4/10/96 – 01945

OHM Corporation

Site Construction Office
Camp Allen Landfill - Area A
Soil and Groundwater Remediation
Ingersol Street off Helmick Street
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Telephone: (804) 451-2855

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TRANSMITTAL

April 10, 1996

Mr. David M. Forsythe
Commander
Atlantic Division
1510 Gilbert Street
Norfolk, VA 23511-2699

Phone: 804-322-4783
Fax: 804-322-4805

Subject: Sampling Plan, Area A
Camp Allen Landfill, Soil and Groundwater Remediation

Dear Dave:

Attached are two copies of the revised sampling plan. You already know everything that's in it, but look at sections 3 and 5 which indicate the analytical parameters and sampling strategy respectively.

Sincerely Yours,

Gordon H. Miller, Jr.

4/10/96 - 01945

FIELD SAMPLING AND QUALITY ASSURANCE PLAN
CAMP ALLEN LANDFILL, AREA "A"
NORFOLK, VIRGINIA

Prepared for:

DEPARTMENT OF THE NAVY
Contract No. N62470-93-D-3032
Delivery Order 008

Prepared by:

OHM Remediation Services Corp.
Trenton, New Jersey

W D for Mike Lacy

Michael J. Lacy, Ph.D.
Senior Project Chemist

Reviewed by:

Gordon D Miller

Gordon Miller
Project Manager

John Franz
Program Manager

OHM Remediation Services Corp.
A Subsidiary of OHM Corporation

April 10, 1996
OHM Project 15856

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1.0 INTRODUCTION

This Field Sampling and Quality Assurance Plan (SAP) has been written to guide the field sampling and laboratory analysis of characterization samples from the Camp Allen "A" Landfill in Norfolk, Virginia. This work is performed under Contract No. N62470-93-D-3032, Delivery Order No. 008.

A 3500 linear foot trench is to be inserted around a portion of the landfill. Excavated materials will be staged in approximately 100 to 150 cubic yard stockpiles adjacent to the trench pending analysis and disposal.

2.0 PROJECT DESCRIPTION

2.1 SITE HISTORY

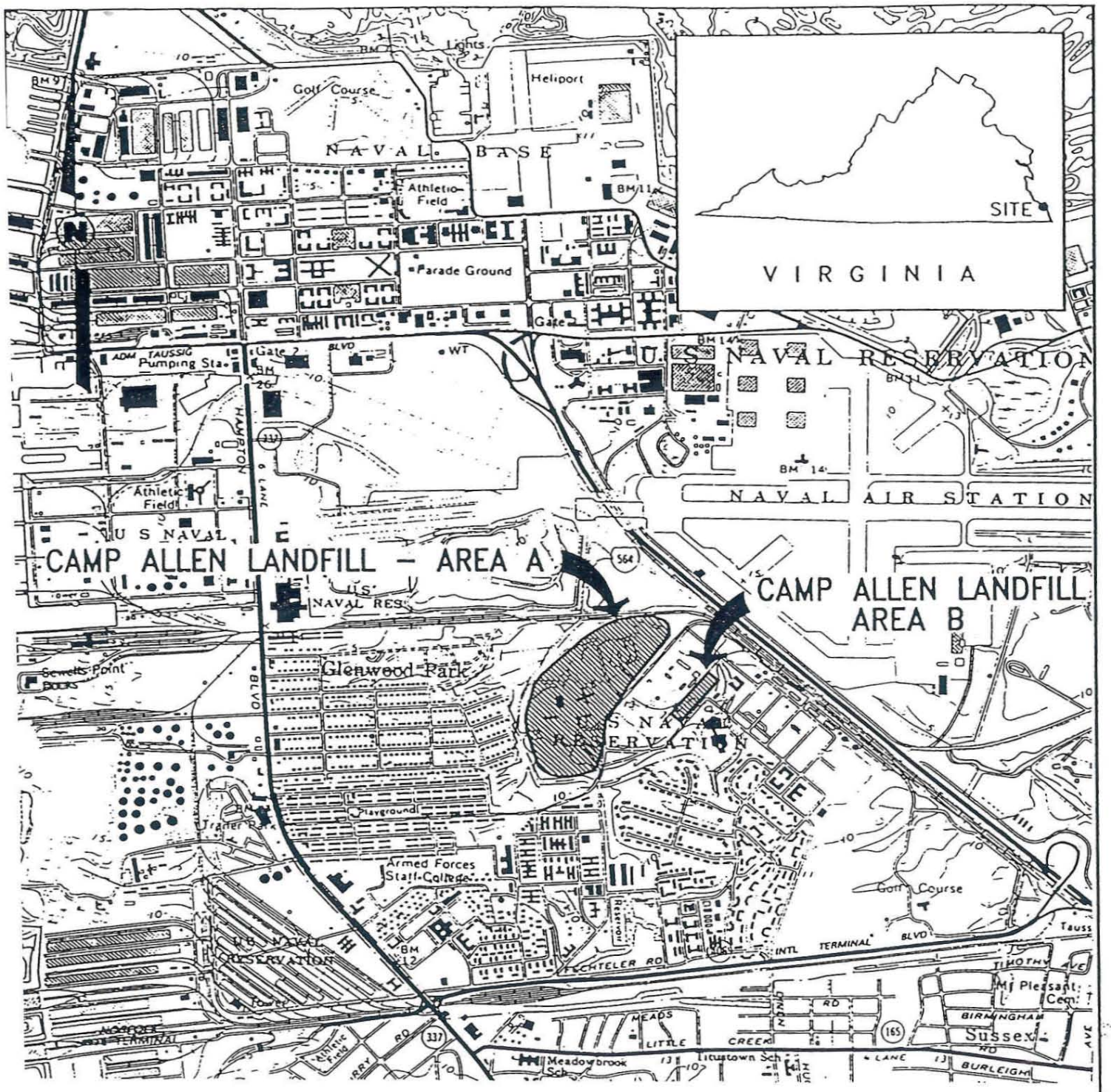
Area A of the Camp Allen Landfill is a 45-acre site that was used for the disposal of wastes from the early 1940s until 1974. During this time, significant quantities of municipal, solid, and hazardous wastes were disposed including the following: general refuse, demolition debris, sludges from metal plating processes, parts cleaning and paint stripping wastes, over-age chemicals, various chlorinated organic solvents, acids, caustics, paints and paint thinners, pesticides, and asbestos. It is estimated, from approximated waste generation rates, that about 40,000 pounds of metals plating sludge, 60,000 pounds of parts cleaning sludges, and 400,000 pounds of paint stripping residue were disposed at Area A. Additionally, ash from the incineration of solid wastes, as well as fly and bottom ash from the power plant, were landfilled.

In the mid-1940s, an incinerator was constructed in the southern portion of the Camp Allen area to burn combustible wastes. This incinerator operated until the mid-1960s. Materials too bulky for the incinerator were burned in Area A of the Camp Allen Landfill.

At present, most of Area A is capped and revegetated to minimize surface erosion. Area A incorporates the Navy Brig facility and a heliport built over a portion of the landfill during the mid-1970s. The area is surrounded by drainage ditches, which convey surface water runoff to Willoughby Bay. These drainage ditches are remnants of Bousch Creek, the main channel of which was completely filled and replaced by a network of ditches and channels during the development of Norfolk Naval Base. Additionally, a residential area (Glenwood Park) is located to the west of the site. Refer to Figure 1 for the Site Location Map which shows the locations of Areas A.

2.2 TRENCHING OPERATIONS

Installation activities requiring excavation in the Area A landfill include the placement of the groundwater extraction wellhead manholes, electrical ductbank and electrical handholes. Excavation associated with the installation of the DPVE System piping headers and wellheads will also be required. A plan layout of these facilities is presented in Figure 2.



SCALE

0 2000 4000 feet

FIGURE 1

SITE LOCATION MAP
SOIL AND GROUNDWATER REMEDIAL ACTION
CAMP ALLEN LANDFILL – AREAS A AND B
NAVAL STATION NORFOLK, NORFOLK, VIRGINIA

PREPARED FOR

DEPARTMENT OF THE NAVY
ATLANTIC DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORFOLK, VIRGINIA

OHM Remediation Services Corp.

REFERENCE:

1.5 MIN U.S.G.S. TOPOGRAPHIC MAP OF NORFOLK NORTH, VA QUADRANGLE DATED 1965, PHOTOREVISED 1989, SCALE 1:24000

WELL NO.	TYPE	TOTAL DEPTH	DROP PIPE DIA.	SET FLOWRATE
B-EW1A	EXISTING	25'	1.5"	3.0 gpm
B-EW2A	EXISTING	25'	1.5"	3.0 gpm
B-EW2B	EXISTING	25'	1.5"	3.0 gpm
B-EW3A	EXISTING	25'	1.5"	3.0 gpm
B-EW3B	EXISTING	65'	1.5"	3.0 gpm
B-EW4A	EXISTING	25'	1.5"	3.0 gpm
B-EW4B	EXISTING	65'	1.5"	3.0 gpm
B-EW5A	EXISTING	25'	1.5"	3.0 gpm
B-EW6A	EXISTING	25'	1.5"	3.0 gpm
B-EW7A	EXISTING	25'	1.5"	3.0 gpm

AREA A1 EXTRACTION WELL DATA				
WELL NO.	TYPE	TOTAL DEPTH	DROP PIPE DIA.	SET FLOWRATE
A1-EW2B	EXISTING	65'	2.5"	24.5 gpm
A1-EW4B	EXISTING	65'	2"	14.0 gpm
A1-EW3B	EXISTING	65'	2.5"	24.5gpm

NEW BUILDING STEAM LINE BELOW GROUND
CONEX BOXES (2)
LAYDOWN AREA 6,000 S.F. APPROX.
DECONTAMINATION PAD
GROUNDWATER COLLECTION FROM AREA B
4"ø HDPE U.G. DEEP WELL PIPE
NORFOLK & PORTSMOUTH BELT LINE RAILROAD
STEAM CROSSING
GROUNDWATER COLLECTION FROM AREA A1
A2EW-2B
A2EW-1B
A2EW-1A
A2EW-2A
APPROXIMATE NORFOLK NAVAL BASE PROPERTY LINE
HEALTH & SAFETY/ BREAK TRAILER (1)
OHM SITE ADMIN. TRAILERS (2)
TREATMENT FACILITY SITE
NEW 8"DIA. OUTFALL LINE
A2EW-3B
4"ø HDPE U.G. DEEP WELL PIPE
A2EW-4B
2"ø HDPE U.G. SHALLOW WELL PIPE
3"ø HDPE U.G. DEEP WELL PIPE
2"ø HDPE U.G. SHALLOW WELL PIPE
1"ø HPDE U.G. DEEP WELL PIPE
SALVAGE YARD
B-EW6A
B-EW4B
B-EW3B
B-EW5A
A1EW-2B
BRIG FACILITY
PROJECT IMPACTED BASKETBALL COURTS
B-EW4A
1"ø HDPE U.G. SHALLOW WELL PIPE
B-EW1A
2"ø HDPE U.G. DEEP WELL PIPE
A1A-VE1
A1EW-3B
B-EW3A
B-EW7A
A1B-VE1
1"ø HDPE U.G. SHALLOW WELL PIPE
A1B-VE2
A1C-VE2
DPVE BUILDING
A1C-VE1
B-EW2B
2"ø HDPE U.G. SHALLOW WELL PIPE
A1C-VE3
B-EW2A
CAMP ALLEN ELEMENTARY SCHOOL
A1EW-4B
2"ø HDPE U.G. DEEP WELL PIPE
ELECTRICAL SUBSTATION
DIRT PILES
N 225,000
N 224,000
N 223,000
E 2,641,000
E 2,642,000
E 2,643,000
E 2,644,000
E 2,645,000

LEGEND:

- DEEP EXTRACTION WELL
- SHALLOW EXTRACTION WELL
- FUTURE EXTRACTION WELL
- SYSTEM PIPING FOR DEEP AQUIFER WELLS
- SYSTEM PIPING FOR SHALLOW AQUIFER WELLS
- AREA "A" GWES TRENCH

SCALE 0 200 400

GROUNDWATER RECOVERY SYSTEM

FIG. 2

OHM Remediation Services Corp.
Trenton, New Jersey
A Subsidiary of OHM Corporation

SUBMITTED: G. MILLER, PROJECT MANAGER DATE:
APPROVED: PE, PROJECT ENGINEER DATE:
APPROVED: DEPT. MANAGER DATE:

AT FULL SCALE (IF NOT 8"-SCALE ACCORDINGLY)
CADD FILE: 15856-D21
DRAWN: C. SMITH
DESIGNED:
CHECKED: S. KOKOL
CHECKED:

REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.
	1	ISSUED FOR DESIGN REVIEW	WG	2/9/96	
	2	RELEASED FOR CONSTRUCTION	WG	3/28/96	
	3				
	4				

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ATLANTIC DIVISION
NAVAL STATION — NORFOLK, VIRGINIA
LANTDIV RAC CONTRACT N62470-93-D-3032 — DELIVERY ORDER NO. 0006
CAMP ALLEN LANDFILL — NAVAL BASE, NORFOLK, VA.

CIVIL
CAMP ALLEN LANDFILL
SOIL & GROUNDWATER REMEDIATION
AREA "A"
LOCATION PLAN

DRAWING NUMBER:
SHEET NUMBER: 1 of 1
DATE: 1/6/96

3.0 DATA QUALITY OBJECTIVES

3.1 PROJECT OBJECTIVES

Samples will be collected and analyzed from along the length of the trench excavation in order to accurately characterize the soils for disposal. The samples will be analyzed for the parameters in Table 3.1, Package A and TAL Metals.

3.2 DATA QUALITY OBJECTIVES

USEPA currently defines five levels of data quality for environmental projects, which relate to data precision, accuracy, and completeness. ~~NEESA~~ NFESC has adopted three of these levels for data reporting. The five defined levels of data quality are:

1. Screening (Level 1): This provides the lowest data quality, but the most rapid results. It is often used for health and safety monitoring at the site, preliminary comparison to ARARs (Applicable or Relevant and Appropriate Requirements), initial site characterization to locate areas for subsequent and more accurate analyses, and for engineering screening of alternatives (bench-scale tests). These types of data include those generated onsite through the use of organic vapor analyzers, temperature and conductivity meters and other similar real time monitoring equipment at the site.

2. Field Analyses (Level 2): This provides rapid results and better quality than in Level 1. Analyses include mobile lab generated data.

3. Engineering (Level 3)/~~NEESA~~ Level C: This provides an intermediate level of data quality and is used for site characterization and engineering analyses. It may include mobile lab generated data and some analytical lab methods (e.g., laboratory data with quick turnaround used for screening, but without full quality control documentation).

4. Confirmational (Level 4)/~~NEESA~~ Level D: This provides the highest level of data quality and is used for purposes of risk assessment, engineering design, and cost analyses. These analyses require full CLP (Contract Laboratory Program) analytical and data validation procedures.

5. Non-Standard (Level 5)/~~NEESA~~ Level E: This refers to analyses by non-standard protocols, for example, when exacting detection limits, or analysis of an unusual chemical compound is required. These analyses often require method development or adaption. The level of quality control is usually similar to Level 4 data.

OHM will be generating data conforming to DQO Levels 1 and 3/~~NEESA~~ Level C.

OHM will generate data conforming to DQO Level 3/~~NEESA~~ Level C data (without deliverables) for the characterization analyses.

3
4

Results will be submitted in order for manifests to be signed.

3.2.1 Laboratory Methods

The subcontract project laboratory will conduct all analyses using accepted EPA methodology. Table 3.1 displays the intended analytical protocols for the project.

3.2.2 QA/QC Samples

Due to the nature of these samples, no field generated QA/QC samples will be collected.

TABLE 3.1
OHM GUIDELINES FOR DISPOSAL ANALYSIS

PACKAGE A [ALL SAMPLES]	
Analysis	***Method(s)***
Total Solids	160.3
Corrosivity, pH	150.1, 9040, 9045
Flash Pt. Ignitability	1010, 1020
Reactive Sulfide	Sec. 7.3.4.1
Reactive Cyanide	Sec. 7.3.3.2
TCLP Volatile Organics	1311 - 8240, 8260
TCLP Semi-Volatile Organics	1311 - 8270
TCLP Metals	1311 - 6010, 7000's
TCLP Pesticide/Herbicides	1311 - 8080/8150
TCL Volatile Organics	8240, 8260
TCL Semi-Volatile Organics	8270
TCL Pesticide/PCBs	8080
TCL Herbicides	8150
PACKAGE B [INCINERATION DISPOSAL] Package A plus the following:	
% Ash	160.4
BTU	ASTM
Total Halides	9020
Total Sulfur	ASTM
Total Cyanide	9010
TAL Metals and Molybdenum	6010, 7000's
PACKAGE C [LANDFILL DISPOSAL] Package A plus the following:	
Paint Filter Test	9095
Total Cyanide	9010
Total Organic Halogens (TOX)	9020
PACKAGE D [WASTEWATER TREATMENT] Package A plus the following:	
Total Sulfide	376.2, 9030
Total Cyanide	9010
Total Phenols	420.1, 9065
TAL Metals and Molybdenum	6010, 7000's

4.0 PROJECT ORGANIZATION AND RESPONSIBILITY

Data acquisition activities for the project will be accomplished using personnel from both OHM and the subcontracted analytical laboratories.

For this project, OHM personnel will be responsible for the following activities:

- Development and revisions to all project submittals and plans.
- Collection, documentation, and off-site shipment of all site samples.
- Maintaining project communication with the subcontract laboratory and any applicable USACE QA laboratory.
- Review and/or validation of all subcontract generated data.

A detailed discussion of OHM personnel titles, qualifications, and duties is presented in the subsection below. Laboratory personnel, as required in Section 01450 of the specifications, are presented in the subcontractor documents in Appendices B and C.

4.1 FIELD/PROJECT PERSONNEL

The following summarizes the project functions of the individuals presented.

- Project Manager - Responsible for the financial, safety, and quality performance of the job. Maintains project status interaction with Navy contacts.
- Program QA/QC Manager - Ensures all corporate, contract, and project procedures are followed. Reviews all data acquisition documents, and interacts with subcontract laboratory in a non-conformance situation.
- QA/QC Representative - specific functions are enumerated in the LANTDIV RAC QA/QC Program Plan. Job specific duties may include:
  - Maintaing compliance with the submittal register
  - Inspection of materials upon receipt
  - Securing subcontracted equipment specification sheets
- Senior Project Chemist - Responsible for data generation. Oversees site field sampling team. Supervises procurement, sample coordination and data review with off-site laboratory.
- Sample Technician - Implements all field sampling and completes field documentation. Transports and manages samples for off-site shipment.

5.0 SAMPLING PROCEDURES

5.1 SAMPLING LOCATIONS

Excavated materials associated with trenching activities will be collected and sampled from the debris stockpiles for disposal characterization. Grab samples shall be taken from each stockpile and composited at a frequency of one composite sample for each 500 cubic yards of material. Assuming 1500 cubic yards of material scheduled for removal, three composit samples will be required.

Samples will be analyzed for the Package A parameters in Table 3.1 plus Target Analyte Metals. Container and preservation requirements are presented in Table 5-1.

5.2 SAMPLE PROCEDURES

Samples will be collected using either chemically-inert sample scoops or decontaminated stainless-steel scoops.

5.3 DOCUMENTATION

Accurate documentation of all sample procedures is critical to the sampling process. Types of documents which are considered essential and must be accounted for include:

Notes	Maps	Drawings
Photographs	Safety plans	QA plans
Log books	Data sheets	Reports

These link the sample with the project, sampler, time, location, procedures, changes to the work plan, sample history, transfer to the laboratory, and ensures tamper-free transit.

Data, calibration, and maintenance records, samples, and documents, must be accounted for and retrievable at any time during an investigation. Chain-of-custody records are necessary to document sample identity, handling, and shipping procedures.

5.3.1 Sample Numbering

Samples will be numbered as follows:

- 15856 - #

where # is the stockpile number denoting the location the sample was taken from.

5.3.2 Sample Label

- The sample label will contain the following additional information:

  -- Sample Number
  -- Date
  -- Time (Military)
  -- Sample Description

-- Preservatives used
-- Samplers Initials
-- Witnesses Initials
-- Number of Containers
-- Required Analysis

The sample description will note the sample type, e.g. confirmation sample and the depth at which the sample is obtained.

5.3.3 Field Sampling Log Book

The OHM Sample Technician (Tech) will maintain a detailed, accurate account of the sampling event in the Field Sampling Log Book. The Field Sampling Log will contain:

- All information found on the sample label, as listed above.
- Other information such as:
  - -- Weather conditions
  - -- Personnel on-site
  - -- Site map which indicates sample locations
  - -- Name of analytical lab
- The log book will also include a Table of Contents.
- Chain-of-custody information includes the names of the individuals involved in a custody transfer, a custody number (from the upper right corner of the COC form, a list of all samples for which the COC form applies.

5.4 SAMPLE PACKAGING AND SHIPMENT

Samples shall be packaged for shipment in the following manner:

1. Each sample container, properly identified and with a sealed lid, is placed in a polyethylene bag.
2. The sample is placed in a cooler previously lined with a large polyethylene bag.
3. The cooler is then packed with enough ice and non-combustible, adsorbent, cushioning material to preserve the samples during transport and minimize sample container breakage.
4. The large bag is closed and sealed.
5. The COC is placed in a Ziploc™-type bag and taped to the inside lid of the container.
6. The outer container is closed and sealed.
7. The outside of the container is marked
   - ORM-E NA 9188
   - Inside packages comply with prescribed specifications

- "This End Up" on the top and four sides of the container.

TABLE 5.1
ANALYSIS OF ORGANIC AND INORGANIC COMPOUNDS USING USEPA SW-846 METHODOLOGIES FOR AQUEOUS, NON-AQUEOUS, AND WASTE SAMPLES

Parameter	Matrix	Sample Container[1]	Container Volume	Preservation[2]	Maximum Holding Time*
Volatile Organics	Waste Samples	G, wide mouth, teflon liner	8 oz.	None	14 days
Volatile Organics - no residual Cl_2	Liquids	G vial, teflon lined septum cap	40 ml	4 drops conc. HCl, cool 4°C	14 days
Volatile Organics - for Acrolein and Acrylonitrile	Liquids	G vial, teflon lined septum cap	40 ml	Adjust to pH 4-5, cool 4°C	14 days
Volatile Organics	Soil/sludge/solids	G, wide mouth, teflon liner	4 oz.	Cool 4°C	14 days
Phenols	Water	G only	1 liter (12)	Cool 4°C, H_2SO_4 to pH<2	28 days
Extractable Organics	Waste Samples	G, wide mouth, teflon liner	8 oz.	Cool 4°C	14 days
Extractable Organics - residual Cl_2	Liquids	G, amber, w/teflon liner	1 gallon or 2½ gallon	Cool 4°C	Extraction - 7 days --- Analysis - 40 days from extraction
Extractable Organics - soils/sediments	Solids	G, wide mouth, teflon liner	8 oz.	Cool 4°C	14 days
Metals except Cr VI, and Hg	Waters	P	1000 ml	HNO_3 to pH<2	28 days
Hg (total)	Waters	G	400 ml	HNO_3 to pH<2	28 days
Metals	Soils	G	8 oz.	Cool 4°C	6 months
Cyanide, total and amenable to chlorination	Waters	P	1 liter or larger	Cool 4°C, 0.6 g ascorbic acid NaOH to pH>12	14 days
Cyanide - soils/sediments	Solids	G	8 oz.	Cool 4°C	28 days
Polychlorinated dibenzo-p-dioxin (PCDDs) and polychlorinated dibenzofurans (PCDFs)	Waters	G, wide mouth with teflon liner	1 pint	Cool 4°C, dark	Extracted within 30 days --- Analysis - 45 days from extraction

6.0 SAMPLE CHAIN OF CUSTODY

Because of the evidentiary nature of samples collected during enforcement investigations, the possession of samples must be traceable from the time the samples are collected until they are introduced as evidence in legal proceedings.

Documentation of sample custody following collection is accomplished using a standard Chain-of-Custody Record. This document traces possession of every sample from the time of collection through sample analysis.

In general, chain of custody protocols follow those outlined in USEPA guidelines. This documentation begins immediately following sample collection and proper labeling. The chain-of-custody record provides information on the sealing of samples, the sample number, sample description, date and time of collection, number of containers for the sample, type of analysis requested, and any pertinent remarks are entered onto the chain of custody record form. The chain-of-custody record form also documents the condition of sample containers upon their receipt from the support laboratory. This form is completed using indelible black ink.

6.1 INSTRUCTIONS FOR COMPLETING CHAIN-OF-CUSTODY RECORD

1. Project Name - Name assigned by OHM (generally the client company's name or the facility at which the work is being performed).

2. Project Location - City and state in which the project is located; use street address if possible.

3. Project Number - Number assigned by OHM (15 856).

4. Project Contact - Usually an OHM employee who is responsible for overseeing the sampling operation. This person should be the individual to whom questions are to be directed or verbal results given (i.e., project chemist or project scientist).

5. Project Telephone Number - Telephone number of OHM on-site office trailer or number where person responsible for samples (project contact) can be contacted. On a short term project, enter the Project Manager's number.

6. Client Representative - The individual employed by the client to oversee and coordinate work performed by OHM on-site (i.e., contract coordinator, OSC, OSR).

7. Project Manager/Supervisor - The name of the OHM designated project manager or site supervisor should be entered here.

8. Sample Number - Number assigned in the field during collection of samples.

9. Date - Date of sample collection.

10. Time - Time of sample collection (24-hour time).

11. Composite/Grab - Checkmark (✓) in the appropriate column to indicate whether sample is composite or grab.

12. Sample Description (Include Matrix and Point of Sample) - Indicate whether sample is soil, liquid, air, oil, etc., along with any useful description, such as appearance (color, density, odor, etc.) Includes the location, designation, such as monitoring well number, soil sample coordinates, or EPA description number. This information must be the same as the sample label information.

13. Number of Containers - Number, size (capacity), and types of containers that are sealed and labeled for transfer to another location.

14. Analysis Desired (Indicate Separate Containers) - The name of the test (i.e., PCBs) or series of tests (VOAs) with method numbers is to be entered on the diagonal lines. For each sample container designated in the number of containers, a checkmark (✓) should appear in the column for the desired analysis.

15. Remarks - Enter sample specific instructions, cautions, or priorities (i.e., "do cyanide test first on this sample" or "caution may contain hydrofluoric acid;" also indicate preservation of sample (i.e., "sulfuric acid added"). Enter a sample specific comment (i.e., "sample lost in shipping").

16. Item Number - Each sample number is considered a separate item. Use sequential number (1,2,3...). Item numbers begin with No. 1 on each form. Do not carry item numbers from one form to another. List items 1,2,3... that you accepted.

17. Transfers Relinquished By - Name of person and affiliation transferring or surrendering the sample to another person, (do not use only the name of an organization).

18. Transfers/Accepted By - Person signing this part is responsible for the sample(s). In addition to the person's name, he should include his company name or agency(s) initial. Person accepting sample(s) is also responsible for making sure that all samples are accounted for when he signs an acceptance. If a common carrier is used, include the carrier name and bill-of-lading number or airbill number.

19. Date - Date on which sample is released to next person.

20. Time - Time at which sample is released to next person.

21. Remarks - Enter general instruction or requests, such as, fax report and turnaround times requested, preservatives added.

22. Sampler's Signature - The signature of the individual performing, or having immediate oversight of the sampling should appear in this section.

23. Laboratory name, telephone number, and contact.

6.2 FIELD CUSTODY PROCEDURES

In collecting samples for evidence, collect only that number which provides a fair representation of the media being sampled. To the extent possible, the quantities and types of samples and sample locations are determined prior to the actual field work. Minimization of sample transfers is always considered. Sample labels shall be completed for each sample using indelible ink unless prohibited by weather conditions.

The field sampler is personally responsible for the care and custody of the samples collected until they are transferred or properly dispatched. Throughout the course and at the end of the field work, the project chemist/scientist determines whether these procedures have been followed and whether additional samples are required.

6.3 TRANSFER OF CUSTODY AND SHIPMENT

Samples are accompanied by a chain of custody (COC) record. When transferring the possession of samples, the individuals relinquishing and receiving sign, date, and note the time on the record. The person receiving the samples should always inspect for correct sample description and sample count. This record documents transfer of custody of samples from the sampler to another person, a mobile laboratory, or an analytical laboratory. The original record will accompany the shipment, and a copy will be retained in the project files.

Samples will be properly packaged in accordance with DOT regulations for shipment and dispatched to the selected laboratory for analysis with a separate custody record prepared for each laboratory. COC records will be placed in a gallon Ziploc™ bag and taped inside the cooler lid.

Airbills from the courier will be retained as part of the permanent documentation. The person relinquishing the sample signs off his custody and enters the courier company's name and the bill-of-lading number or airbill number.

When samples are split with the facility or another government agency, a separate custody record is labeled to indicate this. In addition, the sample numbers from all the labels are recorded on the custody record. The person relinquishing the samples to the facility or agency should request the signature of a representative of the appropriate party, acknowledging receipt of the samples. If a representative is unavailable or refuses to sign, this is noted in the "received by" space. When appropriate (i.e., the representative is unavailable), the COC should contain a statement that the samples were delivered to the designation location at the designated time. The copy of the COC record may be given to the facility or agency upon request.

6.4 LABORATORY CUSTODY PROCEDURES

Once the sample arrives at the laboratory, custodial responsibility of the sample is transferred to that facility. The minimum requirements for a laboratory custodial system are:

- Designation of a sample custodian whose duties include:
  - Receiving samples
  - Inspecting and documenting sample conditions, e.g. temperature, pH, leakage, breakage, seals
  - Verifying and recording agreement of information on the sample documents
  - Marking/labeling of samples for laboratory use
  - Initiating paperwork within the laboratory
  - Distributing samples to appropriate analysts
  - Placing samples and extracts into the appropriate storage and/or secure areas
  - Controlling access to samples and extracts
  - Monitoring storage conditions for proper temperature and prevention of cross-contamination
  - Proper disposal of samples and extracts
- Secure appropriate storage for samples and extracts

- Sample tracking system
- Controlled access to storage areas
- Monitoring procedures for storage areas

7.0 CALIBRATION PROCEDURES AND FREQUENCY

7.1 FIELD INSTRUMENT CALIBRATION

All field laboratory instrumentation shall be calibrated according to manufacturer's specifications. Calibration procedures are included in the Health and Safety Plan.

7.2 CONTRACT LABORATORY INSTRUMENT CALIBRATION

The contract laboratory calibration procedures for all relevant Methods shall be found in the contract laboratory Quality Assurance Plan in Appendix A.

8.0 ANALYTICAL PROCEDURES

All analyses shall be performed by a laboratory certified by NEESA or otherwise approved to perform analyses for the Navy. Table 3.1 lists all required analytical methodology for this project.

8.1 ANALYTES AND PARAMETERS OF CONCERN

TABLE 8.1
ANALYTICAL METHODS AND MAXIMUM ALLOWABLE CONTAMINANT CONCENTRATIONS FOR CAMP ALLEN LANDFILL "A"

Method	Analyte	MACC (mg/L)
1311/8240	benzene	0.5
	carbon tetrachloride	0.5
	chlorobenzene	100.0
	chloroform	6.0
	1,2-dichloroethane	0.5
	1,1-dichloroethene	0.7
	methylethylketone	200.0
	tetrachloroethene	0.7
	trichloroethene	0.5
	vinyl chloride	0.2
1311/8270	o-cresol	200.0
	m-cresol	200.0
	p-cresol	200.0
	cresol	200.0
	1,4-dichlorobenzene	7.5
	2,4-dinitrotoluene	0.13
	hexachlorobenzene	0.13
	hexachlorobutadiene	0.5
	hexachloroethane	3.0
	nitrobenzene	2.0
	pentachlorophenol	100.0
	pyridine	5.0
	2,4,5-trichlorophenol	400.0
	2,4,6-trichlorophenol	2.0
1311/8080	chlordane	0.03
	endrin	0.02
	heptachlor/heptachlor epoxide	0.008
	lindane	0.4
	methoxychlor	10.0
	toxaphene	0.5
1311/8150	2,4-D	10.0
	2,4,5-TP (Silvex)	1.0
1311/6010/7000	arsenic	5.0
	barium	100.0
	cadmium	1.0
	chromium	5.0
	lead	5.0
	mercury	0.2
	selenium	1.0
	silver	5.0

MACC - Maximum Allowable Contaminant Concentration: These will serve as practical quantitation limits (PQLs) for this project

9.0 DATA REDUCTION, VALIDATION, AND REPORTING

9.1 DATA REDUCTION AND TABULATION

Data generated from the site activities can be grouped into two broad categories:

- Field data, such as data collected during VOC screening
- Chemical data for environmental samples generated by the project laboratory and accompanying QA/QC data package deliverables as required for DQO Level II and Level III

These data will be compiled and managed using a central project filing system. The field and laboratory data filing system will be a manual storage system established at the Contractor's field office at the Site. Field and laboratory data will be filed chronologically. Field log books, sample logs, sample data sheets, chain-of-custody records, laboratory log books, and laboratory calculation sheets shall be labelled with a task number and date.

Chemical data shall be stored in a spread-sheet based system (e.g., LOTUS 123, EXCEL), with separate files maintained according to sample medium and validation status. The project laboratory shall provide the Project Coordinator and Contractor with computer diskette files containing the analytical data. Permits statistical analyses of data shall be performed at the Contractors expense.

9.2 GENERAL PROCEDURES FOR DATA REVIEW/VALIDATION

9.2.1 Level I Data

Level I data (e.g., screening for VOCs) will be validated by reviewing calibration and maintenance records for field instruments and field logbook information associated with individual data sets to ensure that appropriate SOPs were followed. Data validation, therefore, will be qualitative, and will focus on whether field screening data are of acceptable quality based upon supporting documentation. Acceptance or rejection of data will be determined by the judgement of experienced field personnel familiar with the SOPs.

9.2.2 Level II Data

Level II data will undergo qualitative and semi-quantitative review based on the standards or performance of the equipment in use. Acceptance or rejection of Level II data will be based on the judgement of qualified personnel. Level II review would include activities similar to Level I, i.e., review of instrument calibration concentrations.

9.2.3 Level III Data

Generation of the Level III data will include the analysis of QA/QC samples, including blanks, calibration and reference standards, and possibly spiked samples in some instances; a complete CLP QA/QC analysis program will be performed for these samples. Items that will be reviewed to validate the data include:

1) Integrity and completeness of the data package,

2) Holding times from sample receipt at the laboratory to sample extraction and analysis or holding times from sample receipt to analysis, as appropriate,

3) Trip blank and laboratory method blank sample results,

4) Matrix spike, matrix spike duplicate, and replicate analyses,

5) Surrogate recoveries,

6) Field blank sample results, and

7) Field duplicate results.

Data validation will be a qualitative process. Review of precision, accuracy, representativeness, completeness and comparability criteria will be included whenever measurement data are reviewed. The analytical laboratory will provide numerical precision and accuracy data that will be compared to the acceptance criteria. Precision and accuracy values for project data sets that are within the ranges for the type of sample and analytical method used will be considered acceptable. In some cases, data of apparently poor precision and/or accuracy may be somewhat useful. The judgement to accept such data, with appropriate qualifications, will be made by a data validator with appropriate technical expertise.

9.3 DATA REPORTING

OHM will provide all data results to the Navy. Entries with associated quality assurance limitations will be appropriately flagged.

The project laboratory will report the data in a certificate of analysis format. Sample analytical results and accompanying QA/QC sample results will be reported to the Project Manager on computer diskette files suitable for transfer to the spreadsheet data base.

Analytical data will be identified according to the project laboratory's procedures for establishing sample lots, so that sample analysis data can be matched to corresponding QA/QC samples, control charts, and calibration data.

10.0 INTERNAL QUALITY CONTROL CHECKS

Internal quality control checks procedures such as matrix spikes, replicates, control charts, blanks, etc. shall be found in the contract laboratory Quality Assurance Plan (Appendix A). The results of these analyses and charts will be used to verify the stability of instrumentation and methods, as well as the ability of the laboratory to perform analyses reproducibly.

11.0 PERFORMANCE AND SYSTEM AUDITS

Performance and system audits will be conducted as necessary by the contract laboratory. Other audits which may occur during the Project include, but are not limited to, field, data, health and safety, and laboratory audits.

12.0 PREVENTATIVE MAINTENANCE

Preventative maintenance procedures concerning downtime minimization and backup instrumentation shall be found in the contract laboratory's Quality Assurance Plan found in Appendix A.

13.0 CORRECTIVE ACTION

Corrective Action is required if:

1. Any QC data is outside of the acceptable precision and/or accuracy
2. Blanks or laboratory control samples contain contaminants above acceptable limit
3. Undesirable trends are detected in spike or surrogate recoveries or RPD between duplicates
4. There are unusual changes in method detection limits
5. Deficiencies are detected by the QA department during internal or external audits or from the results of performance evaluation samples
6. Inquiries concerning data quality are received from the Contracting Officer .

13.1 CORRECTIVE ACTION PROCEDURES

Corrective actions/procedures for out of control events in the following areas shall be found in the contract laboratory's Quality Assurance Plan found in Appendix A.

1. Incoming samples
2. Sample holding times
3. Instrument calibrations
4. Practical quantitation limits
5. Method QC
6. Calculation errors
7. On-site audits

Corrective actions will be implemented by various individuals, depending upon the location of the out of control event. Response to events on-site will be the task of the Site Supervisor, and the on-site laboratory manager if the event incudes the on-site laboratory. Corrective action at the off-site laboratory are the responsibility of the QA/QC Manager or designated representative.

14.0 REFERENCES

The following references were used in the preparation of this FSQAP

- Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program, NEESA 20.2-047B, June 1988, Naval Energy and Environmental Support Authority.

- OHM Field Sampling Manual; March 1989.

- Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, 3rd ed., Sept. 1986 and Update IIIA, September, 1994

APPENDIX A

CONTRACT LABORATORY QUALITY ASSURANCE PLAN

(UNDER SEPARATE COVER)