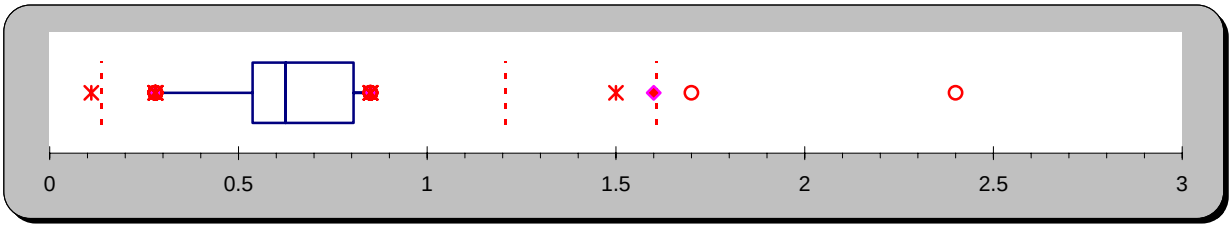
Zinc, Surface Soil				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
6.2	34.15	47	66.4	108



APPENDIX B.3
Box and Whisker Plots, Subsurface Soil, Clay

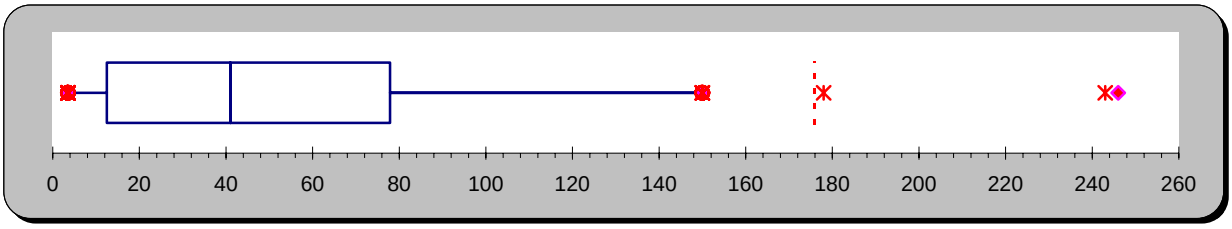
Box and Whisker Plot

Arsenic, Subsurface Soil, Clay				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
0.28	0.5375	0.625	0.805	0.85



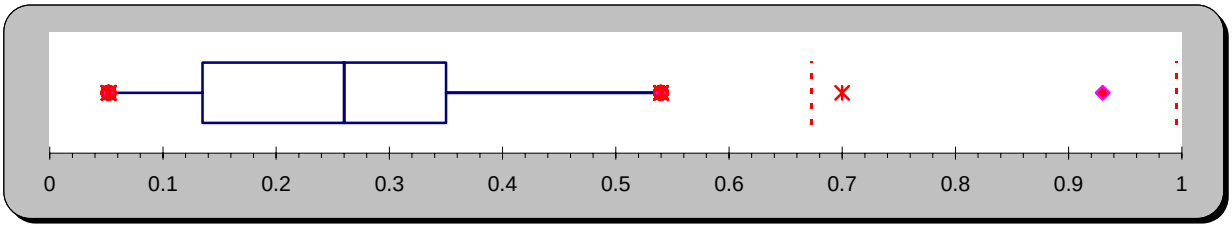
Box and Whisker Plot

Barium, Subsurface Soil, Clay				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
3.5	12.5	41	77.875	150



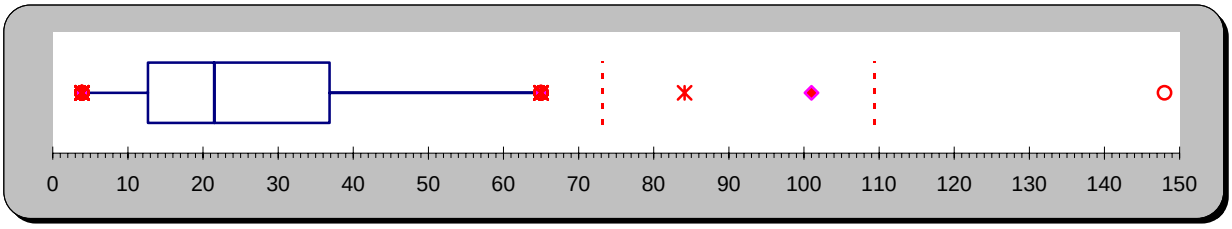
Box and Whisker Plot

Beryllium, Subsurface Soil, Clay				
Lower Whisker	**Lower Hinge**	**Median**	**Upper Hinge**	**Upper Whisker**
0.052	0.135	0.26	0.35	0.54



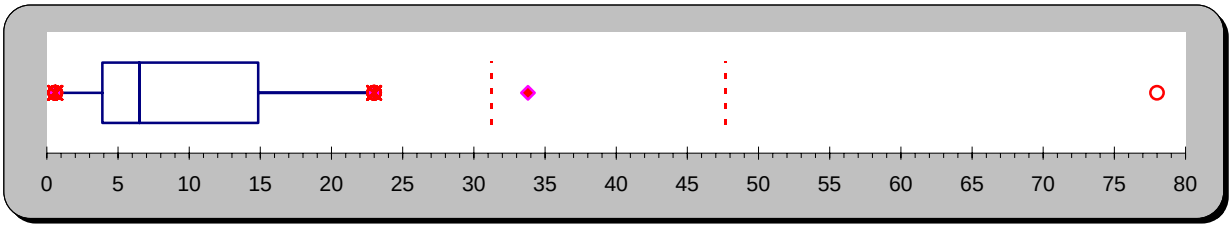
Box and Whisker Plot

Chromium, Subsurface Soil, Clay				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
3.9	12.675	21.5	36.85	65



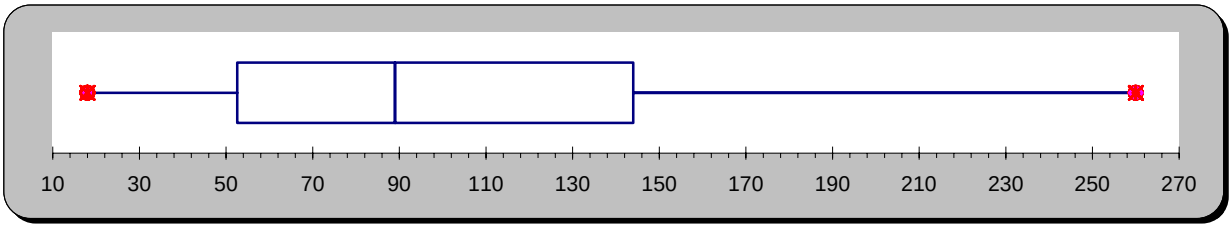
Box and Whisker Plot

Cobalt, Subsurface Soil, Clay				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
0.6	3.9	6.5	14.85	23



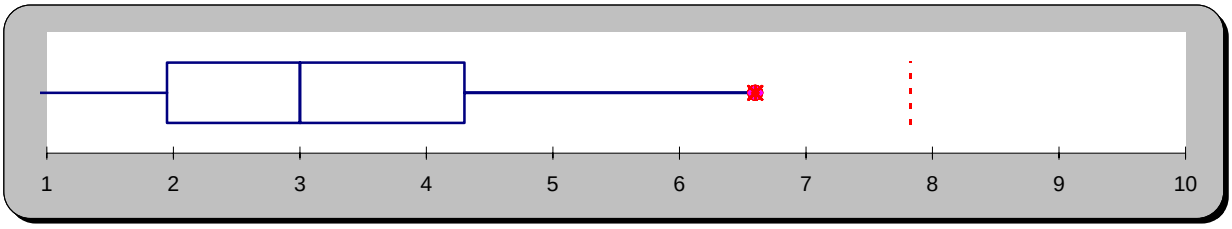
Box and Whisker Plot

Copper, Subsurface Soil, Clay				
Lower Whisker	**Lower Hinge**	**Median**	**Upper Hinge**	**Upper Whisker**
18	52.6	89	144	260



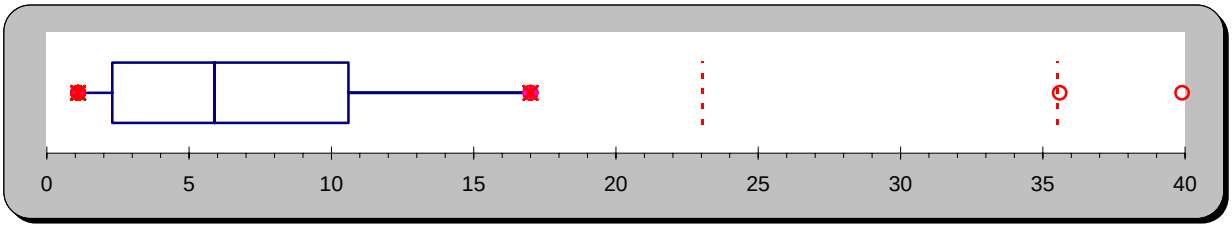
Box and Whisker Plot

Lead, Suburface Soil, Clay				
Lower Whisker	**Lower Hinge**	**Median**	**Upper Hinge**	**Upper Whisker**
0.27	1.95	3	4.3	6.6



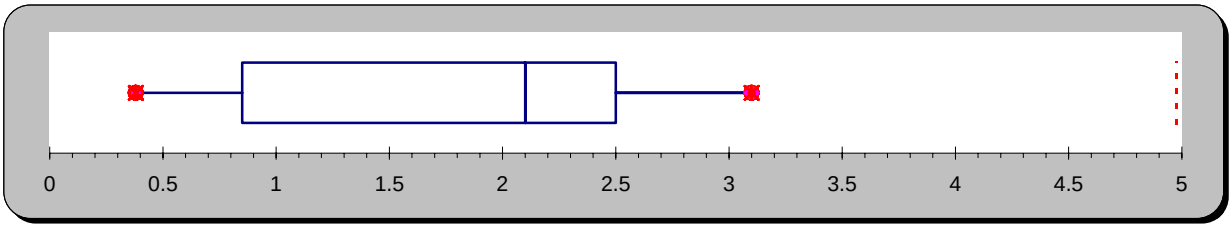
Box and Whisker Plot

Nickel, Subsurface Soil, Clay				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
1.1	2.3	5.9	10.6	17



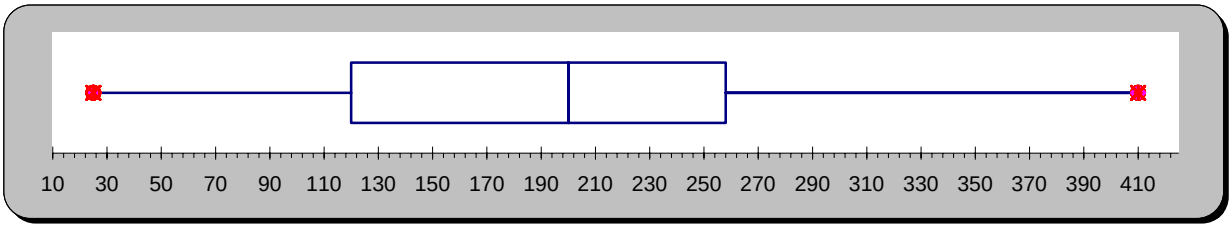
Box and Whisker Plot

Tin, Subsurface Soil, Clay				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
0.38	0.85	2.1	2.5	3.1



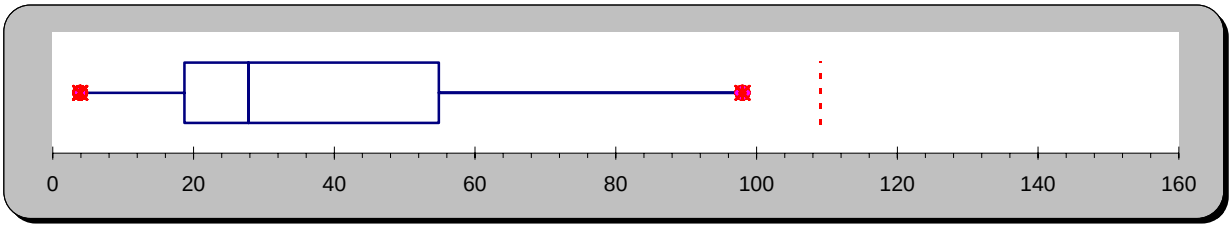
Box and Whisker Plot

Vanadium, Subsurface Soil, Clay				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
25	120	200	258	410



Box and Whisker Plot

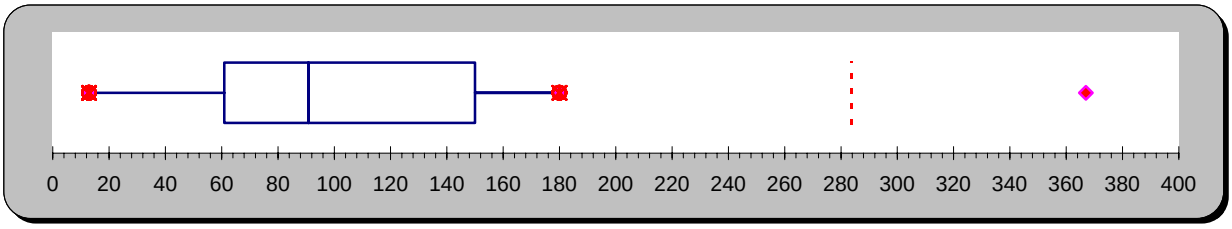
Zinc, Subsurface Soil, Clay				
Lower Whisker	**Lower Hinge**	**Median**	**Upper Hinge**	**Upper Whisker**
3.9	18.7	27.8	54.85	98



APPENDIX B.4
Box and Whisker Plots, Subsurface Soil, Fine Sand and Silt

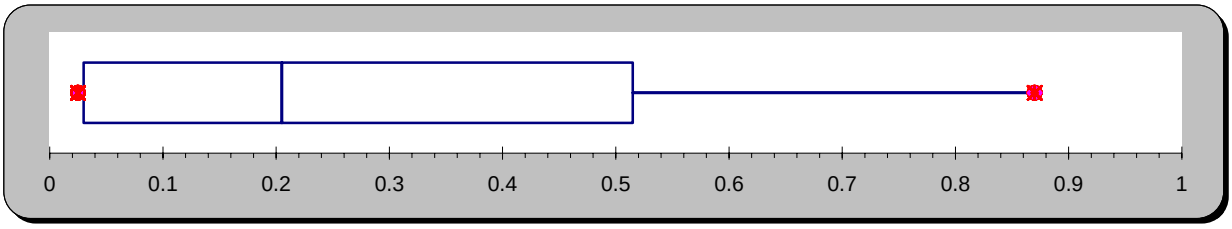
Box and Whisker Plot

Barium, Subsurface Soil, Fine Sand or Silt				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
12.9	60.9	90.8	150	180



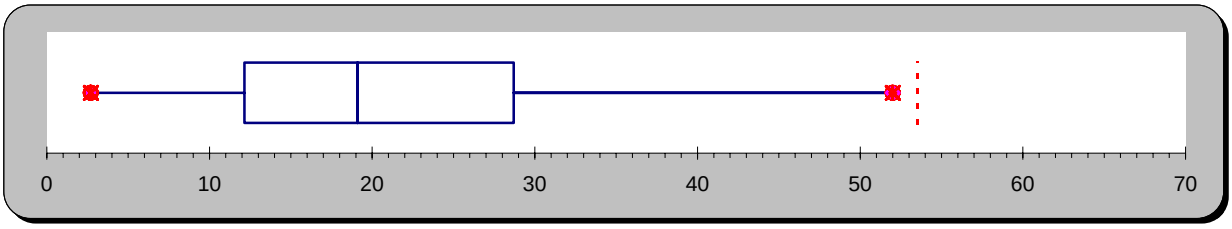
Box and Whisker Plot

Beryllium, Subsurface Soil, Fine Sand or Silt				
Lower Whisker	**Lower Hinge**	**Median**	**Upper Hinge**	**Upper Whisker**
0.025	0.03	0.205	0.515	0.87



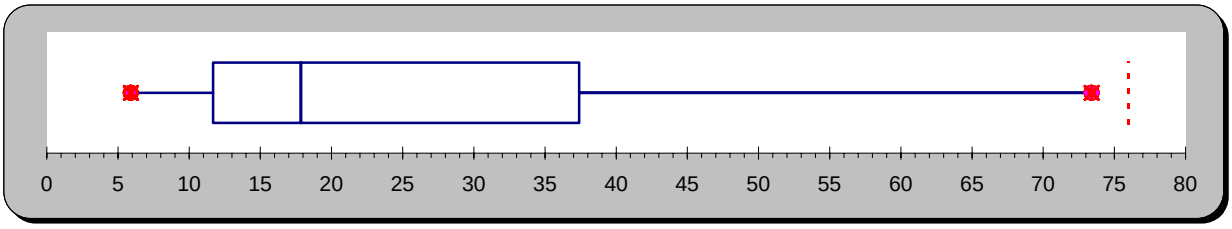
Box and Whisker Plot

Chromium, Subsurface Soil, Fine Sand or Silt				
Lower Whisker	**Lower Hinge**	**Median**	**Upper Hinge**	**Upper Whisker**
2.7	12.15	19.1	28.7	52



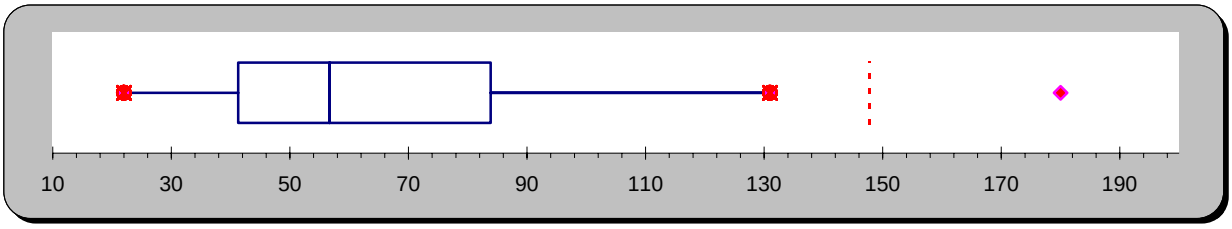
Box and Whisker Plot

Cobalt, Subsurface Soil, Fine Sand or Silt				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
5.9	11.675	17.85	37.4	73.4



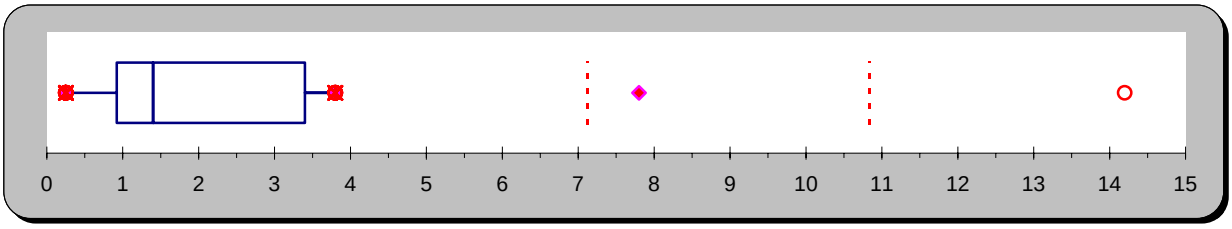
Box and Whisker Plot

Copper, Subsurface Soil, Fine Sand or Silt				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
22	41.275	56.7	83.875	131



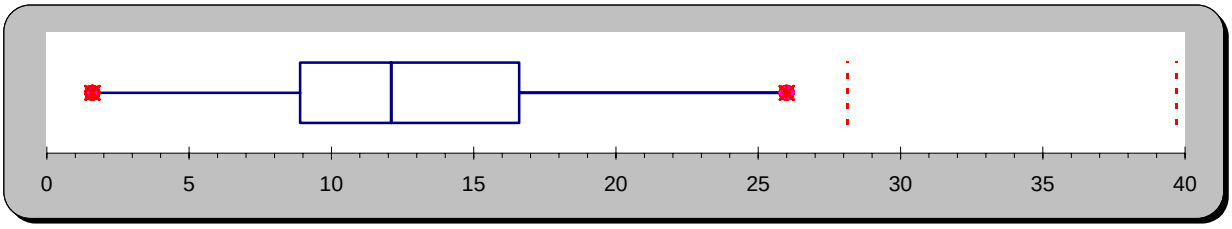
Box and Whisker Plot

Lead, Suburface Soil, Fine Sand or Silt				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
0.25	0.92	1.4	3.4	3.8



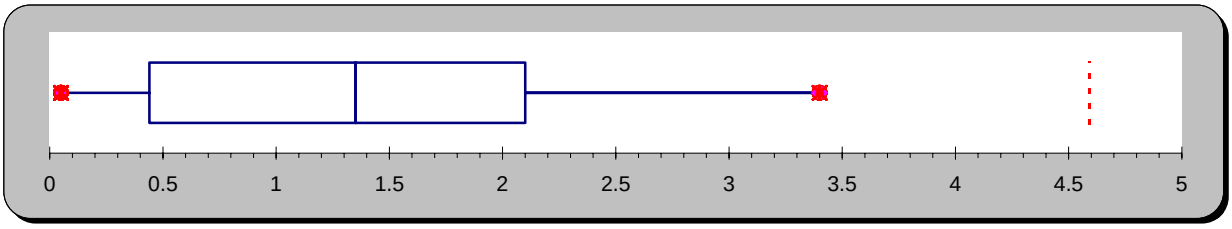
Box and Whisker Plot

Nickel, Subsurface Soil, Fine Sand or Silt				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
1.6	8.9	12.1	16.6	26



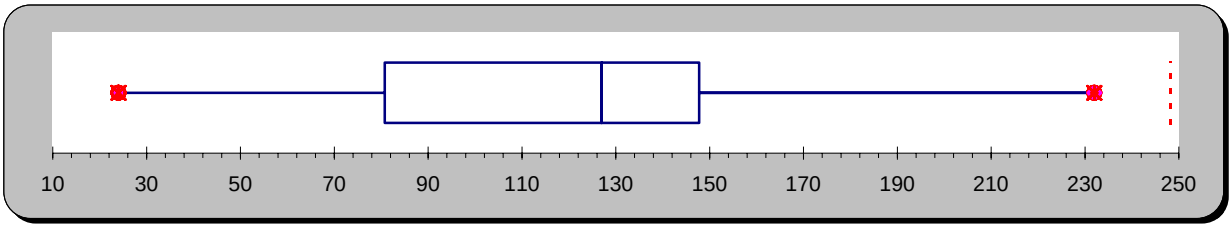
Box and Whisker Plot

Tin, Subsurface Soil, Fine Sand or Silt				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
0.05	0.44	1.35	2.1	3.4



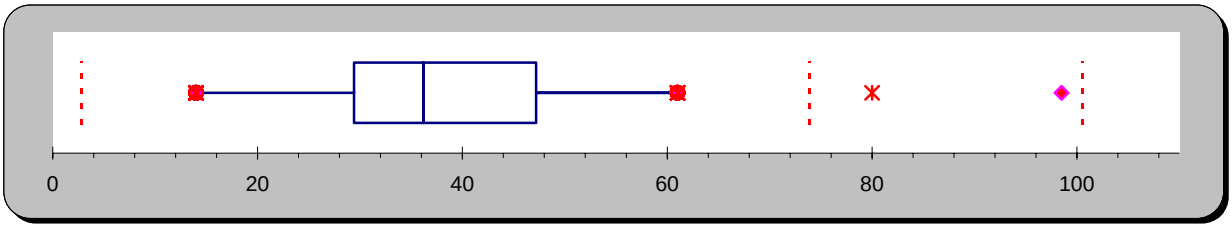
Box and Whisker Plot

Vanadium, Subsurface Soil, Fine Sand or Silt				
Lower Whisker	**Lower Hinge**	**Median**	**Upper Hinge**	**Upper Whisker**
24	80.75	127	147.75	232



Box and Whisker Plot

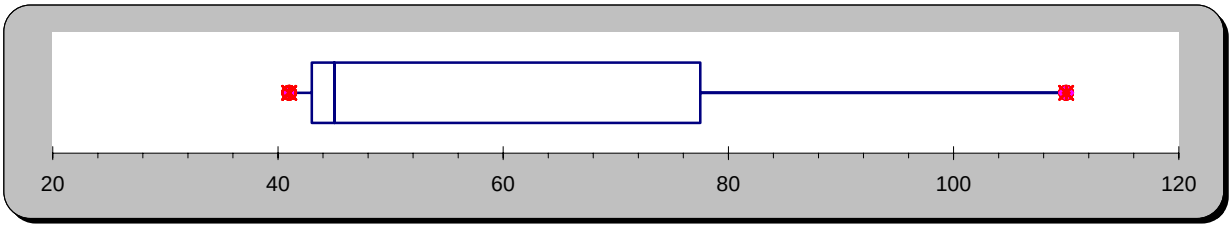
Zinc, Subsurface Soil, Fine Sand or Silt				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
14	29.425	36.2	47.2	61



APPENDIX B.5
Box and Whisker Plots, Subsurface Soil, Weathered Bedrock

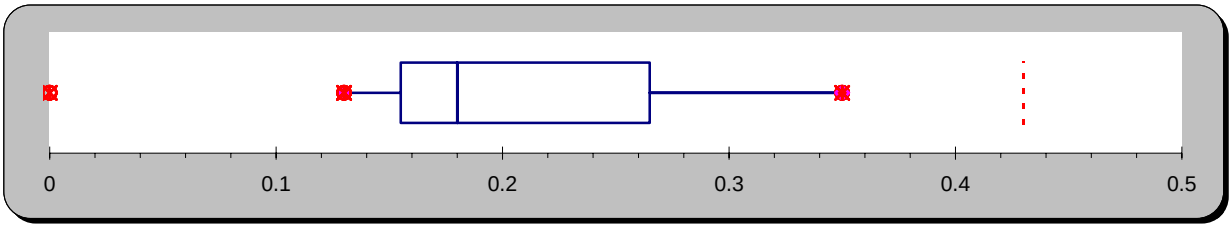
Box and Whisker Plot

Barium, Subsurface Soil, Weathered Bedrock				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
41	43	45	77.5	110



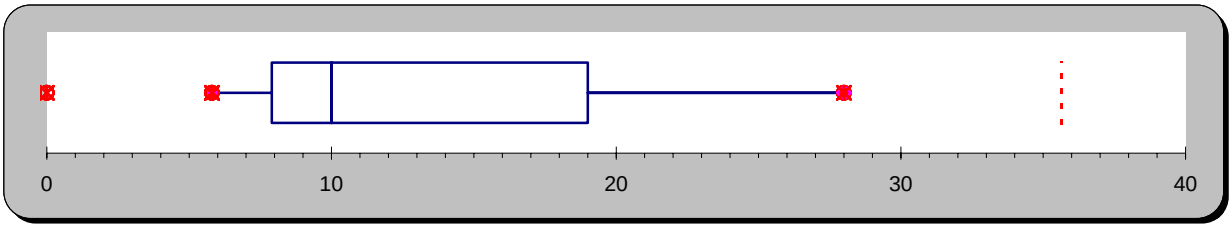
Box and Whisker Plot

Beryllium, Subsurface Soil, Weathered Bedrock				
Lower Whisker	**Lower Hinge**	**Median**	**Upper Hinge**	**Upper Whisker**
0.13	0.155	0.18	0.265	0.35



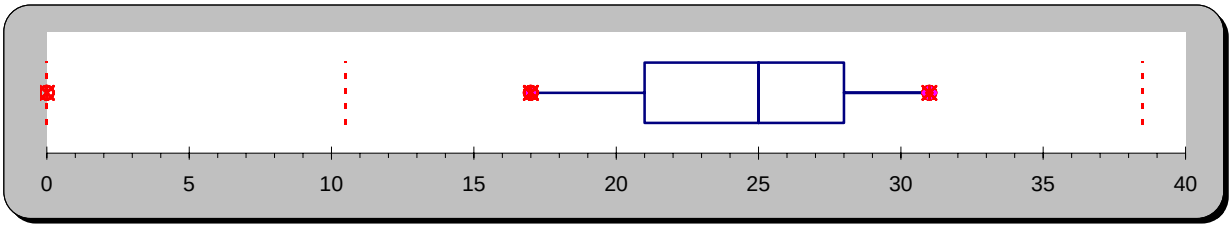
Box and Whisker Plot

Chromium, Subsurface Soil, Weathered Bedrock				
Lower Whisker	**Lower Hinge**	**Median**	**Upper Hinge**	**Upper Whisker**
5.8	7.9	10	19	28



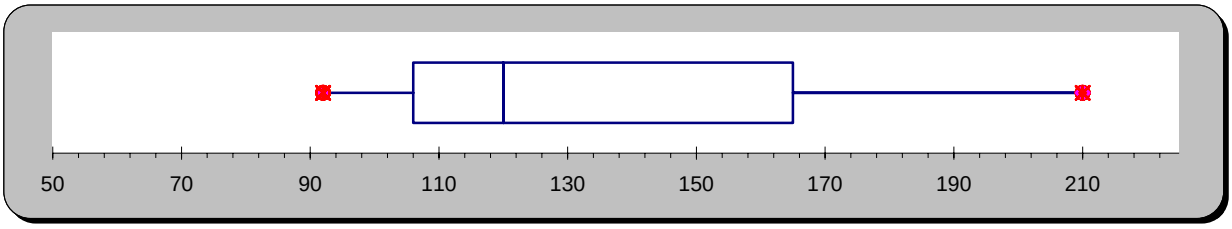
Box and Whisker Plot

Cobalt, Subsurface Soil, Weathered Bedrock				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
17	21	25	28	31



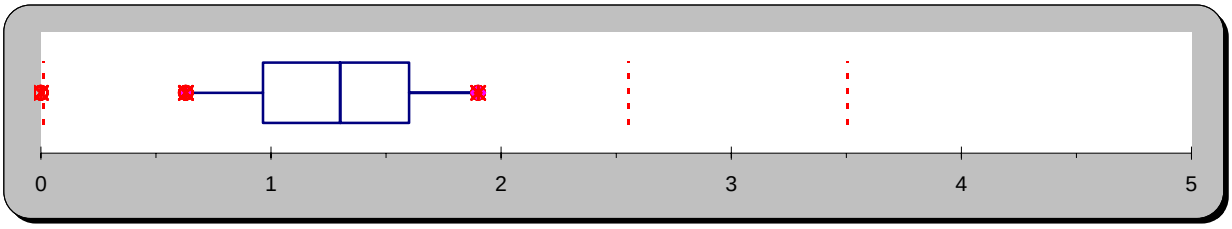
Box and Whisker Plot

Copper, Subsurface Soil, Weathered Bedrock				
Lower Whisker	**Lower Hinge**	**Median**	**Upper Hinge**	**Upper Whisker**
92	106	120	165	210



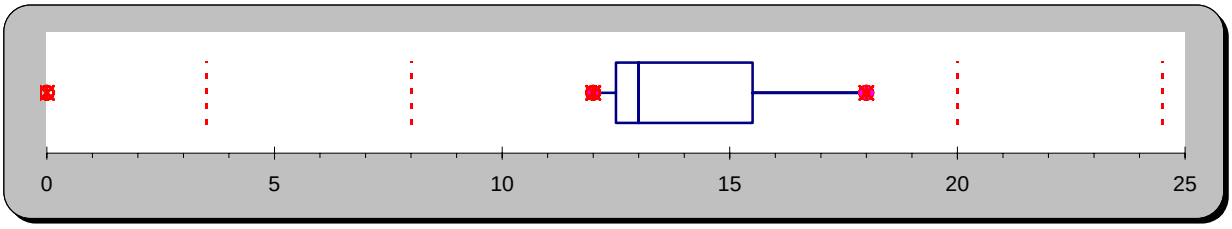
Box and Whisker Plot

Lead, Suburface Soil, Weathered Bedrock				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
0.63	0.965	1.3	1.6	1.9



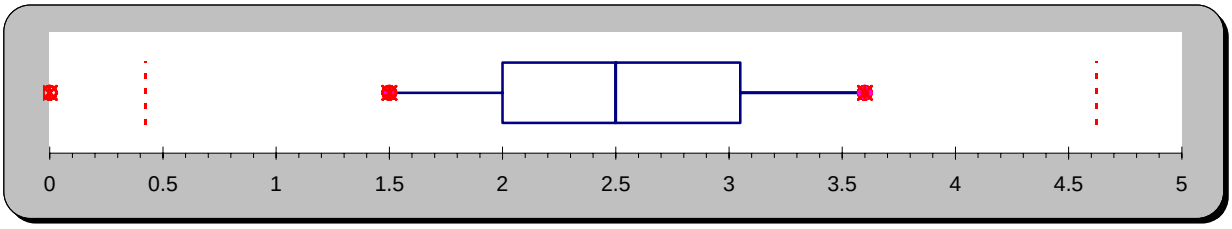
Box and Whisker Plot

Nickel, Subsurface Soil, Weathered Bedrock				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
12	12.5	13	15.5	18



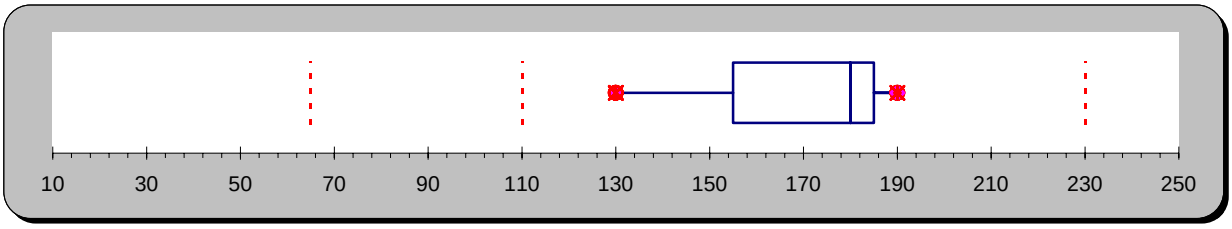
Box and Whisker Plot

Tin, Subsurface Soil, Weathered Bedrock				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
1.5	2	2.5	3.05	3.6



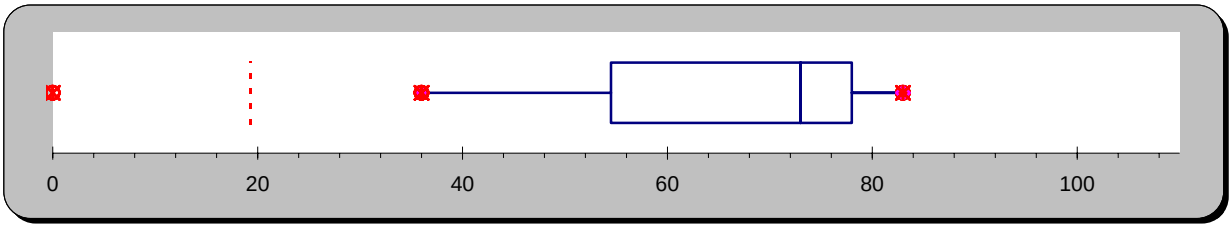
Box and Whisker Plot

Vanadium, Subsurface Soil, Weathered Bedrock				
Lower Whisker	**Lower Hinge**	**Median**	**Upper Hinge**	**Upper Whisker**
130	155	180	185	190



Box and Whisker Plot

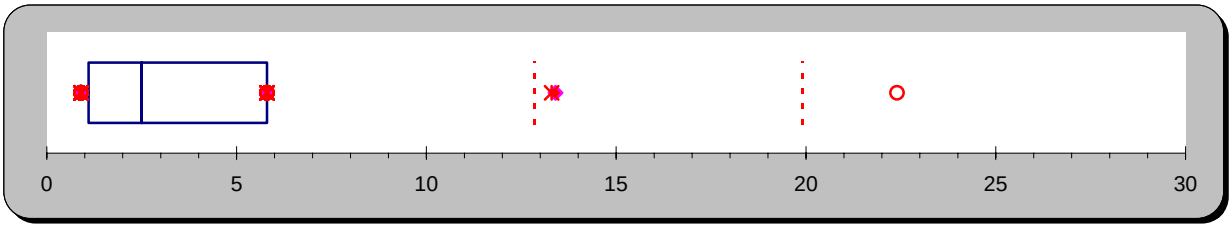
Zinc, Subsurface Soil, Weathered Bedrock				
Lower Whisker	**Lower Hinge**	**Median**	**Upper Hinge**	**Upper Whisker**
36	54.5	73	78	83



APPENDIX B.6
Box and Whisker Plots, Groundwater

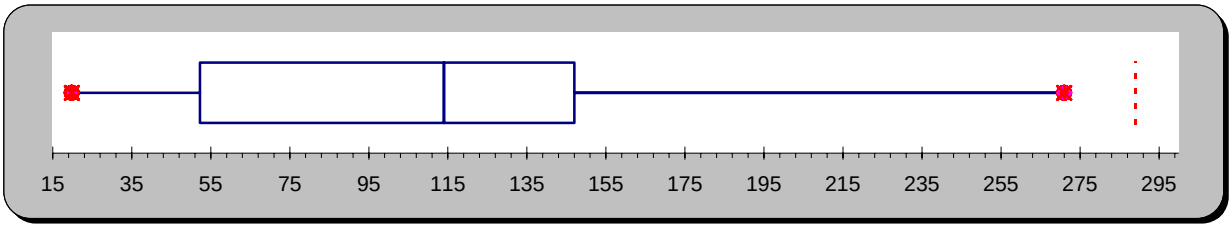
Box and Whisker Plot

Arsenic, Groundwater, Total Metals				
Lower Whisker	**Lower Hinge**	**Median**	**Upper Hinge**	**Upper Whisker**
0.9	1.1	2.5	5.8	5.8



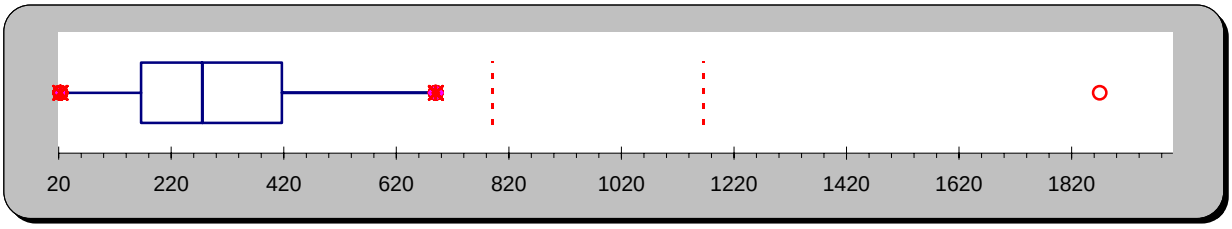
Box and Whisker Plot

Barium, Groundwater, Dissolved Metals				
Lower Whisker	**Lower Hinge**	**Median**	**Upper Hinge**	**Upper Whisker**
19.8	52.25	114	147	271



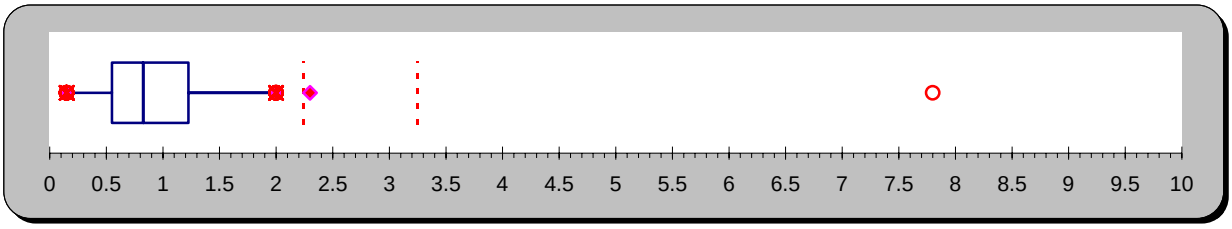
Box and Whisker Plot

Barium, Groundwater, Total Metals				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
23.1	166.5	275	416.5	690



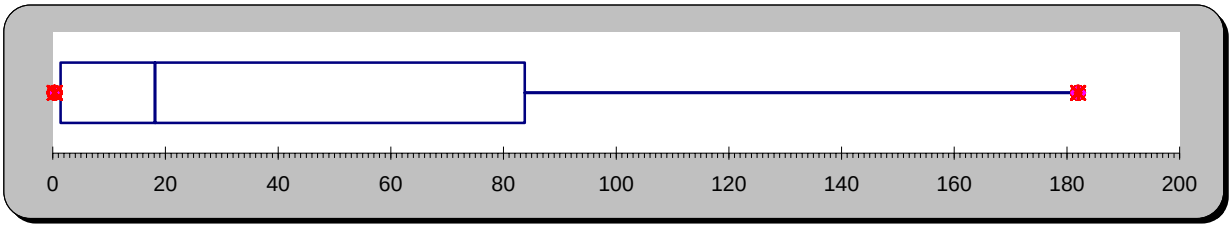
Box and Whisker Plot

Beryllium, Groundwater, Total Metals				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
0.15	0.55	0.825	1.225	2



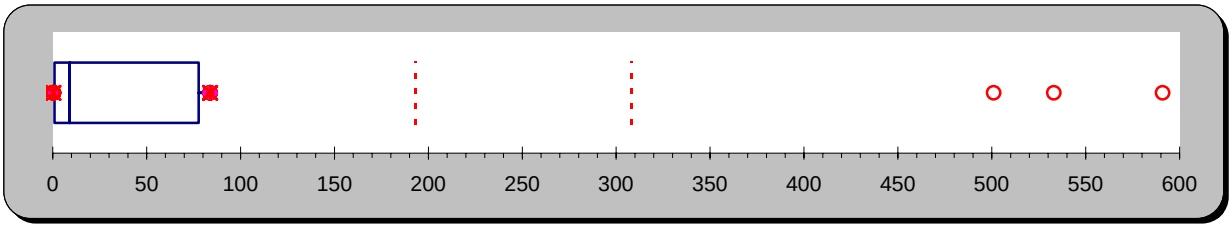
Box and Whisker Plot

Chromium, Groundwater, Total Metals				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
0.35	1.4	18.15	83.775	182



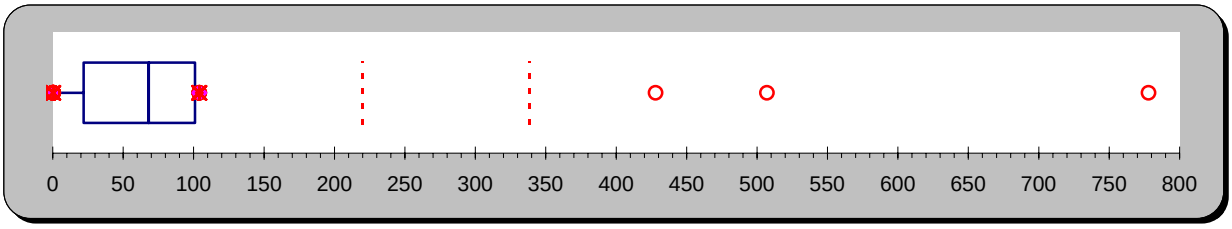
Box and Whisker Plot

Cobalt, Groundwater, Dissolved Metals				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
0.35	0.935	9.05	77.7	83.8



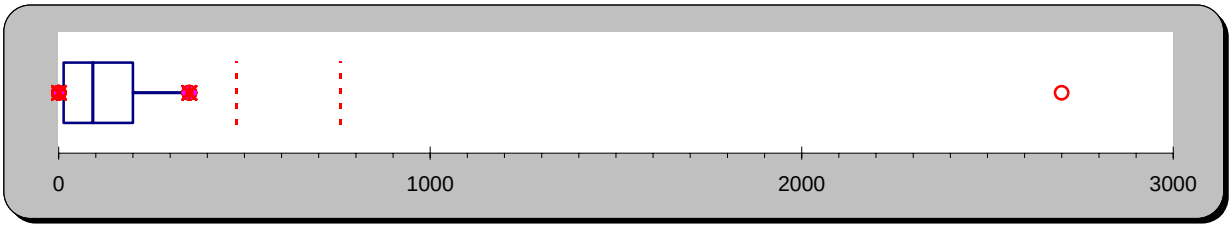
Box and Whisker Plot

Cobalt, Groundwater, Dissolved Metals				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
0.34	21.9	68.15	100.95	104



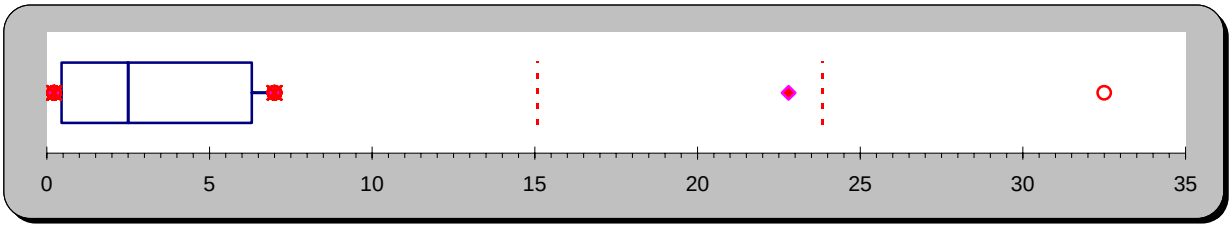
Box and Whisker Plot

Copper, Groundwater, Total Metals				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
0.25	13.35	91.95	199.75	352



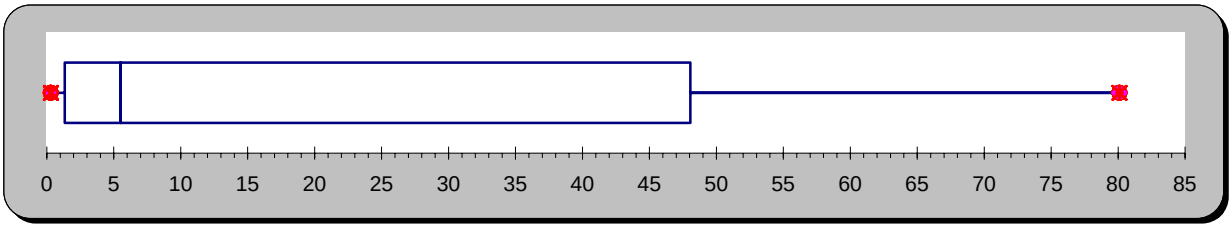
Box and Whisker Plot

Lead, Groundwater, Total Metals				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
0.225	0.45	2.5	6.3	7



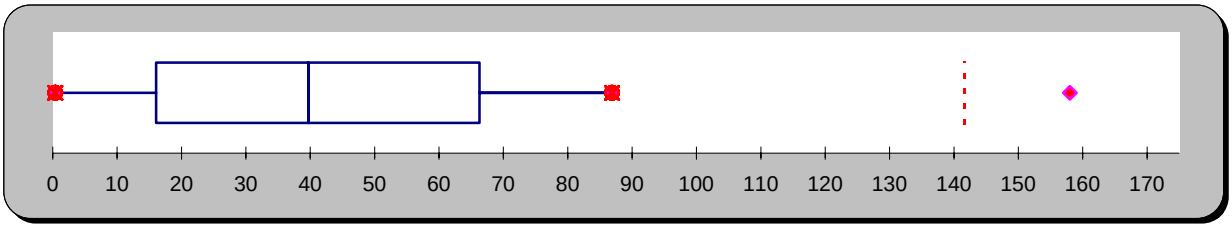
Box and Whisker Plot

Nickel, Groundwater, Dissolved Metals				
Lower Whisker	**Lower Hinge**	**Median**	**Upper Hinge**	**Upper Whisker**
0.3	1.3325	5.5	48.05	80.1



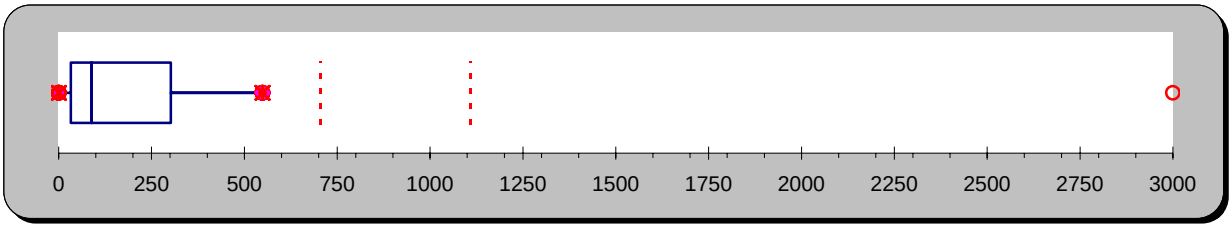
Box and Whisker Plot

Nickel, Groundwater, Total Metals				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
0.4	16.05	39.7	66.275	86.9



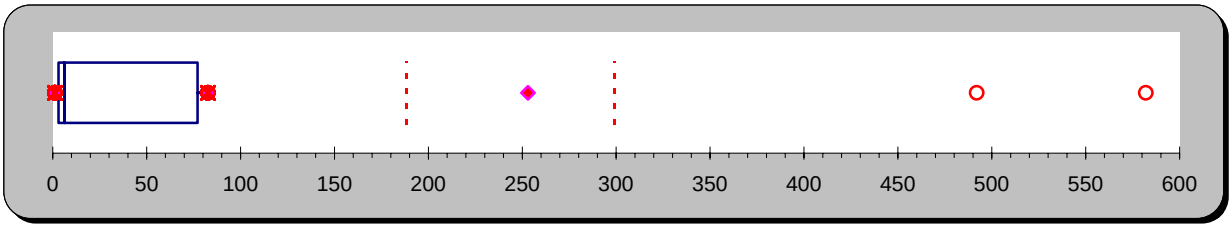
Box and Whisker Plot

Vanadium, Groundwater, Total Metals				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
0.4	32.7	88.15	302	549



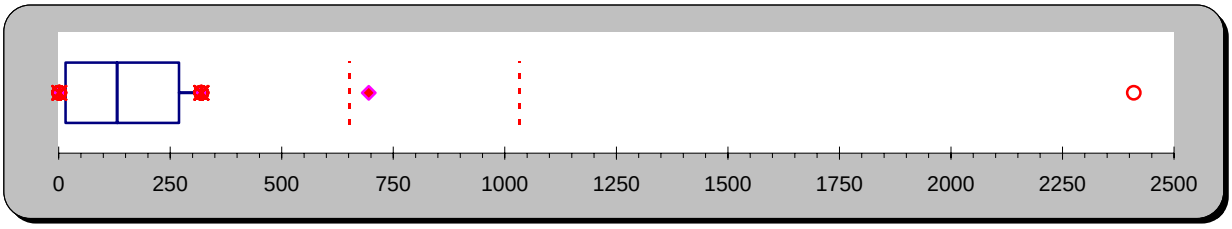
Box and Whisker Plot

Zinc, Groundwater, Dissolved Metals				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
1.2	3.05	6.1	77.1	82.6



Box and Whisker Plot

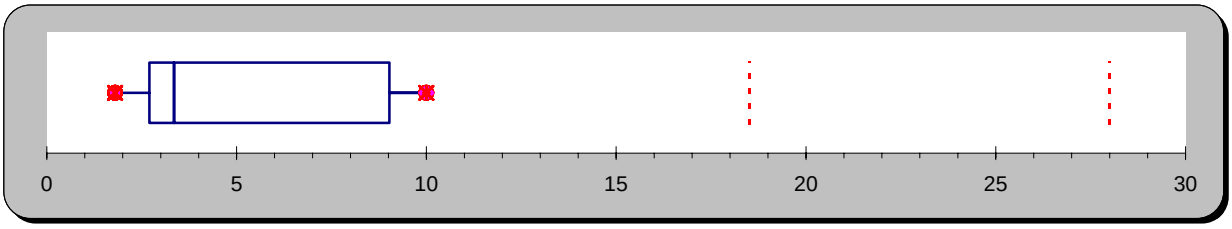
Zinc, Groundwater, Total Metals				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
1.3	15.325	131	269.75	320



APPENDIX B.7
Box and Whisker Plots, Estuarine Surface Water

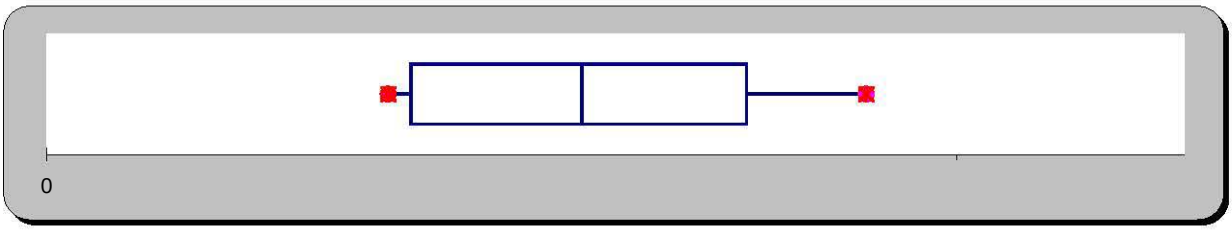
Box and Whisker Plot

Arsenic, Estuarine Surface Water, Total Metals				
Lower Whisker	**Lower Hinge**	**Median**	**Upper Hinge**	**Upper Whisker**
1.8	2.7	3.35	9.025	10



Box and Whisker Plot

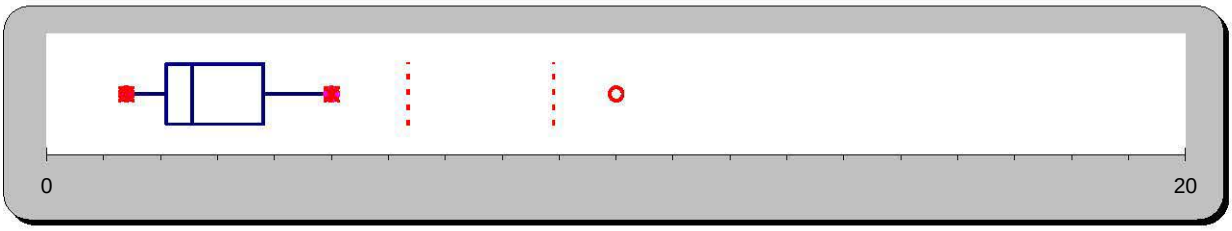
Barium, Estuarine SW, Total Metals				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
15	16	23.5	30.75	36



Box and Whisker Plot

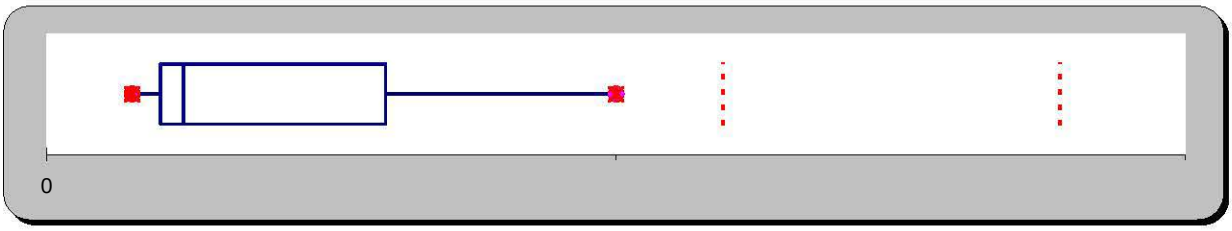
Chromium, Estuarine SW, Total Metals

Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
1.4	2.1	2.55	3.8	5



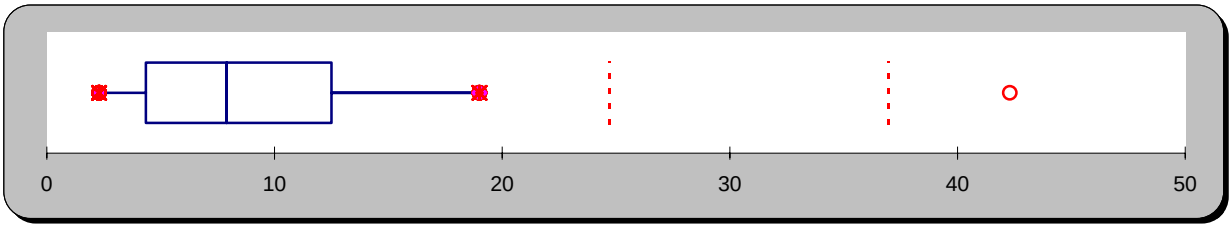
Box and Whisker Plot

Cobalt, Estuarine SW, Total metals				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
1.5	2	2.4	5.95	10



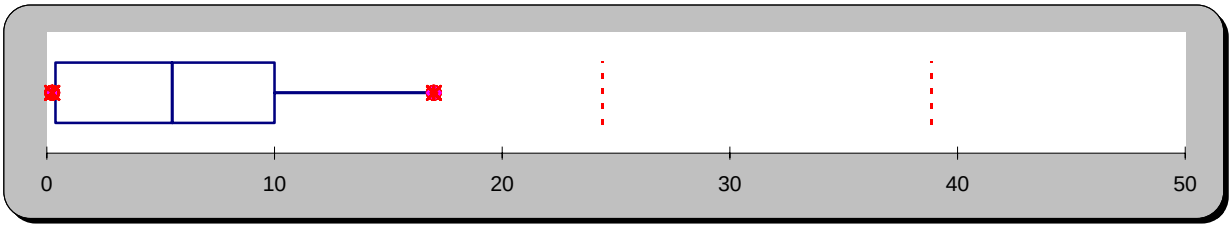
Box and Whisker Plot

Copper, Estuarine SW, Total Metals				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
2.3	4.35	7.9	12.5	19



Box and Whisker Plot

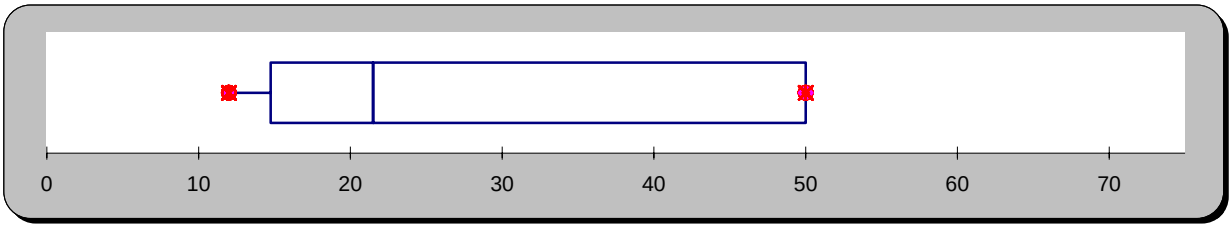
Selenium, Estuarine SW, Total Metals				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
0.24	0.38	5.5	10	17



Box and Whisker Plot

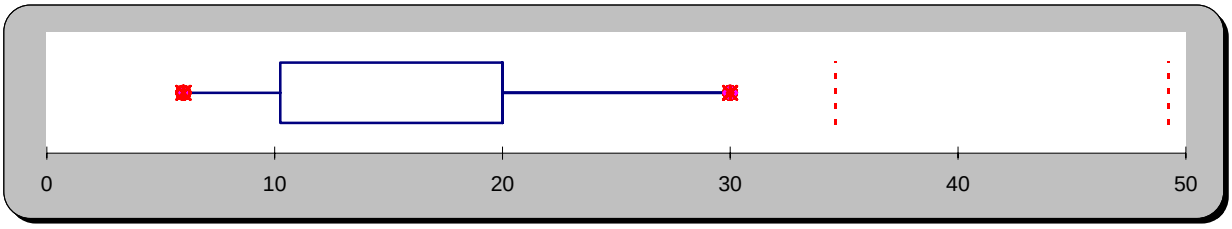
Vanadium,Estuarine SW, Total Metals

Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
12	14.75	21.5	50	50



Box and Whisker Plot

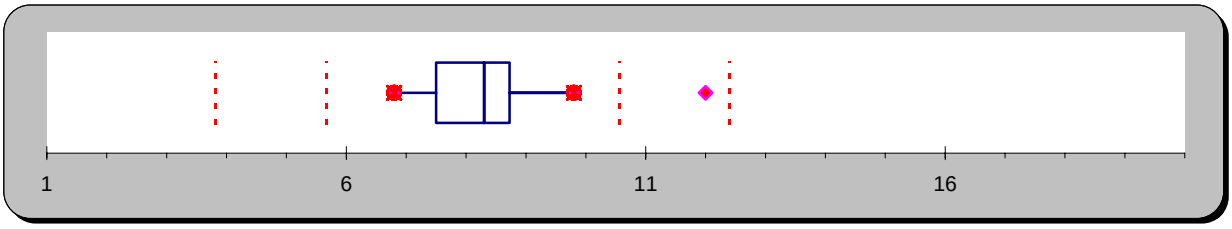
Zinc, Estuarine SW, Total Metals				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
6	10.25	20	20	30



APPENDIX B.8
Box and Whisker Plots, Open Water Surface Water

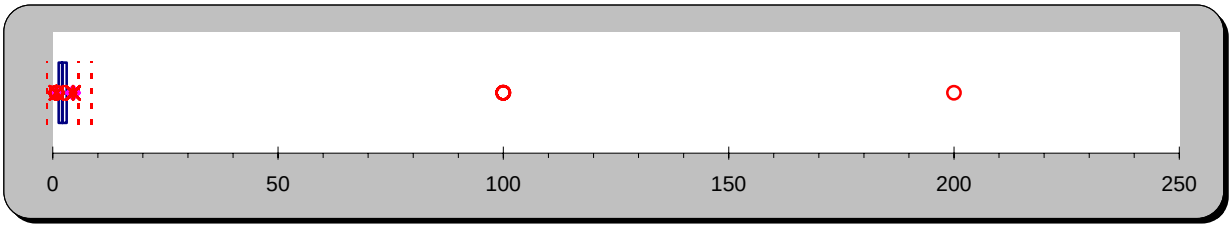
Box and Whisker Plot

Barium, Open Water SW, Total Metals				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
6.8	7.5	8.3	8.725	9.8



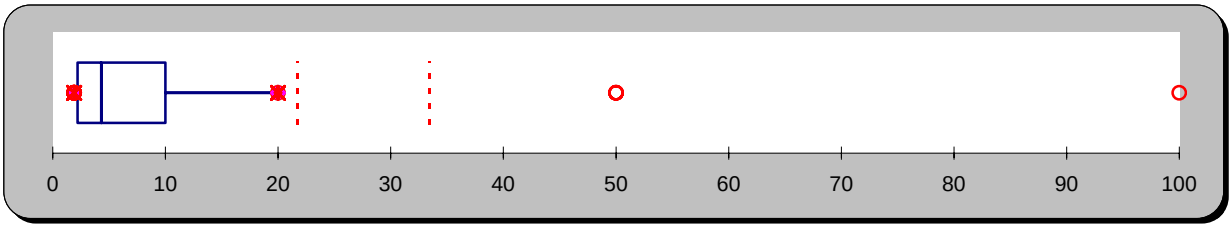
Box and Whisker Plot

Copper, Open Water SW, Total Metals				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
0.86	1.3	2.1	3.1	4.5



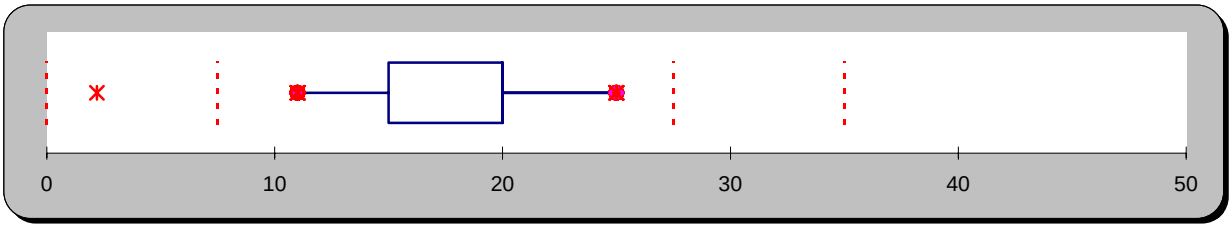
Box and Whisker Plot

Vanadium, Open Water SW, Total Metals				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
1.9	2.2	4.3	10	20



Box and Whisker Plot

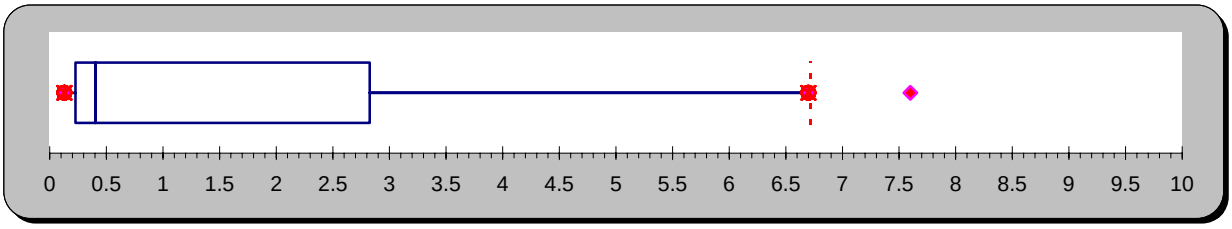
Zinc, Open Water SW, Total Metals				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
11	15	20	20	25



APPENDIX B.9
Box and Whisker Plots, Estuarine Sediment

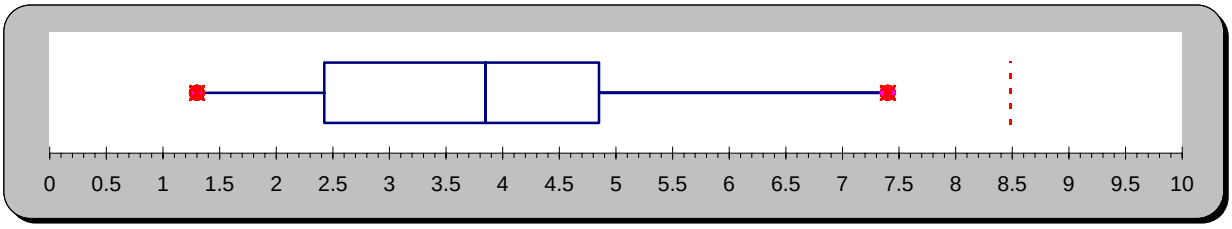
Box and Whisker Plot

Antimony, Estuarine Sediment				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
0.13	0.2275	0.405	2.825	6.7



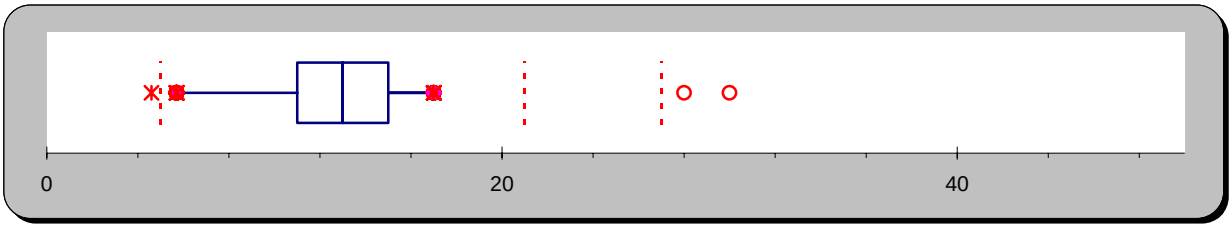
Box and Whisker Plot

Arsenic, Estuarine Sediment				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
1.3	2.425	3.85	4.85	7.4



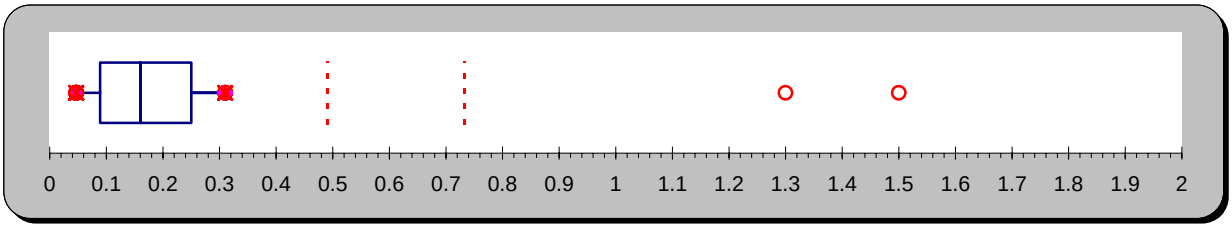
Box and Whisker Plot

Barium, Estuarine Sediment				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
5.7	11	13	15	17



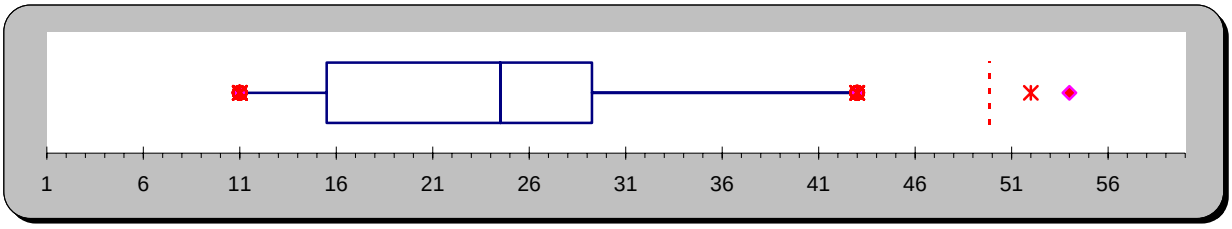
Box and Whisker Plot

Beryllium, Estuarine Sediment				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
0.047	0.089	0.16	0.25	0.31



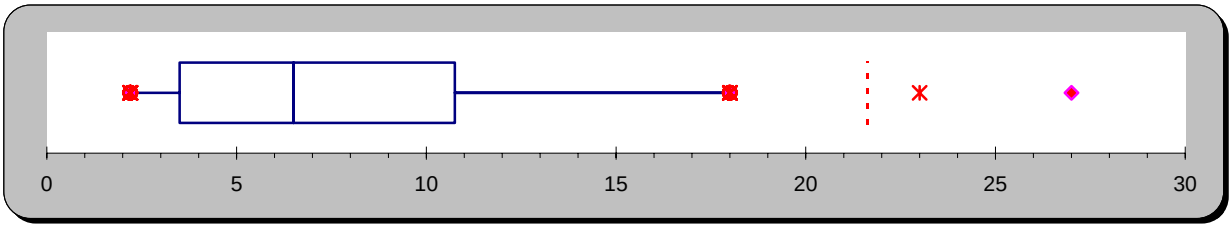
Box and Whisker Plot

Chromium, Estuarine Sediment				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
11	15.5	24.5	29.25	43



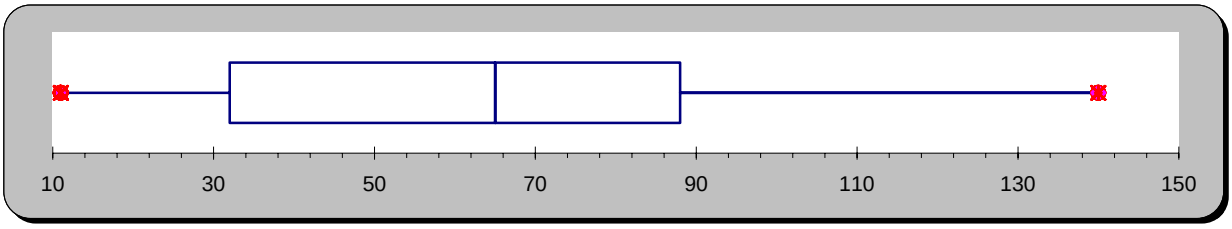
Box and Whisker Plot

Cobalt, Estuarine Sediment				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
2.2	3.5	6.5	10.75	18



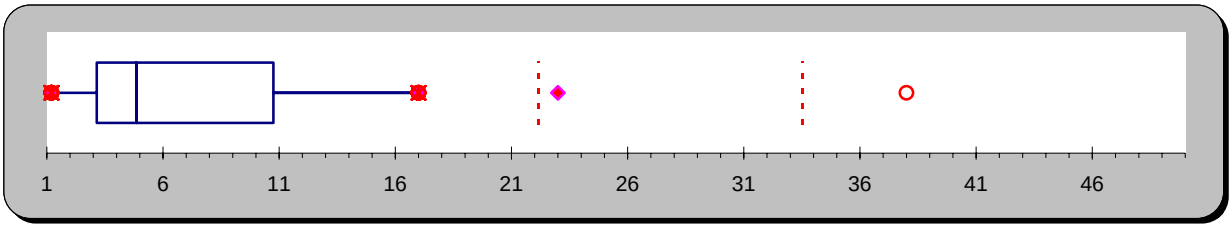
Box and Whisker Plot

Copper, Estuarine Sediment				
Lower Whisker	**Lower Hinge**	**Median**	**Upper Hinge**	**Upper Whisker**
11	32	65	88	140



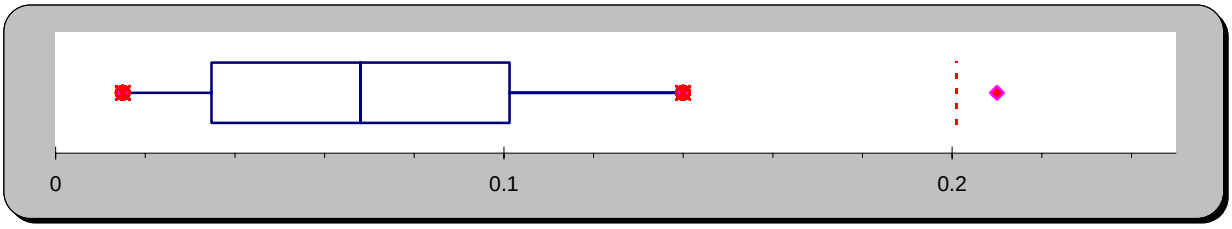
Box and Whisker Plot

Lead, Estuarine Sediment				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
1.2	3.15	4.85	10.75	17



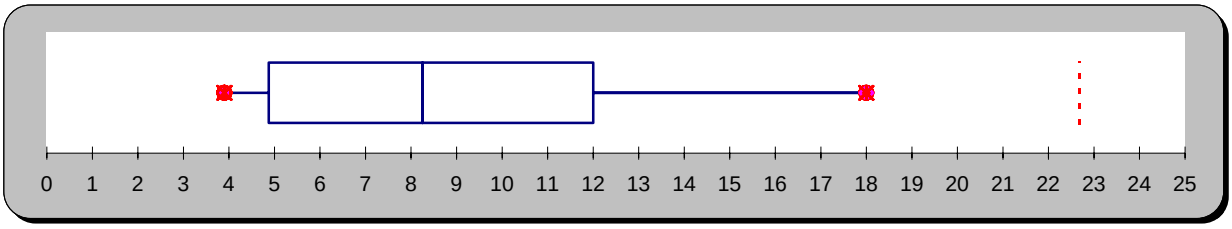
Box and Whisker Plot

Mercury, Estuarine Sediment				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
0.015	0.03475	0.068	0.10125	0.14



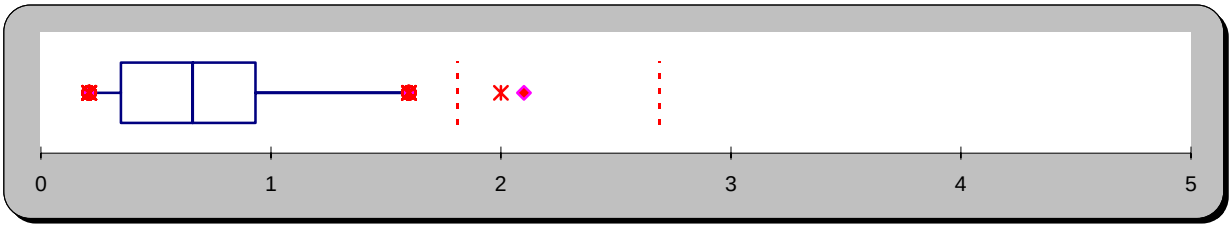
Box and Whisker Plot

Nickel, Estuarine Sediment				
Lower Whisker	**Lower Hinge**	**Median**	**Upper Hinge**	**Upper Whisker**
3.9	4.875	8.25	12	18



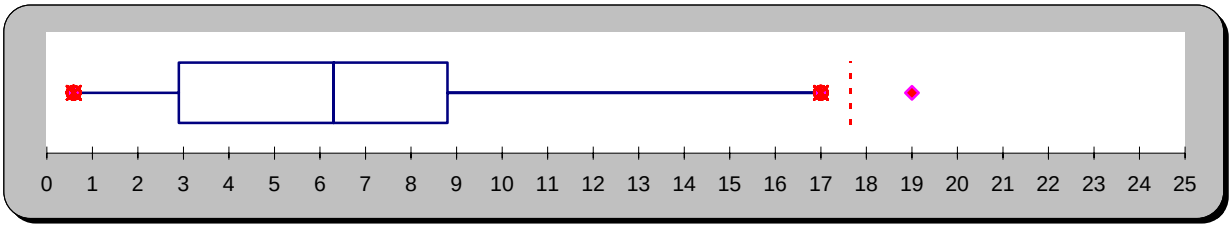
Box and Whisker Plot

Selenium, Estuarine Sediment				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
0.21	0.3475	0.66	0.9325	1.6



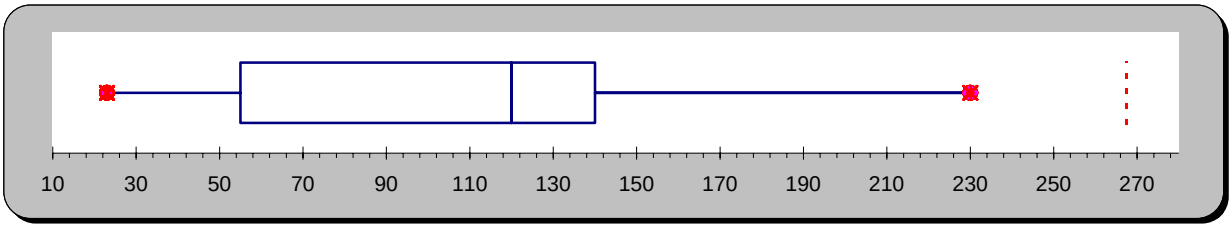
Box and Whisker Plot

Tin, Estuarine Sediment				
Lower Whisker	**Lower Hinge**	**Median**	**Upper Hinge**	**Upper Whisker**
0.59	2.9	6.3	8.8	17



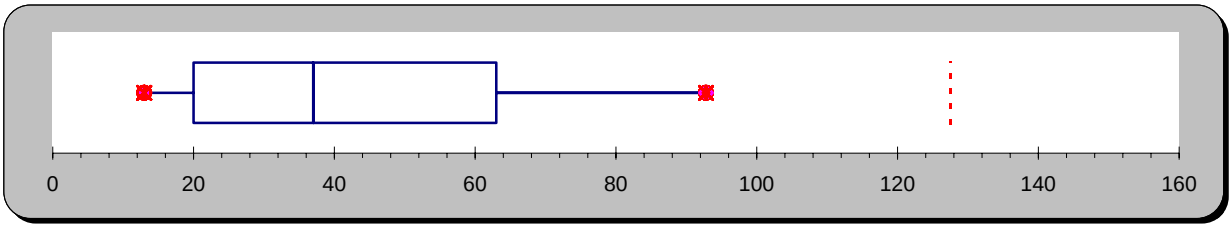
Box and Whisker Plot

Vanadium, Estuarine Sediment				
Lower Whisker	**Lower Hinge**	**Median**	**Upper Hinge**	**Upper Whisker**
23	55	120	140	230



Box and Whisker Plot

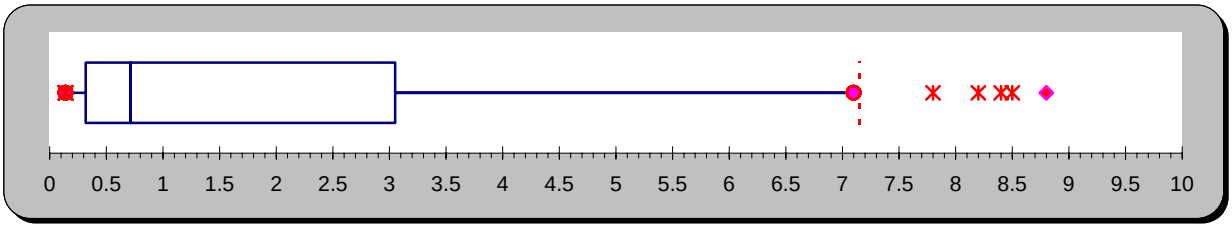
Zinc, Estuarine Sediment				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
13	20	37	63	92.8



APPENDIX B.10
Box and Whisker Plots, Open Water Sediment

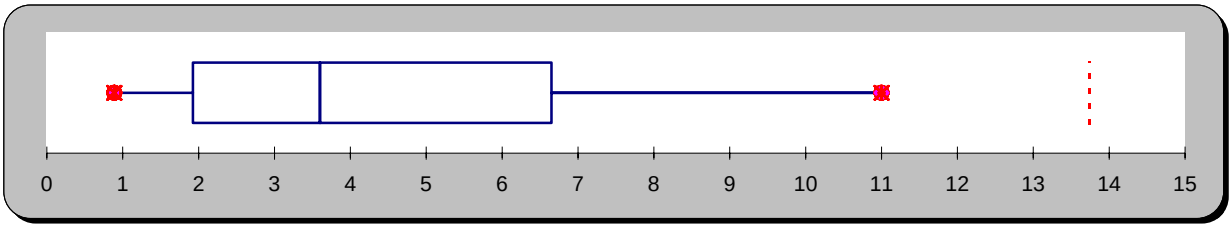
Box and Whisker Plot

Antimony, Open Water Sediment				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
0.14	0.3175	0.715	3.05	7.1



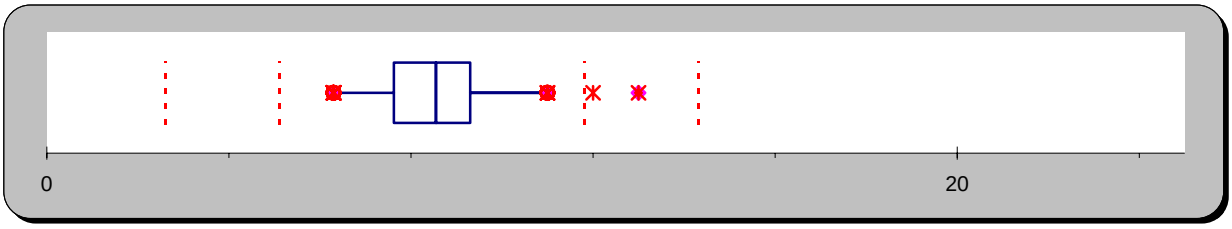
Box and Whisker Plot

Arsenic, Open Water Sediment				
Lower Whisker	**Lower Hinge**	**Median**	**Upper Hinge**	**Upper Whisker**
0.89	1.925	3.6	6.65	11



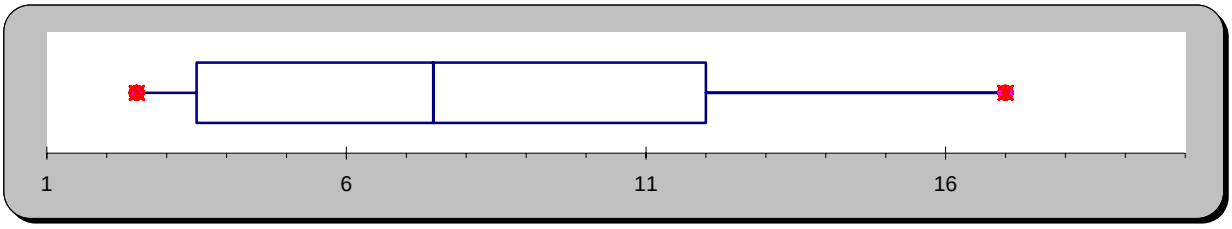
Box and Whisker Plot

Barium, Open Water Sediment				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
6.3	7.625	8.55	9.3	11



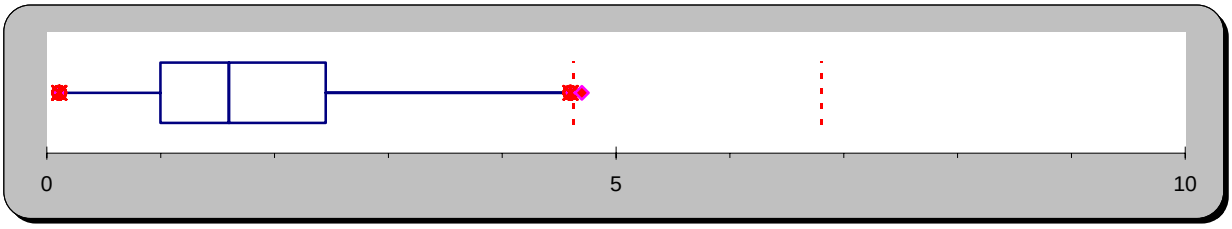
Box and Whisker Plot

Chromium, Open Water Sediment				
Lower Whisker	**Lower Hinge**	**Median**	**Upper Hinge**	**Upper Whisker**
2.5	3.5	7.45	12	17



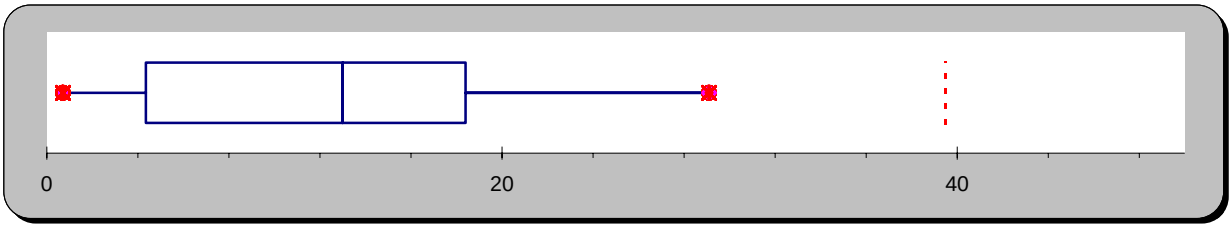
Box and Whisker Plot

Cobalt, Open WaterSediment				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
0.11	0.9975	1.6	2.45	4.6



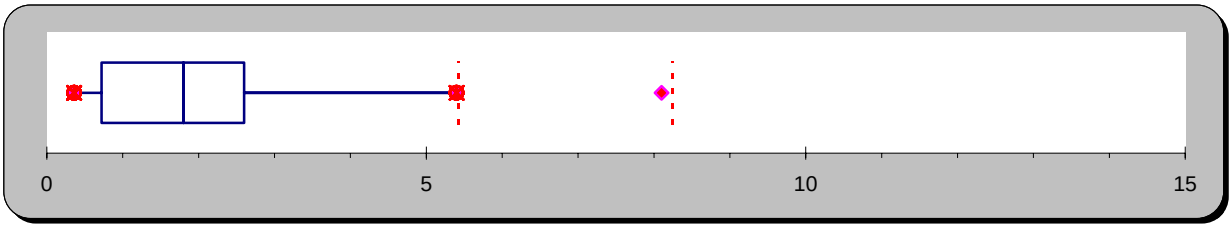
Box and Whisker Plot

Copper, Open Water Sediment				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
0.71	4.35	13	18.4	29.1



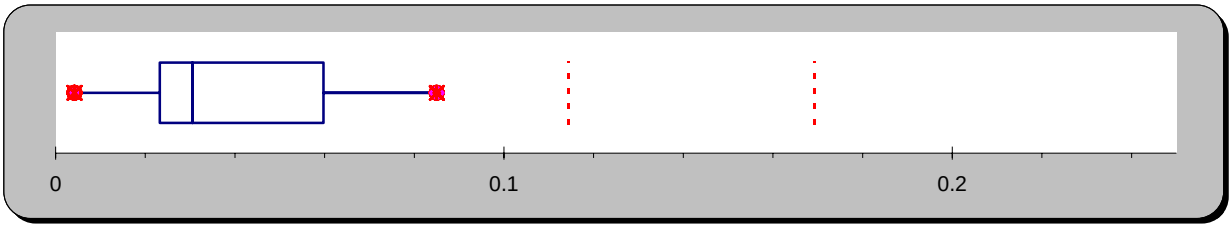
Box and Whisker Plot

Lead, Open Water Sediment				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
0.36	0.72	1.8	2.6	5.4



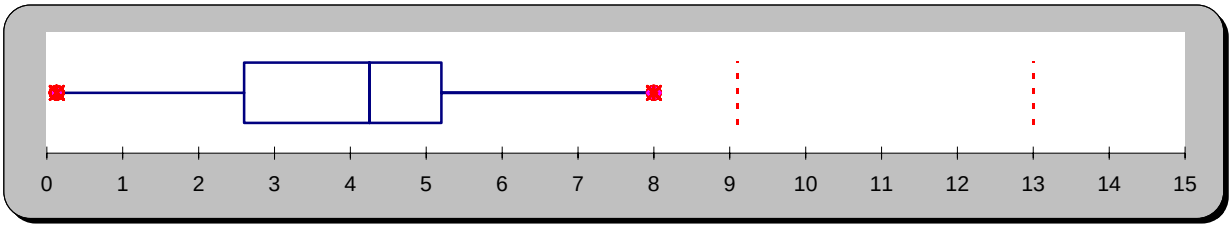
Box and Whisker Plot

Mercury, Open Water Sediment				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
0.0042	0.02325	0.0305	0.05975	0.085



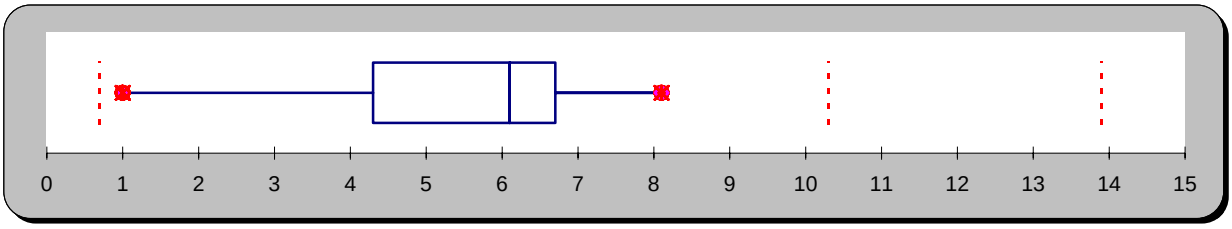
Box and Whisker Plot

Nickel, Open Water Sediment				
Lower Whisker	**Lower Hinge**	**Median**	**Upper Hinge**	**Upper Whisker**
0.13	2.6	4.25	5.2	8



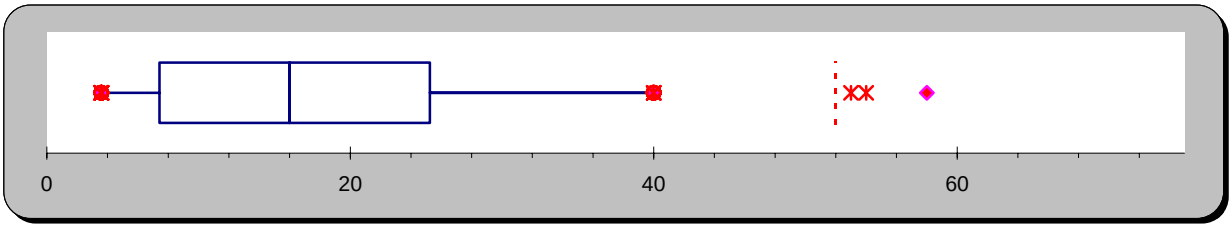
Box and Whisker Plot

Tin, Open Water Sediment				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
1	4.3	6.1	6.7	8.1



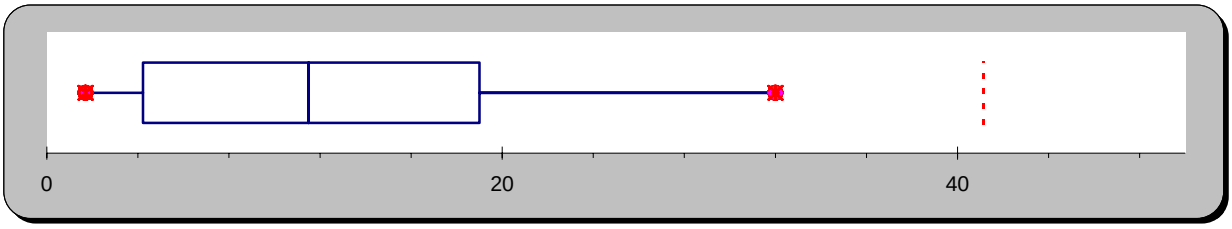
Box and Whisker Plot

Vanadium, Open Water Sediment				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
3.6	7.425	16	25.25	40



Box and Whisker Plot

Zinc, Open Water Sediment				
Lower Whisker	Lower Hinge	Median	Upper Hinge	Upper Whisker
1.7	4.225	11.5	19	32



Appendix C:
Boring Logs

Baker
Baker Environmental

TEST BORING RECORD

PROJECT: RCRA Facility Investigation - SWMU 11/45, Roosevelt Roads Naval Station
CTO NO.: 62470-356 BORING NO.: 11-SB15
COORDINATES: EAST: 786289.31 NORTH: 143044.55
ELEVATION: SURFACE: 106.16 TOP OF PVC CASING: --

Rig: Earthprobe 4000	Sample Core	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	1-in.	2-in.	--	--	9/19/97	0.0 - 8.0	M Sunny, 87°	--
Length	2-ft.	--	--	--				
Type	--	--	--	--				
Hammer Wt.	--	--	--	--				
Fall	--	--	--	--				

Remarks:

SAMPLE TYPE
S = Sample Core A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
BG/PS = Background/Point Source
ppm = parts per million

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm) ps/bg	Visual Description		Elevation (Ft. MSL)
1		S-1		--		0.4 / 0.4	SILT, some f sand, little rock frag; brown; dry		
2	2.0							2.0	104.16
3		S-2	0.5 25%	--	02	0.4 / 0.4	F SAND, little rock frag; brown; damp		
4	4.0							4.0	102.16
5		S-3	0.5 25%	--		0.4 / 0.4	CORAL FRAG, some f sand; tan; wet - groundwater at 5.0'		
6	6.0								
7		S-4	0.5 25%	--		0.4 / 0.4	F SAND, little coral frag; gray; wet		
8	8.0							8.0	98.16
9							BOH @ 8.0'		
10									

DRILLING CO.: TEG - Puerto Rico BAKER REP.: Mark DeJohn
DRILLER: Kevin Shelburne BORING NO.: 11-SB15 SHEET 1 OF 1

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 45MW01

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-277
PROJECT NAME: SWMU #45
LOCATION: NSRR - PUERTO RICO
DRILLING COMPANY: SOIL TECH CORPORATION
RIG TYPE & NUMBER: TRAILER RIG (ACKER)
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY, HOT, HUMID
GEOLOGIST: E.J. KLEINKAUF
ENV. SCIENTIST: M.K. DeJOHN
DATE BEGUN: 11/22/96 DATE COMPLETED: 11/23/96

GROUND SURFACE ELEVATION: 100.32' msl
TOP OF PVC CASING ELEVATION: 102.82' msl

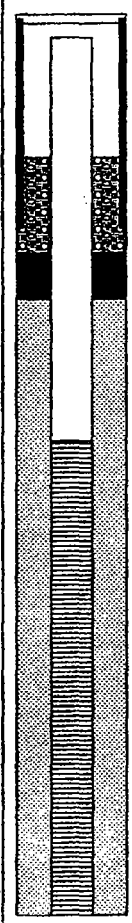
WELL DETAILS (FT)

STICKUP:	2.5
LENGTH OF RISER (2"I.D.):	6.0
LENGTH OF SCREEN (2"I.D.):	10.0
THICKNESS OF GROUT:	2.0
THICKNESS OF SEAL:	1.0
THICKNESS OF SAND PACK:	13.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
100.00	0.0									GRAVEL/ROCK FRAGMENTS: Brown, fine/fine to medium, some fine/fine to coarse sand, little silt/silt and clay	0.0
99.00	1.0		S-1	SS	13 17 50/5"	1.0	-	-			1.0
98.00	2.0		S-2	SS	11 27 29 23	1.8	-	-		SAND AND SILT: White/tan, fine to coarse	3.0
96.00	4.0		S-3	SS	10 13 7 5	2.0	-	-			5.0
94.00	6.0		S-4	SS	8 9 6 7	2.0	-	-		CLAY/CLAY AND SILT: Brown, trace fine/fine to coarse sand	7.0
92.00	8.0		S-5	SS	2 3 2 13	1.8	-	-		SILTY CLAY: Dark brown, trace/little fine/fine to coarse sand	9.0
90.00	10.0		S-6	SS	31 50 / 3"	0.8	-	-		SAND AND SILT: Olive/white/black, fine to coarse (decomposed rock)	11.0
88.00	12.0		S-7	SS	50 / 5"	0.4	-	-			13.0
86.00	14.0		S-8	SS	50 / 2"	0.2	-	-			15.0
84.00	16.0									BOTTOM OF BOREHOLE @ 16.0'	16.0
82.00	18.0										18.0
80.00	20.0										20.0
78.00	22.0										22.0
76.00	24.0										24.0

NOTES:
1) Groundwater encountered @ 8.5' during drilling
2) Auger refusal was encountered @ 1.5', borehole was moved twice.
3) Elevations are based on a building corner slab assumed to be 100' msl

WELL INSTALLATION



Baker
Baker Environmental

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: SWMU 9 Phase III Investigation
CTO NO.: 26007-099 BORING NO.: 9-BG-SB05
COORDINATES: EAST: 783,238.97 NORTH: 149,272.59
ELEVATION: SURFACE: 128.67 TOP OF PVC CASING: NA

Rig: Geoprobe	Sampler	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	2-in.	--	--	--	6/27/1999	0.0 - 23	M. Sunny, High 80s	Dry
Length	2-ft.	--	--	--				
Type	Stainless	--	--	--				
Hammer Wt.	--	--	--	--				
Fall	--	--	--	--				

Remarks:

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push, Large Bore Sampler
P = Push N = No Sample

WELL INFORMATION

Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)
Schedule 40 PVC Casing	1-in.	0	13.0
Schedule 40 PVC 10-Slot Screen	1-in.	13.0	23.0

Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	PID (ppm) ps/bg	USCS ID	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
0.0							
1							
2							
3							
4							
5							
6							
7							
8							
9			—				
10					Match to Sheet 2		

DRILLING CO.: Inland Pollution Services BAKER REP.: Matt Maloney
DRILLER: Domingo BORING NO.: 9-BG-SB05 SHEET 1 OF 2

Baker Environmental

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: SWMU 9 Phase III Investigation
CTO NO.: 26007-099 BORING NO.: 9-BG-SB05

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push P = Piston N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
ps/bg = point source/background

Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	PID (ppm) ps/bg	USCS ID	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
11							
12							
13							
14							
15							
16				CL	Clay. Firm. Brown. Moist; no odor. Sample 9-BG-SB05-15-17 collected here.		
17	17.0	D	1.8 90.0%				
18							
19							
20							
21							
22					Weathered bedrock, granodiorite. Sample 9-BG-SB05-21-23 collected here.		
23	23.0	D	1.8 90.0%				
24					End of boring = 23.0 ft.		
25							
26							
27							
28							
29							
30							

DRILLING CO.: Inland Pollution Services BAKER REP.: Matt Maloney
DRILLER: Domingo BORING NO.: 9-BG-SB05 SHEET 2 OF 2

Baker
Baker Environmental

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: SWMU 9 Phase III Investigation
CTO NO.: 26007-099 BORING NO.: 9-BG-SB04
COORDINATES: EAST: 778,503.6902 NORTH: 150,318.0585
ELEVATION: SURFACE: 107.73 TOP OF PVC CASING: NA

Rig: Geoprobe	Sampler	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	2-in.	--	--	--	6/26/1999	0.0 - 14	M. Sunny, High 80s	12.50
Length	2-ft.	--	--	--				
Type	Stainless	--	--	--				
Hammer Wt.	--	--	--	--				
Fall	--	--	--	--				

Remarks:

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push, Large Bore Sampler
P = Push N = No Sample

WELL INFORMATION

Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)
Schedule 40 PVC Casing	1-in.	0	4.0
Schedule 40 PVC 10-Slot Screen	1-in.	4.0	14.0

Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	PID (ppm) ps/bg	USCS ID	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
0.0							
1							
2							
3							
4							
5							
6							
7							
8							
9			—				
10	10.0	N-D	NA				
					Match to Sheet 2		

DRILLING CO.: Inland Pollution Services BAKER REP.: Matt Maloney
DRILLER: Domingo BORING NO.: 9-BG-SB04 SHEET 1 OF 2

Baker Environmental

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: SWMU 9 Phase III Investigation

CTO NO.: 26007-099 BORING NO.: 9-BG-SB04

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push P = Piston N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
ps/bg = point source/background

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	PID (ppm) ps/bg	USCS ID	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
11						Clay. Soft. Greenish black. Collected sample 9-BG-SB04 here.		
12	12.0	D	1.0 50.0%		CL			
13				—				
14	14.0	N-D	NA					
						End of boring = 14.0 ft.		
15				—				
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Inland Pollution Services BAKER REP.: Matt Maloney

DRILLER: Domingo BORING NO.: 9-BG-SB04 SHEET 2 OF 2

Baker
Baker Environmental

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: SWMU 9 Phase III Investigation
CTO NO.: 26007-099 BORING NO.: 9-BG-SB03
COORDINATES: EAST: 778,747.7892 NORTH: 150,246.0472
ELEVATION: SURFACE: 104.66 TOP OF PVC CASING: NA

Rig: Geoprobe	Sampler	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	2-in.	--	--	--	6/26/1999	0.0 - 16	M. Sunny, High 80s	6.50
Length	2-ft.	--	--	--				
Type	Stainless	--	--	--				
Hammer Wt.	--	--	--	--				
Fall	--	--	--	--				

Remarks:

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push, Large Bore Sampler
P = Push N = No Sample

WELL INFORMATION

Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)
Schedule 40 PVC Casing	1-in.	0	6.0
Schedule 40 PVC 10-Slot Screen	1-in.	6.0	16.0

Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	PID (ppm) ps/bg	USCS ID	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
0.0							
1							
2							
3							
4							
5							
6							
7							
8 / 8.0	N-D	NA					
9			—	CL	Clay. Stiff. White with iron stained minerals throughout. Collected sample 9-BG-SB03 here.		
10 / 10.0	D	2.0 100.0%					

Match to Sheet 2

DRILLING CO.: Inland Pollution Services BAKER REP.: Matt Maloney
DRILLER: Domingo BORING NO.: 9-BG-SB03 SHEET 1 OF 2

Baker Environmental

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: SWMU 9 Phase III Investigation
CTO NO.: 26007-099 BORING NO.: 9-BG-SB03

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push P = Piston N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
ps/bg = point source/background

Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	PID (ppm) ps/bg	USCS ID	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
11							
12							
13							
14							
15							
16	16.0	N-D	NA				
					End of boring = 16.0 ft		
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

DRILLING CO.: Inland Pollution Services BAKER REP.: Matt Maloney
DRILLER: Domingo BORING NO.: 9-BG-SB03 SHEET 2 OF 2

Baker
Baker Environmental

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: SWMU 9 Phase III Investigation
CTO NO.: 26007-099 BORING NO.: 9-BG-SB02
COORDINATES: EAST: 779,294.9920 NORTH: 150,179.8510
ELEVATION: SURFACE: 106.36 TOP OF PVC CASING: NA

Rig: Geoprobe	Sampler	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	2-in.	--	--	--	6/26/1999	0.0 - 16	M. Sunny, High 80s	15.10
Length	2-ft.	--	--	--				
Type	Stainless	--	--	--				
Hammer Wt.	--	--	--	--				
Fall	--	--	--	--				

Remarks:

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push, Large Bore Sampler
P = Push N = No Sample

WELL INFORMATION

Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)
Schedule 40 PVC Casing	1-in.	0	6.0
Schedule 40 PVC 10-Slot Screen	1-in.	6.0	16.0

Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	PID (ppm) ps/bg	USCS ID	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
0.0							
1							
2							
3							
4							
5							
6							
7							
8 / 8.0	N-D	NA					
9			—	CL	Clay. Very stiff. White with iron stained minerals throughout.		
10 / 10.0	D	2.0 100.0%			Collected sample 9-BG-SB02 here.		
					Match to Sheet 2		

DRILLING CO.: Inland Pollution Services BAKER REP.: Matt Maloney
DRILLER: Domingo BORING NO.: 9-BG-SB02 SHEET 1 OF 2

Baker Environmental

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: SWMU 9 Phase III Investigation
CTO NO.: 26007-099 BORING NO.: 9-BG-SB02

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push P = Piston N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
ps/bg = point source/background

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	PID (ppm) ps/bg	USCS ID	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
11								
12								
13								
14								
15								
16	16.0	N-D	NA					
						End of boring = 16.0 ft		
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Inland Pollution Services BAKER REP.: Matt Maloney
DRILLER: Domingo BORING NO.: 9-BG-SB02 SHEET 2 OF 2

Baker
Baker Environmental

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: SWMU 9 Phase III Investigation
CTO NO.: 26007-099 BORING NO.: 9-BG-SB01
COORDINATES: EAST: 779,311.6037 NORTH: 151,373.2890
ELEVATION: SURFACE: 111.22 TOP OF PVC CASING: NA

Rig: Geoprobe	Sampler	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	2-in.	--	--	--	6/26/1999	0.0 - 16	M. Sunny, High 80s	11.50
Length	2-ft.	--	--	--				
Type	Stainless	--	--	--				
Hammer Wt.	--	--	--	--				
Fall	--	--	--	--				

Remarks:

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push, Large Bore Sampler
P = Push N = No Sample

WELL INFORMATION

Type	Diam.	Top Depth (Ft.)	Bottom Depth (Ft.)
Schedule 40 PVC Casing	1-in.	0	6.0
Schedule 40 PVC 10-Slot Screen	1-in.	6.0	16.0

Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	PID (ppm) ps/bg	USCS ID	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
0.0							
1							
2							
3							
4							
5							
6							
7							
8							
9							
10	10.0	N-D	NA				
					Match to Sheet 2		

DRILLING CO.: Inland Pollution Services BAKER REP.: Matt Maloney
DRILLER: Domingo BORING NO.: 9-BG-SB01 SHEET 1 OF 2

Baker Environmental

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: SWMU 9 Phase III Investigation
CTO NO.: 26007-099 BORING NO.: 9-BG-SB01

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push P = Piston N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
ps/bg = point source/background

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	PID (ppm) ps/bg	USCS ID	Visual Description	Well Installation Detail	Elevation (Ft. MSL)
11					CL	Clay. Stiff. Brown, white, green.		
			1.7			Collected sample 9-BG-SB01 here.		
12	12.0	D	85.0%					
13				—				
14								
15				—				
16	16.0	N-D	NA					
						End of boring = 16.0 ft		
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Inland Pollution Services BAKER REP.: Matt Maloney
DRILLER: Domingo BORING NO.: 9-BG-SB01 SHEET 2 OF 2

Baker
Baker Environmental

TEST BORING RECORD

PROJECT: RCRA Facility Investigation - SWMU 11/45, Roosevelt Roads Naval Station
CTO NO.: 62470-356 BORING NO.: 11-SB04
COORDINATES: EAST: 786383.62 NORTH: 143010.58
ELEVATION: SURFACE: 103.89 TOP OF PVC CASING: --

Rig: Earthprobe 4000	Sample Core	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	1-in.	2-in.	--	--	9/17/97	0.0 - 8.0	Sunny, 87°	--
Length	2-ft.	--	--	--				
Type	--	--	--	--				
Hammer Wt.	--	--	--	--				
Fall	--	--	--	--				

Remarks:

SAMPLE TYPE
S = Sample Core A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
BG/PS = Background/Point Source
ppm = parts per million

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	SPT	Lab ID	PID (ppm) ps/bg	Visual Description		Elevation (Ft. MSL)
1		S-1	1.5 75%	--		0.5 / 0.5	F SAND, some rock frag, trace silt; brown; dry		
2	2.0								
3		S-2	1.3 65%	--	02	0.4 / 0.4	F/M SAND, little rock frag; tan; wet groundwater at 2.0'		
4	4.0								
5		S-3	1.8 90%	--		0.4 / 0.4		5.5	98.39
6	6.0						F SAND, some silt, trace clay; lt gray; wet H_2S odor	6.0	97.89
7		S-4	0.7 35%	--		0.4 / 0.4	F/M SAND, trace fossil frag; lt gray; wet; H_2S odor		
8	8.0							8.0	95.89
9							BOH @ 8.0'		
10									

DRILLING CO.: TEG - Puerto Rico BAKER REP.: Mark DeJohn
DRILLER: Kevin Shelburne BORING NO.: 11-SB04 SHEET 1 OF 1

Baker
Baker Environmental

TEST BORING RECORD

PROJECT: Phase II Environmental Condition of Property - Naval Activity Puerto Rico
PROJ. NO.: 102291 BORING NO.: 20E-SB07
COORDINATES: EAST: 783,492.54 NORTH: 144,891.74
ELEVATION: SURFACE: Not Available

Rig: Geoprobe 66DT	Macro Core	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	1.5-in.	--	--	--	5/11/04	0.0 - 13.0	Cloudy, shwrs, 80s	--
Length	5.0-ft.	--	--	--				
Type	Stainless	--	--	--				
Hammer Wt.	--	--	--	--				
Fall	--	--	--	--				

Remarks: (1) PID not required

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
BG/PS = Background/Point Source
ppm = parts per million

Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	FID (ppm) ps/bg	PID (ppm) ps/bg	Visual Description	Elevation (Ft. MSL)
1							
2							
3	S-1	2.0 40%	--	0 / 0	(1)	F/C GRAVEL, some f/c sand, trace silt; gray; dry (FILL)	
4						little clay; brown; damp	
5 (5.0)							
6							
7	S-2	3.9 78%	--	0 / 0 / 0 / 0		gray	
8						8.0	
9				0 / 0 / 0		F/C SAND, trace silt; brown & gray;damp (RESIDUAL)	
10 (10.0)				0		brown & dark gray	
				0	0	Match to Sheet 2	

DRILLING COMPANY: GeoEnvironTech, Inc. BAKER REP.: Mark DeJohn
DRILLER: William Rodrigez BORING NO.: 20E-SB07 SHEET 1 OF 2

Baker
Baker Environmental

TEST BORING RECORD

PROJECT: Phase II Environmental Condition of Property - Naval Activity Puerto Rico
CTO NO.: 102291 BORING NO.: 20E-SB07

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
ps/bg = point source/background

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	SPT	FID (ppm) ps/bg	PID (ppm) ps/bg	Visual Description		Elevation (Ft. MSL)
11					0	0	Continued from Sheet 1		
		S-3	3.0	--	0	1		12.0	
12			100%		0	1	weathered BEDROCK; gray & brown; damp		
					0	1			
13	13.0				0	1	Refusal	13.0	
							BOH at 13.0-ft		
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									

DRILLING COMPANY: GeoEnvironTech, Inc. BAKER REP.: Mark DeJohn
DRILLER: William Rodrigez BORING NO.: 20E-SB07 SHEET 2 OF 2

Baker
Baker Environmental

TEST BORING RECORD

PROJECT: Phase II Environmental Condition of Property - Naval Activity Puerto Rico
PROJ. NO.: 102291 BORING NO.: 18E-SB04
COORDINATES: EAST: 784,980.20 NORTH: 145,159.86
ELEVATION: SURFACE: Not Available

Rig: Geoprobe 66DT	Macro Core	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	1.5-in.	--	--	--	5/4/04	0.0 - 13.0	M sunny, low 80s	--
Length	5.0-ft.	--	--	--				
Type	Stainless	--	--	--				
Hammer Wt.	--	--	--	--				
Fall	--	--	--	--				

Remarks:

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
BG/PS = Background/Point Source
ppm = parts per million

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	SPT	FID (ppm) ps/bg	PID (ppm) ps/bg	Visual Description	Elevation (Ft. MSL)
1							ASPHALT and subbase 1.2	
					0			
2					0		F SAND, trace f gravel, c sand, & silt;	
		S-1	5.0	--	0	--	tan; dry (weathered BEDROCK)	
3			100%		0			
4								
5	5.0							
					0	1.0		
6					0	1.0	black & gray w/ rust-brown fractures; dry	
		S-2	3.0		0	1.0		
7			100%		0	1.0		
					0	1.0		
8	8.0				0	1.0		
					0	1.0		
9					0	1.0	gray w/ rusty weathered zones; dry	
		S-3	3.0		0	1.0		
10			100%		0	1.0		
					0	1.0	Match to Sheet 2	

DRILLING COMPANY: GeoEnvironTech, Inc. BAKER REP.: Mark DeJohn
DRILLER: William Rodrigez BORING NO.: 18E-SB04 SHEET 1 OF 2

Baker
Baker Environmental

TEST BORING RECORD

PROJECT: Phase II Environmental Condition of Property - Naval Activity Puerto Rico
PROJ. NO.: 102291 BORING NO.: 18E-SB03
COORDINATES: EAST: 784,686.89 NORTH: 145,300.02
ELEVATION: SURFACE: Not Available

Rig: Geoprobe 66DT	Macro Core	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	1.5-in.	--	--	--	5/4/04	0.0 - 5.5	M sunny, low 80s	--
Length	5.0-ft.	--	--	--				
Type	Stainless	--	--	--				
Hammer Wt.	--	--	--	--				
Fall	--	--	--	--				

Remarks:

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
BG/PS = Background/Point Source
ppm = parts per million

Depth (Ft.)	Sample Type & No.	Sample Rec. (Ft.,%)	SPT	FID (ppm) ps/bg	PID (ppm) ps/bg	Visual Description	Elevation (Ft. MSL)
				12	0.5	ASPHALT and subbase	
1				0	0.5		
				0	0.5	1.5	
2				0	0.5		
	S-1	2.5	--	0	0.5	GABBRO; gray & ruat-brown; dry	
3		50%		0	0.5	(weathered BEDROCK)	
				0	0.5		
4				0	0.5		
5	5.0						
	5.5	S-2	--	--	--	Refusal - gabbro fragments in shoe	
6						BOH at 5.5-ft.	
7							
8							
9							
10							

DRILLING COMPANY: GeoEnvironTech, Inc. BAKER REP.: Mark DeJohn
DRILLER: William Rodrigez BORING NO.: 18E-SB03 SHEET 1 OF 1

Baker
Baker Environmental

TEST BORING RECORD

PROJECT: Phase II Environmental Condition of Property - Naval Activity Puerto Rico
PROJ. NO.: 102291 BORING NO.: 14E-SB03
COORDINATES: EAST: 768,137.50 NORTH: 146,968.95
ELEVATION: SURFACE: Not Available

Rig: Geoprobe 66DT	Macro Core	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	1.5-in.	--	--	--	5/8/04	0.0 - 14.0	M sunny, mid 80	12.0
Length	5.0-ft.	--	--	--				
Type	Stainless	--	--	--				
Hammer Wt.	--	--	--	--				
Fall	--	--	--	--				

Remarks:

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
BG/PS = Background/Point Source
ppm = parts per million

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	SPT	FID (ppm) ps/bg	PID (ppm) ps/bg	Visual Description	Elevation (Ft. MSL)
					0	0		
1					0	0		
					0	0	CLAY, trace f gravel, f sand, & silt; dk brown,	
2					0	0	trace orange-brown mottles; damp	
		S-1	4.2	--	0	0	(RESIDUAL)	
3			84%		0	0		
					0	0		
4					0	0		
5	5.0							
					0	0		
6					0	0		
					0	0		
7					0	0	CLAY, trace f gravel & silt; lt gray, some	
		S-2	5.0	--	0	0	red & rust mottles; damp; stiff, but broken	
8			100%		0	0	in places	
					0	0		
9					0	0		
					0	0		
10	10.0				0	0	CLAY, trace silt; brown; wet at 10-ft	
					0	0	Match to Sheet 2	

DRILLING COMPANY: GeoEnvironTech, Inc. BAKER REP.: Mark DeJohn
DRILLER: William Rodrigez BORING NO.: 14E-SB03 SHEET 1 OF 2

Baker
Baker Environmental

TEST BORING RECORD

PROJECT: Phase II Environmental Condition of Property - Naval Activity Puerto Rico
PROJ. NO.: 102291 BORING NO.: 14E-SB02
COORDINATES: EAST: 767,954.93 NORTH: 146,895.01
ELEVATION: SURFACE: Not Available

Rig: Geoprobe 66DT	Macro Core	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	1.5-in.	--	--	--	5/8/04	0.0 - 15.0	M sunny, mid 80	12.0
Length	5.0-ft.	--	--	--				
Type	Stainless	--	--	--				
Hammer Wt.	--	--	--	--				
Fall	--	--	--	--				

Remarks:

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
BG/PS = Background/Point Source
ppm = parts per million

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	SPT	FID (ppm) ps/bg	PID (ppm) ps/bg	Visual Description		Elevation (Ft. MSL)
					0	0			
1					0	0			
					0	0	CLAY, some silt; brown; damp (FILL)		
2					0	0	f gravel layer		
		S-1	4.3	--	0	0			
3			86%		0	0			
					0	0			
4					0	0			
5	5.0								
					0	0			
6					0	0			
					0	0	little f gravel; dark brown		
7					0	0			
		S-2	5.0	--	0	0	F GRAVEL, little f/c sand; gray; dry		
8			100%		0	0			
					0	0	CLAY, some f gravel; brown & gray; damp		
9					0	0			
					0	0			
10	10.0				0	0		9.7	
					0	0	Match to Sheet 2		

DRILLING COMPANY: GeoEnvironTech, Inc. BAKER REP.: Mark DeJohn
DRILLER: William Rodrigez BORING NO.: 14E-SB02 SHEET 1 OF 2

Baker

Baker Environmental

TEST BORING RECORD

PROJECT: Phase II Environmental Condition of Property - Naval Activity Puerto Rico

PROJ. NO.: 102291 BORING NO.: 14E-SB01

COORDINATES: EAST: 767,808.55 NORTH: 146,959.09

ELEVATION: SURFACE: Not Available

Rig: Geoprobe 66DT	Macro Core	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	1.5-in.	--	--	--	5/8/04	0.0 - 15.0	M sunny, mid 80	12.0
Length	5.0-ft.	--	--	--				
Type	Stainless	--	--	--				
Hammer Wt.	--	--	--	--				
Fall	--	--	--	--				

Remarks:

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
BG/PS = Background/Point Source
ppm = parts per million

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	SPT	FID (ppm) ps/bg	PID (ppm) ps/bg	Visual Description		Elevation (Ft. MSL)
					0	0			
1					0	0	SILT, little clay; dark brown; damp (FILL)		
					0	0			
2					0	0			
		S-1	3.8	--	0	0	CLAY, little f/c sand, trace silt w/ f gravel		
3			76%		0	0	layers; brown; damp		
					0	0			
4					0	0		4.0	
							CLAY, trace silt; dark brown; damp		
5	5.0						(RESIDUAL)		
					0	0			
6					0	0			
					0	0			
7					0	0			
		S-2	5.0	--	0	0			
8			100%		0	0			
					0	0			
9					0	0			
					0	0			
10	10.0				0	0	F GRAVEL, little f sand & clay; brown	9.7	
							and gray; damp Match to Sheet 2		

DRILLING COMPANY: GeoEnvironTech, Inc. BAKER REP.: Mark DeJohn

DRILLER: William Rodrigez BORING NO.: 14E-SB01 SHEET 1 OF 2

Baker

Baker Environmental

TEST BORING RECORD

PROJECT: Phase II Environmental Condition of Property - Naval Activity Puerto Rico

PROJ. NO.: 102291 BORING NO.: 12E-SB02

COORDINATES: EAST: 774,972.74 NORTH: 150,356.59

ELEVATION: SURFACE: Not Available

Rig: Geoprobe 66DT	Macro Core	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	1.5-in.	--	--	--	5/9/04	0.0 - 20.0	Cloudy, windy, 80s	10.0
Length	5.0-ft.	--	--	--				
Type	Stainless	--	--	--				
Hammer Wt.	--	--	--	--				
Fall	--	--	--	--				

Remarks:

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
BG/PS = Background/Point Source
ppm = parts per million

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	SPT	FID (ppm) ps/bg	PID (ppm) ps/bg	Visual Description	Elevation (Ft. MSL)
					0	1	SILT, trace clay; dk brown; damp (FILL)	
1					0	1	F GRAVEL 1.0	
					0	1	CLAY, little silt; brown; damp	
2					0	1		
		S-1	4.5	--	0	1		
3			90%		0	1		
					0	1		
4					0	1	gray, yellow-brown, & red, mottled; wet	
					0	1		
5	5.0				0	1		
					0	1	yellow-brown, & gray, mottled; damp	
6					0	1	brittle red silty fracture	
					0	1		
7					0	1		
		S-2	5.0	--	0	1		
8			100%		0	1		
					0	1	brittle red silty fracture	
9					0	1		
					0	1		
10	10.0				0	1	Driller noted wet rods at 10-ft bgs	
					0	1	Match to Sheet 2	

DRILLING COMPANY: GeoEnvironTech, Inc. BAKER REP.: Mark DeJohn

DRILLER: William Rodrigez BORING NO.: 12E-SB02 SHEET 1 OF 2

Baker
Baker Environmental

TEST BORING RECORD

PROJECT: Phase II Environmental Condition of Property - Naval Activity Puerto Rico
PROJ. NO.: 102291 BORING NO.: 12E-SB01
COORDINATES: EAST: 774,980.67 NORTH: 150,387.20
ELEVATION: SURFACE: Not Available

Rig: Geoprobe 66DT	Macro Core	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	1.5-in.	--	--	--	5/9/04	0.0 - 15.0	Cloudy, windy, 80s	10.0
Length	5.0-ft.	--	--	--				
Type	Stainless	--	--	--				
Hammer Wt.	--	--	--	--				
Fall	--	--	--	--				

Remarks:

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
BG/PS = Background/Point Source
ppm = parts per million

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	SPT	FID (ppm) ps/bg	PID (ppm) ps/bg	Visual Description	Elevation (Ft. MSL)
					0	1		
1					0	1	CLAY, trace f gravel & silt; dk yellow-brown;	
					0	1	damp	
2					0	1		
		S-1	4.5	--	0	1		
3			90%		0	1		
					0	1		
4					0	1		
					0	1		
5	5.0				0	1	moist	
					0	1		
6					0	1		
					0	1	yellow-brown & gray, mottled; damp	
7					0	1		
		S-2	5.0	--	0	1		
8			100%		0	1		
					0	1	gray & yellow-brown, trace red, mottled;	
9					0	1	damp	
					0	1		
10	10.0				0	1	Driller noted wet rods at 10-ft bgs	
					0	1	Match to Sheet 2	

DRILLING COMPANY: GeoEnvironTech, Inc. BAKER REP.: Mark DeJohn
DRILLER: William Rodrigez BORING NO.: 12E-SB01 SHEET 1 OF 2

Baker
Baker Environmental

TEST BORING RECORD

PROJECT: Phase II Environmental Condition of Property - Naval Activity Puerto Rico
PROJ. NO.: 102291 BORING NO.: 11E-SB02
COORDINATES: EAST: 775,133.82 NORTH: 150,787.43
ELEVATION: SURFACE: Not Available

Rig: Geoprobe 66DT	Macro Core	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	1.5-in.	--	--	--	5/9/04	0.0 - 15.0	Cloudy, windy, 80s	12.0
Length	5.0-ft.	--	--	--				
Type	Stainless	--	--	--				
Hammer Wt.	--	--	--	--				
Fall	--	--	--	--				

Remarks:

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
BG/PS = Background/Point Source
ppm = parts per million

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	SPT	FID (ppm) ps/bg	PID (ppm) ps/bg	Visual Description		Elevation (Ft. MSL)
					0	1	F SAND & ROCK FRAG; tan;	0.5	
1					0	1	damp (FILL)		
					0	1	CLAY, trace f sand; brown; stiff; damp		
2					0	1			
		S-1	5.0	--	0	1	trace red zones		
3			100%		0	1			
					0	1	yellow-brown w/ red mottles; stiff; damp		
4					0	1			
					0	1	gray & yellow-brown - red brittle fracture		
5	5.0				0	1	zones; damp		
					0	1			
6					0	1			
					0	1			
7					0	1	brittle red silty fracture		
		S-2	5.0	--	0	1			
8			100%		0	1			
					0	1			
9					0	1	brittle red silty fracture zone		
					0	1			
10	10.0				0	0			
					0	1	Match to Sheet 2		

DRILLING COMPANY: GeoEnvironTech, Inc. BAKER REP.: Mark DeJohn
DRILLER: William Rodrigez BORING NO.: 11E-SB02 SHEET 1 OF 2

Baker
Baker Environmental

TEST BORING RECORD

PROJECT: Phase II Environmental Condition of Property - Naval Activity Puerto Rico
CTO NO.: 102291 BORING NO.: 11E-SB02

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
ps/bg = point source/background

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	SPT	FID (ppm) ps/bg	PID (ppm) ps/bg	Visual Description	Elevation (Ft. MSL)
11					0	1	Continued from Sheet 1	
					0	1	brittle red silty fracture; moist water at 11.5-ft	
12		S-3	--	--	0	1	moist fracture	
					0	1		
13					0	1	mainly red w gray & yellow-brown mottles	
14	14.0						14.0	
15							BOH at 14.0-ft.	
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING COMPANY: GeoEnvironTech, Inc. BAKER REP.: Mark DeJohn
DRILLER: William Rodrigez BORING NO.: 11E-SB02 SHEET 2 OF 2

Baker Environmental

TEST BORING RECORD

PROJECT: Phase II Environmental Condition of Property - Naval Activity Puerto Rico
PROJ. NO.: 102291 BORING NO.: 11E-SB01
COORDINATES: EAST: 775,130.04 NORTH: 150,830.12
ELEVATION: SURFACE: Not Available

Rig: Geoprobe 66DT	Macro Core	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	1.5-in.	--	--	--	5/9/04	0.0 - 10.0	Cloudy, windy, 80s	8.5
Length	5.0-ft.	--	--	--				
Type	Stainless	--	--	--				
Hammer Wt.	--	--	--	--				
Fall	--	--	--	--				

Remarks:

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
BG/PS = Background/Point Source
ppm = parts per million

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	SPT	FID (ppm) ps/bg	PID (ppm) ps/bg	Visual Description	Elevation (Ft. MSL)
					0	1		
1					0	1	CLAY, trace silt; yellow-brown, little red	
					0	1	mottles; damp (RESIDUAL)	
2					0	1		
		S-1	5.0	--	0	1		
3			100%		0	1		
					0	1		
4					0	1	some silt; red, gray, & yellow-brown, mottled;	
					0	1	damp	
5	5.0				0	1		
6								
					0	1	trace silt; red, gray, & yellow-brown, mottled;	
7					0	1	damp	
		S-2	4.7	--	0	1		
8			94%		0	1		
					0	1	wet fracture at 8.5-ft w/ mod flow	
9					0	1	wet fracture at 8.9-ft w/ mod flow	
					0	1	damp	
10					0	1	10.0	
							BOH at 10.0-ft.	

DRILLING COMPANY: GeoEnvironTech, Inc. BAKER REP.: Mark DeJohn
DRILLER: William Rodrigez BORING NO.: 11E-SB01 SHEET 1 OF 1

Baker
Baker Environmental

TEST BORING RECORD

PROJECT: Phase II Environmental Condition of Property - Naval Activity Puerto Rico
PROJ. NO.: 102291 BORING NO.: 5E-SB02
COORDINATES: EAST: 781,846.08 NORTH: 148,217.58
ELEVATION: SURFACE: Not Available

Rig: Geoprobe 66DT	Macro Core	Casing	Augers	Core Barrel	Date	Progress (Ft.)	Weather	Depth to Water (Ft.)
Size (ID)	1.5-in.	--	--	--	5/3/04	0.0 - 10.0	M sunny, low 80s	--
Length	5.0-ft.	--	--	--				
Type	Stainless	--	--	--				
Hammer Wt.	--	--	--	--				
Fall	--	--	--	--				

Remarks:

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Direct Push P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D1586)
PID = Photo Ionization Detector Measurement
MSL = Mean Sea Level
BG/PS = Background/Point Source
ppm = parts per million

Depth (Ft.)		Sample Type & No.	Sample Rec. (Ft.,%)	SPT	FID (ppm) ps/bg	PID (ppm) ps/bg	Visual Description	Elevation (Ft. MSL)
					0	1.7	CLAY, some silt & f gravel; highly organic;	
1					0	1.7	dark brown; damp 0.9	
					0	1.7		
2					0	1.7		
		S-1	5.0	--	0	1.7	SILT, little clay, trace f sand; tan & brown;	
3			100%		0	1.7	damp; (very weathered BEDROCK)	
					0	1.7		
4					0	1.7		
					0	1.7		
5	5.0				0	1.7		
					0	1.0		
6					0	1.0		
					0	1.0		
7					0	1.0		
		S-2	3.7	--	0	1.0	SILT, trace clay; tan & brown w/ black	
8			74%		0	1.0	fractures; damp (SAPPROLITE)	
9								
10	10.0						10.0	
							BOH at 10.0-ft.	

DRILLING COMPANY: GeoEnvironTech, Inc. BAKER REP.: Mark DeJohn
DRILLER: William Rodrigez BORING NO.: 5E-SB02 SHEET 1 OF 1

Baker
Baker Environmental, Inc.

WELL/BORING NO.: BGMW01

TEST BORING AND WELL CONSTRUCTION RECORD

INSTALLATION: NSRR-002 CTO NO.: 277
SITE/AREA: BACKGROUND - BOXER ROAD
COORDINATES: NORTH: _____, EAST: _____
ELEVATIONS: SURFACE: _____

RIG:	SPLIT SPOON	AUGERS	SURFACE CASING	REAMING TOOL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)
SIZE (DIAM.)	3" OD	4-1/4" ID			4/23/96	0-30	SUNNY 80's	
LENGTH	2.0'	5.0'		–	4/24/96	–	SUNNY 80's	23.6
TYPE	Std.	HSA						
HAMMER WT.	140#	–	–	–				
FALL	30"	–	–	–				

REMARKS: SURFACE SOIL SAMPLE BGMW01-00 COLLECTED FROM 0-1'

SAMPLE TYPE
S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Well Riser	2"	Sch. 40 PVC, Threaded	-2	10
Well Screen	2"	No. 10 Slot Sch. 40 PVC, Threaded	10	30

Depth (ft.)	Samp. Type and No.	Samp. Rec. ft./%	SPT	Lab Samp. Desig.	PID (ppm) BG/Samp.	Visual Description/Comments	Well Installation Detail	Elevation (ft.)
1	A-N						12" DIA BOREHOLE	
2								
3	S-1	1.3	24 21 21 19			CLAY AND SILT, RED AND ORANGE, VERY STIFF, DRY	2" DIA PVC CASING; GROUT	
4								
5	S-2	1.4	10 12 15 15				TOP BENTONITE @ 5'	
6								
7	S-3	1.1	8 11 14 19				TOP OF SAND @ 7'	
8						8.0		
9	S-4	1.8	9 10 12 14	BGMW 01-04		CLAY, LITTLE SILT, TRACE SAND, GRAY, STIFF TO VERY STIFF, DRY	SAND PACK	
10						Match to Sheet 2	TOP OF SCREEN @ 10'	

DRILLING CO.: SOIL TECH BAKER REP.: K. TUA
DRILLER: JOSÉ MORALES WELL/BORING NO.: BGMW01 SHEET 1 OF 2

Baker
Baker Environmental, Inc.

WELL/BORING NO.: BGMW01

TEST BORING AND WELL CONSTRUCTION RECORD

INSTALLATION: NERR-OUZ
SITE/AREA: BACKGROUND
CTO NO. 277

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

ACRONYMS

BG = Background
HSA = Hollow Stem Augers
ID = Inside Diameter
PID = Photoionization Detector
ppm = parts per million
SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
WD = While Drilling

Depth (ft.)	Samp. Type and No.	Samp. Rec. ft./%	SPT	Lab Samp. Desig.	PID (ppm) BG/Samp	Visual Description/Comments	Well Installation Detail	Elevation (ft.)
						Continued from Sheet 1		
11–12	S-5	1.6	6 9 11 12			CLAY, LITTLE SILT, TRACE SAND, GRAY, RED, PURPLE, STIFF TO VERY STIFF, DRY	12" DIA BOREHOLE	
13–14	S-6	2.0	5 7 9 10	BGMW 01-06		HIT WATER AT 14.0'		
15–16	S-7	1.8	3 7 6 8			DAMP	2" PVC SCREEN	
17–18	S-8	2.0	5 7 8 11			DAMP		
19–20	S-9	1.3	5 8 11 2			MOIST	SAND PACK	
21–22	S-10	2.0	5 7 9 10			DAMP		
						22.0		
23–24	S-11	2.0	5 7 10 13			CLAY AND SILT, LITTLE SILT AND SAND, BROWN, WHITE, GRAY & GREEN, STIFF TO VERY STIFF, DAMP		
25–26	S-12	2.0	6 13 18 21			- TRACE LIMESTONE FRAGMENTS FROM 22-24'		
27–28	S-13	2.0	9 15 20 24					
29–30	S-14	2.0	11 13 19 26			BOTTOM OF BORING @ 30' Match to Sheet 30'	BOTTOM OF WELL @ 30'	

DRILLING CO.: SOIL TECH
DRILLER: JOSÉ MORALES
BAKER REP.: K. TUA
WELL/BORING NO.: BGMW01
SHEET 2 OF 2

Baker

Baker Environmental, Inc.

WELL/BORING NO.: BGMWØ2

TEST BORING AND WELL CONSTRUCTION RECORD

INSTALLATION: NSRR-OU2 CTO NO.: 277

SITE/AREA: BACKGROUND - BOXER ROAD

COORDINATES: NORTH: _____, EAST: _____

ELEVATIONS: SURFACE: _____

RIG:	SPLIT SPOON	AUGERS	SURFACE CASING	REAMING TOOL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)
SIZE (DIAM.)	3"OD	4-1/4" ID			4/22/96	0-30	P.CLDY 80°s	
LENGTH	2.0'	5.0'		–	4/23/96	30-35	CLDY 80°s	16.7
TYPE	Std.	HSA						
HAMMER WT.	140#	–	–	–				
FALL	30"	–	–	–				

REMARKS: SURFACE SOIL SAMPLE BGMWØ2-ØØ COLLECTED FROM 0-1'

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Well Riser	2"	Sch. 40 PVC, Threaded	-2	15
Well Screen	2"	No. 10 Slot Sch. 40 PVC, Threaded	15	35

Depth (ft.)	Samp. Type and No.	Samp. Rec. ft./%	SPT	Lab Samp. Desig.	PID (ppm) BG/Samp.	Visual Description/Comments	Well Installation Detail	Elevation (ft.)
1	A-N					CLAY, TRACE FINE SAND AND SILT, MOTTLED RED & GRAY, STIFF TO VERY STIFF, DRY TO MOIST	← 12" DIA. BOREHOLE	
2								
3	S-1	1.1	13 14 15 14					
4							← 2" PVC CASING	
5	S-2	1.4	6 10 13 16				← GROUT	
6								
7	S-3	1.7	8 12 15 19					
8								
9	S-4	1.2	10 10 13 15	BGMW Ø2-Ø4				
10						Match to Sheet 2		

DRILLING CO.: SOIL TECH BAKER REP.: K. TUA

DRILLER: JOSÉ MORALLES WELL/BORING NO.: BGMWØ2 SHEET 1 OF 3

Baker
Baker Environmental, Inc.

WELL/BORING NO.: BGMWØ2

TEST BORING AND WELL CONSTRUCTION RECORD

INSTALLATION: NSRR-OU2 CTO NO. 277
SITE/AREA: BACKGROUND

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

ACRONYMS

BG = Background
HSA = Hollow Stem Augers
ID = Inside Diameter
PID = Photoionization Detector
ppm = parts per million
SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
WD = While Drilling

Depth (ft.)	Samp. Type and No.	Samp. Rec. ft./%	SPT	Lab Samp. Desig.	PID (ppm) BG/Samp	Visual Description/Comments	Well Installation Detail	Elevation (ft.)
						Continued from Sheet 1		
11–12	S-5	1.6	6 9 11 13			CLAY, TRACE FINE SAND AND SILT, MOTTLED RED & GRAY, TRACE WHITE, STIFF TO VERY STIFF, DRY TO MOIST.	GROUT; TOP OF BENTONITE @ 11'	
13–14	S-6	1.6	5 7 10 12				TOP OF SAND @ 12'	
15–16	S-7	1.8	8 10 10 14			16.0	TOP OF SCREEN @ 15.0'	
17–18	S-8	2.0	8 9 13 16	BGMW Ø2-Ø8		SILT, LITTLE CLAY, TRACE SAND, GRAY, GREEN, BROWN, STIFF, DAMP TO MOIST		
19–20	S-9	2.0	8 8 14 18			WATER AT 16.7' ON 4/23/96 @ 0730; 20.0		
21–22	S-10	0.8	6 19 24 24			SILT AND CLAY, TRACE SAND & ROCK FRAGMENTS, BROWN, GRAY, GREEN, VERY STIFF TO HARD		
23–24	S-11	1.7	11 17 24 37					
25–26	S-12	2.0	30 31 28 30					
27	S-13	1.3	18 28 50/.5					
27.5–28	A-N					28.0		
29	S-14	1.5	20 40 50/.5					
30	A-N					Match to Sheet 3		

DRILLING CO.: SOIL TECH
DRILLER: JOSÉ MORALES
BAKER REP.: K. TUA
WELL/BORING NO.: BGMWØ2
SHEET 2 OF 3

Baker

Baker Environmental, Inc.

WELL/BORING NO.: BGMW02

TEST BORING AND WELL CONSTRUCTION RECORD

INSTALLATION: NERR-OU2 CTO NO. 277

SITE/AREA: BACKGROUND

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

ACRONYMS

BG = Background
HSA = Hollow Stem Augers
ID = Inside Diameter
PID = Photoionization Detector
ppm = parts per million
SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
WD = While Drilling

Depth (ft.)	Samp. Type and No.	Samp. Rec. ft./%	SPT	Lab Samp. Desig.	PID (ppm) BG/Samp	Visual Description/Comments	Well Installation Detail	Elevation (ft.)
						Continued from Sheet 2		
31	S-15	1.2	3 5 21 46			SILT AND CLAY, SOME ROCK FRAGMENTS, LITTLE SAND, BROWN & GRAY, VERY STIFF TO HARD, MOIST TO WET		
32								
33	S-16	1.6	31 40 37 50/4					
34								
35	A-N							
						BOTTOM OF BORING @ 35'	BOTTOM OF WELL @ 35'	
7								
8								
9								
0								
1								
2								
3								
4								
5								
6								
7								
8								
0						Match to Sheet		

DRILLING CO.: SOIL TECH BAKER REP.: K TUA

DRILLER: JOSÉ MORALES WELL/BORING NO.: BGMW02 SHEET 3 OF 3

Baker

Baker Environmental, Inc.

WELL/BORING NO.: BGMW03

TEST BORING AND WELL CONSTRUCTION RECORD

INSTALLATION: NSRR-OU2 CTO NO.: 277

SITE/AREA: BACKGROUND BAKER ROAD

COORDINATES: NORTH: _____, EAST: _____

ELEVATIONS: SURFACE: _____

RIG:	SPLIT SPOON	AUGERS	SURFACE CASING	REAMING TOOL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)
SIZE (DIAM.)	3"OD	4-1/4" ID			4/12/96	0-	SUNNY 80°S	
LENGTH	2.0'	5.0'		--				
TYPE	Std.	HSA						
HAMMER WT.	140#	--	--	--				
FALL	30"	--	--	--				

REMARKS: SURFACE SOIL SAMPLE BGMW03-00 COLLECTED FROM 0-1'

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Well Riser	2"	Sch. 40 PVC, Threaded	-2	7.3
Well Screen	2"	No. 10 Slot Sch. 40 PVC, Threaded	7.3	27.3

Depth (ft.)	Samp. Type and No.	Samp. Rec. ft./%	SPT	Lab Samp. Desig.	PID (ppm) BG/Samp.	Visual Description/Comments	Well Installation Detail	Elevation (ft.)
1–2	A-N							
3–4	S-1	0.4	5 4 2 2			CLAY, LITTLE ROCK FRAGMENTS, TRACE SILT AND SAND, RED, BROWN, GRAY & WHITE, SOFT, DAMP		
5–6	S-2	0.2	4 2 3 5			6.0	TOP OF BENT. @ 4.3'. TOP OF SAND @ 5.3'	
7–8	S-3	1.6	5 9 11 15	BGMW Ø3-Ø3		CLAY AND ROCK FRAGMENTS, LITTLE SILT AND SAND, MOTTLED ORANGE-RED-GRAY, STIFF, MOIST	TOP OF SCREEN @ 7.3'	
9–10	S-4	2.0	6 9 13 20	BGMW Ø3-Ø4		WATER AT 10'		
						10.0 Match to Sheet 2		

DRILLING CO.: SOIL TECH BAKER REP.: J. TEPSIC

DRILLER: JORGE DIAZ WELL/BORING NO.: BGMW03 SHEET 1 OF 2

Baker
Baker Environmental, Inc.

WELL/BORING NO.: BGMW03

TEST BORING AND WELL CONSTRUCTION RECORD

INSTALLATION: NSRR-OU2 CTO NO. 277
SITE/AREA: BACKGROUND

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

ACRONYMS

BG = Background
HSA = Hollow Stem Augers
ID = Inside Diameter
PID = Photoionization Detector
ppm = parts per million
SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
WD = While Drilling

Depth (ft.)	Samp. Type and No.	Samp. Rec. ft./%	SPT	Lab Samp. Desig.	PID (ppm) BG/Samp	Visual Description/Comments	Well Installation Detail	Elevation (ft.)
						Continued from Sheet 1		
11	S-5	2.0	8 10 12 18			CLAY, TRACE TO LITTLE SILT, TRACE SAND, MOTTLED BROWN, ORANGE, WHITE, STIFF TO HARD, MOIST TO WET	12" DIA BOREHOLE	
12								
13	S-6	2.0	8 12 14 16					
14								
15	S-7	2.0	9 11 15 18				2" PVC SCREEN	
16								
17	S-8	2.0	10 14 20 22					
18							SAND PACK	
19	S-9	1.4	7 10 50/.5					
20	A-N							
21	S-10	1.5	19 24 50/.5					
22	A-N							
23	S-11	2.0	14 21 34 50			LITTLE ROCK FRAGMENTS FROM 22'-27'		
24								
25	S-12	1.0	24 50/.5					
26	A-N							
27 (27.1)	S-13	1.1	25 36 50/.1					
28	A-N						BOTTOM WELL @ 27.5	
9						BOTTOM OF BORING AT 28.0'		
0						Match to Sheet		

DRILLING CO.: SOIL TECH
DRILLER: JORGE DIAZ
BAKER REP.: J. TEPSIC
WELL/BORING NO.: BGMW03
SHEET 2 OF 2

Baker
Baker Environmental, Inc.

WELL/BORING NO.: BGMW04

TEST BORING AND WELL CONSTRUCTION RECORD

INSTALLATION: NSRR-OU2
SITE/AREA: BACKGROUND - BOXER ROAD
COORDINATES: NORTH: _____, EAST: _____
ELEVATIONS: SURFACE: _____

CTO NO.: 277

RIG:	SPLIT SPOON	AUGERS	SURFACE CASING	REAMING TOOL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)
SIZE (DIAM.)	2" OD	4-1/4" ID			4/24/96	0 - 28	SUNNY 80's	
LENGTH	2.0'	5.0'		–	4/25/96	28 - 30	SUNNY 80's	
TYPE	Std.	HSA						
HAMMER WT.	140#	–	–	–				
FALL	30"	–	–	–				

REMARKS: SURFACE SAMPLE BGMW04-00 COLLECTED FROM 0-1'.

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Well Riser	2"	Sch. 40 PVC, Threaded	-2	10
Well Screen	2"	No. 10 Slot Sch. 40 PVC, Threaded	10	30

Depth (ft.)	Samp. Type and No.	Samp. Rec. ft./%	SPT	Lab Samp. Desig.	PID (ppm) BG/Samp.	Visual Description/Comments	Well Installation Detail	Elevation (ft.)
1	A-N						12" DIA BOREHOLE	
2								
3	S-1	1.0	4 4 7 7			CLAY AND SILT, RED & DARK BROWN, MEDIUM STIFF TO VERY STIFF, DRY TO DAMP	2" PVC CASING	
4							GROUT	
5	S-2	1.4	3 5 7 8	BGMW 04-02				
6							TOP OF BENTONITE @6'	
7	S-3	0.8	6 9 16 7			LITTLE ROCK FRAGMENTS FROM 6-8'.		
8							TOP OF SAND @ 8'	
9	S-4	1.5	3 5 7 12	BGMW 04-04		LT. BLUE COLOR FROM 8'-12'	SAND	
10							TOP OF SCREEN @10'	

Match to Sheet 2

DRILLING CO.: SOIL TECH
DRILLER: JOSÉ MORALES
BAKER REP.: K. TUA
WELL/BORING NO.: BGMW04
SHEET 1 OF 2

Baker
Baker Environmental, Inc.

WELL/BORING NO.: BGMW04

TEST BORING AND WELL CONSTRUCTION RECORD

INSTALLATION: NSRR-OU2 CTO NO. 277
SITE/AREA: BACKGROUND

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

ACRONYMS

BG = Background
HSA = Hollow Stem Augers
ID = Inside Diameter
PID = Photoionization Detector
ppm = parts per million
SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
WD = While Drilling

Depth (ft.)	Samp. Type and No.	Samp. Rec. ft./%	SPT	Lab Samp. Desig.	PID (ppm) BG/Samp	Visual Description/Comments	Well Installation Detail	Elevation (ft.)
						Continued from Sheet 1		
11–12	S-5	1.4	3 7 8 9					
13–14	S-6	1.7	4 5 7 7			14.0	12" DIA BORENOLE	
15–16	S-7	1.7	4 7 10 10			SILT AND CLAY, GRAY TO DARK BROWN, STIFF TO HARD, MOIST.	2" PVC SCREEN	
17–18	S-8	1.9	6 9 10 14			CLAY CONTENT DECREASES TO TRACE TO DEPTH - WET FROM 16'-18'		
19	S-9	1.5	6 15 50/.5			DAMP	SAND PACK	
20	A-N							
21–22	S-10	1.7	10 10 19 17			WET		
23–24	S-11	1.6	21 21 25 25			TRACE FINE SAND 22'-24' WET		
25–26	S-12	2.0	12 18 35 35			WET		
27	S-13	1.5	12 25 50/.5			WET		
28	A-N							
29	S-14	1.5	22 31 50/.5			WET BOTTOM OF BORING AT 30'		BOTTOM OF WELL @ 30'
30	A-N					Match to Sheet		

DRILLING CO.: SOIL TECH
DRILLER: JOSÉ MORALES
BAKER REP.: K. TUA
WELL/BORING NO.: BGMW04 SHEET 2 OF 2

Appendix D:
Electronic Data

Appendix D electronic data is contained within the hard copy of this report.