SDMS Document
123081

MALCOLM PIRNIE

Final Quality Assurance Project Plan

Cornell-Dubilier Electronics Superfund Site,
Operable Unit-1: Vicinity Property Pre-Design Sampling
South Plainfield, NJ

For: U.S. Army Corps of Engineers

USACE Contract No. W912DQ-06-D-0006
Task Order No. 0018

March 2008

Prepared by:
Malcolm Pirnie, Inc.
104 Corporate Park Drive
White Plains, New York 10602

U.S. Army Corps of Engineers
Kansas City District

Final
Quality Assurance Project Plan
Cornell-Dubilier Electronics Superfund Site
Operable Unit-1: Vicinity Property Pre-Remedial Design Sampling

Prepared by:

Malcolm Pirnie, Inc

March 2008

Version: 2008/3/3

Document Control Number: CDOU10001

This page is intentionally left blank

TABLE OF CONTENTS

Introduction 1
QAPP Worksheet #1. Title and Approval Page 4
QAPP Worksheet #2. QAPP Identifying Information 5
QAPP Worksheet #3. Distribution List 10
QAPP Worksheet #4. Project Personnel Sign-Off Sheet 11
QAPP Worksheet #5. Project Organizational Chart 16
QAPP Worksheet #6. Communication Pathways 20
QAPP Worksheet #7. Personnel Responsibilities and Qualification Table 21
QAPP Worksheet #8. Special Personnel Training Requirements Table 22
QAPP Worksheet #9. Project Scoping Session Participants Sheet 23
QAPP Worksheet #10. Problem Definition 25
QAPP Worksheet #11. Project Quality Objectives/Systematic Planning Process Statements ... 26
QAPP Worksheet #12. Measurement Performance Criteria Tables 28
QAPP Worksheet #13. Secondary Data Criteria and Limitations Table 33
QAPP Worksheet #14. Summary of Project Tasks 38
QAPP Worksheet #15. Reference Limits and Evaluation Tables 39
QAPP Worksheet #16. Project Schedule Timeline Table 41
QAPP Worksheet #17. Sampling Design and Rationale 43
QAPP Worksheet #18. Sampling Locations and Methods/SOP Requirements Table 44
QAPP Worksheet #19. Analytical SOP Requirements Table 45
QAPP Worksheet #20. Field Quality Control Sample Summary Table 46
QAPP Worksheet #21. Project Sampling SOP References Table 47
QAPP Worksheet #22. Field Equipment Calibration, Maintenance, Testing, and Inspection Table 49
QAPP Worksheet #23. Analytical SOP References Table 50
QAPP Worksheet #24. Analytical Instrument Calibration Table 52
QAPP Worksheet #25. Analytical Instrument and Equipment Maintenance, Testing, and Inspection Table 53
QAPP Worksheet #26. Sample Handling System 54
QAPP Worksheet #27. Sample Custody Requirements 59
QAPP Worksheet #28. QC Samples Table 64
QAPP Worksheet #29. Project Documents and Records Table 66
QAPP Worksheet #30. Analytical Services Table 70
QAPP Worksheet #31. Planned Project Assessments Table 71
QAPP Worksheet #32. Assessment Findings and Corrective Action Responses 72
QAPP Worksheet #33. QA Management Reports Table 78
QAPP Worksheet #34. Verification (Step I) Process Table 79
QAPP Worksheet #35. Validation (Steps IIa and IIb) Process Table 81
QAPP Worksheet #36. Validation (Steps IIa and IIb) Summary Table 82
QAPP Worksheet #37. Usability Assessment 85
References 87

FIGURES

Figure 1 Organization Chart

ATTACHMENTS

Attachment 1.1 Data Quality Objectives
Attachment 1.2 Data Needs Table
Attachment 2 SOP No. 1: Procedure to Conduct Sample Management for CLP and Non-CLP Samples
Attachment 3.1 Example of CLP Chain of Custody Form
Attachment 3.2 Example of Non-CLP Chain of Custody Form
Attachment 4 Field Modification Form
Attachment 5 SOP No. 6: Technical System Audit
Attachment 6 SOP No. 5: Procedure to Conduct Collection of Equipment Blanks
Attachment 7 Non-Conformance Report
Attachment 8 Basic Manual for Electronic Data EPA Region 2
Attachment 9 USEPA, SOP NO. HW-32 SOP for Implementing the National Strategy For Procuring Analytical Services
Attachment 10 USEPA Region 2 Memorandum: Tracking Superfund Non-CLP Analytical Data, Directive # 9240.0-2C
Attachment 11 Contract Laboratory Program Guidance for Field Samplers
Attachment 12 Daily Quality Control Report

APPENDIX

Appendix A Cornell-Dubilier OU-1 Field Sampling Plan
Appendix B Residential Property Maps (Will be provided once complete)

ACRONYMS

ARAR	Applicable, Relevant, and Appropriate Requirement
ASB	Analytical Services Branch
ASTM	ASTM International. ASTM is a non-profit standards organization formerly called the American Society for Testing and Materials
ATSDR	Agency for Toxic Substances and Disease Registry
CDE	Cornell-Dubilier Electronics
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CHSM	Corporate Health and Safety Manager
CLP	Contract Laboratory Program
COC	Chain of Custody
CRQL	Contract Required Quantitation Limit
DESA	Division of Environmental Science and Assessment
D	Replicate
DOT	Department of Transportation
DPM	Deputy Project Manager
DQA	Data Quality Audit
DQI	Data Quality Indicator
DQO	Data Quality Objectives
ECD	Electronic Capture Detector
EDD	Electronic Data Deliverable
FORMS II Lite	Field Operations Records Management System II Lite
FSP	Field Sampling Plan
FTL	Field Team Leader
GC	Gas Chromatography
GC-ECD	Gas Chromatography-Electron Capture Detector
HASP	Health and Safety Plan
LCS	Laboratory Control Sample
LIMS	Laboratory Information Management System
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NA	Not Applicable
NELAP	National Environmental Laboratory Accreditation Program
NJ	New Jersey
NJDEP	New Jersey Department of Environmental Protection
OSHA	Occupational Safety and Health Administration
OU	Operatable Unit

OU-1	Operable Unit -1
PA	Performance Audit
PE	Performance Evaluation
PCB	Polychlorinated Biphenyl
PCIH	Project Certified Industrial Hygienist
PE	Performance Evaluation
PID	Photoionization Detector
PO	Project Officer
PM	Project Manager
ppb	parts per billion
ppm	parts per million
PQOs	Project Quality Objectives
PSO	Project Safety Officer
PT	Performance Testing
QA	Quality Assurance
QAM	Quality Assurance Manager
QAPP	Quality Assurance Project Plan
QC	Quality Control
QL	Quantitation Limit
R	Recovery
RDCSCC	Residential Direct Contact Soil Cleanup Criterion
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
RL	Reporting Limit
ROD	Record of Decision
RPD	Relative Percent Difference
RSCC	Regional Sample Control Center
SA	Spike added to spiking matrix
SDG	Sample Delivery Group
SMO	Sample Management Officer
SOP	Standard Operating Procedure
SOW	Statement of Work
SR	Spike result
SSR	Spike sample result
TAT	Turnaround Time
TBC	To Be Considered
TCL	Target Compound List
TD	Technical Director
TSA	Technical Systems Audit

µg /kg	microgram per kilogram
µg/100cm^2	microgram per 100 square centimeters
UFP	Uniform Federal Policy
USACE-KCD	United States Army Corps of Engineers-Kansas City District
USEPA	United States Environmental Protection Agency

INTRODUCTION

This Quality Assurance Project Plan (QAPP) is intended to integrate the technical and quality control aspects of the Cornell-Dubilier Electronic (CDE) Superfund Site soils and indoor dust sampling and analysis program for Operable Unit 1 (OU-1), and is supplemented by detailed information in the Field Sampling Plan (FSP). It details the planning processes for collecting data and describes the implementation of the quality assurance (QA) and quality control (QC) activities developed for this program. The purpose of this QAPP is to generate project data that are technically valid and legally defensible. The QAPP consists of four main components:

- Project Management;
- Measurement and Data Acquisition;
- Assessment and Oversight; and
- Data Validation and Usability.

The above components will incorporate QA/QC requirements cited within the following documents:

- U.S. Environmental Protection Agency (USEPA) Requirements for Quality Assurance Project Plans, USEPA QA/R-5, March 2001.
- USEPA Guidance for the Data Quality Objectives Process, QA/G-4, August 2000.
- Uniform Federal Policy for Quality Assurance Project Plans, Final Version March 2005

Project Background

The CDE Superfund Site (the Site) is located at 333 Hamilton Boulevard in South Plainfield, Middlesex County, New Jersey. The Site consists of approximately 26 acres including the Hamilton Industrial Park, contaminated portions of Bound Brook adjacent to and downstream of the industrial park, and contaminated residential, municipal, and commercial properties in the vicinity of the former CDE facility. The CDE operated from 1936 to 1962, manufacturing electronic components including, in particular, capacitors. Polychlorinated biphenyls (PCBs) and chlorinated organic solvents were used in the manufacturing process. These activities led to widespread chemical contamination at the facility, as well as migration of contaminants to

nearby areas. PCBs have been detected in groundwater, soils and building interiors at the industrial park; at adjacent residential, commercial, and municipal properties; and in surface water and sediments of the Bound Brook. The USEPA divided the Site into separate operable units for remediation design. The focus of this project is OU-1, which consists of residential, commercial, and municipal properties located in the vicinity of the former CDE facility with soils and/or indoor dust potentially contaminated with PCBs.

In 2000, the USEPA initiated the remedial investigation (RI) and collected soil samples from OU-1 properties. Analytical results from this investigation revealed additional properties with PCB contamination in soil, and indicated the need for more extensive sampling. The USEPA evaluated data obtained during sampling conducted in 1997 and 1998 in conjunction with the RI findings, and in June 2003 proposed a comprehensive remedy for OU-1. On September 30, 2003, the USEPA signed a Record of Decision (ROD) to address the contaminated soils at the OU-1 properties. The soils cleanup level established by the USEPA in the ROD is 1.0 ppm for total PCBs. The State of New Jersey concurred with the Selected Remedy in the ROD, but has a lower Residential Direct Contact Soil Cleanup Criterion (RDCSCC) for PCBs of 0.49 ppm. Because this is not a promulgated standard, it is not an Applicable, Relevant and Appropriate Requirement (ARAR), but rather a "To Be Considered" (TBC) criteria. The PCB data collected for this project should also be usable to determine if the lower New Jersey RDCSCC criterion has been met.

The major components of the Selected Remedy described in the ROD include:

- Excavation of an estimated 2,100 cubic yards of contaminated soil from approximately 16 properties, backfilling with clean fill, and property restoration as necessary.
- Transport of the contaminated soil off-site for disposal, with treatment as necessary.
- Indoor dust remediation where PCB-contaminated dust is encountered.
- Where necessary, temporary relocation of residents during the indoor remediation.

Studies conducted by the USEPA to date have identified four OU-1 properties requiring remedial action, and a study area of approximately 59 properties that require expanded soil and interior dust sampling to determine if additional remediation is required to meet the ROD cleanup goals. Remedial actions have recently been completed on the four properties.

The objectives for this study of the OU-1 vicinity properties are as follows:

- To characterize total PCB contamination (as PCB Aroclors) in the soils on vicinity properties.
- To characterize total PCB contamination (as PCB Aroclors) in the indoor dust collected within vicinity properties.

QAPP Worksheet #1
(UFP-QAPP Section 2.1)
Title and Approval Page

Site Name/Project Name: Cornell-Dubilier Electronics Superfund Site Operable Unit 1
Site Location: South Plainfield, New Jersey

Document Title: Cornell-Dubilier Electronics Superfund Site QAPP (OU-1)

Lead Organization: USEPA Region 2

Preparer's Name and Organizational Affiliation: James McCann of Malcolm Pirnie, Inc

Preparer's Address, Telephone Number, and E-mail Address:
James McCann, Malcolm Pirnie, Inc. 17-17 Route 206 North, Fair Lawn, NJ 07410,
e-mail: jmccann@pirnie.com

Preparation Date (Day/Month/Year): 3/3/2008

Investigative Organization's Project Manager/Date: _____
Signature
Printed Name/Organization: Edward Dudek, P.E., Malcolm Pirnie, Inc

Investigative Organization's Project QA Officer/Date: _____
Signature
Printed Name/Organization: James McCann, Malcolm Pirnie, Inc

Lead Organization's Project Manager/Date: _____
Signature
Printed Name/Organization: Pietro Mannino, USEPA Region 2 Project Manager

Approval Signatures/Date: _____
Signature
Printed Name/Title: Kenneth Maas, USACE-KCD Project Manager

Approval Authority: U.S. Army Corps of Engineers, Kansas City (USACE-KCD)

QAPP Worksheet #2
(UFP-QAPP Section 2.2.4)
QAPP Identifying Information

Site Name/Project Name: Cornell-Dubilier Electronics Superfund Site Operable Unit 1 (OU-1)
Site Location: South Plainfield, New Jersey
Site Number/Code: EPA ID# NJD981557879
Operable Unit: 1
Contractor Name: Malcolm Pirnie Inc
Contractor Number: USACE W912DQ-06-D-0006

Title: Cornell-Dubilier Electronics Superfund Site OU-1 QAPP
Revision Number: 0
Revision Date: March 2008

Contract Title: Indefinite Delivery/Indefinite Quantity Type Contract for Miscellaneous Military and Civil Hazardous Waste Cleanup Projects and Related Work
Work Assignment Number: Task Order 0018

1. Regulatory Program: Comprehensive Environmental Response, Compensation, & Liability Act (CERCLA)
2. Approval Entity: USEPA Region 2
3. The QAPP is (select one): ☐Generic ☒Project Specific
4. Dates of scoping sessions that were held: August 2007 through September 2007
5. Dates and titles of QAPP documents written for previous Site work, if applicable:

Title	Approval Date
Final Quality Assurance Project Plan for Remedial Investigation/Feasibility Study, Cornell-Dubilier Electronics Superfund Site, South Plainfield, Middlessex County, New Jersey, Foster Wheeler Environmental Corporation-Operable Unit-2	March 2002
Building Quality Assurance Project Plan, Cornell-Dubilier Electronics Superfund Site, South Plainfield, NJ-Operable Unit-2 (This document descibed the requirements for characterizing the nature and extent of hazardous constituents in the facility building materials at the OU-2 site.)	January 2006
Soils Quality Assurance Project Plan, Cornell-Dubilier Electronics Superfund Site, South Plainfield, NJ, Operable Unit-2 (This document describes the requirements for characterizing the nature and extent of hazardous constituents in the soils at the OU-2 site.)	August 2006

6. Organizational Partners (stakeholders) and connection with Lead Organization:
   The primary project organizational partners include representatives from USEPA Region 2, USACE-KCD, New Jersey Department of Environmental Conservation (NJDEP) and Malcolm Pirnie, Inc. (Malcolm Pirnie). USEPA Region 2 and USACE-KCD will provide project and contract management guidance to Malcolm Pirnie. Malcolm Pirnie will be the primary consultant and will be responsible for developing and implementing the investigation and will provide project management for other subcontractors.
7. Data users: USEPA Region 2 and Malcolm Pirnie
8. If any required QAPP elements and required information are not applicable to the project, then circle the omitted QAPP elements and required information on the attached table.

Provide an explanation for their exclusions below:

QAPP Worksheet #2
QAPP Identifying Information
(Continued)

Required QAPP Element(s) and Corresponding QAPP Section(s)	Required Information	Crosswalk to Worksheet # or Related Documents
Project Management and Objectives		
2.1 Title and Approval Page	- Title and Approval Page	1
2.2 Document Format and Table of Contents 2.2.1 Document Control Format 2.2.2 Document Control Numbering System 2.2.3 Table of Contents 2.2.4 QAPP Identifying Information	- Table of Contents - QAPP Identifying Information	2
2.3 Distribution List and Project Personnel Sign-Off Sheet 2.3.1 Distribution List 2.3.2 Project Personnel Sign-Off Sheet	- Distribution List - Project Personnel Sign-Off Sheet	3 4
2.4 Project Organization 2.4.1 Project Organizational Chart 2.4.2 Communication Pathways 2.4.3 Personnel Responsibilities and Qualifications 2.4.4 Special Training Requirements and Certification	- Project Organizational Chart - Communication Pathways - Personnel Responsibilities and Qualifications Table - Special Personnel Training Requirements Table	5 6 7 8
2.5 Project Planning/Problem Definition 2.5.1 Project Planning (Scoping) 2.5.2 Problem Definition, Site History, and Background	- Project Scoping Session Documentation (including Data Needs tables) - Project Scoping Session Participants Sheet - Problem Definition, Site History, and Background - Site Maps (historical and present)	9 plus meeting minutes Data Needs Table in Attachment 1.2 10 and Attachment 1.1 Introduction and 13 See Field Sampling Plan for maps (Attachment 1).
2.6 Project Quality Objectives (PQOs) and Measurement Performance Criteria 2.6.1 Development of Project Quality Objectives Using the Systematic Planning Process 2.6.2 Measurement Performance Criteria	- Site-Specific PQOs - Measurement Performance Criteria Table	11 –See Attachment 1.1 for Data Quality Objectives (DQOs) 12

QAPP Worksheet #2
QAPP Identifying Information
(Continued)

Required QAPP Element(s) and Corresponding QAPP Section(s)	Required Information	Crosswalk to Worksheet # or Related Documents
2.7 Secondary Data Evaluation	- Sources of Secondary Data and Information - Secondary Data Criteria and Limitations Table	13
2.8 Project Overview and Schedule 2.8.1 Project Overview 2.8.2 Project Schedule	- Summary of Project Tasks - Reference Limits and Evaluation Table - Project Schedule/Timeline Table	14 15 16
Measurement/Data Acquisition		
3.1 Sampling Tasks 3.1.1 Sampling Process Design and Rationale 3.1.2 Sampling Procedures and Requirements 3.1.2.1 Sampling Collection Procedures 3.1.2.2 Sample Containers, Volume, and Preservation 3.1.2.3 Equipment/Sample Containers Cleaning and Decontamination Procedures 3.1.2.3 Field Equipment Calibration, Maintenance, Testing, and Inspection Procedures 3.1.2.4 Supply Inspection and Acceptance Procedures 3.1.2.6 Field Documentation Procedures	- Sampling Design and Rationale - Sample Location Map - Sampling Locations and Methods/Standard Operating Procedure (SOP) Requirements Table - Analytical Methods/SOP Requirements Table - Field Quality Control Sample Summary Table - Sampling SOPs - Project Sampling SOP References Table - Field Equipment Calibration, Maintenance, Testing, and Inspection Table	17 See FSP Section 5 18 and FSP 19 20 See FSP Attachments 1 and 3 21 22
3.2 Analytical Tasks 3.2.1 Analytical SOPs 3.2.2 Analytical Instrument Calibration Procedures 3.2.3 Analytical Instrument and Equipment Maintenance, Testing, and Inspection Procedures 3.2.4 Analytical Supply Inspection and Acceptance Procedures	- Analytical SOPs - Analytical SOP References Table - Analytical Instrument Calibration Table - Analytical Instrument and Equipment Maintenance, Testing, and Inspection Table	23 24 25

QAPP Worksheet #2
QAPP Identifying Information
(Continued)

Required QAPP Element(s) and Corresponding QAPP Section(s)	Required Information	Crosswalk to Worksheet of Related Documents
3.3 Sample Collection Documentation, Handling, Tracking, and Custody Procedures 3.3.1 Sample Collection Documentation 3.3.2 Sample Handling and Tracking System 3.3.3 Sample Custody	- Sample Collection Documentation Handling, Tracking, and Custody SOPs - Sample Container Identification - Sample Handling Flow Diagram - Example Chain-of-Custody Form and Seal	26 Attachment 2 SOP No. 1 27 and Attachments 3 and 11 and USPEA Forms II Lite software User's Guide
3.4 Quality Control Samples 3.4.1 Sampling Quality Control Samples 3.4.2 Analytical Quality Control Samples	- QC Samples Table - Screening/Confirmatory Analysis Decision Tree	28
3.5 Data Management Tasks 3.5.1 Project Documentation and Records 3.5.2 Data Package Deliverables 3.5.3 Data Reporting Formats 3.5.4 Data Handling and Management 3.5.5 Data Tracking and Control	- Project Documents and Records Table - Analytical Services Table - Data Management SOPs	29 30 See Attachment 8 for examples electronic deliverable
Assessment/Oversight		
4.1 Assessments and Response Actions 4.1.1 Planned Assessments 4.1.2 Assessment Findings and Corrective Action Responses	- Assessments and Response Actions - Planned Project Assessments Table - Audit Checklists - Assessment Findings and Corrective Action Responses Table	31 Attachment 5 SOP No. 3 32
4.2 QA Management Reports	- QA Management Reports Table	33
4.3 Final Project Report		

QAPP Worksheet #2
QAPP Identifying Information
(Continued)

Required QAPP Element(s) and Corresponding QAPP Section(s)	Required Information	Crosswalk to Related Documents
Data Review		
5.1 Overview		
5.2 Data Review Steps 5.2.1 Step I: Verification 5.2.2 Step II: Validation 5.2.2.1 Step IIa Validation Activities 5.2.2.2 Step IIb Validation Activities 5.2.3 Step III: Usability Assessment 5.2.3.1 Data Limitations and Actions from Usability Assessment 5.2.3.2 Activities	- Verification (Step I) Process Table - Validation (Steps IIa and IIb) Process Table - Validation (Steps IIa and IIb) Summary Table - Usability Assessment	34 35 36 37
5.3 Streamlining Data Review 5.3.1 Data Review Steps To Be Streamlined 5.3.2 Criteria for Streamlining Data Review 5.3.3 Amounts and Types of Data Appropriate for Streamlining		

QAPP Worksheet #3
(UFP-QAPP Manual Section 2.3.1)

The following persons will receive a hardcopy of the approved QAPP, subsequent QAPP revisions, addenda, and amendments:

Distribution List

QAPP Recipients	Title	Organization	Telephone Number	Fax Number	E-mail Address	Document Control Number
Pietro Mannino	USEPA Project Manager	USEPA Region 2	212-637-4395	212-637-4429	Mannino.pietro@epa.gov	MP-CDS-01
Amy Darpinian	USACE Project Chemist	USACE-KCD	816-389-3897		Amy.F.Darpinian@usace.army.mil	MP-CDS-02
TBD		USEPA-DESA				MP-CDS-03
TBD	Field Team Leader	Malcolm Pirnie Inc				MP-CDS-04

Electronic copies of the QAPP and related project documents will also be available in the project directory and the project database for the personnel named in the organization chart given in Worksheet 5, Figure 1 and other Malcolm Pirnie personnel who will be assigned to work on the project. Those named above will be responsible for distributing the QAPP and related documents to others in their organization.

QAPP Worksheet #4
(UFP-QAPP Manual Section 2.3.2)

Have copies of this form signed by key project personnel from each organization to indicate that they have read the applicable sections of the QAPP and will perform the tasks as described. Ask each organization to forward signed sheets to the central project file.

Project Personnel Sign-Off Sheet

Organization: USEPA Region 2

Project Personnel	Title	Telephone Number	Signature	Date QAPP Read
Pietro Mannino	Project Manager –USEPA Region 2	212-637-4395		

QAPP Worksheet #4
(UFP-QAPP Manual Section 2.3.2)

Have copies of this form signed by key project personnel from each organization to indicate that they have read the applicable sections of the QAPP and will perform the tasks as described. Ask each organization to forward signed sheets to the central project file.

Project Personnel Sign-Off Sheet

Organization: USACE-KCD

Project Personnel	Title	Telephone Number	Signature	Date QAPP Read
Kenneth Maas	Project Manager – USACE-KCD	816-389-3709		

QAPP Worksheet #4
(UFP-QAPP Manual Section 2.3.2)

Have copies of this form signed by key project personnel from each organization to indicate that they have read the applicable sections of the QAPP and will perform the tasks as described. Ask each organization to forward signed sheets to the central project file.

Project Personnel Sign-Off Sheet

Organization: NJDEP

Project Personnel	Title	Telephone Number	Signature	Date QAPP Read
Carlton Bergman	Project Manager – NJ DEP	609-633-6621		

QAPP Worksheet #4
(UFP-QAPP Manual Section 2.3.2)

Have copies of this form signed by key project personnel from each organization to indicate that they have read the applicable sections of the QAPP and will perform the tasks as described. Ask each organization to forward signed sheets to the central project file.

Project Personnel Sign-Off Sheet

Organization: Malcolm Pirnie Inc

Project Personnel	Title	Telephone Number	Signature	Date QAPP Read
Edward Dudek, PE	Project Manager	914-641-2686		
Erika Zamek	Deputy Project Manager	914-641-2961		
James McCann	Project Quality Officer	201-398-4310		

QAPP Worksheet #4
(UFP-QAPP Manual Section 2.3.2)

Have copies of this form signed by key project personnel from each organization to indicate that they have read the applicable sections of the QAPP and will perform the tasks as described. Ask each organization to forward signed sheets to the central project file.

Project Personnel Sign-Off Sheet

Organization: Malcolm Pirnie Inc

Project Personnel	Title	Telephone Number	Signature	Date QAPP Read
TBD	Field Team Leader			
TBD	Sample Management Officer			
TBD	Field Team Members		Project field team members, when assigned, will be required to sign that they have read applicable sections of the QAPP.	Field team members must read applicable sections of the QAPP and SOPs prior to participating in the project.

QAPP Worksheet #5
(UFP-QAPP Manual Section 2.4.1)

Project Organizational Chart

The Organization Chart, provided as Figure 1, the description of project organization and the roles of the team members are summarized below:

Project/Task Organization Overview

The project management team will consist of representatives from USEPA Region 2, USACE-KCD, the NJDEP, and Malcolm Pirnie. USEPA Region 2 and USACE-KCD will provide technical oversight to the project and contract management guidance to Malcolm Pirnie. NJDEP will provide USEPA with State approval during the planning and investigation. Malcolm Pirnie will be the primary contractor, will be responsible for developing and implementing the investigation, and will provide project management for the other subcontractors. Figure 1 presents the project organization.

Cornell-Dubilier Team Members

This section contains a description of the project organizational structure. Pietro Mannino is the USEPA Project Manager with responsibility for the CDE Superfund Site. Kenneth Maas is the USACE-KCD Project Manager. Malcolm Pirnie will be the primary contractor, will be responsible for developing and implementing the investigation, and conduct project management for other subcontractors. Additional project team members from other companies may be subcontracted to Malcolm Pirnie.

Project Officer – The Project Officer (PO) is responsible for the commitment of resources required to fulfill Malcolm Pirnie's obligation to the USACE.

Project Manager – The Project Manager (PM) is accountable to the PO throughout the duration of the project. The PM will be the primary point of contact with the USACE. The PM may delegate authority to expedite and facilitate the implementation of the project plan. The PM is responsible for:

- Coordination with the USACE.
- Budget control.
- *Subcontractor performance.*
- Project coordination to implement Work Plans.
- Allocation of staffing and resources to implement the QA/QC program and the Site Safety and Health Plan (SSHP).
- Review of engineering and interim reports.

Deputy Project Manager – The Deputy Project Manager (DPM) reports directly to, and works with, the Project Manager. The DPM is responsible for assisting the Project Manager, as needed, with project related issues.

Project Quality Consultants – The Project Quality Consultants are responsible for independent reviews of project quality. The Project Quality Consultants make an integral contribution to the project success by performing technical reviews throughout all project phases and offering technical guidance.

Corporate Health and Safety Manager – The Corporate Health and Safety Manager (CHSM) is responsible for development and implementation of Malcolm Pirnie's Health and Safety program. The CHSM serves as the administrator of Malcolm Pirnie's Corporate Health and Safety program. He is responsible for:

- Proper training for Malcolm Pirnie field personnel.
- Medical clearance of Malcolm Pirnie field personnel.
- Field personnel having adequate experience with personal protective equipment.
- Providing guidance on data interpretation.
- Determining levels of worker protection.

Project Certified Industrial Hygienist – The Project Certified Industrial Hygienist (PCIH) is responsible for development, implementation and review of the Site Safety and Health Plan. The PCIH functions as a liaison with the USACE, the Occupational Safety and Health Administration (OSHA), and other agencies on health and safety issues.

Health and Safety QA/QC Officer – The Safety QA/QC Officer is responsible for Site safety quality assurance including oversight and coordination of Site auditing procedures pertaining to health and safety.

Project Quality Control Officer – The Project QC Officer is responsible for project specific supervision and monitoring of the QA program and reports to the Project Manager. Additional responsibilities include:

- Ensuring that field personnel are familiar with and adhere to proper sampling procedures, field measurement techniques, sample identification, and chain-of-custody procedures.
- Coordinating with the analytical laboratory for the receipt of samples, the reporting of analytical results, and recommending corrective actions to correct deficiencies in the analytical protocol or sampling.
- Preparing QA reports to management.

Project Safety Officer – The Project Safety Officer (PSO) is knowledgeable in safety and worker protection techniques as they relate to the project. Responsibilities include monitoring daily compliance of Site work to the SSHP, having the ability and authority to make needed changes or additions to the SSHP and providing technical assistance to the Project Manager on problems relating to work Site safety.

The PSO is responsible for the development and set-up of emergency procedures and personnel decontamination procedures. The PSO or designee will complete a daily diary of activities with health and safety relevance. If unsafe work conditions are encountered, the PSO is authorized to stop work. Resolution of all on-Site health and safety problems will be coordinated through the Project Manager with assistance from the PCIH.

Field Team Leader – The Field Team Leader will serve as the on-Site contact person for Malcolm Pirnie for field investigations and activities. The Field Team Leader will be responsible for the logistics of the field activities. The Field Team Leader will:

- Inspect and replace equipment.
- Prepare interim field reports.
- Prepare samples for shipment.
- Coordinate field activities.
- Schedule sampling and other field activities.

Malcolm Pirnie Field Personnel – All field personnel are required to become thoroughly familiar with the FSP, QAPP, and the SSHP, and follow the guidelines outlined in them. Field personnel will implement the plans and contribute any appropriate suggestions and assist in discovering or correcting non-conforming working procedures.

Data Validator (to be assigned if necessary) – For this project we anticipate that the majority of the data validation will be performed by the USEPA, since the analytical data will generated by the USEPA's Division of Environmental Assessment (DESA) laboratory or USEPA Contract Laboratory Program laboratories. Qualified Malcolm Pirnie data validation specialists will also be available and will be assigned as required to validate any non-CLP data from a subcontract laboratory.

Subcontractor Team Members

Subcontractors may be utilized for performance of specific work activities associated with the CDE Superfund Site field investigations. The following is a list of possible services to be subcontracted for the Site:

Laboratory (to be determined) - It is anticipated that the DESA laboratory or a CLP laboratory will perform most of the required chemical analyses; however, a subcontract laboratory may be required as an alternate laboratory to perform analysis for PCBs. A back-up subcontract laboratory has

not been chosen at this time.

QAPP Worksheet #6
(UFP-QAPP Manual Section 2.4.2)

Communication Pathways

Communication Drivers	Responsible Entity	Name	Phone Number	Procedure (Timing, Pathways, etc.)
Approval of Amendments to the QAPP	Malcolm Pirnie, Inc.	Project Quality Officer (Jim McCann or designee)	201-309-4310	Obtain initial approval from the Investigative Organization PM and submit documented amendments within 10 working days to USACE-KCD/USEPA for approval.
Document and Records Control	Malcolm Pirnie, Inc.	Deputy Project Manager (Erika Zamek or designee)	914-641-2961	Project Document Preparation and distribution. Document and records control posting procedure implemented within 5 working days of receipt by Malcolm Pirnie.
Stop Work and Initiation of Corrective action	Malcolm Pirnie, Inc.	Project Manager or Deputy Project Manager (Ed Dudek, or Erika Zamek, or designees)	E. Dudek: 914-641-2686 E. Zamek: 914-641-2961	The PM communicates within 24 hours of stop work to the project organization by phone, with confirming e-mail.
Real time modification, notifications and approval	Malcolm Pirnie, Inc.	Project Quality Officer (Jim McCann or designee) with PM/DPM approval.	201-309-4310	Real time modification to the project will require the approval of the Project Quality Officer and PM or DPM (or designees) and will be documented using the Field Modifications Form in Attachment 4 within 5 working days.
Reporting of serious issues	Malcolm Pirnie, Inc.	Project Manager or Deputy Project Manager (Ed Dudek, E. Zamek, or designees)	E. Dudek: 914-641-2686 E. Zamek: 914-641-2961	Report any serious issues to the USEPA and USACE-KCD and other concerned parties by e-mail or memo.
Meeting Minutes	Malcolm Pirnie, Inc.	Deputy Project Manager (Erika Zamek or desginee)	914-641-2961	Post approved meeting minutes or distribute by e-mail within 5 working days of meeting.
Corrective action, audit finding	Malcolm Pirnie, Inc.	Project Quality Officer (James McCann or designee)	201-398-4310	Problems or negative audit findings are reported to the PM or DPM by e-mail within 3 days.

QAPP Worksheet #7
(UFP-QAPP Manual Section 2.4.3)

Personnel Responsibilities and Qualification Table

Name	Title	Organizational Affiliation	Responsibilities	Education and Experience Qualifications
Pietro Mannino	USEPA Project Manager	USEPA Region 2	Remedial Project Manager	Bachelor of Arts
Kenneth Maas	USACE-KCD Project Manager	USACE KCD	Project Manager	Professional Engineer
Carlton Bergman	NJDEP Project Manager	NJ DEP Division of Remedial Management and Response	Project Manager	N/A
Edward Dudek, PE	Senior Associate	Malcolm Pirnie, Inc.	Investigative Organization Project Manager	Professional Engineer (NY), ME Civil Engineering, BE Civil Engineering
Erika Zamek	Project Environmental Scientist	Malcolm Pirnie, Inc.	Deputy Project Manager	MS/BS Environmental Science
James McCann	Senior Project Chemist	Malcolm Pirnie, Inc.	Project Quality Officer	MA/BS in Chemistry, 40+ years of experience in analytical chemistry, environmental testing, and quality assurance

Note: Resumes of Malcolm Pirnie, Inc. project team members can be obtained by contacting the Malcolm Pirnie PM or designee.

QAPP Worksheet #8
(UFP-QAPP Manual Section 2.4.4)

Special Personnel Training Requirements Table

Project Function	Specialized Training – Title or Description of Course	Training Provider	Training Date	Personnel/Groups Receiving Training	Personnel Titles/ Organizational Affiliation	Location of Training Records/Certificates
Field Team and on-Site personnel	Safety and OSHA training and medical monitoring as specified in the SSHP	Malcolm Pirnie, Inc.	Training dates kept in company/project training records	All field team members working on Site.	All Malcolm Pirnie, Inc. and subcontractor personnel working on Site	Malcolm Pirnie, Inc. Project Files
Sample Management and Creation of sample chain of custody (COC) records	Forms II Lite Software Training	USEPA on-line training	Training dates kept in company/project training records	Sample Management Officer or designee assigned to log samples into Forms II Lite	Malcolm Pirnie, Inc. staff preparing COC forms.	Malcolm Pirnie, Inc. Project Files
Dust Sample Collection	Training in the use of the vacuum equipment for collection of dust samples per SOP 4 in FSP Attachment 3	Malcolm Pirnie, Inc.	Training dates kept in the project records	Field personnel responsible for collecting dust samples	Malcolm Pirnie, Inc. personnel	Malcolm Pirnie, Inc. Project Files

Note: Training Records will be kept in the Malcolm Pirnie, Inc. project files.

QAPP Worksheet #9
(UFP-QAPP Manual Section 2.5.1)

Numerous project team meetings and conference calls were held to plan the project from August 2007 through September 2007. These included weekly conference calls internal to the Malcolm Pirnie Investigative team to review/plan the project and discuss any open issues. In addition, biweekly conference calls have been held with USACE, USEPA and Malcolm Pirnie team representatives to discuss the project objective and status. Visits to the CDE Superfund OU-1 Site are made by team members as necessary to evaluate conditions and gather information needed to develop project plans.

Biweekly Project Team Participants:

Project Scoping Session Participants Sheet

Project Name: Cornell-Dubilier Superfund Site OU-1 **Projected Date(s) of Sampling: Spring 2008** **Project Manager:** Edward Dudek, PE	**Site Name:** Cornell-Dubilier Electronics Superfund Site Operable Unit 1 **Site Location:** 333 Hamilton Boulevard, South Plainfield, New Jersey

Date of Session: August 2007-September 2007
Scoping Session Purpose: Review the status of project plans.

Name	Title	Affiliation	Phone #	E-mail Address	Project Role
Kenneth Maas	Project Manager	USACE-KCD	816-389-3709	Kenneth.E.Maas@nwk02.usace.army.mil	USACE-KCD Project Manager
Pietro Mannino	USEPA Project Manager	USEPA Region 2	212-637-4395	Mannino.pietro@epa.gov	USEPA Project Manager
Edward Dudek, PE	Senior Associate	Malcolm Pirnie	914-641-2686	Edudek@pirnie.com	Project Manager
Erika Zamek	Project Environmental Scientist	Malcolm Pirnie	914-641-2961	Ezamek@pirnie.com	Deputy Project Manager

Other team members from the Malcolm Pirnie investigative team and representatives of the USACE and USEPA participated as necessary in the bi-weekly planning calls.

Comments/Decisions: Were documented in meeting minutes stored in Malcolm Pirnie files and distributed to team members by e-mail.

Action Items: Malcolm Pirnie personnel were assigned to prepare the OU-1 documents.

Consensus Decisions: Decisions were documented in meeting minutes, which were distributed by e-mail. Minutes of meetings are stored in Malcolm Pirnie files.

Weekly Malcolm Pirnie Team Participants: Project Scoping Session Participants Sheet

Project Name: Cornell-Dubilier Superfund Site OU-1 **Projected Date(s) of Sampling: Spring 2008** **Project Manager:** Edward Dudek, PE	**Site Name:** Cornell-Dubilier Electronics Superfund Site Operable Unit 1 **Site Location:** 333 Hamilton Boulevard, South Plainfield, New Jersey

Date of Session: Weekly sessions starting August 2007.
Scoping Session Purpose: Plan the project.

Name	Title	Affiliation	Phone #	E-mail Address	Project Role
Edward Dudek, PE	Senior Associate	Malcolm Pirnie, Inc.	914-641-2686	Edudek@pirnie.com	Project Manager
Erika Zamek	Project Environmental Scientist	Malcolm Pirnie, Inc.	914-641-2961	Ezamek@pirnie.com	Deputy Project Manager
James McCann	Senior Project Chemist	Malcolm Pirnie, Inc.	201-398-4310	Jmccann@pirnie.com	Project Quality Assurance Officer

Other members of the Malcolm Pirnie investigative team participated as necessary in the weekly project planning/status calls.

Comments/Decisions: The data quality objectives and data needs for the project were developed based on the information provided during communications with the USEPA and USACE-KCD..

Action Items: Erika Zamek was assigned to prepare the draft FSP and SSHP, while Jim McCann was assigned to prepare the draft QAPP. As an action Jim McCann also contacted Jennifer Feranda of USEPA Region 2, who confirmed that a CLP laboratory should be capable of handling the settled dust analyses, including the sieving of the dust samples prior to analysis for PCB Aroclors.

Consensus Decisions: Per direction from the USEPA, samples should be analyzed by either the DESA laboratory and/or an assigned CLP laboratory. The team decided that vacuum dust samples should be collected in the residences and that wipe samples would not be collected, since there were no residential criteria for wipe samples. The team decided that the Omega vacuum should be investigated as a suitable alternative device to a Nilfisk vacuum for collecting the dust samples, since this device was previously employed at the World Trade Center for dust collection and would require less decontamination between samples.

QAPP Worksheet #10
(UFP-QAPP Manual Section 2.5.2)

Problem Definition

The CDE facility located in South Plainfield, Middlesex County, New Jersey operated from 1936 to 1962, manufacturing electronic components including, in particular, capacitors. PCBs and chlorinated organic solvents were used in the manufacturing process. These activities led to widespread chemical contamination at the facility, as well as migration of contaminants to nearby areas. PCBs have been detected in groundwater, soils and in building interiors at the industrial park, at adjacent residential, commercial, and municipal properties, and in surface water and sediments of Bound Brook. The USEPA divided the Site into separate operable units for remediation design. The focus of this project is OU-1, which consists of residential, commercial, and municipal properties located in the vicinity of the former CDE facility with soils and/or indoor dust potentially contaminated with PCBs. In 2000, the USEPA initiated the RI and collected soil samples from OU-1 properties. Analytical results from this investigation revealed additional properties with PCB contamination in soil at unacceptable levels, and indicated the need for more extensive sampling. The USEPA evaluated data obtained during sampling conducted in 1997 and 1998 in conjunction with the RI findings, and in June 2003 proposed a comprehensive remedy for OU-1. On September 30, 2003, the USEPA signed a ROD to address the contaminated soils at the OU-1 properties. The soils cleanup level established by the USEPA in the ROD is 1.0 ppm for total PCBs. The State of New Jersey concurred with Selected Remedy in the ROD, but has a lower RDSCC criterion for PCBs of 0.49 ppm. Based on the data collected to date, the USEPA believes that in meeting the 1.0 ppm goal for this action, the Selected Remedy may also achieve the State's RDSCC. If the selected remedy does not achieve the RDSCC at some properties, the State may elect to pursue additional soil removal or may require that additional restrictions be placed on properties to prevent future direct contact with soils above 0.49 ppm.

Note: For further discussion see the DQOs, which are given in Attachment 1.1. A site map is available in the Field Sampling Plan **(FSP) as Figure 1.**

QAPP Worksheet #11
(UFP-QAPP Manual Section 2.6.1)

Project Quality Objectives /Systematic Planning Process Statements

Who will use the data?
USEPA Region 2, the NJDEP, and Malcolm Pirnie's remediation design team.

What will the data be used for?

- To compare total PCB contamination (as PCB Aroclors) in the soils on properties located in the vicinity of the CDE facility to the USEPA remediation goal for the OU-1 soils of 1.0 ppm.
- To compare total PCB contamination (as PCB Aroclors) in the indoor dust collected within properties located in the vicinity of the CDE facility to the USEPA remediation goal for the OU-1 soils of 1.0 ppm.
- The data collected during this investigation may be used to estimate quantities of soil to be remediated during future data analysis phases.

What types of data are needed?

- Analytical data needs include analyses for PCBs as Aroclors in surface soils, sub-surface soils and indoor dust samples. (See Attachment 1.2)

How "good" do the data need to be in order to support the environmental decision?
The data must be technically defensible and of sufficient quality to support the project DQOs, which are described in Attachment 1.1. See Worksheet 15, Reference and Evaluation Table, which summarizes the analytical parameters and the associated project action levels and project quantitation limits.

How much data are needed?
Samples will include soils and indoor settled dust collected for PCB analyses. The number of samples to be collected at each sampling location is described in the FSP Section 5 and in the tables in the FSP.

Where, when, and how should the data be collected/generated?
Soil and indoor dust samples will be collected in late 2007 through 2008 per the FSP and project schedule. The samples collected will be submitted to the USEPA Region 2 DESA laboratory, USEPA CLP laboratories, and/or subcontract laboratories for analyses.

Who will collect and generate the data? Malcolm Pirnie field personnel will collect the samples. The samples will be analyzed for chemical analytical parameters by USEPA Region 2 DESA laboratory, USEPA CLP laboratories, and/or subcontract laboratories (as a back-up).
How will the data be reported? The data will be reported by the USEPA-assigned lab, or the subcontract laboratory to Malcolm Pirnie, according to the requirements in Worksheet 29. See Attachment 12 for an example electronic data deliverable.
How will the data be archived? Electronic data will be archived in the project database to be maintained by Malcolm Pirnie. Hard copies of laboratory reports will also be kept in the Malcolm Pirnie project files. Data will be transferred to the USACE upon completion of the project. Retrieval of data by others will be at the discretion of the USACE and the USEPA. The length of time that records will be archived will be at the discretion of the USACE and USEPA.

QAPP Worksheet #12
(UFP-QAPP Manual Section 2.6.2)
Analytical Parameters:

Measurement Performance Criteria Table

Matrix	Soil and Dust
Analytical Group	PCB Aroclors
Concentration Level	Low

Sampling Procedure	**Analytical Method/SOP**	**Data Quality Indicators (DQIs)**	**Measurement Performance Criteria** [1]	**QC Sample and/or Activity Used to Assess Measurement Performance**	**QC Sample Assesses Error for Sampling (S), Analytical (A) or Both (S&A)**
See SOPs attached to the Field Sampling Plan and referenced in Worksheet 23	USEPA-CLP SOW SOM01.2	Sensitivity and Accuracy	Less than CRQLs	Equipment and or Field Blanks	S & A
		Precision	<RPD 35% for duplicate values greater than or equal to 5 times the CRQL	Field Duplicates	S & A
		Accuracy	Recoveries per SOM01.2	Surrogates	A
		Accuracy/Bias/Precision	Per recovery and RPD% requirements in SOM01.2	Matrix Spike (MS)/Matrix Spike Duplicates (MSD)	A
		Accuracy/Bias	Recovery per SOM01.2	Laboratory Control Samples	A
		Sensitivity	Per recoveries given in SOM01.2	Instrument Blanks	A
		Sensitivity	Per recoveries given in SOM01.2	Method Blanks	A
		Sensitivity	Per requirements in SOM01.2	Method Detection Limits (MDLs)	A
		Completeness	>90% soil collection, >90% laboratory analysis	Data Completeness Check	S & A

1 The assigned laboratory must perform and meet all the measurement performance criteria that assess the analytical Data Quality Indicators (DQIs) specified in USEPA CLP SOW SOM01.2, such as laboratory duplicates and matrix spike duplicates for precision, matrix spikes, laboratory control standards for accuracy, and blanks and method detection limits for sensitivity. The criteria in the USEPA CLP SOW and the contract required limits are sufficient to meet project requirements.

Precision, Accuracy (or Bias), Representativeness, Completeness, and Comparability

To measure and control the quality of analyses, certain QA parameters are defined and utilized in data analysis activities. These parameters are defined below. The QA/QC required for the parameters to be analyzed under the USEPA CLP is contained in the USEPA CLP SOW. If non-CLP labs perform these analyses, they would also be required to meet these QA/QC criteria. Detailed information on CLP methods and QA/QC criteria can be found in the USEPA CLP SOW, on the USEPA CLP website at http://www.epa.gov/superfund/programs/clp/.

Precision

Precision measures the reproducibility of data or measurements under specific conditions. Precision is a quantitative measure of the variability of a group of data compared to their average value. Duplicate precision is stated in terms of relative percent difference (RPD) or absolute difference between two measurements. Measurement of precision is dependent upon sampling technique and analytical method. Field duplicate and laboratory duplicate samples will be used to measure precision for project samples. Both sampling and analysis will be as consistent as possible. For a pair of measurements, RPD (or absolute difference) will be calculated to assess precision, as presented below:

$$RPD(\%) = \frac{|D_1 - D_2|}{\left[\frac{(D_1 + D_2)}{2}\right]} \times 100$$

where: D_1 and D_2 = the two replicate values.

RPD will meet USEPA CLP SOW requirements, where applicable, or the QA requirements listed in the applicable laboratory standard operating procedures.

Accuracy/Bias

Accuracy measures the bias in a measurement system. Sources of error include the sampling process, field contamination, preservation, handling, shipping, sample matrix, sample preparation, and analysis technique. Analytical accuracy will be assessed through surrogate spike, matrix spike, laboratory control and/or quality check samples, where applicable. In general, accuracy is measured in terms of percent recovery (%R):

$$\%R = \frac{(SSR - SR)}{SA} \times 100$$

where: SSR = spike sample result
SR = sample result
SA = spike added to spiking matrix

Refer to the CLP SOW for the laboratory analytical method accuracy requirements.

Representativeness

Representativeness expresses the degree to which data accurately and precisely reflect a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. Representativeness is a qualitative parameter that is dependent upon the proper design and implementation of the sampling program and proper laboratory protocol. The sampling design created for this project was designed to provide data representative of Site conditions. During the development of the sampling design, consideration was given to the past history of contamination in the study area, existing analytical data, physical setting, and processes. Representativeness will be satisfied by determining that the FSP is followed; proper sampling techniques, preservation, and handling are used; proper analytical procedures are followed; and holding times for the samples are not exceeded in the laboratory.

Completeness

Completeness is a measure of the amount of usable data obtained from a measurement system compared to the amount that was expected to be obtained under normal conditions. It is expected that the laboratories used for this project will provide data that meet the QC acceptance criteria for 90 percent, or more, of all samples analyzed. Following the completion of the analytical testing, the percent completeness will be calculated by the following equation:

$$\text{COMPLETENESS } (\%) = \frac{\text{number of usable data}}{\text{number of samples collected for each parameter analyzed}} \times 100$$

The data validation process will be used to determine the quality and quantity of usable analytical data generated.

The completeness acceptance criterion for samples collected in the field will be 90 percent of the quantity of samples planned for collection as described in the FSP. Corrective action may be implemented to re-collect samples where necessary and possible (*e.g.*, modifying a planned sample location, sample jars broken during shipment). Laboratory notification sample receipt and conditions will be used to determine, as soon as possible, whether any problems during sample shipment would necessitate recollection of samples.

Comparability

Comparability expresses the confidence with which one data set can be compared to another. The extent to which existing and planned analytical data will be comparable depends on the similarity of sampling and analytical methods. The procedures used to obtain the planned analytical data are expected to provide comparable data to existing datasets for the CDE Site. The procedures proposed for both soil and settled dust sample collection are similar to those previously conducted by the USEPA. The procedures used will be USEPA-promulgated methodologies or ASTM Standard Test Methods, which are well recognized and commonly used for environmental and geotechnical investigations.

Desired Method Sensitivity

Depending upon the use of the data (see Attachment 1.2 for data needs and data use) and the type of test parameter, specific Quantitation Limits (QLs) will be required. Worksheet 15 lists the required QLs or USEPA CLP contract required QLs (CRQLs), as specified for the definitive chemical parameters required for this project. These are well below the project action levels, which are also listed or referenced. For PCBs, which are the contaminants being measured at the Site, the USEPA remediation goal is for the Site is 1 ppm for soils, while the New Jersey RDCSCC is 0.49 ppm. . The method selected for the determination of PCBs is based upon USEPA CLP SOW SOM01.2, with CRQLs well below the USEPA and New Jersey action levels.

QAPP Worksheet #13
(UFP-QAPP Manual Section 2.7)

Secondary Data Criteria and Limitations Table

Secondary Data	Data Source (Originating Organization, Report Title, and Date)	Data Generator(s) (Originating Org., Data Types, Data Generation/ Collection Dates)	How Data Will Be Used	Limitations on Data Use
Sampling Trip Report	Residential Soil Sampling Trip Report Cornell-Dubilier Electronics, South Plainfield, NJ, November 4, 1997	Roy F. Weston, Inc. Federal Programs Division Site 201 1090 King Georges Post Road Edison, New Jersey 08837-3703 Residential soil sampling.	To determine the extent of PCB contamination on the properties and to evaluate remediation actions for the Site.	The historical data is considered to be valid data and has been accepted by the USEPA.
Historical Data	Final Report Vacuum Dust Sampling Cornell Dubilier Electronics, South Plainfield, NJ, February 1998	Roy F. Weston, Inc. PCB data on indoor dust samples	To determine the extent of PCB contamination on the properties and to evaluate remediation actions for the Site.	The historical data is considered to be valid data and has been accepted by the USEPA.

Secondary Data Criteria and Limitations Table

Secondary Data	Data Source (Originating Organization, Report Title, and Date)	Data Generator(s) (Originating Org., Data Types, Data Generation/ Collection Dates)	How Data Will Be Used	Limitations on Data Use
Historical Data	Final Report Vacuum Dust Sampling Cornell-Dubilier Electronics, South Plainfield, NJ, July 1998	Roy F. Weston, Inc. PCB data on vacuum indoor dust samples	To determine the extent of PCB contamination on the properties and to evaluate remediation actions for the Site.	The historical data is considered to be valid data and has been accepted by the USEPA.
Historical Data	Final Report Vacuum, Wipe, and Soil Sampling Cornell-Dubilier Electronics, South Plainfield, NJ, December 1998	Roy F. Weston, Inc. PCB data on vacuum indoor dust, wipe and soil samples	To determine the extent of PCB contamination on the properties and to evaluate remediation actions for the Site.	The historical data is considered to be valid data and has been accepted by the USEPA.

Secondary Data Criteria and Limitations Table

Secondary Data	Data Source (Originating Organization, Report Title, and Date)	Data Generator(s) (Originating Org., Data Types, Data Generation/ Collection Dates)	How Data Will Be Used	Limitations on Data Use
Historical Data	Tier I Residential Sampling and Analysis Summary Report – Cornell-Dubilier Electronics, June 25, 1998	Roy F. Weston, Inc. PCB data on soil samples	To determine the extent of PCB contamination on the properties and to evaluate remediation actions for the Site.	The historical data is considered to be valid data and has been accepted by the USEPA.
Historical Data	Tier II Residential Sampling and Analysis Summary Report – Cornell Dubilier Electronics, July 2, 1998	Roy F. Weston, Inc. PCB data on soil samples	To determine the extent of PCB contamination on the properties and to evaluate remediation actions for the Site.	The historical data is considered to be valid data and has been accepted by the USEPA.

Secondary Data Criteria and Limitations Table

Secondary Data	Data Source (Originating Organization, Report Title, and Date)	Data Generator(s) (Originating Org., Data Types, Data Generation/ Collection Dates)	How Data Will Be Used	Limitations on Data Use
Historical Data	Tier III Residential/Neighborhood Sampling and Analysis Summary Report – Cornell-Dubilier Electronics, July 10, 1998	Roy F. Weston, Inc. PCB data on soil samples	To determine the extent of PCB contamination on the properties and to evaluate remediation actions for the Site.	The historical data is considered to be valid data and has been accepted by the USEPA.
Historical Data	Tier I Residential Sampling and Analysis Summary Report – Cornell-Dubilier Electronics, February 16, 1999	Roy F. Weston, Inc. PCB data on soil samples	To determine the extent of PCB contamination on the properties and to evaluate remediation actions for the Site.	The historical data is considered to be valid data and has been accepted by the USEPA.

Secondary Data Criteria and Limitations Table

Secondary Data	Data Source (Originating Organization, Report Title, and Date)	Data Generator(s) (Originating Org., Data Types, Data Generation/ Collection Dates)	How Data Will Be Used	Limitations on Data Use
Historical Data	Final Investigation Report For Operable Unit 1 (OU-1) Off-Site Soils For Cornell-Dubilier Electronics Superfund Site, South Plainfield, Middlesex County, New Jersey, August 2001	Foster Wheeler Environmental Corporation obtained soils PCB data on OU-1 properties.	To determine the extent of PCB contamination on the properties and to evaluate remediation actions for the Site.	The historical data is considered to be valid data and has been accepted by the USEPA.
Record of Decision	USEPA, Region II, Record of Decision, Cornell-Dubilier Electronics Superfund Site, Middlesex County, New Jersey. September 2003.	USEPA Region 2	Background information used in planning the current project.	None
Historical Data	Draft Removal Action Report, Cornell-Dubilier Electronic Superfund Site, June 2007	Cape Environmental, Exton, PA Chemistry data on soil removed from OU-1 properties.	Background information used in planning the current project.	None

1. Existing data is discussed in more detail in the FSP Section 1.2.

Existing studies, particularly for dust collection, were carefully considered during development of the current dust sampling methods.

QAPP Worksheet #14
(UFP-QAPP Manual Section 2.8.1)

Summary of Project Tasks

Sampling Tasks:

- To compare total PCB contamination (as PCB Aroclors) in the soils on properties located in the vicinity of the CDE facility to the USEPA remediation goal for the OU-1 soils of 1.0 ppm. The soil sampling methods are discussed in FSP Attachment 1: SOP No. 2. A total of 15 samples (10 from the 0 to 6-inch horizon and five from the 24 to 30-inch horizon) will be collected from each property.
- To compare total PCB contamination (as PCB Aroclors) in the indoor dust collected within properties located in the vicinity of the CDE facility to the USEPA remediation goal for the OU-1 soils of 1.0 ppm. The indoor settled dust sampling methods are discussed in FSP Attachment 3 – SOP No. 3. A total of two samples (one from the highly-trafficked areas and one from the bedroom spaces) will be collected at each property.

The data needs associated with these tasks are summarized in Attachment 1.2.

Analysis Tasks: The analytical tasks are as follows:

Laboratory analyses will be performed on these samples for PCB Aroclors. The testing methodologies are described in Worksheets 19 and 23.

Quality Control Tasks: The analytical and testing laboratories will be required to analyze QC samples listed in the USEPA CLP SOW SOM01.2 and the other documents and procedures given in Worksheet 28.

Secondary Data: Historical data available in the USEPA ROD and prior studies will be used for remediation design. See Worksheet 13.

Data Management Tasks: All data, field notes, and analytical information will be placed in an electronic database which will be maintained in the Malcolm Pirnie, Inc. corporate office. If at the time of sampling the assigned CLP or DESA lab are prepared to provide data in the Region 2 Electronic Data Deliverable (EDD) format, they will be required to do so. All electronic data will be backed up. Hardcopies of data will also be stored in project files. See Worksheet 29 for discussion of data management.

Documentation and Records: All hardcopy data (field notebooks, photos, hardcopies of Chain of Custody forms, Airbills, etc.) will be taken to the Malcolm Pirnie, Inc. corporate office and stored in the project files.

Assessment/Audit Tasks: SOPs will be reviewed prior to the performance of tasks. Technical System Audits will be performed per SOP No. 3 in Attachment 5 (see Worksheet 31.)

Data Review Tasks: Verification of sampling and laboratory data will be conducted. Laboratory data produced by USEPA CLP labs will be validated by the USEPA. Any non-CLP chemical data that is generated will be validated by Malcolm Pirnie data validators or subcontract data validators against the criteria in the applicable analytical SOPs (see Worksheets 23, 28, 35 and 36) .

QAPP Worksheet #15
(UFP-QAPP Manual Section 2.8.1)

Reference Limits and Evaluation Table

Matrix: Soil

Analytical Group: PCBs

Concentration Level: Low

Analyte	CAS Number	Project Action Limit (ug/kg)	Project Quantitation Limit (ug/kg)[2]	Analytical Method		Achievable Laboratory Limits (Based upon USEPA CLP CRQLs	
				MDLs	QLs	MDLs	CRQLs(ug/kg)[6]
Aroclor 1016	12674-11-2	Note 1	33	Note 3	33	Note 5	33
Aroclor 1221	11104-28-2	Note 1	33	Note 3	33	Note 5	33
Aroclor 1232	11141-16-5	Note 1	33	Note 3	33	Note 5	33
Aroclor 1242	53469-21-9	Note 1	33	Note 3	33	Note 5	33
Aroclor 1248	12672-29-6	Note 1	33	Note 3	33	Note 5	33
Aroclor 1254	11097-69-1	Note 1	33	Note 3	33	Note 5	33
Aroclor 1260	11096-82-5	Note 1	33	Note 3	33	Note 5	33
Aroclor 1262	37324-23-5	Note 1	33	Note 3	33	Note 5	33
Aroclor 1268	11100-14-4	Note 1	33	Note 3	33	Note 5	33
Total PCB (Sum of all the Aroclors)		1,000 (USEPA) 490 (NJ)					

1. The USEPA soil cleanup criterion for total PCBs given in the ROD is 1.0 ppm (or 1,000 ug/kg). The USEPA CLP CRQLs are also sufficiently sensitive to compare the data to the lower New Jersey RDCSCC of 0.49 ppm.
2. The project quantitation limits for soils are based upon USEPA CLP CRQLs for soil given in CLP SOW SOM01.2.
3. The MDLs should meet the criteria given in USEPA CLP SOW SOM01.2.
4. The method QLs must be equivalent to or lower than the CRQLs given in USEPA CLP SOW SOM01.2.
5. The assigned laboratory must have determined MDLs annually, meeting the requirements in USEPA CLP SOW SOM01.2.
6. The achievable Laboratory Limits as listed are based upon CLP CRQLs for soil samples. The actual achievable QLs based upon the assigned laboratory MDL studies should be equivalent or lower. To achieve the detection limits at least 10 grams of sample should be collected.

QAPP Worksheet #15 (continued)
(UFP-QAPP Manual Section 2.8.1)

Reference Limits and Evaluation Table

Matrix: Dust

Analytical Group: PCBs

Concentration Level: Low

Analyte	CAS Number	Project Action Limit (ug/kg)	Project Quantitation Limit (ug/kg)	Analytical Method		Achievable Laboratory Limits (Based upon USEPA CLP CRQLs)	
				MDLs (ug/kg)	QLs(ug/kg)[2]	MDLs (ug/kg)	CRQLs (ug/kg)[6]
Aroclor 1016	12674-11-2	Note 1	33	Note 2	33	Note 5	33
Aroclor 1221	11104-28-2	Note 1	33	Note 2	33	Note 5	33
Aroclor 1232	11141-16-5	Note 1	33	Note 2	33	Note 5	33
Aroclor 1242	53469-21-9	Note 1	33	Note 2	33	Note 5	33
Aroclor 1248	12672-29-6	Note 1	33	Note 2	33	Note 5	33
Aroclor 1254	11097-69-1	Note 1	33	Note 2	33	Note 5	33
Aroclor 1260	11096-82-5	Note 1	33	Note 2	33	Note 5	33
Aroclor 1262	37324-23-5	Note 1	33	Note 2	33	Note 5	33
Aroclor 1268	11100-14-4	Note 1	33	Note 2	33	Note 5	33
Total PCB (Sum of all the Aroclors)		1,000 (USEPA) 490 (NJ)					

1. The USEPA soil cleanup criterion for total PCBs given in the ROD is 1.0 ppm (or 1,000 ug/kg) will also be used as the action level for dust. The USEPA CLP CRQLs are also sufficiently sensitive to compare data to the lower New Jersey RDCSCC of 0.49 ppm.
2. The MDLs should meet the criteria given in USEPA CLP SOW SOM01.2.
3. The method QLs must be equivalent to or lower than the CRQLs given in USEPA CLP SOW SOM01.2.
4. The assigned laboratory must have determined MDLs annually, meeting the requirements in USEPA CLP SOW SOM01.2.
5. The achievable Laboratory Limits as listed are based upon CLP CRQLs for soil samples. The actual achievable QLs based upon the assigned laboratory MDL studies should be equivalent or lower, assuming at least 10 grams of settled dust can be collected.

QAPP Worksheet #16
(UFP-QAPP Manual Section 2.8.2)

Project Schedule Timeline Table

Activities	Organization	Dates		Deliverable	Deliverable Due Date
		Anticipated Date(s) of Initiation	Anticipated Date of Completion		
Planning and Development of DQOs	Malcolm Pirnie	August 2007	October 2007	DQOs	October 2007
Development of the Sampling Rationale, FSP and associated sampling SOPs	Malcolm Pirnie	August 2007	March 2008	Final FSP	March 2008
Preparation of the QAPP and the testing QA requirements	Malcolm Pirnie	August 2007	March 2008	Final QAPP	March 2008
Preparation of SSHP	Malcolm Pirnie	August 2007	March 2008	Final SSHP	October 2007
Submit DESA/CLP request forms to Jennifer Feranda	Malcolm Pirnie	Spring 2008	Spring 2008	Submitted forms	One month before sampling begins
Collection of Soil Samples and Submission for Analysis	Malcolm Pirnie	Spring 2008	2008	Samples collected per Final FSP	2008
Collection of Indoor Dust Samples and Submission for Analysis	Malcolm Pirnie	Spring 2008	2008	Samples collected per Final FSP	2008
Submit Trip COC Reports	Malcolm Pirnie	At time of sample collection	2008	Included with samples	When samples are collected
Laboratory Analyses	Laboratories assigned by USEPA-CLP or DESA	Late 2007	Analyses should be completed within 21 days of receipt of samples	Analytical data to USEPA for validation	One month after sample collection
Validation, Review and Verification of Data	USEPA Region 2 and Malcolm Pirnie	Early 2008	Validation should be completed within 21 days after the laboratory provides the data packages.	Validated data reported	One month after all the lab data packages are available

Project Schedule Timeline Table

Activities	Organization	Dates		Deliverable	Deliverable Due Date
		Anticipated Date(s) of Initiation	Anticipated Date of Completion		
Note: A more detailed project schedule is maintained by the USACE and Malcolm Pirnie Project Manager. An up-to-date copy of the Project Schedule will be available to the project team members.					

QAPP Worksheet #17
(UFP-QAPP Section 3.1.1)

Sampling Design and Rationale

It is anticipated that surface and subsurface soils will be collected from approximately 30 or more of the 59 properties identified by the OU-1 ROD as requiring additional sampling to determine if the total PCBs in soils exceed the USEPA clean-up criterion selected in the ROD of 1 ppm. Sampling will commence upon receiving copies of access agreements from the USACE and USEPA. The soil samples will be collected with a hand auger and will be taken at two discrete depth intervals. Surface soil samples will be collected at 0-6 inches, and subsurface soil samples at 24-30 inches. The 24-30 inch interval may be changed to 18-24 inches if field conditions do not allow deeper samples to be collected. This shallower depth will only be sampled after two unsuccessful attempts at collecting samples at the specified 24-30 inch depth interval. The subsurface samples will be collected from the same locations as the surface samples, as determined in the field. Sampling locations will be determined in the field through coordination with the USACE and USEPA Region 2 during a site reconnaissance visit conducted prior to the sample collection effort. Upon completion of sampling at a property, all soil sampling locations will be located by using a hand-held Global Positioning System (GPS) unit. Initially 10 surface samples will be collected per property and five subsurface samples per property.

Interior dust samples will also be collected in homes at locations determined in conjunction with the USEPA. It is estimated that 30 or more of the 59 properties identified by the ROD as requiring additional sampling will be tested. It is anticipated that two dust samples will be collected at each property, one from the highly trafficked common areas in the residential living space (*e.g.*, the living room, entry hall, family room with television, etc.) and one from the bedroom spaces. Dust sample(s) will be collected at each property using a vacuum cleaner sampling device according to the procedures described in the interior dust sampling SOP 4 (see Attachment 3 of the FSP).

For a more complete description of the sampling design and rationale see FSP Section 5.0, starting on p. 5-1 and ending on p. 5-5.

QAPP Worksheet #18
(UFP-QAPP Manual Section 3.1.1)

Sampling Locations and Methods/SOP Requirements Table

Sampling Location/ID Number	Matrix	Depth (inches)	Analytical Group	Concentration Level	Number of Samples (identify field duplicates)	Sampling SOP Reference	Rationale for Sampling Location
10 locations per property[1]	Soil (Surface)	0 to 6	PCBs	Low	10 samples per property (duplicates at 1 per 20	Note 2,3	Determine if the soil exceeds the USEPA criterion of 1 ppm. See FSP Section 5.1.
5 locations per property[1]	Soil (Sub-surface)	24 to 30 (or 18-24 inches based on field conditions)	PCBs	Low	5 samples per property (duplicates at 1 per 20	Note 2,3	Determine if the soil exceeds the USEPA criterion of 1 ppm. See FSP Section 5.1.
Approx. 2 samples of interior dust within each building[2]	Indoor dust	NA	PCBs	Low	2 samples per property (duplicates at 1 per 20	Note 2,3	Determine if indoor dust exceeds the USEPA clean up criterion of 1 ppm. See FSP Section 5.2.

1. The soil sample locations at each property will be selected in the field in conjunction with the USACE and USEPA. It is anticipated that 15 samples will be collected at each property: 10 from the 0 to 6 inch depth interval, and five from the 24 to 30 inch depth interval. The 15 samples will be collected from a total of 10 identifiable locations: five of the 10 locations will have only a 0 to 6 inch depth interval sample collected, and five of the 10 locations will have a 0 to 6 inch interval sample and a 24 to 30 inch depth interval sample. See FSP Section 5.0 for further details regarding selection of sample locations.

2. It is anticipated that approximately 30 or more of the 59 properties identified by the ROD as requiring additional investigation will be sampled during the pre-remedial design sampling activities; however, the specific list of properties will be determined by the USEPA. It is anticipated that two interior dust samples will be collected from each property, one from highly-trafficked common areas in the residential living space and one from the bedroom spaces. See FSP Section 5.0 for further details regarding selection of sample locations.

3. See Worksheet 21 and Appendix A: FSP Attachments for sampling SOPs.

QAPP Worksheet #19
(UFP-QAPP Manual Section 3.1.1)

Analytical SOP Requirements Table

Matrix	Analytical Group	Concentration Level	Analytical and Preparation Method/SOP Reference	Sample Volume/Mass per Analysis	Containers[1] (number, size, and type)	Preservation Requirements (chemical, temperature, light protected)	Maximum Holding Time (preparation/ analysis)[2]
Soils	PCBs	Low	USEPA-CLP SOM01.2	At least 30 g; see SOM01.2	8 oz. Glass, Amber Jar	Cool to 4 °C or (2 to 6° C)	14 days to extraction, 40 days to analysis or applicable CLP requirements
Indoor dust (Screened by lab through No. 100 mesh sieve per ASTM D 422.)	PCBs	Low	USEPA-CLP SOM01.2	Ideally 30 g or more (at least 10 g are needed); see SOM01.2[3]	The vacuum bag or collection filter should placed in a clean 32 oz. Glass, Amber Jar or sealable plastic bag	Cool to 4 °C or (2 to 6° C)	14 days to extraction, 40 days to analysis or applicable CLP requirements

1. The size and type of the sample container will depend upon the requirements of the assigned laboratory.
2. Requested laboratory turn-around times (TATs) for the non-CLP test methods for the majority of the requested analyses will be within 21 days of receipt of the sample. Quicker TATs may be requested for specific samples, as appropriate.
3. Ideal and necessary volumes assume the removal via sieving of solid, non-dust particulates (i.e., pebbles, wood fragments, etc.). It is anticipated that any soil clumps will be broken apart prior to the screening process.

QAPP Worksheet #20

(UFP-QAPP Manual Section 3.1.1)

The following table summarizes by matrix, analytical group, and concentration level the number of field QC samples that will be collected and sent to the laboratory.

Field Quality Control Sample Summary Table

Matrix	Analytical Group	Conc. Level	Analytical and Preparation SOP Reference[1]	Approximate No. of Sampling Locations	No. of Field Duplicate Pairs	No. of MS	No. of Field Blanks	No. of Equip. Blanks [5]	No. of PT Samples	Approximate Total No. of Samples to Lab
Soil	PCBs	Low	USEPA-CLP SOM01.2	300	1 per 20	Note 3	0	1 per 20	Note 5	495
Indoor dust	PCBs	Low	USEPA-CLP SOM01.2	60	1 per 20	Note 3	0	1 per 20	Note 5	64

1. Field duplicates for soil samples will be taken from the same boring and depth.
2. Field duplicates for dust will be co-located samples collected from an adjacent area of similar size.
3. A separate soil and/or sample container is not required for matrix spikes, since the lab will take QA samples for solids (soil and dust) from the sample container. Thirty or more grams of dust should be obtained for a minimum of one sample each day to ensure that sufficient material is obtained to analyze one MS and one MSD sample per analytical batch. If necessary, the sampling area will be expanded to collect additional material.
4. A composite equipment blank will be taken of decontaminated tools and unused filters associated with indoor dust sample collection.
5. Performance Testing (PT) samples are performed quarterly by CLP laboratories per USEPA-CLP SOW requirements. Project-specific PT samples are not planned, since for this project the other QAs being performed are considered to be sufficient to meet the data needs.

QAPP Worksheet #21
(UFP-QAPP Manual Section 3.1.2)

Project Sampling SOP References Table

Reference Number	Title, Revision Date and/or Number	Originating Organization	Equipment Type	Modified for Project Work?	Comments
SOP 1	Procedure to Conduct Sample Management for CLP and Non-CLP Samples, March 2008, Revision No. 1	Malcolm Pirnie	Notebook, personal computer, safety glasses, gloves, sample coolers, ice, sample labels etc.	No	QAPP Attachment 2
SOP 2	Procedure for Shallow Subsurface Soil Sample Collection and Processing, September 2007, Revision No. 0	Malcolm Pirnie	Hand auger and sampling/processing equipment, sample jars etc.	No	FSP Attachment 1
SOP 3	Procedure for Collecting Indoor Dust, March 2008, Revision 1	Malcolm Pirnie	Vaccum cleaner, clean accessories, vacuum cleaner bags or collection filters, ice, coolers, etc.	No	FSP Attachment 2
SOP 4	Procdure for Conducting Decontamination of Soil Sampling Equipment, September 2007, Revision No. 1	Malcolm Pirnie	Distilled water, solvents, etc.	No	FSP Attachment 3
SOP 5	Procedure to Conduct Collection of Equipment Blanks, September 2007, Revision 0	Malcolm Pirnie	Sample processing equipment, sample bottles, preservation ice, coolers, etc.	No	QAPP Attachment 6
SOP 6	Procedure to Conduct a Technical System Audit (TSA)	Malcolm Pirnie	Copies of relevant project documentation (e.g., FSP, QAPP, and memos, correspondence, or addenda pertaining to field activities), TSA audit checklist, and digital camera.	No	QAPP Attachment 5
SOP 7	Procedure for Calibration, Operation and Maintenance of the Photo Ionization Detector (PID), March 2006, Revision No. 0	Malcolm Pirnie	PID instruments	No	FSP Attachment 4

Project Sampling SOP References Table

Reference Number	Title, Revision Date and/or Number	Originating Organization	Equipment Type	Modified for Project Work?	Comments
OSWER 9240.0-44 USEPA540-R-07-06	Contract Laboratory Program Guidance for Field Samplers, OSWER 9240.0-44, USEPA540-R-07-06, July 2007	USEPA	Notebook, personal computer, safety glasses, gloves, sample coolers, ice, sample labels and other materials described in the document.	No	QAPP Attachment 11 To be used by the field team as a guide for collecting and preparing CLP samples. Referenced in SOPs 1
Form II Lite User's Guide	Forms II Lite, Version 5.1 User's Guide, Version 5.1	USEPA	Personal computer, printer, Forms II Lite software, etc.	No	Forms II Lite is required for creating COC forms for USEPA-CLP samples.
SOP No. HW-32	Standard Operating Procedure For Implementing The National Strategy For Procuring Analytical Services for All OSWER Programs (Superfund, RCRA, Brownfields), Revision 5, March 17, 2005	USEPA Region 2	SOP No. HW-32 attachments	No	QAPP Attachment 9

QAPP Worksheet #22
(UFP-QAPP Manual Section 3.1.2.4)

Field Equipment Calibration, Maintenance, Testing, and Inspection Table

Field Equipment	Calibration Activity	Maintenance Activity	Testing Activity	Inspection Activity	Frequency	Acceptance Criteria	Corrective Action	Responsible Person	SOP Reference
Vaccuum cleaner (Nilfisk or Omega or equivalent alternative) used to collect indoor dust samples	None required.	Per the vacuum manual.	None required.	Decontaminate per FSP, SOP 4.	Decontaminate/ change vacuum accessories before each sample is collected.	None required	Decontaminate per FSP SOP 4.	Field Team Leader	See FSP, SOP 4.
Photoionization Detector (PID)	See FSP Attachment 4, SOP 7	See FSP Attachment 4, SOP 7	See FSP Attachment 4, SOP 7	See FSP Attachment 4, SOP 7	See FSP Attachment 4, SOP 7	See FSP Attachment 4, SOP 7	See FSP Attachment 4, SOP 7	Field Team Leader	FSP Attachment 4, SOP 7

QAPP Worksheet #23
(UFP-QAPP Manual Section 3.2.1)

Analytical SOP References Table

Reference Number	Title, Revision Date, and/or Number	Definitive or Screening Data	Analytical Group	Instrument	Organization Performing Analysis	Modified for Project Work?
SOM01.2	USEPA Multi-Media, Multi-Concentration, Organic Analytical Service for Superfund (SOM01.2), May 2005 or lasted revision	Definitive	PCBs	GC-ECD	Lab to be assigned by USEPA DESA or CLP lab or subcontract lab to be chosen	No

Note: For more discussion regarding the Analytical and Geotechnical methods see the following text:

Analytical Methods

We anticipate for this project that the chemical analyses will be performed by a USEPA CLP Lab; however, a DESA laboratory or subcontract commercial laboratories may also be utilized. If a subcontract laboratory is used for chemical analyses, it must be qualified in the analytical methods and, where applicable, certified through the programs listed below:

- NJDEP.
- NJDEP through the National Environmental Laboratory Accreditation Program (NELAP).
- USEPA CLP.

Any subcontract laboratory utilized for the project will undergo an evaluation to determine if their experience and capability in the requested analytical methods are appropriate for the project. When possible the test methods selected must either be USEPA methods or national consensus methods, such as those published by ASTM.

The analytical methods were selected based on the DQOs established for the project.

The PCB as Aroclors analyses, specified in Worksheet 23, will be performed by Gas Chromatography with Electron Capture Detection (GC-ECD) following the methodologies described in USEPA CLP Multi-Media, Multi-Concentration, Organic Analytical Services for Superfund (SOM01.2) or the latest CLP SOW. In the case of dust samples the laboratory will also be required to process the sample by passing the dust through a No. 100 mesh sieve screen per ASTM D422. Depending on the capabilities of laboratories employed to support the project, modifications may be made to the specific test methods and quality assurances described herein so long as the data quality is sufficient to meet project objectives, and all modifications are documented and approved by the PQO. For example, if a subcontract lab is employed, the PCB Aroclors may be performed by USEPA Method SW-846-8082, however the lab must achieve the project-required QLs.

QAPP Worksheet #24
(UFP-QAPP Manual Section 3.2.2)

Analytical Instrument Calibration Table

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference
GC-ECD	See USEPA CLP SOW SOM01.2	See USEPA CLP SOW	See USEPA CLP SOW	See USEPA CLP SOW	Assigned CLP Lab personnel	SOM01.2

QAPP Worksheet #25
(UFP-QAPP Manual Section 3.2.3)

Analytical Instrument and Equipment Maintenance, Testing, and Inspection Table

Instrument/ Equipment	Maintenance Activity	Testing Activity	Inspection Activity	Frequency	Acceptance Criteria	Corrective Action	Responsible Person	SOP Reference
Gas Chromatograph with Electron Capture Detector (GC-ECD)	Per instrument manual and USEPA CLP SOM01.2[ab]	See USEPA CLP SOM01.2	See USEPA CLP SOM01.2	See USEPA CLP SOM01.2	See USEPA CLP SOM01.2	See USEPA CLP SOM01.2	Assigned lab personnel	See USEPA CLP SOM01.2

a. The maintenance of the analytical instruments including the testing activity, inspection activity, frequency, acceptance criteria, responsible person and SOP reference must be documented in the Laboratory's Quality Control Manual. It is anticipated that the samples will be analyzed through the USEPA CLP program, which has developed detailed Statements of Work referenced in Worksheet #23. There is also possibility that some of the analyses will be assigned by USEPA Region 2 for analysis by the USEPA Region 2 DESA Lab. If the DESA lab or a contract lab performs analyses, the associated instrumentation must be maintained according to their SOPs and Laboratory Quality Manual.
b. Spare parts and maintenance of laboratory analytical instrumentation are the responsibility of the assigned USEPA CLP laboratory, the DESA laboratory or the subcontract laboratory.

QAPP Worksheet #26
(UFP-QAPP Manual Appendix A)

Sample Handling System

SAMPLE COLLECTION, PACKAGING, AND SHIPMENT
Sample Collection (Personnel/Organization): Malcolm Pirnie Field Team supervised by the Field Team Leader will collect the samples.
Sample Packaging (Personnel/Organization): Malcolm Pirnie Field Team
Coordination of Shipment (Personnel/Organization): Malcolm Pirnie Sample Management Officer
Type of Shipment/Carrier: Federal Express for Overnight Delivery or courier to the laboratory
SAMPLE RECEIPT AND ANALYSIS
Sample Receipt (Personnel/Organization): Assigned USEPA CLP laboratory, the USEPA Region 2 DESA laboratory or subcontract lab personnel
Sample Custody and Storage (Personnel/Organization): Assigned USEPA CLP laboratory, the USEPA Region 2 DESA laboratory or subcontract lab personnel
Sample Preparation (Personnel/Organization): Assigned USEPA CLP laboratory, the USEPA Region 2 DESA laboratory or subcontract lab personnel
Sample Determinative Analysis (Personnel/Organization): Assigned USEPA CLP laboratory, the USEPA Region 2 DESA laboratory or subcontract lab personnel
SAMPLE ARCHIVING
Field Sample Storage (No. of days from sample collection): Samples will not be stored in the field, but will be shipped within 24 hours of collection. If due to an emergency they are stored in the field, they will be kept in a cooler or transferred to a refrigerator kept at 4 degrees C.
Sample Extract/Digestate Storage (No. of days from extraction/digestion): Sample extraction and digestion will be conducted according to the USEPA-CLP SOWs and the requirements given in Worksheet 19.
Biological Sample Storage (No. of days from sample collection): NA
SAMPLE DISPOSAL
Personnel/Organization: Assigned USEPA DESA or CLP Lab or Subcontract Lab Sample Custodians
Number of Days from Analysis: At least 60 days

Sample Handling System

Sample handling and custody procedures ensure the timely, correct, and complete analysis of each sample for all parameters requested. A sample is considered to be in someone's custody if it:

- Is in his/her possession.
- Is in his/her view, after being in his/her possession.
- Is in his/her possession and has been placed in a secure location.
- Is in a designated secure area.

Sample custody documentation provides a written record of sample collection and analysis. The sample custody procedures provide for specific identification of samples associated with an exact location, the recording of pertinent information associated with the sample, including time of sample collection and any preservation techniques, and a Chain of Custody (COC) record which serves as physical evidence of sample custody. Custody procedures will be similar to the procedures outlined in the USACE's Requirements for the Preparation of Sampling and Analysis Plans (USACE, 2001) and the USEPA's Contract Laboratory Program Guidance for Field Samplers (USEPA, 2007). The COC documentation system provides the means to individually identify, track, and monitor each sample from the time of collection through final data reporting. Sample custody procedures are developed in three areas: sample collection, laboratory analysis, and final evidence files, which are described below. See Attachment 9 for a copy of SOP No. HW-32, Implementing the National Strategy for Procuring Analytical Services for All OSWER Programs. It includes the Region 2 requirements for obtaining analytical services for Superfund projects and outlines the arrangements that must be made through the Region 2 Regional Sample Control Coordinator (RSCC) and gives example forms that must be submitted.

Field Sample Handling and Custody

Field records provide a means of recording information for each field activity performed at the Site. COC procedures document

pertinent sampling data and all transfers of custody until the samples reach the analytical laboratory. The sample packaging and shipment procedures summarized below will ensure that the samples arrive at the laboratory with the COC intact. Refer to SOP No. 1 in Attachment 2 for sample management information. Worksheet 19 lists the specific sample preservation requirements for each test method.

Field Procedures

The general responsibilities of the field team are listed below:

- The field sampler is personally responsible for the care and custody of the samples until they are transferred to the Sample Management Officer (SMO) or until they are properly dispatched. As few people as possible should handle the samples.
- The Field Team Leader, or designee, is responsible for entering the proper information in the field logbook, including all pertinent information such as sample identification number, date and time of sample collection, type of analysis, and description of sample location. The information entered into the field logbook will be used to generate a COC.
- All sample containers will be labeled with the project identification, sample number, matrix, type of analysis required, and preservation requirements.
- The samples will be properly preserved, bagged, and packed into coolers. The original COC form will be placed into the lead cooler and will be shipped to the laboratory.
- The SMO or designee will review all field activities to determine whether proper custody procedures were followed during the field work and if additional samples are required.

Field Records

The field logbook will provide the means of recording data collection activities. Entries will be described in as much detail as possible so that persons going to the Site can reconstruct a particular situation without reliance on memory. At the beginning of each day, the date, start time, weather, and names of all sampling team members present will be entered. The names of visitors to the Site and the purpose of their visit will also be recorded. All field measurements, as well as the instrument(s), will be noted.

Samples will be collected following the sampling procedures documented in the FSP. Observations such as sampling conditions or any problems will also be recorded. Sample identification numbers will be assigned at the time the data are entered in the logbook. Field duplicate samples for soil samples, which will receive a unique sample identification number, are "blind" to the laboratory and will be identified under the sample description so that they can be associated with their respective samples by project staff. Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples for soils will not be noted in the logbook or COC forms as they will be collected after homogenization of the soil samples in the analytical laboratory. In the case of dust samples, at least one sample collected per day should have a mass of 30 grams or more to allow for analysis of one MS and one MSD per analytical batch. If necessary, the sampling area will be expanded to collect additional material. It will be noted in the field log book where a larger area has been sampled and the amount of material obtained appears to be sufficient for analysis of MS/MSD samples.

Sample Identification System

All samples collected from the Site must be identified with a sample label in addition to an entry on a COC record. Indelible ink will be used to complete sample labels and handwritten COC records. COCs for all CLP samples must be generated using Forms II Lite software. Forms II Lite can also be used to create COCs for non-CLP samples. CLP Samples will be assigned a CLP sample number by the Forms II Lite software. In addition, each soil sample shall be identified by a unique sample number assigned by the field team as described in the FSP. The unique sample number will include a sequential sample number, the property ID, type of property, and the type of sample and the depth of the sample if it is a soil sample.

Sample Labels/Tags

Sample labels will require the field team to complete the following information for each sample container:

1. Sample Number.
2. In the case of CLP samples, the label must also list the CLP Number and the CLP Case Number.
3. Sample Matrix.
4. Parameters to be analyzed.
5. Date of Collection.
6. Time of Collection.
7. Preservation Technique Employed (if applicable).
8. Sampler's Name.

QAPP Worksheet #27
(UFP-QAPP Manual Section 3.3.3)

Sample Custody Requirements

Field Sample Custody Procedures (sample collection, packaging, shipment, and delivery to laboratory): Samples will be collected per the procedures described in the FSP (given in Appendix A). The field sample custody procedures including sample packing, shipment, and delivery requirements are discussed in the text in Worksheets 17 and 26. Also refer to SOP No. 1 in Attachment 2 and the CLP Guidance for Field Samplers in Attachment 11 for sample management information.
Laboratory Sample Custody Procedures (receipt of samples, archiving, disposal): Each laboratory will have a sample custodian who accepts custody of the samples and verifies that the information on the sample labels matches the information on the COC. The sample custodian will document any discrepancies and will sign and date all appropriate receiving documents. The sample custodian will also document the condition of the samples upon receipt at the laboratory. The laboratory sample custody procedures ware discussed further in the following text.
Sample Identification Procedures: The sample identification scheme that will be employed is described in the FSP. Sample labeling procedures are discussed in the text in Worksheet 26.
Chain-of-Custody (COC) Procedures: A COC record will accompany the samples from the time of sampling through all transfers of custody. Example COC forms are presented in Attachments 3.1 and 3.2. The COC procedures are detailed in the following text and in SOP No. 1 in Attachment 2, and for CLP samples, in the CLP Guidance for Field Samplers (Attachment 11).

Sample Custody Requirements:

Chain of Custody Procedure

When samples are being submitted to an USEPA-CLP laboratory, the COC must be generated using FORMS II Lite software. Each CLP sample will have a CLP number assigned in addition to the field sample identification number. The following information is typically recorded on manual COC forms. All COC forms must be signed in ink:

- Project name and/or project number.
- Signature of SMO or designee.

- Sampling station number.
- Date and time of collection.
- Grab or composite sample designation.
- Sample matrix.
- Sampling location description.
- Field identification number.
- Analyses required.
- Preservation technique.
- Signatures and dates for transfers of custody.
- Air express/shipper's bill of lading identification numbers.

The COC form serves as an official communication to the laboratory detailing the particular analyses required for each sample. The COC record will accompany the samples from the time of sampling through all transfers of custody. It will be kept on file at the laboratory where samples are analyzed and archived. Three copies of the COC form are created; one copy is retained by the Field Team Leader and two are sent to the laboratory. An electronic copy of each COC should be also made and kept in the project directory. The SMO or designee completes a COC record to accompany each shipment from the field to the laboratory. In the case of CLP samples a copy of the COC created by Forms II Lite must be sent to the USEPA CLP Region 2 coordinator.

The completed COC is put in a zip-lock bag and taped to the inside cover of the sample shipping container. If there is more than one container in a shipment, copies of the COC form will be placed in each container. Each container is then sealed with custody seals and custody is transferred to the laboratory.

Transfer of Custody and Shipment

The custody of samples must be maintained from the time of sampling through shipment and relinquishment to the laboratory. Instructions for transferring custody are given below:

- All samples are accompanied by a COC. When transferring custody of samples, the individuals relinquishing and receiving will sign, date, and note the time on the COC. This form documents sample custody transfer from the SMO or designee, through the shipper, to the analytical laboratory. Since a common carrier will usually not accept responsibility for handling COC forms, the name of the carrier is entered under "Received by," the bill-of-lading number is recorded in the comments section, and the COC form is placed in a zip-lock plastic bag and taped to the inside lid of the lead shipping cooler. Copies of the COC form will be placed in each additional cooler in a shipment.

- Samples will be packaged for shipment and either picked up at the Site by the laboratory or dispatched to the appropriate laboratory via overnight delivery service. SOP No. 1 in Attachment 2 contains the proper sample packaging techniques. A separate COC record must accompany each shipment. Shipping containers will be sealed for shipment to the laboratory. Two custody seals will be applied to each cooler to document that the container was properly sealed and to determine if the container was tampered with during shipment. The custody seals will be placed on the coolers in such a manner that the custody seal would be broken if the cooler were opened (*i.e.*, diagonally opposite corners of the cooler lid).

- The original COC (and a copy for CLP laboratories) will accompany the shipment. A copy will be retained by the Field Team Leader.

- If the samples are sent by common carrier or air freight, proper documentation must be maintained. For example, the bill of lading must be retained by the Field Team Leader.

Laboratory Custody Procedures

The laboratory custody procedures will be equivalent to those described in the latest edition of the CLP SOW. The following will be addressed in the laboratory custody SOPs:

- A designated sample custodian accepts custody of the samples and verifies that the information on the sample labels matches the information on the COC. The sample custodian will document any discrepancies and will sign and date all appropriate receiving documents. The sample custodian will also document the condition of the samples upon receipt at the laboratory. The CLP laboratories will send a copy of the sample receipt checklist to USEPA's RSCC, while the subcontract laboratories will complete the form and return it electronically.

- Once the samples have been accepted by the laboratory, checked and logged in, they must be maintained in accordance with laboratory custody and security requirements.

- To ensure traceability of samples while in the possession of the laboratory, a method for sample identification that has been documented in a laboratory SOP will be used to assign sample numbers.

- The following stages of analysis must be documented by the laboratory:
    - Sample Extraction/Preparation.
    - Sample Analysis.
    - Data Reduction.
    - Data Reporting.

- Laboratory personnel are responsible for the custody of samples until they are returned to the sample custodian.

- When sample analyses and QA checks have been completed in the laboratory, the used portion of the sample must be stored or disposed of in accordance with the protocols specified in the CLP SOW or the subcontract agreement. Identifying labels, data sheets, COCs, and laboratory records will be retained until analyses and QA checks are completed in accordance with the protocols specified in the CLP SOW or the subcontract agreement.

Final Evidence Files

This is the final phase of sample custody. The COC records and sample analysis request form copies are archived in their respective project files. Laboratory custody forms, sample preparation and analysis logbooks, and data packages will become part of the laboratory final evidence file. Other relevant documentation including records, reports, and correspondence, logs, pictures, and data review reports will be archived by Malcolm Pirnie.

Sample Holding Times

Information on sample holding times and required preservation for each test method are provided in Worksheet 19.

Sample Packaging and Shipping Requirements

- Custody of samples must be maintained through the shipment of samples to the selected laboratory. All samples will be packaged and shipped at the end of each day unless other arrangements are made with the laboratory. See SOP 1 in Attachment 2 for a description of the Sample Management and Custody Procedures, as well as sample packing. Also refer to the USEPA CLP Guidance for Field Samplers in Attachment 11 for more details regarding shipment of CLP samples.

QAPP Worksheet #28
(UFP-QAPP Manual Section 3.4)

QC Samples Table

Matrix	Solids (Soil and Dust)
Analytical Group	PCBs
Concentration Level	Low
Sampling SOP	See FSP, SOPs 2 and 3
Analytical Method/ SOP Reference	SOM01.2
Sampler's Name	Malcolm Pirnie Field Sampling Team
Field Sampling Organization	Malcolm Pirnie
Analytical Organization	Assigned USEPA CLP Lab
No. of Sample Locations	See Worksheet 20 and FSP

QC Sample:	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
Equipment and/or Field Blanks	At least once a week but no more than once a day	FSP and QAPP	Investigate source of contamination	Malcolm Pirnie Field Team Leader	Sensitivity	< QL
Field Duplicates	1 per 20 field samples per matrix	FSP and QAPP	If the results exceed limits for the field replicate, this will be addressed by the Malcolm Pirnie Data Reviewer	Malcolm Pirnie Field Team Leader and or Laboratory	Precision	RPD 35% for duplicate values greater than or equal to 5 times the CRQL
Matrix Spike/Matrix Spike Duplicates (MS/MSD)	Each group of field samples in an SDG, or each SDG, whichever is most frequent per SOM01.2	Per SOM01.2 Exhibit D, Section 12.0,	Reanalyze the samples	Assigned lab	Accuracy/Bias/ Precision	Recovery for Aroclor 1016 29-135%, RDP 0-15% Recovery for Aroclor 1260 29-136%, RDP 0-20%

QC Samples Table

Matrix	Solids (Soil and Dust)
Analytical Group	PCBs
Concentration Level	Low
Sampling SOP	See FSP, SOPs 2 and 3
Analytical Method/ SOP Reference	SOM01.2
Sampler's Name	Malcolm Pirnie Field Sampling Team
Field Sampling Organization	Malcolm Pirnie
Analytical Organization	Assigned USEPA CLP Lab
No. of Sample Locations	See Worksheet 20 and FSP

QC Sample:	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
Laboratory Control Samples (LCS)	Once every 20 samples of the sample matrix in an SDG	Per SOM01.1/1.2, Exhibit D, Section 12.0,	Check calculation. It maybe necessary to re-calibrate to meet acceptance criteria	Assigned lab	Accuracy/Bias	Aroclor 1016 Recovery 50-150% Aroclor 1260 Recovery 50-150%
Method Blank	Each group of 20 samples or less of the same matrix	Per SOM01.1/1.2, Exhibit D, Section 12.0,	Correct problem and reanalyze blank	Assigned lab	Sensitivity	Less than CRQLs
Instrument Blank	Every 12 hours on each GC column used for analysis	Per SOM01.1/1.2, Exhibit D, Section 12.0,	An acceptable instrument blank must be run before collecting or accepting data	Assigned lab	Sensitivity	Less than CRQLs
Method Detection Limits	Annually	Per SOM01.1/1.2, Exhibit D, Section 12.0,	Correct the problem and determine method detection limits per SOM01.2 before analyzing samples	Assigned lab	Sensitivity	Must be less than CRQLs

The assigned laboratory also must perform all the QA/QC sample analyses and meet all the measurement performance criteria that assess the analytical DQIs specified in USEPA CLP SOW SOM01.2, such as laboratory duplicates and matrix spike duplicates for precision, matrix spikes, laboratory control standards for accuracy, and blanks and method detection limits for sensitivity. The lab personnel must follow all the corrective actions required by the USEPA CLP SOW.

QAPP Worksheet #29

(UFP-QAPP Manual Section 3.5.1)

This section identifies the documents and records that will be generated for all aspects of the project including, but not limited to, sample collection and field measurement, on-Site and off-Site analysis, and data assessment.

Project Documents and Records Table

Sample Collection Documents and Records	On-Site Analysis Documents and Records	Off-Site Analysis Documents and Records	Data Assessment Documents and Records	Other
Field Notes and/or data sheets and trip reports	Sample collection and trip reports and COC records.	Copies of field notes and COC records will be made and stored in the project files	Field Sampling Audit Check List	Prepare and submit to Project Team
Air bills	Air bills	Copies of Air Bills will be kept in project files	Project Records	
Analytical and Testing Sample Data Packages	Hardcopy and electronic data deliverables	Copies of all Analytical Data Deliverables transferred to Project files (Instrument calibration records, results and raw data files stored electronically or in hardcopy format)	QA Review sheet	
Data Validation Reports for any non-CLP	Data Validation Reports	Stored in project files	QA Review sheet	
Draft Final Summary Report	Report of findngs	Stored in the project files		Prepare and submit to Project Team
ANSETS Forms	Record of collected samples, requested analyses, and cost		See Attachment 10	Prepare and submit to USEPA Region 2 with copies to USACE-KCD
USACE-KCD Daily Quality Control Summary	Daily report in USACE-KCD format			Prepare and submit to USACE-KCD during field sample collection

Data Management

This section describes the project data management process, tracing the path of the data from their generation to their final use or storage. All project data and information must be documented in a format useable to the project personnel.

Project Document Control System

Project documents will be controlled by the Malcolm Pirnie Project Manager and the Deputy Project Manager who will maintain and distribute the hardcopies and electronic copies of the project documents, including any amendments. Electronic copies of project information will be maintained in the project directory on the server at Malcolm Pirnie corporate headquarters, which is backed up at least once per day.

Data Recording

Data for this project will be collected by handwritten entries and will be recorded into field logbooks or on forms. Forms II Lite software will be the primary tool used to generate COC records and sample labels, or possibly COCs and labels will be created manually. Forms II Lite software has been designed to meet USEPA requirements. The Malcolm Pirnie IT department will provide a laptop computer properly configured to meet the minimum requirements outlined in the Forms II Lite Users Manual. Computer-generated data associated with laboratory analyses will be managed under the control of the assigned USEPA-CLP or sub-contract laboratory's laboratory information management system (LIMS). Requirements for the LIMS software can be found in the individual laboratories' QA documentation.

Types of Project Documentation and Records

1. Sample Collection and Field Measurement Records include items such as:
    a. Field data collection or sampling data sheets or field notes.
    b. COC records.
    c. Air bills.
    d. Communications logs, records or copies of pertinent e-mails.
    e. Corrective action reports and results.
    f. Documentation of field modifications.
    g. Field instrument records.
    h. Drilling logs.

2. Analytical Records include items such as:
    a. COC records.
    b. Sample receipt records.
    c. Records of sample preparation and analysis.
    d. Instrument calibration records.
    e. Raw data files.
    f. Electronic Data Deliverables (See Attachment 8 for examples of USEPA Region 2 EDDs. If at the time of the sampling and analysis, the assigned USEPA CLP or the DESA laboratoy are prepared to provide data in the Region 2 format, they will be requested to do so.)
    g. Analytical Results and supporting data.
    h. Sample Data Packages.
3. Project Data Assessment Records such as:
    a. Technical System Field Audits.
    b. Data Validation Reports.

Data Quality Assurance Checks

Malcolm Pirnie will monitor the progress of sample collection to verify that samples are collected as planned. The progress of sample collection and processing will be monitored through documentation of the samples collected each day.

The contracted laboratory (either CLP or non-CLP) will have a formal in-house QA Plan to which it adheres and performs as part of daily operations. Data generation processes will be reviewed and modified to meet objectives, if necessary. A formalized data generation procedure will be utilized. Each analyst must have previously demonstrated, through the laboratory QA program, his or her ability to generate acceptable results within the requirements of the each method.

Laboratory Data Transmittal

Laboratory data are managed by the laboratory's LIMS system, beginning with sample check-in on the sample receiving data terminal. For non-CLP laboratories, full laboratory data reports will be delivered to Malcolm Pirnie within 21 days of the laboratory's receipt of

each SDG, and will include electronic data deliverables (EDDs). In addition, Region 2 requires that non-CLP laboratories adhere to the Analytical Services Tracking System (ANSETS) reporting requirements, which utilize the ANSETS Data Requirement form. Detailed instructions and procedures can be obtained by contacting the USEPA Region 2 Regional Sample Control Coordinator, Ms. Jennifer Feranda, at 732-321-6687 or feranda.jennifer@epa.gov, or Mr. Adly Michael at 732-906-6161 or Michael.adly@epa.gov. See Attachment 10 for additional information on ANSETS. For CLP laboratories, third-party validated laboratory results will be received by Malcolm Pirnie through the USEPA RSCC, and will include EDDs.

Data Storage and Retrieval

Paper copies of the forms, electronic copies of files, and the photographic log will be transmitted regularly to the Malcolm Pirnie PM or designee. The completed forms and notebooks will be stored in the custody of the PM for the duration of the project. The full laboratory data reports submitted to Malcolm Pirnie will be stored in the custody of the Project Quality Manager. The Laboratory will maintain copies of documents and backups of all data associated with the analyses of samples. Raw data and electronic media of all field samples, including QC samples and blanks, will be archived from the date of generation and will be kept by the laboratory per the requirements of USEPA-CLP. Hard copies of project files will be archived off-site at a secure facility and retained until the end of the contract; project closeout will be conducted in accordance with USEPA Close-out Guidelines. Data will be transferred to the USACE upon completion of the project. Retrieval of data by others will be at the discretion of the USACE and the USEPA. The length of time that records will be archived will be at the discretion of the USACE and USEPA.

Each laboratory shall archive, electronically, the sample analyses and submit the electronic data files along with the data deliverable package. In addition, each laboratory must submit instrument manufacturer, method files and ID file information. Malcolm Pirnie must receive this information in the event a lab on this project closes or updates hardware/software.

QAPP Worksheet #30
(UFP-QAPP Manual Section 3.5.2.3)

Analytical Services Table

Matrix	Analytical Group	Concentration Level	Sample Location/ID Numbers	Analytical SOP	Data Package Turnaround Time	Laboratory/Organization (Name and Address, Contact Person and Telephone Number)	Backup Laboratory/Organization (Name and Address, Contact Person and Telephone Number[1]
Soil	PCBs	Low	Approximately 30 of the 59 OU-1 properties identified by USEPA will be sampled. Approximately 10 surface soils and 5 subsurface soil samples will be collected at each property. See FSP in Appendix A for more details.	SOM01.2	21 days	The USEPA Region II DESA Laboratory, and or an assigned USEPA CLP Laboratory. Contacts regarding the USEPA CLP Laboratories are: Jennifer Feranda of USEPA Region 2 Edison, NJ at 732-321-6687 or Adly Michael of USEPA Region 2 Edison, NJ at 732-321-6161.	A backup lab has not been assigned at this time.
Indoor Dust	PCBs	Low	Approximately 30 of the 59 OU-1 properties identified by USEPA will be sampled. Approximately two dust samples will be collected at each property. See FSP in Appendix A for more details.	SOM01.2 after sieving of indoor dust through ASTM D 422, No. 100 sieve	21 days	The USEPA Region II DESA Laboratory, and or an assigned USEPA CLP Laboratory. Contacts regarding the USEPA CLP Laboratories are: Jennifer Feranda of USEPA Region 2 Edison, NJ at 732-321-6687 or Adly Michael of USEPA Region 2 Edison, NJ at 732-321-6161.	A backup lab has not been assigned at this time.

[1] A backup subcontractor laboratory may be selected at a future date pending procurement by Malcolm Pirnie and approval by the USACE.

QAPP Worksheet #31
(UFP-QAPP Manual Section 4.1.1)

Planned Project Assessments Table

Assessment Type	Frequency	Internal or External	Organization Performing Assessment	Person(s) Responsible for Performing Assessment (Title and Organizational Affiliation)	Person(s) Responsible for Responding to Assessment Findings (Title and Organizational Affiliation)	Person(s) Responsible for Identifying and Implementing Corrective Actions (CA) (Title and Organizational Affiliation)	Person(s) Responsible for Monitoring Effectiveness of CA (Title and Organizational Affiliation)
QC Reports of any non-conformance	Daily as required	Int.	Malcolm Pirnie	Field Team Members	Malcolm Pirnie Project Quality Officer	Malcolm Pirnie PM or designees	Malcolm Pirnie Project Quality Officer
Field Safety Audit	Initially within the first week of field work and then at least quarterly if necessary	Int.	Malcolm Pirnie	Malcolm Pirnie Project Safety Officer	Malcolm Pirnie PM	Malcolm Pirnie PM or designees	Malcolm Pirnie Project Safety Officer
Technical System Internal Audit	Initially within the first week and then at least quarterly if necessary	Int.	Malcolm Pirnie	Malcolm Pirnie Project Quality Officer	Malcolm Pirnie PM	Malcolm Pirnie PM or designees	Malcolm Pirnie Project Quality Officer

QAPP Worksheet #32
(UFP-QAPP Manual Section 4.1.2)

Assessment Findings and Corrective Action Responses

Assessment Type	Nature of Deficiencies Documentation	Individual(s) Notified of Findings (Name, Title, Organization)	Timeframe of Notification	Nature of Corrective Action Response Documentation	Individual(s) Receiving Corrective Action Response (Name, Title, Org.)	Timeframe for Response
Non-Conformance	See below	Project Quality Officer	As soon as possible	Complete non-conformance form	PM	As soon as possible
Technical System Field Audits (TSAs)	See Technical Systems Audit report SOP 6 in Attachment 5	Project Quality Officer, PM or designees, Malcolm Pirnie Inc	Within week	See below section on Field Corrective Actions	Field Team Leader and PM	Within week
Internal Laboratory Audits (This does not apply if the USEPA Region 2 DESA or a USEPA CLP Lab are assigned to perform the analyses)	Per Laboratory Quality Manual	Laboratory Management or designee	Annually	Per Laboratory Quality Manual	Laboratory Personnel	Per Laboratory Quality Manual

Non-Conformance/QC Reporting

A non-conformance is defined as an identified or suspected deficiency or discrepancy with regard to an approved document (*e.g.*, improper sampling procedures, improper instrument calibration, calculation, computer program); or an item where the quality of the end product itself or subsequent activities using the document or item would be affected by the deficiency; or an activity that is not conducted in accordance with the established plans or procedures.

Any staff member engaged in project work that discovers or suspects a non-conformance is responsible for initiating a non-conformance report to the Project QC Officer. The Project QC Officer will evaluate each non-conformance report and the Project QC Officer will provide a disposition which describes the actions to be taken. An example Non-Conformance/QC report form is included in the Field Sampling Plan, Appendix A.

The PM will verify that no further project work dependent on the nonconforming item or activity is performed until approval is obtained and the non-conformance is properly addressed. If the non-conformance is related to material, the PM shall be responsible for marking or identifying, with the non-conformance report number, the nonconforming item (if practical) and indicating that it is nonconforming and is not to be used.

A copy of each non-conformance report will be included in the project file. Copies of all non-conformances shall be maintained by the Project QC Officer.

Assessment and Oversight

This element addresses assessment of the effectiveness of the project implementation and associated QA/QC activities.

Assessment and Response Actions

To monitor the capability and performance of the FSP activities, several types of audits will be performed. These audits will be conducted by the PQO or designee. Performance audits (PAs) of laboratories are conducted to measure the accuracy of the measurement systems. Data Quality Audits (DQAs) are conducted to determine if the data generated by the sampling and analysis satisfy the DQOs.

Technical System Audits (TSAs)

Field audits will be conducted on an ongoing basis during the project as field data are generated, reduced, and analyzed. Numerical manipulations, including manual calculations, will be documented. Records of numerical analyses will be legible, of reproduction-quality, and sufficiently complete to permit logical reconstruction by a qualified individual other than the originator. System audits of

Site activities will be accomplished by an inspection of field Site activities. During this audit, the auditor(s) will compare current field practices with standard procedures. The following elements will be evaluated during a TSA:

- Whether procedures and analyses are conducted according to procedures outlined in the FSP.
- Whether proper sample documentation is being recorded.
- If the working order of field instruments and equipment is being properly checked and recorded.
- The level of QC conducted per each field team.
- Decontamination procedures, where applicable.
- Sample packaging and shipment.

TSAs are conducted for each field team at the beginning of each field sampling task to determine if the system is capable of producing data that meet the DQOs. As long as the field team(s) demonstrate proficiency in the sampling procedures being audited, a follow-up audit will not be required. However, if the audit indicates the need for corrective action, a second TSA will be required. Following the initial audit, TSAs will be conducted on the following schedule:

- Whenever key personnel leave the project or new key personnel are added to the project.
- Whenever a significant amount of time (more than 6 months) has elapsed between TSAs for a particular field task.

Any minor deficiencies that are noted during the TSA will be corrected in the field as they occur. If major deficiencies are noted (*i.e.*, those that cannot be immediately corrected in the field), a Stop-Work Order will be issued until appropriate measures can be taken to correct the problem. A Stop-Work Order may be issued by the Project QC Officer, following notification to the PM. The conditions and the need for a Stop-Work Order will be documented in sufficient detail to permit evaluation of the deficiency and determination of proper corrective action(s). Pertinent communications with the Project QC Officer, Field Team Leader, DPM, and PM that pertain to an evaluation of the problem along with potential solutions and their implementation will be attached to the Stop-Work Order. In order for work to resume following a Stop-Work Order, the Malcolm Pirnie PM and Project QC Officer must rescind it in writing. The Project QC Officer is responsible for tracking non-conforming conditions, evaluating the effectiveness of corrective measures,

and assuring that the necessary steps have been taken to prevent recurrence of the original problem.

Regardless of whether major, minor, or no deficiencies were noted during the audit, a written report of the TSA will be prepared by the Project QC Officer and submitted to the Malcolm Pirnie, USEPA, and USACE PMs, as well as the Field Team Leader and the field team. This report will identify any deficiencies found and will outline the corrective actions that were recommended/implemented to address them. A copy of SOP No. 3 on conducting a TSA and an example of an audit form are found in Attachment 5. Note that the audit form contained in the SOP is for example purposes only; the Project QC Officer will tailor this form for each type of activity audited. Periodically during the audit, it may be determined that the Site program should be modified to increase data quality or efficiency. These modifications will be documented by the Malcolm Pirnie PM or Project QC Officer in a Field Modification Form. An example of this form can be found in Attachment 4.

Field Corrective Actions

At the end of each sampling day, the sampling team is to report any problems requiring corrective action that were encountered during the day. Corrective action will be undertaken when a non-conforming condition is identified. A non-conforming condition occurs when QA objectives for precision, accuracy, completeness, representativeness, or comparability are not met, or when procedural practices or other conditions are not acceptable. A report is to be filed that documents the problems encountered and the corrective action implemented. A Stop-Work Order may be issued by the Project QC Officer, following notification to the PM, if corrective action does not adequately address a problem, or if no resolution can be reached.

Performance Audits

A performance audit (PA) consists of sending a laboratory a performance evaluation (PE) sample for analysis. The PE sample is a sample of known concentration [established by an independent party such as the National Institute of Standards and Technology (NIST)] that is analyzed by the laboratory, and the analytical results are compared with the certified concentration. The results provide a measure of laboratory performance that is used along with other QA criteria to monitor laboratory capability. USPEA-CLP laboratories are required to perform quarterly analysis of PE samples. At the current time, there are no plans to conduct any additional

PA using PE samples. Therefore, all chemical subcontract laboratories performing chemical tests procured for this project must be NJDEP or federally-certified and are subject to the performance audits required by those programs.

Internal Laboratory Audits

As part of its QA program, the Laboratory Quality Assurance Manager (QAM) will conduct periodic checks and audits of the analytical systems to ensure that the systems are working properly and personnel are adhering to established procedures and documenting the required information. These checks and audits will also assist in determining or detecting where problems are occurring.

In addition to conducting internal reviews and audits, as part of its established QA program the laboratory is required to take part in regularly scheduled Performance Evaluations and laboratory audits from State and Federal agencies for applicable tests. Each laboratory selected to support this program must maintain current NJDEP or Federal certifications, as appropriate. **This does not apply if the USEPA Region 2 DESA or a USEPA CLP Lab is assigned to perform the analyses. Malcolm Pirnie will only perform audits of commercial subcontract laboratories.**

Laboratory Corrective Actions

If a particular laboratory analysis is deemed "out of control," corrective action will be taken by the laboratory to maintain continued data quality. Each laboratory must adhere to their in-house corrective action policy. The coordinator of the laboratory's analytical section will be responsible for initiating laboratory corrective action when necessary.

Data Quality Audits (DQAs)

DQAs are conducted to determine if the data are adequate to support the DQOs and to determine the cause of deficiencies in the event that the data quality is not adequate. This audit is conducted by the Project QC Officer or his designee after the data have been fully validated. The Project QC Officer will first determine to what extent the data can be used to support the decision making process. If

the data are deficient, the Project QC Officer will identify the cause of the deficiency and will determine what modifications need to be made (*e.g.*, request that the laboratory analyze a larger volume sample or employ an alternate or modified method to lower the RLs so that subsequent data are acceptable.)

QAPP Worksheet #33
(UFP-QAPP Manual Section 4.2)

QA Management Reports Table

Type of Report	Frequency (daily, weekly monthly, quarterly, annually, etc.)	Projected Delivery Date(s)	Person(s) Responsible for Report Preparation (Title and Organizational Affiliation)	Report Recipient(s) (Title and Organizational Affiliation)
Progress Reports	Monthly	End of each following month	Malcolm Pirnie PM or Deputy PM	USEPA and USACE-KCD PMs
Technical System Field Audit	Initally within the first two weeks of field work and with follow up audits if significant deficiencies are found	Month after field work begins	Project QC Officer or designee	USACE PM
Data Validation Report	After lab data is received	Within 21 days after receiving data	Data Validator	Project QC Officer and PM
Corrective Action Reports	When corrective action is required	When corrective action is implemented	Project Manager or designee	Project Team and PM(s)

The USACE PM will receive several types of management reports. These will include the results of any corrective action reports and data validation reports. In addition, the progress report will contain a section on quality control reports. Problems or issues that arise between regular reporting periods may be identified to program management at any time. Information included in the progress report will include the following:

- Results of Technical System field audits conducted during the period.
- An assessment of any problems with the measurement data, including accuracy, precision, completeness, representativeness, and comparability.
- A listing of the non-conformance reports, including Stop-Work Orders issued during the period, related corrective actions undertaken, and an assessment of the results of these actions.
- Identification of significant quality assurance problems and recommended solutions, as necessary.

QAPP Worksheet #34
(UFP-QAPP Manual Section 5.2.1)

This worksheet and text section describes the processes that will be followed to verify project data. Verification inputs include items such as those listed in Table 9 of the UFP-QAPP Manual (Section 5.1 Internal or *external* is in relation to the data generator.

Verification (Step I) Process Table

Verification Input	Description	Internal/ External	Responsible for Verification (Name, Organization)
Chain of custody (COC)	Form will be internally reviewed upon completion and verified against field logs and laboratory reports. Review will occur with the completetion of each report.	I	Malcolm Pirnie
Field report	Field reports will be verified with the field logbooks.	I	Malcolm Pirnie
Laboratory data packages	Laboratory data packages will be used to verify the reported results in the project report and against QAPP criteria.	I	Malcolm Pirnie

Data Verification

- The Field Team Leader or designee is required to review the logbook entries for errors or omissions. This information is transmitted to the Project QC Officer or designee for correction.

- In addition, the Project QC Officer or designee is responsible for reviewing field data for completeness and to verify that the field crew followed the QC requirements detailed in this QAPP (*e.g.*, the collection of QC samples at the required frequency, response checking the field instruments). If any problems with the information are found, the Project QC Officer or designee will document the problems.

- Once the Project QC Officer or designee reviews the field data, he/she signs the bottom of the logbook page as reviewed and approved.

QAPP Worksheet #35
(UFP-QAPP Manual Section 5.2.2)

This worksheet describes the processes that will be followed to validate project data. Validation inputs include items such as those listed in Table 9 of the UFP-QAPP Manual (Section 5.1). It describes how each item will be validated, when the activity will occur, what documentation is necessary and identifies the person responsible. It also differentiates between steps IIa and IIb of validation.

Validation (Steps IIa and IIb) Process Table

Step IIa/IIb	Validation Input	Description	Responsible for Validation (Name, Organization)
IIa	Methods	Records support implementation of SOP in QAPP.	J. McCann, Malcolm Pirnie, Inc.
IIa	Chain of Custody	Examine traceability of data from sample collection to generation of project report	J. McCann, Malcolm Pirnie, Inc. (Based upon USEPA DESA lab reports or USEPA-CLP Data Validation Reports for CLP data.)
IIb	Deviations from SOP and project documents.	Determine impacts of any deviation from method and the project plan.	Project Team led by Edward Dudek, PE, Malcolm Pirnie, Inc.

QAPP Worksheet #36
(UFP-QAPP Manual Section 5.2.2)

This worksheet and text section identifies the matrices, analytical groups, and concentration levels that each entity performing validation will be responsible for, as well as criteria that will be used to validate those data.

Validation (Steps IIa and IIb) Summary Table

Step IIa/IIb	Matrix	Analytical Group	Concentration Level	Validation Criteria	Data Validator (title and organizational affiliation)[1]
IIa/IIb	Soil or dust	PCB Aroclors	Low	USEPA Region 2 Validation Criteria	USEPA Data Validators assisted by subcontractors.

1. We anticipate that the majority of the analyses will be performed by a USEPA CLP laboratory or the USEPA Region 2 DESA laboratory. If the DESA laboratory performs the analyses, the reported data will be considered valid. If analytical test data is produced by a subcontract laboratory, it will be reviewed by a qualified data validator assigned by Malcolm Pirnie.

USEPA DESA Laboratory Data

Data generated by the USEPA Region 2 DESA laboratory in Edison, NJ undergo an internal laboratory QA review and are considered USEPA-validated and useable as reported. No third party data validation will be performed on DESA-generated data.

USEPA CLP Data

Validation of USEPA CLP data will be accomplished by comparing the contents of the data packages and QA/QC results to the requirements contained in the applicable analytical methods (SOWs), laboratory SOPs, and validation guidelines. All data generated through the CLP will be validated by RSCC using the latest applicable USEPA Region 2 validation procedures in accordance to the following USEPA guidance documents or their most recent revisions:

- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, OPSWER 9240.1-46, USEPA-540-R-07-003, July 2007

- SOP NO. HW-37/Arochlor Validation of Data USEPA Contract Laboratory Program for Organic Analysis of Low/Medium Concentration of Arochlor Organic Compounds SOM01.1, Revision 0, April 2006.

Commercial Subcontractor Laboratory Data

Data generated by a commercial subcontractor laboratory will be validated by Malcolm Pirnie or a qualified Malcolm Pirnie subcontractor. Parameters will be validated in accordance with the QC requirements of this QAPP, USEPA's National Functional Guidelines, and applicable Region 2 guidelines.

The validator will conduct a 100% validation of the first SDG received for each analytical parameter. This means that the validator will review the raw data and logbook sheets, and will recalculate at least 10 percent of the sample and QC sample results. If this validation indicates that the laboratory is producing acceptable data, the validation may be scaled back and subsequent data packages will have a less rigorous review. The validation will then be based on the information provided by the laboratory on their QC forms. If the laboratory QC on the report forms are within limits no further review will be conducted; however, if there are QA/QC aspects not meeting criteria, the validator may then review some or all of the full data package to determine the cause or data quality impact of the non-compliance. In addition, at least one of every five data packages will be subject to a full review.

Once data validation is completed, a data validation report will be generated. The report will contain information regarding the parameters that are qualified, the reason for the qualification, and the direction of the bias (only for parameters qualified as estimated), when possible. Based upon the quality assurance review of the analytical data, specific codes (data qualifiers or 'flags') will be placed next to results to provide an indication of the quantitative and qualitative reliability of the results. The data qualifier codes in the National Function Guidelines are proposed for this project. Qualifiers assigned by laboratories will be defined by each laboratory in their data package and will be superseded by the data validator's qualifiers.

Field Data Evaluation

Procedures to evaluate field data for this program include reviewing the data entered into the log books to insure that errors have not been made. The field data documented includes data generated during measurement of field parameters, observations, results of any quality control sample analyses, and field instrument calibrations. This task will be the responsibility of a Malcolm Pirnie Data Reviewer with oversight by the Project QC Officer or designee.

QAPP Worksheet #37
(UFP-QAPP Manual Section 5.2.3)

This worksheet describes the procedures/methods/activities that will be used to determine whether data are of the right type, quality, and quantity to support environmental decision-making for the project.

Usability Assessment

Summarize the usability assessment process and all procedures, including interim steps and any statistics, equations, and computer algorithms that will be used: The USEPA will perform the validation of the USEPA-CLP laboratory data or the DESA laboratory. Data reported by assigned USEPA CLP laboratories will be validated by USEPA Region 2 validators and /or subcontract validators under contract to USEPA following Region 2 SOPs. DESA laboratory data undergoes an internal laboratory QA review and is considered to be validated by the USEPA. The Malcolm Pirnie data validator will validate the non-CLP chemical data in accordance with the protocols outlined on Worksheet 35. Data validation alone does not insure usability of the data. Other factors will be considered, including comparison of actual reporting limits achieved by the lab on the samples collected to the project action levels and data needs.
Describe the evaluative procedures used to assess overall measurement error associated with the project: As part of the data validation process, the validator identifies any qualifications, the bias (if known) of the data, applies qualifiers and comments on the usability of the data. Once the validation package is received from the validator it is reviewed by the Project Quality Officer or a designee. Any QA/QC problems with the validation will be discussed with the validator and laboratories. The data will be compared to the ROD total PCB action level of 1 ppm and the New Jersey RDCSCC of 0.49 ppm to characterize detected contamination in soils and settled dust.

Identify the personnel responsible for performing the usability assessment:

The usability of the data is the responsibility of the project team. The PM and Deputy PM will reconvene the project team after all data has been validated and reviewed. The data users performing the remediation design will participate in a usability assessment to determine if the data is sufficient to meet the data needs and the project DQOs, and will recommend if additional data is required. A data assessment report will be issued by the PM or his designee documenting the results of the usability assessment review performed by the project team. The report will be submitted to the USEPA and USAEC for their approval and regulatory review.

REFERENCES:

1. Cape 2007. Draft Removal Action Report, Cornell-Dubilier Electronic Superfund Site, June 2007.

2. Foster Wheeler Environmental Corporation 2001. Final Investigation Report For Operable Unit 1 (OU-1) Off-Site Soils For Cornell-Dubilier Electronics Superfund Site, South Plainfield, Middlesex County, New Jersey, August 2001.

3. Malcolm Pirnie, Inc., 2007. Cornell-Dubilier OU-1 Draft Project Field Sampling Plan, October 2007.

4. Malcolm Pirnie, Inc., 2007. Cornell-Dubilier OU-1 Draft Project Health and Safety Plan, October 2007.

5. Roy F. Weston, Inc. 1997. Residential Soil Sampling Trip Report Cornell-Dubilier Electronics, South Plainfield, NJ, November 4, 1997.

6. Roy F. Weston, Inc. 1998. Final Report Vacuum Dust Sampling Cornell Dubilier Electronics, South Plainfield, NJ, February 1998.

7. Roy F. Weston, Inc. 1998. Final Report Vacuum Dust Sampling Cornell Dubilier Electronics, South Plainfield, NJ, July 1998.

8. Roy F. Weston, Inc. 1998. Final Report Vacuum, Wipe, and Soil Sampling Cornell Dubilier Electronics, South Plainfield, NJ, December 1998.

9. Roy F. Weston, Inc. 1998. Tier I Residential Sampling and Analysis Summary Report – Cornell Dubilier Electronics, June 25,

1998.

10. Roy F. Weston, Inc. 1998. Tier II Residential Sampling and Analysis Summary Report – Cornell Dubilier Electronics, July 2, 1998.

11. Roy F. Weston, Inc. 1998. Tier III Residential/Neighborhood Sampling and Analysis Summary Report – Cornell Dubilier Electronics, July 10, 1998.

12. Roy F. Weston, Inc. 1999. Tier I Residential Sampling and Analysis Summary Report – Cornell Dubilier Electronics, February 16, 1999.

13. USACE, 2001. USACE Requirements for the Preparation of Sampling and Analysis Plans. 2001.

14. USEPA, 1996. SW-846, "Test Methods for Evaluating Solid Waste," Including Promulgated Final Update III. 3rd Edition. December 1996.

15. USEPA 1999. CLP National Functional Guidelines for Organic Data Review, EPA-540/R-99- 008 (PB99-963506), October 1999.

16. USEPA, 2000. Guidance for the Data Quality Objectives Process, QA/G-4. August 2000.

17. USEPA, 2001. Requirements for Quality Assurance Project Plans. USEPA QA/R-5. March 2001.

18. USEPA, 2002. Guidance for Quality Assurance Project Plans. USEPA QA/G-5. December 2002.

19. USEPA, 2003. Region II, "Record of Decision" Cornell-Dubilier Electronics Superfund Site, South Plainfield, Middlesex County, New Jersey. September 2003.

20. USEPA, 2005. Contract Laboratory Program, Statement of Work for Organic Analysis, Multi-Media, Multi-Concentration (SOM01.1), May 2005.

21. USEPA, 2005. Intergovernmental Data Quality Task Force, Uniform Federal Policy For Quality Assurance Project Plans, Part 1: UFP-QAPP Manual, EPA-505-B-04-900A, Final Version 1, March 2005

22. USEPA, 2005. Intergovernmental Data Quality Task Force, Uniform Federal Policy For Quality Assurance Project Plans, Part 2A: UFP-QAPP Workbook, EPA-505-B-04-900C, Final Version 1, March 2005.

23. USEPA, 2005. Intergovernmental Data Quality Task Force, Uniform Federal Policy For Quality Assurance Project Plans, Part 2B: Quality Assurance/Quality Control Compendium: Minimum QA/QC Activities, EPA-505-B-04-900B, Final Version 1, March 2005.

24. USEPA, 2006. SOP NO. HW-37/Aroclor Validation of Data USEPA Contract Laboratory Program for Organic Analysis of Low/Medium Concentration of Aroclor Organic Compounds SOM01.1, Revision 0, April 2006.

25. USEPA, 2007. Contract Laboratory Program Guidance for Field Samplers, OSWER 9240.0-44, EPA 540-R-07-06, July 2007.

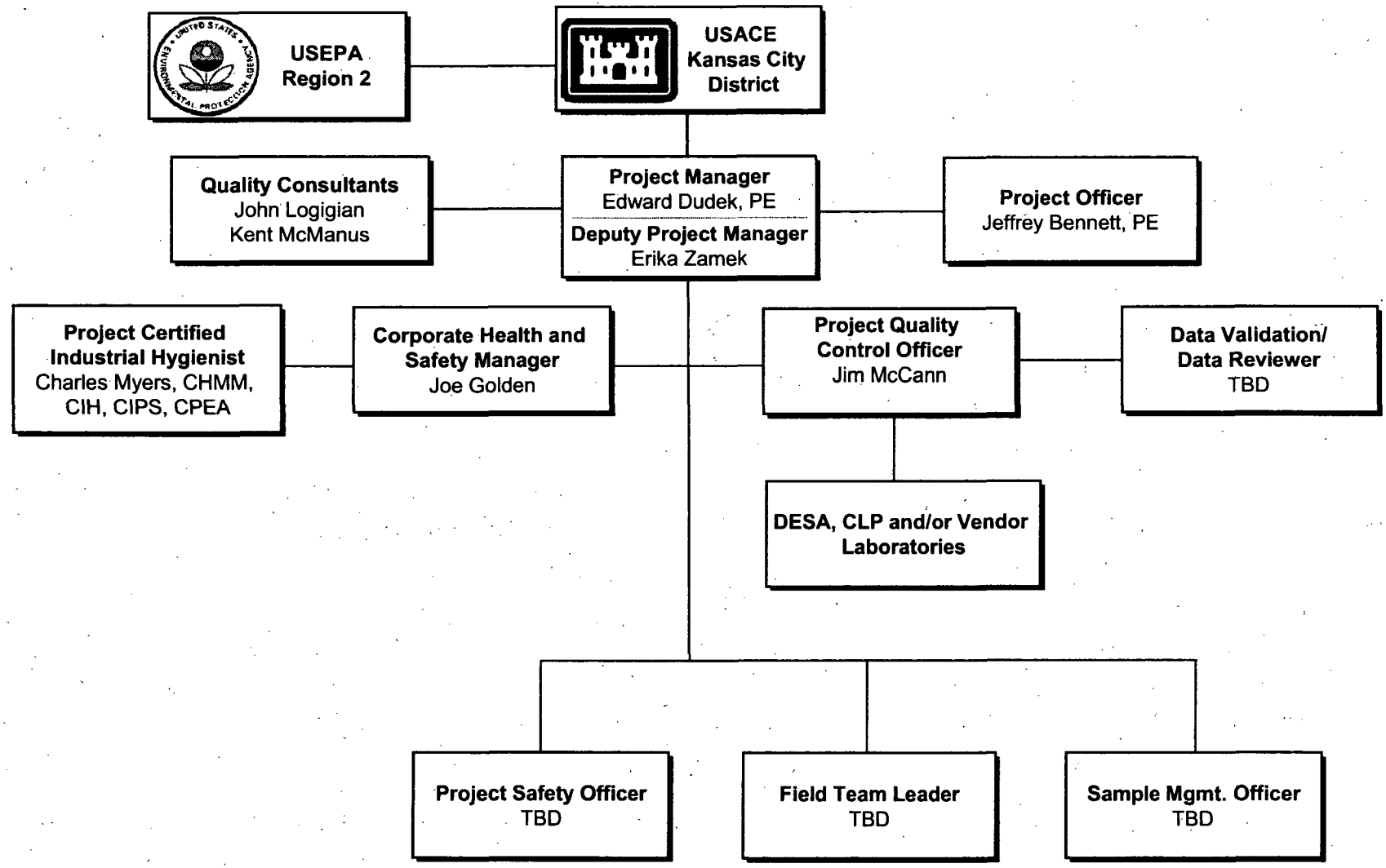
26. USEPA, 2007. Introduction to the Analytical Services Branch (ASB) Contract Laboratory Program, EPA 540-R-07-05, OWER 9240.0-42, January 2007.

27. USEPA, 2007. Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, OSWER 9240.1-46, EPA-540-R-04-003, July 2007.

28. USEPA, 2007. Modifications Updating SOM01.1 To SOM01.2 October 5, 2005, (Updated 02-12-2007) Amended 04-11-2007).

29. USEPA, 2005. SOP NO. HW-32 Standard Operating Procedure for Implementing the National Strategy For Procuring Analytical Services for All OSWER Programs (Superfund, RCRA, and Brownfields, Revision 5, March 17, 2005.

30. USEPA, 2007. Basic Manual for Electronic Data EPA Region 2, Version 1.1, November 2007.



MALCOLM PIRNIE	**Figure 2:** Cornell-Dubilier Electronics Superfund Site OU-1 Project Team Organization Chart	Final SSHP March 2008

ATTACHMENT 1.1

Data Quality Objectives

DATA QUALITY OBJECTIVES

Data Quality Objectives (DQOs) are used to help decision makers collect data of the right type, quality, and quantity to support decisions. The approach to developing DQOs is an iterative one, designed to take decision makers through a strategic planning process that begins with setting broad project goals and continues through a number of refining steps aimed at generating environmental data that will be appropriate to making the decisions needed to reach the goals.

This document begins with a "project-level" statement of the DQOs that sets the framework for addressing the environmental problems of the study area. The project-level DQOs focus on the information that the decision-making team needs to carry out an integrated assessment that will produce data to be used for planning remedial actions at properties that are part of Operable Unit 1 (OU-1) of the Cornell-Dubilier Electronics (CDE) Superfund Site (the Site).

1.0 State the Problem

The Site is located in South Plainfield, Middlesex County, New Jersey. The CDE operated from 1936 to 1962, manufacturing electronic components including, in particular, capacitors. Polychlorinated biphenyls (PCBs) and chlorinated organic solvents were used in the manufacturing process. These activities led to widespread chemical contamination at the facility, as well as migration of contaminants to nearby areas. PCBs have been detected in ground water, soils, and in building interiors at the industrial park, at adjacent residential, commercial, and municipal properties, and in the surface water and sediments of the Bound Brook. The United States Environmental Protection Agency (USEPA) divided the Site into four separate operable units. The focus of this project is OU-1, which consists of residential, commercial, and municipal properties located in the vicinity of the former CDE facility with soils and/or indoor dust potentially contaminated with PCBs.

- In 2000, the USEPA initiated the remedial investigation (RI) and collected soil samples from OU-1 properties. Analytical results from this investigation revealed additional properties with PCB contamination in soil at unacceptable levels, and indicated the need for more extensive sampling. The USEPA evaluated data obtained during sampling conducted in 1997 and 1998 in conjunction with the RI findings, and in June 2003 proposed a comprehensive remedy for OU-1. On September 30, 2003, the USEPA signed a Record of Decision (ROD) to address the contaminated soils at the OU-1 properties. The soils cleanup level established by the USEPA in the ROD is 1.0 ppm for total PCBs. The State of New Jersey concurred with Selected Remedy in the ROD, but has defined a lower Residential Direct Contact Soil Cleanup Criterion (RDCSCC) for PCBs of 0.49 ppm. Based on the data collected to date, the USEPA believes that in meeting the 1.0 ppm goal for this action, the Selected Remedy may also achieve the State's RDSCC. If the Selected Remedy does not achieve the RDSCC at some properties, the State may elect to pursue additional soil removal or may require that additional restrictions be placed on properties to prevent future direct contact with soils above 0.49 ppm.

The major components of the Selected Remedy described in the ROD include:

- Excavation of an estimated 2,100 cubic yards of contaminated soil from approximately 16 properties, backfilling with clean fill, and property restoration as necessary;
- Transport of the contaminated soil off-site for disposal, with treatment as necessary;
- Indoor dust remediation where PCB-contaminated dust is encountered; and,
- Where necessary, temporary relocation of residents during the indoor remediation.

Studies conducted by the USEPA to date have identified four OU-1 properties requiring remedial action, and a study area of approximately 59 properties that require expanded soil and interior dust sampling to determine if additional remediation is required to meet the ROD cleanup goals. Remedial actions have recently been completed on the four properties.

The objectives for this study of the OU-1 properties are as follows:

- To characterize Total PCB contamination (as PCB Aroclors) in the soils on vicinity properties.
- To characterize the extent of Total PCB contamination (as PCB Aroclors) in the indoor dust collected within vicinity properties.

2.0 Identify the Decision

To meet the objectives, the following fundamental questions will need to be answered during the investigation:

Fundamental Questions	Alternative Actions
Do soils at individual properties in the vicinity of the CDE facility contain PCBs above the USEPA action level of 1 ppm?	If soils contain PCBs above the action level, additional samples may be collected to delineate the full extent of the PCB contamination at the property. The property may also be remediated as appropriate. Action to be taken will be at the direction of the EPA. If soils do not contain PCBs above the action level no further action will be necessary.
Do indoor dust samples within individual properties in the vicinity of the CDE facility contain PCBs above the USEPA action level of 1 ppm?	Properties with indoor dust containing PCBs above action levels will be remediated at the direction of EPA. If indoor dust does not contain PCBs above the action level no further action will be necessary.

The following decisions will need to be addressed:

- Determine which properties contain soil contaminated with PCBs above the USEPA action level and will require additional sampling.

- Determine which properties contain indoor dust contaminated with PCBs above the USEPA action level and will require remediation.

3.0 Identify the Inputs to the Decision

The following inputs are required to answer the fundamental questions identified in Step 2 above:

- Gather any existing information from existing site maps and data files. The existing maps include soils data from past investigations conducted at OU-1 properties from June 1997 to May 1998, the RI in 2000, and the sampling by the remedial action contractor in 2006.

- Review any existing PCB data for OU-1 properties.

- Determine appropriate sampling and analytical methods.

- Review PCB results for soil samples.

- Review PCB results for indoor dust samples.

4.0 Define the Boundaries of the Study

The Site is located at 333 Hamilton Boulevard in South Plainfield, Middlesex County, New Jersey. The former CDE facility, now known as the Hamilton Industrial Park, consists of approximately 26 acres which contained buildings used by a variety of commercial and industrial tenants. The facility is bounded on the northeast by the Bound Brook and former Lehigh Valley Railroad, Perth Amboy Branch (presently Conrail); on the southeast by the Bound Brook and a property used by the South Plainfield Department of Public Works; on the southwest, across Spicer Avenue, by single-family residential properties; and on the northwest, across Hamilton Boulevard, by mixed residential and commercial properties. The physical boundaries of the investigation have been defined by the USEPA as the entire area encompassing OU-1, which consists of residential, commercial, and municipal properties located in the vicinity of the former CDE facility. Figure 1 in Appendix I of the ROD shows the locations of these properties.

The following practical constraints and obstacles that may impede the sampling and interfere with the planned data collection:

- Delay of arrangements and permission to access the properties.

- Weather conditions at the site may prevent collection of samples as scheduled.

- Geological and physical conditions encountered at the sampling locations may interfere with the collection of a desired sample. If these conditions exist, it may be necessary adjusts the sampling schedule and possibly chose alternate sampling locations.

- Laboratory data may not meet the quality assurance criteria or reporting limit criteria and it may be necessary to re-sample locations.

5.0 Develop a Decision Rule

The purpose of this step is to integrate the outputs from the previous steps into a statement that defines the conditions that would cause the decision maker to choose among alternative actions.

The following primary decision rules will be used to answer the fundamental questions:

- If the soil on a property is found to contain total PCB concentrations greater than 1.0 ppm, the contaminated soil will ultimately need to be excavated, backfilled with clean fill, and the property restored. The contaminated soil will then be transported to an off-site location for treatment and/or disposal as appropriate.

- If the indoor dust within a property is found to contain total PCB concentrations greater than 1.0 ppm, the property will require remediation, and where necessary, the temporary relocation of residents during the indoor remedial activities.

6.0 Specify Limits on Decision Errors

This step is to specify acceptable limits on decision errors which will be used by the decision maker to establish appropriate performance goals for limiting uncertainty in environmental data. These acceptable limits on decision errors allow decision makers to develop resource-effective sampling designs while limiting uncertainties in the collected data.

There are two types of decision errors applicable to estimating the true value of a population:

1. Sampling design error, which occurs when the sampling design is unable to capture the complete state of natural variability over space and time; and

2. Measurement error, which refers to a combination of random and systematic errors, known as the total error and can be controlled by hypothesis testing; that is, selecting the null hypothesis (H_o) and the alternative hypothesis (H_a) and testing to reject or accept H_o. The null hypothesis is the baseline condition that is presumed to be true in the absence of strong evidence to the contrary.

The null hypothesis and alternative hypothesis are as follows:

H_o: Soils of the facility with data gaps <u>do</u> contain the contaminants of concern (COCs) at concentrations that exceed the action levels and <u>will</u> need to be remediated.

H_a: Soils of the facility with data gaps do not contain the COCs at concentrations that exceed the action levels and will not need to be remediated.

There are two types of decision errors:

1. The false rejection decision error (false positive), or Type I error, which occurs when the null hypothesis is rejected when it is true; and

2. The false acceptance decision error (false negative), or Type II error, which occurs when the null hypothesis is not rejected when it is false. In this case, the false rejection error concludes that the soil or indoor dust sample does not contain PCBs with concentrations that exceed the action level when the actual sample PCB concentration does exceed the action level.

The consequences of the false acceptance decision errors include the unnecessary expenditure of resources such as funding, personnel, and time. The consequences of the false rejection decision error are that the PCBs in the soils or indoor dust will not be remediated and will pose unacceptable risk to the environment or human health. Because of the possible severity of the false rejection decision error consequence, the false acceptance decision error is more tolerable than the false rejection decision error. The false acceptance decision error will occur when the analytical results are biased high, and the false rejection decision error will occur when the analytical results are biased low.

7.0 Optimize the Design for Obtaining Data

This step involves identifying the most resource-effective sampling and analysis design for generating data that are expected to satisfy project DQOs.

The consequence of the decision error will be balanced against the cost of limiting the possibility of these errors. These errors will be managed by the use of precise and accurate analytical methods, collection of duplicate samples, and use of accepted sampling techniques.

The approach to reducing the risk of error is to systematically perform soil and indoor dust sampling at each property following prescribed procedures. The sampling design will consist of selection of the properties within OU-1 to sample based on previously collected curb side data and selection of representative sample locations at each property based on field observations and professional judgment. USEPA will be responsible for selecting the properties from which samples will be collected. A team of USEPA, USACE, and MP personnel will visit each selected property and map out individual soil sampling points based on yard size and shape. The size of the area sampled for indoor dust is driven by the volume required by the analytical laboratory and will be determined by the field team based on dust loading observed at the time of sample collection.

To minimize unacceptable errors, laboratory analyses with a high degree of confidence and extensive quality assurance/quality control and documentation procedures will need to be utilized. Therefore, the USEPA Region II Division of Environmental Science and Assessment Laboratory or USEPA Contract Laboratory Program will be utilized whenever possible. If a non-USEPA sub-contract laboratory is utilized, it will be certified by the New

Jersey Department of Environmental Protection and National Environmental Laboratory Accreditation Program.

ATTACHMENT 1.2

Data Needs Table

DATA NEEDS TABLE

Data Need	Data User	Parameter	Method	QLs	Rationale for Analysis	Data Use
Surface soils	Remedial Design Team	PCB Aroclors	CLP SOM01.1	See Worksheet 15 for project QLs	Characterize the extent of Total PCB contamination above the USEPA action level in surface soils at properties in the vicinity of the CDE facility.	Determine whether or not additional samples and possible remediation will be needed.
Subsurface soils					Characterize the extent of Total PCB contamination above the USEPA action level in subsurface soils at properties in the vicinity of the CDE facility.	Determine whether or not additional samples and possible remediation will be needed.
Indoor dust					Characterize the extent of Total PCB contamination above the USEPA action level in indoor dust at properties in the vicinity of the CDE facility.	Determine whether or not remediation will be needed.

ATTACHMENT 2

SOP No. 1: Procedure to Conduct Sample Management for CLP and Non-CLP Samples

Procedure to Conduct Sample Management for CLP and non-CLP Samples

I. Introduction

This guideline is to provide reference information on sample management procedures.

II. Definitions

Contract Laboratory Program (CLP) – The U.S. Environmental Protection Agency (USEPA) CLP was developed to retain laboratory services that will ensure that all environmental samples collected under the Superfund Program will be analyzed in accordance with recognized USEPA laboratory methods and quality assurance/quality control (QA/QC) procedures. See http://www.epa.gov/superfund/programs/clp/ for detailed information on the CLP.

Target Compound List (TCL) – This is a list of organic compounds typically analyzed for by the CLP. The list is broken into three subdivisions: volatiles, semi-volatiles, and pesticides/polychlorinated biphenyls (PCBs).

Target Analyte List (TAL) – This is a list of inorganic parameters typically analyzed for by the CLP. Parameters on this list include heavy metals and cyanide.

Routine Analytical Services (RAS) – Laboratory analysis for parameters included on the TCL and/or the TAL in solid and aqueous samples.

Non-RAS – Laboratory analysis for substances or parameters not included on the TCL or the TAL. Also encompasses analysis of non-soil/sediment, non-aqueous matrices, and analysis of RAS compounds using non-RAS protocols.

Trip Blanks – Trip blanks are used to check for sample contamination originating from sample transport and shipping, as well as from site conditions. Trip blanks are necessary when aqueous environmental samples are collected for volatile organic analysis.

Rinsate Blanks – Rinsate blanks, also known as field blanks, are used to check the efficacy of sampling equipment decontamination procedures. Rinsate blanks are collected for each type of non-dedicated sampling equipment used onsite. Demonstrated analyte-free water is poured over the equipment, collected in containers, and analyzed for the analytes of concern.

Field Duplicate – Field duplicates are two separate samples collected from the same sampling location. Field duplicates are used to evaluate field sampling precision and are collected at a set frequency for each analyte group. For soils, a sample aliquot is homogenized and split into two sampling containers.

Matrix Spike/Matrix Spike Duplicates (MS/MSD) – MS/MSD analysis is the process by which standard mixes of various organic TCL compounds are added to field samples prior to extraction. The sample is then split into duplicates and analyzed. The analysis is used to

evaluate the matrix effect of the sample upon the analytical methodology. Triple volume of aqueous samples for MS/MSD analysis is collected in the field, at a frequency of at least 5 percent per matrix/concentration. No extra volume is required for the soil samples.

III. Guidelines

The use of sample management procedures during sample collection is intended to ensure that samples required during the site investigation are accounted for when the project is completed. The sample management officer (SMO) is responsible for the implementation of sample management, and also for assuring that the proper QA/QC samples are collected. These goals can be achieved by adhering to the procedures and guidelines described in Sections IV, V, and VI below.

IV. Laboratory Coordination

Analysis of CLP Samples

For samples that will be analyzed through the CLP, a request must be made through the Regional Sample Control Center Coordinator (RSCC), prior to the initiation of sample collection activities, for assignment of a laboratory per USEPA Region 2 SOP No. HW-32: Standard Operating Procedure for Implementing the National Strategy for Procuring Analytical Services for All OSWER Programs, Revision 5, March 17, 2005. At this time, any requested modifications to the CLP SOWs must also be described [*e.g.*, lower detection limits, adding a parameter to the TCL or TAL list, requesting a quicker turnaround time (TAT)].

A description of how to request CLP services is included in the USEPA-issued CLP Guidance for Field Samplers, OSWER 9240.0-44, EPA 540-R-07-06, July 2007. This guidance document can be found online at the following URL:
http://www.epa.gov/superfund/programs/clp/guidance.htm.

A request for CLP services generally includes the following steps:

1. Contact the RSCC well before the sampling event to discuss the CLP sample submission requirements. For USEPA Region 2, the RSCC is Jennifer Feranda, who can be contacted at 732-321-6687.

2. Fill out the RSCC request forms.

3. RSCC will contact the originator of the request with the Case Number and assigned laboratories. At times, the EPA Region 2 Division of Environmental Science and Assessment (DESA) Laboratory may choose to perform all or part of the analyses requested.

4. For a long-term project, weekly contact should be maintained with the RSCC.

For samples submitted to a CLP laboratory, Forms II Lite software must be used by the samplers

to record the sample information and to create CLP sample numbers and the required COC forms. Assistance with Forms II Lite can be obtained by calling the help desk at 703-818-4200 or by visiting the Forms II Lite web site at http://dyncsdao1.fedcsc.com/itg/forms2lite/.

Analysis of non-CLP Samples

Subcontractor laboratory(ies) will be procured for the project to conduct analysis of non-CLP parameters, as required. Weekly contact should be maintained with these laboratories to keep them informed of the status of the sampling program.

V. Preparation of Sample Containers

When CLP and/or DESA laboratory(ies) are used, Malcolm Pirnie will purchase certified clean sample containers from an approved supplier. Copies of these certifications should be kept in the project files for future reference. When non-CLP laboratory(ies) are used, arrangements should be made with the subcontract laboratory to provide suitable, clean sample containers appropriate for each test.

It should be noted that non-CLP subcontract labs usually also provide coolers, but when samples are being sent to an assigned CLP lab or to the USEPA Region 2 DESA Laboratory, the samplers must make arrangements to obtain the coolers through the Malcolm Pirnie Equipment Facility prior to the sampling event. The Malcolm Pirnie Equipment Facility is located in the Tall Pines Industrial Park, 382 Route 59 Section 286, Monsey, NY 10952 (Contact Max Bateman at 845-357-0965).

VI. QA/QC Samples

Rinsate Blanks

Rinsate blanks (or Equipment Blanks) are collected for each type of equipment used to collect samples at the frequency specified in the Quality Assurance Project Plan (QAPP). It is recommended that rinsates be collected at a minimum frequency of one per week and at a maximum frequency of one rinsate per location per day. Decontaminated equipment must be properly stored in an area and in a manner that will prevent cross contamination. The analyte-free water required for equipment decontamination and rinsate blank collection will be purchased by Malcolm Pirnie from an approved supplier. Additional information on Rinsate Blanks is provided in SOP No. 5.

Where possible, composite rinsates will be collected from all equipment associated with a particular matrix for analysis of non-volatile parameters.

Rinsate blanks are collected using the following procedure:

1. Pour demonstrated analyte-free water over clean equipment.

2. Collect the water into sample containers.

3. Preserve, package, and ship to the analytical laboratory for analysis.

Field Duplicates

Samples for duplicate analysis are collected in the field for each matrix sampled, at the frequency described in QAPP. Sufficient quantity of matrix must be collected from the same sample location to fill a duplicate set of sample containers. The duplicate volume is shipped to the laboratory under a separate, "blind" sample ID (or CLP sample number).

For soil/sediment samples the volatile organic fraction is collected as co-located grab samples, while the non-volatile fraction is homogenized prior to collection. For dust and wipe samples field duplicate samples should be collected from an adjacent area of equal size.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Matrix Spike/Matrix Duplicate (MS/MD)

MS/MSD analysis for organics are typically conducted for 1 in 20 environmental samples per concentration/matrix. Three times the total volume is necessary for collection of aqueous MS/MSD samples. No extra volume is required for the soil samples. MS/MSDs are noted as such on the chain of custody (COC).

VII. Sample Documentation, Packaging, and Shipping Procedures

One or more members of the field team should be designated as SMOs. The SMO will bear the ultimate responsibility for the documentation, packaging, and shipping of the samples. These procedures are outlined in the sections below.

Pre-Field Activities

If samples are being submitted to non-CLP labs, no special arrangements are required prior to the initiation of fieldwork. If samples are being submitted to CLP-assigned labs, the USEPA RSCC must be contacted for information regarding the following items prior to going out into the field:

- CLP Sample Numbers.
- SMO-assigned Case Numbers.
- Traffic Report/COC (TR/COC) Records.
- Chain-of-custody seals.

Refer to the USEPA CLP Guidance for Field Samplers, Chapter 2 for detailed instructions regarding pre-field activities. This document can be found in QAPP Attachment 11.

Documentation and Chain of Custody

For documentation purposes, the field team will enter information about each sample into the field logbook as they collect the sample. The information recorded should include but not be limited to the following:

- The MPI assigned sample number (sample ID).
- The CLP Number and Case Number (for CLP samples, only);.

- Method of sample collection.
- Sample date.
- Time of collection.
- Preservative(s) used.
- Analyses required.
- Sample type.
- Associated rinsate(s).
- Sampler's initials.

The same information should be included on the sample bottle label(s).

Once all of the samples have been collected, they should be grouped for shipment by receiving laboratory and the COC filled out. How the COC is set up and filled out varies between CLP and non-CLP laboratories:

- When samples are being shipped to a non-CLP laboratory, COC forms provided by the laboratory can be used.

- When samples are being shipped to a CLP-assigned laboratory, the COC and sample labels should be created and printed using the FORMS II Lite software. The labels can be printed in the field using a laptop PC and printer, It is also possible to pre-print the labels using the FROMS II Lite prior to going to the field. Refer to the FORMS II Lite User's Guide for instructions on the use of FORMS II Lite software. FORMS II Lite can also be used to create COCs for non-CLP samples. If circumstances require that handwritten sample labels must be used for CLP samples, follow the requirements in checklist Appendix E-4 of the USEPA's CLP Guidance for Field Samplers.

Before placing a sample in a cooler, the sample label should be covered with clear tape. The sample labels should contain the following information:

- Malcolm Pirnie-designated sample number.

- For CLP samples only, the assigned CLP Sample Number and CLP Case Number must be recorded on each sample taken during a sampling event.

- The month, day, and year the sample was collected.

- The type of analysis requested.

- The type of preservation performed in the field.

CLP Documentation Requirements

A full description of the CLP documentation requirements are found in Sections 1.4 and 3.2 of USEPA's CLP Guidance for Field Samplers. Samplers must:

- Record the CLP Number and Case Number on each sample bottle.
- Complete the TR/COC Record using the Forms II Lite software, making sure to indicate on the TR/COC Record if samples require the use of a Modified Analysis.
- Complete and attached sample labels.
- Complete and attach tags to meet Regional requirements.
- Complete and attach custody seals to meet Regional requirements.
- Complete field operations records, as necessary.

Contact the RSCC before the sampling event for information regarding the assigned CLP Sample Numbers, SMO-assigned Case Numbers, TR/COC Records and chain-of custody seals for sampling events. Under no circumstances should the site name appear on any documentation that is sent to the laboratory when shipping CLP samples.

Packaging and Shipping Samples

Below are guidelines for packaging and shipping samples. A checklist for packing CLP samples for shipment can also be found in Appendix E-6 of the USEPA's CLP Guidance for Field Samplers.

1. Make sure the caps on the sample bottles are tightly sealed. Wipe down the outside of all of the sample bottles.
2. Preserve the samples according to requirements in the QAPP.
3. For CLP, apply one custody seal around the circumference of the container or over the cap and onto the sides of the container. The custody seal must applied to sample containers in such a manner as to reveal if the container was opened during transit.
4. Place containers in its individual zip-lock bag. Eliminate extra air space from the bag before sealing.
5. For CLP samples, place the associated sample tag into the zip-lock bag with the sample.
6. Prepare the shipping container (usually a cooler) so that no leakage can occur during shipping. Securely seal all valves using duct tape on both the inside and the outside of the cooler, and line with plastic or a larger garbage bag. Only coolers that conform to the general design requirements in 49 CFR 173.410 should be used for shipment.
7. Put 1-2 inches of packing material in the bottom of the coolers, and then place the samples into the garbage bag in the cooler.

8. Surround the sample bottles with bags of ice (only the samples that need to be cooled – refer to the QAPP requirements for sample preservation. Prior to placement in the cooler, remove the ice from the original bag and re-pack into doubled zip lock bags. Use enough ice to ensure that the proper temperature (2-6°C) is maintained during transport. Place a temperature blank (40-mL vial filled with DI water and labeled as "temperature blank") into the cooler.

9. Place packing material over and around the sample bottles. Sufficient packing material must be used so the bottles will not move or break during transport.

10. Once the samples are packed, close and securely tie or tape the plastic or garbage bag.

11. Fill in the "relinquished by" and "received by" sections of the COC prior to shipment. The SMO should fill in the name of the commercial shipper (courier) and add the airbill number, if applicable, as the courier generally will not sign the COC.

12. Make enough copies of the COC form(s) to allow for placement of one set in each cooler that is not the lead cooler. Seal the original COC form in a ziplock bag and tape to the inside of the lead cooler, and seal one copy of the COC form(s) in a ziplock bag and place in each of the other cooler(s).

13. For CLP samples, retain one copy of the COC form for the SMO and one copy for transmission to the RSCC (send within 1 day). For non-CLP samples, retain one copy of the COC form for the SMO.

14. Close the cooler and seal with strapping tape. If visibly dirty, wipe down the outside of the cooler. Apply two signed and dated custody seals to the cooler diagonally across from each other where the cooler lid meets the cooler. Apply the custody seals in such a manner as to reveal if the cooler was opened during transit.

15. Place an address label on the outside of each cooler and cover with clear tape. If more than one cooler is being sent to one destination, label each cooler appropriately, *e.g.*, 1 of X, 2 of X, etc. Attach the airbill to one of the coolers. Generally, the samples are sent via overnight carrier for next day delivery. This should be confirmed with the Field Team Leader.

16. Notify the laboratory of the shipment before 9:00 a.m. on the day after shipping. For CLP samples, fill out the Sample Shipping Call-In Form. Call or fax the shipping information to RSCC by 9:00 am the following morning. For non-CLP samples, follow the notification system agreed to in the subcontract.

17. Instructions for shipping and packaging CLP samples can be found in the CLP Guidance for Field Samplers. Appendix E of the guidance contains sampling checklist which should be followed.

Note: Some samples have very short holding times. In some limited instances, the samples may need to be either hand delivered to a laboratory or picked up by the laboratory's courier service.

VIII. References

USEPA 2007, Introduction to the Analytical Services Branch (ABS) Contract Laboratory Program, EPA 540-R-07-02, OSWER 9240.0-42, January 2007

USEPA 2007, Contract Laboratory Program Guidance for Field Samplers, OSWER 9240.0-44, EPA 540-R-07-06, July 2007

FORMS II Lite, Version 5.1, User's Guide

ATTACHMENT 3.1

Example of CLP Chain of Custody Form

Example CLP Chain of Custody Form

USEPA Contract Laboratory Program
Organic Traffic Report and Chain of Custody Record

Case No:
DAS No:
SDG No:

Date Shipped:
Carrier Name:
Airbill:
Shipped to:

Chain of Custody Record

Relinquished by: (Date/Time)	Reveived by: (Date/Time)
1.	1.
2.	2.
3.	3.
4.	4.

Sampler Signature:

For Lab Use Only

Lab Contract No:
Unit Price:
Transfer to:

CHAIN OF CUSTODY

Organic Sample No.	Matrix	Sampler	Conc/Type	Preservative	Location	Collection Date/Time	PCB Aroclors (SOM01.1)					Remarks	For Lab Use Only Sample Condition Upon Receipt
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													

Shipment for case complete (Y or N)?	Sample to be used for laboratory QC:	Additional Sampler Signature(s):	Cooler Temperature upon receipt:	Chain of Custody Seal Number:	
Concentration: L = low, M = low/medium, H = High		Type/Designate: C = Composite, G = Grab		Custody Seal Intact?	Shipment Iced?

Note: Forms II Lite Software must be used to create COC for CLP samples.

ATTACHMENT 3.2

Example of Non-CLP Chain of Custody Form

EXAMPLE OF NON-CLP CHAIN OF CUSTODY FORM

Chain of Custody Record	TAT:	PCB Aroclors: _____ Other: _____	Case No: _____ DAS No: _____ SDG No: _____

	Chain of Custody Record		For Lab Use Only
Date Shipped:		Sampler Signature:	
Carrier Name:	Relinquished by: (Date/Time)	Reveived by: (Date/Time)	
Airbill:	1.	1.	Lab Contract No:
Shipped to:	2.	2.	Unit Price:
	3.	3.	Transfer to:
	4.	4.	

CHAIN OF CUSTODY

Field Sample ID	Matrix	Sampler	Conc/Type	Preservative	Location	Collection Date/Time	PCB Arolors in Soil	PCB Arolors - Dust									Remarks	For Lab Use Only Sample Condition Upon Receipt
1																		
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		
13																		

Shipment for case complete (Y or N)?	Sample to be used for laboratory QC:	Additional Sampler Signature(s):		Cooler Temperature upon receipt:	Chain of Custody Seal Number:	
Concentration: L = low, M = low/medium, H = High		Type/Designate: C = Composite, G = Grab			Custody Seal Intact?	Shipment Iced?

Forms II Lite Software should be used to create COC for samples submitted to CLP lab.

ATTACHMENT 4

Field Modification Form

FIELD MODIFICATION FORM
FOR
CORNELL-DUBILIER ELECTRONICS SUPERFUND SITE OU-1
MALCOLM PIRNIE, INC.

Date:

Document:

Activity:

Requested Modification:

Rationale:

Attachments:

Malcolm Pirnie Project Manager: _____

Malcolm Pirnie Deputy Project Manager: _____

Malcolm Pirnie Project Quality Control Officer: _____

ATTACHMENT 5

SOP No. 6: Technical System Audit

Procedure to Conduct a Technical System Audit (TSA)

I. Introduction

This guideline is to provide information on TSAs to be conducted for the Cornell Dubilier Electronics Superfund Site.

II. Guidelines

The purpose of the TSA is to ensure that the sampling team adheres to the guidelines contained in the Field Sampling Plan (FSP), and Quality Assurance Project Plan (QAPP). Prior to conducting the audit, a copy of the FSP and QAPP will be reviewed by the auditor Project Quality Control (QC) Officer or designee). During the TSA the sampling team's adherence to these guidelines will be verified and any deficiencies from the guidelines will be documented. The effect of the deficiencies will be noted, and any necessary corrective actions will be instituted.

Prior to conducting the audit, the auditor will contact the Deputy Project Manager (DPM) to discuss the audit. This will ensure that the sampling team is properly prepared for the sampling event.

A. Conducting the TSA

The following procedures will be used to conduct the TSA:

1) The auditor will bring the following equipment/documents into the field:

- Copy of the FSP and QAPP and any relevant memos, correspondence or addenda
- TSA audit checklist
- Digital camera

2) The following aspects of the sampling event will be audited:

- QA/QC samples
- Sampling methodologies
- Field documentation
- Sample management tasks
- Decontamination procedures

B. Corrective Action in the Field

Besides observing and reporting, the auditor is responsible for initiating steps for the start-up of corrective action procedures.

If the auditor witnesses discrepancies in the field between the FSP and QAPP and the performance of the sampling team, the auditor has several options available for corrective action. These options are dependent upon the type of deficiencies observed.

Deficiencies observed and the corrective action taken must be documented in the auditor's log book.

- Minor Deficiencies

  Minor deficiencies are problems where the impact, if any, to the data can be easily eliminated and the deficiency can be corrected or the procedure repeated to achieve the desired result. Minor deficiencies that are observed by the auditor will immediately be brought to the attention of the field team. The auditor and the field team will discuss the problem and agree upon what corrective action is necessary. This will allow for the deficiencies to be corrected immediately in the field.

- Major Deficiencies

  Major deficiencies are events or procedures that substantially deviate from approved work plans, will result in increased project costs not previously approved, or will significantly impact the quality of the data.

  Upon witnessing a major deficiency, the auditor will temporarily stop all related site work and will inform the field team of the problem. The auditor and field team will discuss the deficiency as well as what steps are necessary for corrective action. If the deficiency can be corrected in the field, the auditor may allow work to resume as long as all necessary corrective actions are taken. Information regarding the nature of the deficiency as well as the corrective action(s) taken will immediately be transmitted to the USACE Project Manager (USACE PM), the Malcolm Pirnie Project Manager (PM), and the DPM

If the deficiency cannot be corrected in the field, a Stop-Work Order will be issued until appropriate measures can be taken to correct the problem. A written report of the major deficiencies will be prepared by the Project QC Officer and submitted to the USACE PM, the Malcolm Pirnie PM, and the DPM. The Stop-Work Order will remain in effect until the proper corrective action(s) can be implemented.

C. Preparation of a TSA Report

The TSA report provides a means of relaying the events of a sampling episode to key personnel. These events could possibly affect the sample integrity (QA/QC) and therefore, are important to the decisions made regarding analytical data. This report will identify any deficiencies found in the field and will outline the corrective actions that were recommended/implemented to address any minor deficiencies observed. The field audit report will also recommend appropriate corrective actions for any major deficiency noted. Follow-up reports describing completed corrective actions which addressed major deficiencies will be submitted by the Malcolm Pirnie PM to the USACE PM.

A quality control field audit report will usually contain the following information:

- Date and location of field audit
- Sample matrices witnessed
- Name of personnel conducting the sampling
- Summary of sample methodology
- Description of any infractions that occurred and the corrective actions taken
- Conclusions
- Recommendations
- Quality control field audit checklist

The following are examples of audit checklists:

QUALITY CONTROL FIELD AUDIT REPORT

SUMMARY INFORMATION

1. PROJECT NAME: _____

2. PROJECT ADDRESS: _____

_____

_____

3. INVESTIGATION _BUILDING MATERIALS _____ SOILS_____

_PRE-REMEDIAL ACTION OF VICINITY PROPERTY: _____

4. DATE(S) OF QC FIELD AUDIT _____

5. AUDITOR'S NAME _____PHONE_____

6. FACILITY CONTACT _____PHONE_____

7. CONTRACTOR CONTACT_____PHONE_____

8. PERSONNEL ON-SITE

NAME	REPRESENTING	PHONE

9. AUDITOR'S COMMENTS

_____

_____

_____

_____

10. WEATHER CONDITIONS

SUNNY ; PARTLY SUNNY ; PARTLY CLOUDY ; CLOUDY ; RAIN ; DRIZZLE ; SNOW ; SLEET

TEMPERATURE_____ WIND SPEED_____ WIND DIRECTION_____

QUALITY CONTROL FIELD AUDIT REPORT, Continued

11. LEVEL OF PERSONNEL PROTECTION REQUIRED IN WORK PLAN

A B C D

LEVEL OF PERSONNEL PROTECTION ACTUALLY DONNED:

A B C D

12. FIELD SURVEY EQUIPMENT

INSTRUMENT	MODEL	CALIBRATION CHECK	CALIBRATION STANDARD	SPAN SETTING
CONDUCTIVITY METER	_____	_____	_____	_____
DISSOLVED O_2 METER	_____	_____	_____	_____
PH METER	_____	_____	_____	_____
COMBUSTIBLE GAS INDICATOR (LEL/O_2)	_____	_____	_____	_____
FLAME IONIZATION DETECTOR (OVA)	_____	_____	_____	_____
PHOTOIONIZATION DETECTOR (HNU)	_____	_____	_____	_____
TOTAL GAS INDICATOR (CO, HS)	_____	_____	_____	_____
OTHER _____	_____	_____	_____	_____

OBSERVATIONS _____

_____

_____

13. DID THE SAMPLING TEAM TAKE PERIODIC SURVEYS OF THE AMBIENT AIR CONDITIONS?

YES NO N/A

14. DID THE SAMPLING TEAM PROVIDE A DECON ZONE DESIGNATING CLEAN AND CONTAMINATED AREAS?

YES NO N/A

15. WERE PHOTOGRAPHS TAKEN? YES NO

16. AUDITOR'S COMMENTS

_____

_____

_____

NON-AQUEOUS SAMPLE INFORMATION

1. NON-AQUEOUS MATRIX SAMPLED:

SOIL SEDIMENT SLUDGE CHEMICAL SOLIDS WASTE PILE

OTHER _____

2. TYPE OF SAMPLE: GRAB COMPOSITE IF COMPOSITE - SAMPLES/COMPOSITE _____

3. WAS THE VOA SAMPLE COLLECTED FIRST FROM A DISCRETE LOCATION PRIOR TO HOMOGENIZATION?

YES NO N/A

4. WAS THE SAMPLE HOMOGENIZED PRIOR TO ACQUISITION INTO THE SAMPLE CONTAINERS? YESNO

5. TYPE OF SAMPLING EQUIPMENT:

	MATERIAL OF CONSTRUCTION			
	STAINLESS STEEL	TEFLON	GLASS	OTHER
SPOON/SPATULA	_____	_____	_____	_____
TROWEL/SCOOP	_____	_____	_____	_____
BUCKET AUGER	_____	_____	_____	_____
SPLIT SPOON	_____	_____	_____	_____
SHELBY TUBE	_____	_____	_____	_____
TRIER	_____	_____	_____	_____
PONAR DREDGE	_____	_____	_____	_____

6. WAS THE DRILL RIG, AUGER FLIGHTS, RODS, ETC. DECONTAMINATED ACCORDING TO STANDARD PROCEDURES BETWEEN EACH SAMPLE LOCATION? YESNO N/A

IF NO, METHOD OF DECONTAMINATION _____

7. IF MUD ROTARY DRILLING WAS UTILIZED WHAT WAS THE SOURCE OF THE WATER? _____

8. WAS THE SAMPLING EQUIPMENT DEDICATED? YES_____ NO _____

9. WAS THE SAMPLING EQUIPMENT: LAB DECONTAMINATED? FIELD DECONTAMINATED?

10. WAS THE SAMPLING EQUIPMENT DECONTAMINATED ACCORDING TO STANDARD PROCEDURES?

YES NO IF NO, METHOD OF DECONTAMINATION: _____

11. WAS THE DECONTAMINATION AREA LOCATED AWAY FROM THE SOURCE OF CONTAMINATION? YES NO N/A

12. ARE DISPOSABLE GLOVES WORN AND CHANGED BETWEEN EACH SAMPLE LOCATION? YES NO N/A

13. AUDITOR'S COMMENTS

_____

_____

QA/QC INFORMATION

1. LABORATORY:

NAME _____ PHONE _____

CONTACT PERSON _____

CLP CLP CAPABLE CERTIFIED OTHER _____

2. SAMPLE INFORMATION:

MATRIX	PARAMETER	PRESERVATIVE	CONTAINER DESCRIPTION

3. WHAT ORDER BY ANALYTICAL PARAMETER ARE SAMPLES COLLECTED: _____

_____

4. FIELD BLANKS: YES NO N/A FREQUENCY _____

METHOD: _____

WAS IDENTICAL BOTTLE TO BOTTLE TRANSFER OF WATER UTILIZED? YES NO

5. TRIP BLANKS: YES NO N/A FREQUENCY _____

6. WHAT WAS THE SOURCE OF THE BLANK WATER? LABORATORY DEMONSTRATED ANALYTE-FREE
OTHER_____

7. SAMPLE PACKAGING AND HANDLING:

SAMPLE CONTAINERS LABELED	YES	NO	N/A
COC FORMS COMPLETED	YES	NO	N/A
CUSTODY SEALS	YES	NO	N/A
SAMPLES PRESERVED TO 4°C:	YES	NO	N/A

8. AUDITOR'S COMMENTS

_____

_____

_____

_____

ATTACHMENT 6

SOP No. 5: Procedure to Conduct Collection of Equipment Blanks

Procedure to Conduct Collection of Equipment Blanks

I. Introduction

This guideline provides procedures on the collection of equipment blanks associated with sample collection. Data from equipment blank analysis is considered during the subsequent validation, review, and interpretation of generated data.

II. Definition

Equipment blanks are often called rinse blanks or rinsate blanks. Equipment blanks are rinse water samples taken from clean sample containers and sampling equipment to determine if residual contaminants are present on the equipment prior to sampling. If contamination is present, the decontamination procedure or source of equipment must be modified to eliminate non-sample contamination. Frequency of equipment blanks will be based upon the requirements set forth in the QAPP, but typically should be collected at a rate of one per 20 environmental samples or per decontamination event, whichever is more frequent, but no more than one per day.

The following is the definition of equipment blank from the USEPA publication EPA-505-B-04-900A, Uniform Federal Policy for Quality Assurance Project Plans, March 2005:

Equipment blanks – A sample of water free of measurable contaminants poured over or through decontaminated field sampling equipment that is considered ready to collect or process an additional sample. The purpose of this blank is to assess the adequacy of the decontamination process.

III. Safety

Wear goggles and gloves when working with and collecting the blank rinse water samples. Also, conform to other safety and clean-hands practices, as appropriate. Perform the procedure with a helper if possible. Clean up all spilled water and sample preservatives immediately.

IV. Supplies

1. 1 Liter Sample bottles and labels
2. Sample preservative (Ice)
3. Plastic sheeting
4. Aluminum foil
5. Gloves
6. Goggles
7. Paper towels

V. Procedure

If the samples will not be going through the CLP Program for laboratory analysis, contact a subcontract commercial laboratory and inform them that you will be collecting equipment blanks and request sample bottles, preservatives, labels, and chain-of-custody forms. Also ask the

laboratory for specifics on the volume of water they require for each parameter and which parameters may be combined into the same sample bottle. If possible, have the laboratory supply the analyte-free water that will be used to collect the equipment blank.

If the samples will be going to a CLP laboratory, obtain the bottles and all necessary supplies, including analyte-free water, from the Malcolm Pirnie, Equipment Facility located in the Tall Pine Industrial Park, 382 Route 59, Monsey, NY 10952 (Contact: Max Bateman 845-357-0965). The bottles need to be certified pre-cleaned. All preservation and holding time requirements as per aqueous (water) samples apply. See Table 1: below for the preservation and holding time requirements for the PCB equipment blanks. The following guidelines should be followed when collecting the soil sampling equipment blanks:

1. The equipment blank must be collected in a designated clean area of the site or field office. Spread out new plastic sheeting on a work surface, and have paper towels handy to wipe up accidental spills.

2. Label the capped sample bottles with an identification number that will later be used for cross-referencing with the associated environmental samples. All other label information will also need to be filled out prior to shipment to the laboratory. Place clear tape over the label to prevent the information on the label from being smeared if it should get wet. Record all information into the field logbook, consistent with regular sample collection procedures.

3. Put on gloves and goggles. Change gloves when handling different sets of decontaminated equipment.

4. If large stainless steel bowls will be used during soil sampling/processing activities and will require decontamination, use the decontaminated bowls to initially collect the rinsate water from the soil sampling equipment (*e.g.*, hand auger bucket). If the bowls are wrapped in aluminum foil, unwrap prior to use. Minimize the handling of decontaminated equipment to prevent the introduction of new contamination.

5. Unwrap all other equipment (trowels, spoons, auger heads, etc.) and place in the bowl. Larger equipment that does not fit in the bowl should be handled last. If large bowls will not be used during soil sampling/processing activities, consider utilization of other types of decontaminated equipment during the blank collection process that can hold water. Otherwise, the rinsate water will need to be captured directly into the sample bottles.

6. Pour analyte-free water slowly and liberally over the surfaces of the equipment that are expected to come into contact with sample material. Collect the analyte-free water in the laboratory jar after it has rinsed the sampling equipment.

7. Place sample bottles into zip-lock bags and then immediately into cooler(s) containing large amount of bagged ice. Cushion bottles to prevent breakage, but not with bags of ice. Ice will lose its cushioning abilities when melted.

8. If purchased 4-L analyte-free water was used and there is substantial remaining in an opened bottle, recap the bottle tightly and place a signed and dated custody seal over the cap and neck of the bottle. The bottle of water may be used for the next equipment blank collection, and can be stored until the vendor's expiration date on the bottle or one year from opening, whichever is sooner. When ready, pack and ship equipment blanks consistent with shipping procedures.

Table 1: Aqueous Sample Handling Requirements

Parameter	Containers	Preservation		Maximum Holding Time From Collection to Analysis[1,2]
		Temperature	Other	
PCB Aroclors	2 x 1-L Glass with Teflon lined caps	Cool 4°C ±2°C	Store in dark	7 days

1. Refer to the CLP SOW requirements or the applicable EPA method.

2. Contact EPA RSCC for samples going through the CLP Program. If a non-CLP is used they should be contacted regarding what sample volumes, preservatives, and type of sample bottles they recommend. Refer to the determinative method or laboratory for parameters not specified in the table above.

VI. Reference

SOP No. 5: Procedure To Conduct Collection of Equipment Blanks, Attachment 9, Cornell-Dubilier Electronics Superfund Site Soils OU-2 QAPP.

ATTACHMENT 7

Non-Conformance Report

CORNELL DUBILIER ELECTRONICS SUPERFUND SITE
NON-CONFORMANCE/QUALITY CONTROL REPORT

Date: _____

Organization Name: _____

Initiator's Name & Title: _____

Problem Description:

_____
_____
_____
_____
_____
_____
_____

Reported To: _____

_____

Corrective Action:

_____
_____
_____
_____
_____
_____
_____

Reviewed and Implemented by: _____

ATTACHMENT 8

EPA Region 2 Basic Manual for Electronic Data

Basic
Manual for Electronic Data

EPA Region 2

Prepared By:

Region 2 Superfund Division
Environmental Protection Agency

May 2007

Version 1

DISCLAIMER OF ENDORSEMENT

Reference herein to any specific commercial products, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government, and shall not be used for advertising or product endorsement purposes.

TABLE OF CONTENTS

1.0 INTRODUCTION....1

2.0 GENERAL EDD REPORTING REQUIREMENTS....2
- 2.1 File Formats....2
- 2.2 EDD Files....3
- 2.3 File Naming Convention....5
- 2.4 Data Integrity Rules....5
- 2.5 Reporting Null Values....6
- 2.6 Valid Values....6
- 2.7 Reporting Non-Detects....7
- 2.8 Reporting Re-Tests....8
- 2.9 Reporting Tentatively Identified Compounds....8
- 2.10 Using the Electronic Data Processor to Check EDD Formatting....9
- 2.11 Submitting Your EDD to EPA....9
- 2.12 EPA Region 2 Contacts....9

3.0 EDD FILE FORMATS....10
- 3.1 Data Provider EDD File....11
- 3.2 Site EDD File....11
- 3.3 Location EDD File....13
- 3.4 Chemistry Sample Result EDD File....16
- 3.5 Water Level EDD File....22
- 3.6 Geology EDD File - Optional....24
- 3.7 Extraction – Injection Well EDD File....26

1.0 INTRODUCTION

The Basic Manual for Electronic Data describes the requirements for electronically submitting "historical" operation and maintenance (O&M) data to EPA Region 2. O&M data is considered to be "historical" if it was collected between the time remedy construction was completed up to and including the most recent data collection event. The data provider should anticipate all future data being collected for a site to be submitted on a regular basis (at least annually or semi-annually) in accordance with this manual. The data provider is also encouraged to become familiar with and submit EDDs in accordance with the standard EPA Region 2 Comprehensive Manual for Electronic Data. EPA Region 2 anticipates requiring all data providers to submit EDDs in accordance with the standard EPA Region 2 Comprehensive Manual for Electronic Data.

The intent of developing special requirements for historical information is to decrease the burden associated with reporting in-depth details about data that may have been collected a number of years ago. EPA recognizes that some information about data collected in the past may not be readily available and, by reducing the requirements for electronic historical data, is endeavoring to strike a balance between minimizing the amount of effort involved in inputting information and maximizing the ability to document remedy progress.

This information is also available on the Region2 Superfund EDD Website located at :

http://www.epa.gov/region02/superfund/medd.htm

2.0 GENERAL EDD REPORTING REQUIREMENTS

2.1 File Formats

All EDD data from EPA Region 2 data providers must be reported as text files. EDD files can be produced using any software with the capability to create text files. These files are especially easy to create using spreadsheet or database software packages. However, if these are unavailable, the files can be created using a word processor or text editor. Table 2-1 provides instructions for creating tab-delimited text files from some widely-used software packages.

Table 2-1 Instructions for Producing Tab-Delimited Text Files

Package	Type	Instructions
Access	Database	Create tables using file structures in Section 3. After data are entered, close table. Click on table name (under table tab) and then select "File," "Save As," from the top menu. Save to an external file or database. Change "Save as Type" to a text file. Change the file extension from "txt" to "tab." Press OK. This will start the export wizard. In the export wizard, select "Delimited," then press the "Next" button. Select "Tab" as the delimiter type and " as the text qualifier. Press the "Next" button. Select a destination and name for the file. Press the "Finish" button.
Excel	Spreadsheet	Select "File," "Save As," from the top menu. Change "Save as Type" to a "Text (Tab Delimited)" file. Press the "Save" button.
Quattro® v8	Spreadsheet	Select "File," "Save As," from the top menu. Change the "File Type" to "ASCII Text (Tab Delimited)." Press the "Save Button."
Word	Word Processor	[Note: A word processor is not the best tool for the job! A large paper size will have to be selected to prevent wrapping for most files.] [wrapping?] Enter data into a table in Word. Any text entered must be contained within double quotes. Select "Table," "Select Table," from the top menu. When the table is highlighted, select "Table," "Convert to Text," "Separate Text with Tabs." Select "File," "Save As," from the top menu. Change "Save as Type" to "MS DOS Text (*.txt).
Lotus 1-2-3	Spreadsheet	Select "File," "Save As," from the top menu. Change "Save as Type" to a "Comma Separated Value (CSV)" file. Provide file name. Press the "Save" button.

A Microsoft Excel Workbook file, EPAR2BasicEDD.xls, provides electronic templates for EDD files. To create an EDD, simply enter your data into the worksheets provided and then follow the instructions in Table 2-1 to create a tab-delimited text file.

A Microsoft Access database file, EPAR2BasicEDD.mdb, also provides electronic templates for EDD files. To create an EDD, simply enter your data into the database files provided and then follow the instructions in Table 2-1 to create a tab-delimited text file.

2.2 EDD Files

The tables in this guidance identify the various types of data being requested. Each EDD file should be saved as an individual text file and should be named in accordance with the naming convention rules. Table 2-2 provides general information on the files that make up this EDD. Detailed instructions for creating all the EDD files are provided in Section 3. Instructions for submitting your EDDs to EPA Region 2 are presented in Section 2.11

Table 2.2 General Information on EDD Files

File Type	File Name	Created By	Contents	What makes a row of data unique?	Dependence of other files on these data
Base Map	SiteName.DXF	Data provider	Basemap of site.	Not applicable	Not applicable.
Data Provider	SiteNameDate. EPAID. EPAR2DPVR_v 1.txt (or csv)	Data Provider	Information about the data provider	Not applicable	Not applicable
Site (Section 3.1)	SiteNameDate. EPAID. EPAR2SITE_v1. txt (or csv)	Data provider	One-time definition of site including EPA Region 2 data providers' contact information.	site_code	The location file cannot be loaded without properly referenced sites (site_code).
Location (Section 3.2)	SiteNameDate.E PAIDCode. BasicLOC.txt (or .csv).	Data provider's surveyor	One entry for each location on a site. Contains elevation, coordinate and general locational data. Data should only be reported once for a location.	sys_loc_code	Sample Results, water levels, field measurements, geology and extraction well data can only be reported for locations that are defined in this file.

Table 2.2 General Information on EDD Files

File Type	File Name	Created By	Contents	What makes a row of data unique?	Dependence of other files on these data
Chemistry Sample Result (Section 3.3)	SiteNameDate. EPAID. BasicChem_v1. txt (or csv)	Data provider's field sampling team(s) and testing lab(s)	One row for each analyte reported for a given sample and test. Additional rows can be added to report total and dissolved results and to report results for re-extracts.	sys_sample_code lab_anl_method_ name analysis_date total_or_dissolved test_type cas_rn	None
Water Level (Section 3.4)	SiteNameDate.E PAIDCode. BasicWTR.txt (or .csv).	Data provider's field sampling team(s)	Groundwater level data for monitoring wells	sys_loc_code measurement_date measurement_time	None.
Geology (Optional) (Section 3.5)	SiteNameDate.E PAIDCode. BasicGEO.txt (or .csv).	Data provider's geologist	Geology data for a borehole.	sys_loc_code start_depth	None.
Extraction-Injection Well (Section 3.6)	SiteNameDate. EPAIDCode. EPAR2EIW_v1. Txt (or csv)	Data provider's field sampling team(s)	Data that relates to any extraction wells that are operating as part of the remedial action.	sys_loc_code start_measurement_ date start_measurement_ time	None.

2.3 File Naming Convention

Each EDD file, except the base map file, should be named according to the following convention:

SiteNameDate.EPAIDCode.*EPAR2*EDDFileType_v1.txt (or .csv)

Italicized text in the above example is the actual text that appear in the file names. The non-italicized text indicates what information should be provided at that position in the EDD file name. Specifically, the short version of the site name would be used in place of "SiteName," followed by (with no intervening spaces) the date the EDD is submitted. The date should be in the following format: "YYYYMMDD." The next part of the file name, "EPAIDCode," refers to the twelve-character alphanumeric CERCLIS ID number designated by EPA for the site. The code consists of the two-letter abbreviation of the State in which the site is located, followed by the letter "D," followed by a unique nine-digit number. CERCLIS ID numbers for sites can be found in Table A-22 of the Comprehensive Manual for Electronic Data. The third part of the EDD file name refers to the type of EDD file being submitted, e.g., EPAR2Site_v1, BasicLOC_v1, etc. Please note that the number after the "_v" is for internal EPA use only and serves to indicate the version of the EPA Comprehensive Manual for Electronic Data on which the EDD format is based. For the foreseeable future, all EDD files submitted to EPA Region 2 should have "v1" as the suffix. [Note: Using capitals versus lowercase letters in the file names makes no difference. The choice is yours.]

As an example, sample and result data for the ABC site (EPA identification number of XYZ123456789) that is being submitted to EPA on February 19, 2000 would be reported in a file named **ABC20000219.XYZ123456789.BasicCHEM_v1.txt (or .csv).**

2.4 Data Integrity Rules

Data providers are responsible for running three types of integrity checks on their data.

Validity: All codes used in a data set must be valid. Valid values for all coded fields are either provided in the description columns of the tables in Section 3 or in the tables in the Valid Value Appendix of this manual. For example, sample matrix information is inputted in the sample_matrix_code field of the Sample Result file and must be reported using one of the values provided in Table A-1 in the Valid Value Appendix.

Row Uniqueness: Row uniqueness must be verified using the guidance provided in Table 2-2. Row uniqueness is assured when no two rows in a file contain the same values for all the fields listed under the heading "What makes a row of data unique?". In database terminology this is called a primary key. For example, the sys_loc_code is the primary key in the Location EDD file and therefore no two rows in the can have the same sys_loc_code.

Row Integrity: The relationship between rows within the files of the EDD must be assured by

enforcing the "referential integrity" rules discussed in Table 2-2 under the column labeled "Dependence of other files on these data." For example, the values in the sys_loc_code field in the Sample Result file must match with a value previously reported in the sys_loc_code field of the Location file.

2.5 Reporting Null Values

When a field is not listed as required in Section 3 and the data is not available or applicable, a null or blank may be appropriate. However, tabs or commas must still delimit the blank value. In other words, the number of fields is always the same, whether or not the fields include data. So a blank field in a tab-delimited file would appear as "<TAB><TAB>" and a blank field in a comma-delimited file would appear as ",,". Table 2-3 shows a number of examples.

Table 2-3. Examples of how to report null values

Example	Comment
"data_one"<tab>"data_two" <tab>"data_three" "data_one","data_two","data_three"	O.K. All fields populated, one tab or comma between fields.
"data_one" <tab><tab>"data_three" "data_one",,"data_three"	O.K. Optional field not populated, 2 tabs or 2 commas between first and third field.
"data_one" <tab>"data_three" "data_one","data_three"	Not O.K. Optional field omitted, only 1 tab or comma between first and third field.

2.6 Valid Values

Valid values, also known as reference values or code lists, govern the contents of some fields in the EDD files. In other words, some fields may only be populated with data that matches a value listed in the EPA Region 2 list of valid values in Valid Value Appendix of this Manual. A list of all the data fields that must contain valid values is presented in Table 2-4. This list is also cross-referenced to the EDD file(s) the field appears in. If data providers need to enter a value not already in the Region 2 list in Valid Value Appendix, they can request the proposed addition to the valid value list in the EDD submittal cover letter. The data provider should explicitly state the valid value that she/he would like added, provide a description of the value, and explain why the addition is necessary. In the case of requesting a new laboratory code, the data provider should include the full name of the laboratory and its address. When requesting an addition of an analyte, the data provider must include the appropriate CAS number or ERPMS code along with a description of the analyte.

Table 2-4. Cross-reference between the valid value tables in appendix and the EDD files

Valid Value Table Name	Table Number	Field Name	EDD File
Matrix	A-1	sample_matrix_code, lab_matrix_code	Chemistry Sample Result
Location Type	A-9	loc_type	Location
Qualifier	A-10	lab_qualifiers, validator_qualifiers	Chemistry Sample Result
Result Type	A-11	result_type_code	Chemistry Sample Result
Sample Type	A-12	sample_type_code	Chemistry Sample Result
Analyte	A-15	cas_rn, chemical_name, dnapl_cas_rn, lnapl_cas_rn	Chemistry Sample Result Water Level
Lab Analysis Method Name	A-16	lab_anl_method_name	Chemistry Sample Result
Unit	A-18	various_unit fields throughout all files	All Files
Geology Soil Materials	A-19	material_type	Geology
EPA Facility IDs	A-22	facility_id, site_name, city	Site

2.7 Reporting Non-Detects

Non-detects must be reported as shown in the example below. Each non-detect row must show an "N" in the detect_flag field and must have values entered in the reporting_detection_limit and detection_limit_unit fields (i.e., these fields cannot be left null if record is a non-detect). Table 2.5 presents an examples how to report a detect (1st row) and non-detect (2nd row) data.

Table 2-5. Example of reporting non-detects

Cas rn	Result Value	Detect Flag	Reporting Detection Limit	Detection Limit Unit	Result_comment	Laboratory qualifiers
108-88-3	.15	Y	.005	ug/ml		U
108-88-3		N	.005	ug/ml	not detected	U

2.8 Reporting Re-Tests

For initial tests, all analytes should be reported. In the case where retests are performed on a sample, the result that is considered the reportable result should indicate a "Y" (for "yes") in the reportable_result field.. The initial test, and any retest result not considered reportable will have reportable_result set to "No". Table 2.6 provides examples of reporting re-tests.

Table 2-6. Example of reporting re-tests

Test Type	Chem Name	Cas rn	Result Value	Detect Flag	Lab Qualifiers	Reportable Result	Result_Comment
Initial	Benzene	71-43-2	1000	Y	E	No	too concentrated to quantitate
Initial	Toluene	108-88-3	5	N	U	Yes	not detected
Initial	Xylenes	1330-20-7	5	N	U	Yes	not detected
Dilution 1	Benzene	71-43-2	780	Y		Yes	quantitated

2.9 Reporting Tentatively Identified Compounds

Tentatively Identified Compounds (TICs) should be reported when available. The naming of TICs should be applied in a cascade fashion. The TIC should be identified to analyte name if possible. If this is not possible, then the class of the TIC should be entered.. If neither an analyte name or a class can be identified, the TIC should be identified as Unknown. The EPA Region 2 EDD only allows for reporting up to 10 TICs. Only the 10 most concentrated or most relevant TICs should be reported. Table 2-7 shows examples of the nomenclature for TICs. As an example, if a sample has three Unknown Hydrocarbons, then the TICs are labeled UnkHydrocarb1, UnkHydrocarb2, and UnkHydrocarb3. TIC names are to be reported in the cas_rn field, Pos #23, of the Chemistry Sample Result file (Section 3.4). In addition, the result_type_code, Pos # 26 in the Chemistry Sample Result file should have "TIC" for all TIC records.

Table 2-7. Example nomenclature for TIC reporting

TIC Name	Number for TIC	Reported Name in cas_rn
Unknown	1-10	Unknown1 – Unknown10
Unknown Hydrocarbon	1-10	UnkHydrocarb1 - UnkHydrocarb10
Unknown PAHs	1-10	UnkPAH1 - UnkPAH10
Unknown Aromatics	1-10	UnkAromatic1 - UnkAromatic10
Unknown VOA	1-10	UnkVOA1 - UnkVOA10
Unknown SV	1-10	UnkSV1 - UnkSV10

2.10 Using the Electronic Data Processor to Check EDD Formatting

All EDD files must be run through the Electronic Data Processor (EDP) prior to submittal to EPA Region 2. The EDP is used by Data Providers to check EDD files prior to submittal to EPA Region 2. The EDP is a no-cost application that performs a series of formatting checks on the files and then identifies any records that have errors along with a description of those errors. This allows the Data Provider to correct the errors before sending the files to EPA Region 2. EDD files that pass through the EDP error-free should also result in error-free import at EPA Region 2.

EDP is currently available as a no-cost download from the EPA Region 2 E-Data website located at **http://www.epa.gov/region02/superfund/medd.htm** Instructions on how to install and use the EDP are also provided on the website.

2.11 Submitting Your EDD to EPA

Once your EDD files are complete and error-free, please check that they conform with the following guidelines. First, files should not be compressed. Completed EDDs should be submitted a CD that is clearly labeled with the site name and the date of the EDDs, and should be sent to: :

EDD EQUIS Coordinator
Superfund Division
U.S. Environmental Protection Agency, Region 2
290 Broadway
New York, NY 10007

In lieu of sending a disk copy of an EDD, e-mail submittals may be arranged with your Remedial Project Manager (RPM). Each EDD must be accompanied by a cover letter that specifies the name of the site, the contact for EDD technical questions, file names, any exceptions to the EDD format, and any requests for additional valid values. Please include a copy of the cover letter as electronic text file along with the EDD.

In the case where Region 2 encounters errors with the submitted EDD files, the entire EDD submittal will be returned to the data provider along with an error report explaining the errors. The data provider should then correct the errors, check the files again with the EDP, and then resubmit the entire EDD. It is important that the resubmitted EDD contain all of the files and the SAME FILE NAMES as those in the original submittal (i.e., use the same site name and submittal date in the file name as was used in the original submittal). Thus, the EDD resubmittal will be identical to the original submittal in everyway except the errors are corrected.

3.0 EDD FILE FORMATS

This section contains detailed information regarding the files that make up the Region 2 EDD. As stated in section 2.1, each file must be saved as individual text files and can be created using any software with the capability to create text files. If a column is limited to a specific number of characters, the limit will be given in parenthesis within the "Data Type" column (e.g., Text (3) signifies the value cannot exceed 3 characters in length). Columns marked "Required" must be reported for each row in the file. If these fields are not reported, errors will be identified in the EDD and the EDD will need to be resubmitted. Columns marked "If available" should also be reported if possible.

The Site and Location files need to be submitted as part of the first EDD submittal. These 2 files only need to be submitted once unless information in the files change or additional information, such a new sampling location, needs to be added.

Examples of populated EDD files are provided in Attachment 1.

3.1. Data Provider

The Data Provider EDD file provides general information about the data provider who is the contact for the data on the site.

SiteNameDate.EPAIDCode.EPAR2DPVR_v1.txt (or .csv)

Table 3.1 Data Provider File Structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	Data Provider	Text(20)	Required	This is the name of the company who is responsible for providing the site data.	No
2	Contact Name	Text(20)	Required	This is the name of the contact person who is responsible for providing the site data.	No
4	Contact State	Text(2)	Required	Contact state	No
5	Contact zip code	Text(10)	Required	Contact zip	No
6	Contact Phone Number	Text(30)	Required	Contact phone number	No
7	Contact fax number	Text(30)	If available	Contact fax number	No
8	Contact email address	Text(100)	If available	Contact email address	No

3.2Site EDD File

The Site EDD file is typically a "one-time-only" submittal and must be submitted as part of the first EDD submittal. This file contains general information about the site, along with information such as the name, address, and phone number of the main contact responsible for data submittal. If the Site EDD file has already been submitted for the site, and none of the information in the file has changed, you do not have to resubmit the file. The only time this file is resubmitted is when information about the contact person or other information in the file changes.

For historical data, the Site EDD file, and all the requirements related to it, are exactly the same as are described for the Site EDD file in the EPA Region 2 Comprehensive EDD Specification Manual for non-historical data.

Site EDD files should be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR2Site_v1.txt (or .csv).

Table 3-2. SITE data file structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	site_code	Text(3)	Required	Code indicating the site operable unit for which the data is collected. Typically the code is "01" unless there is a second or third operable unit at facility. Codes of "02" and "03" should be used for second and third operable units, respectively. Contact the EPA RPM if unsure of proper code.	No
2	facility_id	Text(20)	If available	This is equivalent to the three-letter, nine-digit EPA CERCLIS ID number.	Table A-22
3	site_name	Text(60)	Required	Name of site	Table A-22
4	site_task_code	Text(20)	If available	Code used to identify the task under which the site or area is investigated. This field is for informational purposes only. Field samples are formally associated with task codes.	No
5	site_desc1	Text(255)	If available	General description of the site.	No
6	site_desc2	Text(255)	If available	Additional description of site, if necessary.	No
7	contact_name	Text(50)	Required	Name of person to contact if EPA Region 2 has any questions about the EDD.	No
8	address1	Text(40)	Required	Site address, part one.	No
9	address2	Text(40)	If available	Site address, part two. Default to null if information is not needed	No
10	City	Text(30)	Required	Site city.	No
11	State	Text(2)	Required	Site state.	No
12	Zipcode	Text(10)	Required	Site zip code.	No
13	phone_number	Text(30)	Required	Site contact phone number.	No

Table 3-2. SITE data file structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
14	alt_phone_number	Text(30)	If available	Alternate phone number for site contact. Default to null where the data are not available.	No
15	fax_number	Text(30)	If available	Fax number of site contact. Default to null where the data is not available.	No
16	email_address	Text(100)	Required	Site contact e-mail address.	No

3.2 Location EDD File

The Location file is another EDD file that is typically submitted only once and must be part of the first EDD submittal. The location file only needs to be resubmitted if a new sampling location is used, such as a new monitoring well, or to update previously submitted information. When resubmitting the location file, only include data for the new locations and/or for the locations whose information is being updated. The Location EDD file contains general information about sampling locations and sample ID numbers. This table does not need to be resubmitted if information has previously been submitted to EPA Region 2 in the EDD format

Location files for should be named according to the following convention:

SiteNameDate.EPAIDCode.BasicLOC_v1.txt (or .csv).

SiteNameDate.EPAIDCode.EPAR2LOC_v1.txt (or .csv)

Table 3.3 Location Data File Structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	sys_loc_code	Text (20)	Required	Sample location ID, such as MW-01, A24, SW12, or SB-2S, for all samples, including groundwater samples, hydropunch samples, surface water/sediment samples, and soil samples.	No
2	sys_well_id	Text (20)	Required	Well identification number	No
3	primary_site_code	Text (3)	Required	Code indicating the site operable unit for which the data is being submitted. Must match the entry in column 1 ("site_code") of the SITE EDD file. Typically the code is "01" unless there is a second or third operable unit. Codes "02" or "03," for example, should be used for the second and third operable unit, respectively. Contact the EPA RPM if you are unsure of the proper code to use.	No
4	x_coord	Number w/precision of up to 15	Required	Sampling location numeric x coordinate, i.e., latitude. Preferred coordinate system is UTM NAD83 meters.	No
5	y_coord	Number w/precision of up to 15	Required	Sampling location numeric y coordinate, i.e., longitude. Preferred coordinate system is UTM NAD83 meters.	Units must be in feet
6	surf_elev	Number w/precision of up to 15	Required	Elevation in feet above sea level of the ground surface at the sampling location.	No
7	coord_sys_desc	Text (50)	Required	Description of sampling location coordinate system. Typical format for this field is "UTM Zone nn," where "nn" is the zone number. If the system used is not in UTM, coordinate system that was used should be described here.	No
8	loc_name	Text(40)	If available	Sampling location name. (May be identical to entry in column 1.)	No
9	loc_desc	Text(255)	If available	Description of sampling location.	No

Table 3.3 Location Data File Structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
10	loc_type	Text (10)	If available	Description of sampling type, such as direct push, extraction well, or sediment. See Table A-9 in the EDD Specification Manual Valid Value Appendix for acceptable valid values.	No
11	loc_purpose	Text (20)	If available	Brief description of purpose for collecting sample.	No
12	within_facility_yn	Text (1)	Required	Indicate whether this sampling location is within the facility (site) boundary.	Table A-3
	depth_to_top_of_screen	Number w/precision of up to 15	Required if location is a well	Depth to the top of the well screen in feet below ground surface. Default to null if sample is not from a well.	
13	depth_to_bottom_of_screen	Number w/precision of up to 15	Required if location is a well	Depth to bottom of well screen in feet below ground surface. Default to null if sample is not from a well.	No
14	top_casing_elev	Number w/precision of up to 15	Required if location is a well	Elevation of top of well casing in feet. Default to null if sample is not from a well.	Table A-4
15	depth_to_bottom_of_well	Number w/precision of up to 15	Required if location is a well	Depth to bottom of well in feet below ground surface. Default to null if sample is not a well.	Table A-5
16	total_depth	Number w/precision of up to 15	Required if locations is a well	Total depth of boring below ground surface in feet. Default to null if sample is not a well.	Table A-6
17	remarks	Text (255)	If needed	Any comments or information regarding the information in this EDD file.	

3.3 Chemistry Sample Result EDD File

The Chemistry Sample Result EDD file contains sample, test and result data. Data from both laboratory analysis and in situ measurements taken in the field – such as pH, conductivity, and dissolved oxygen – are to be reported in this file. For surface water samples, record the sample depths, start_depth (field 9) and end_depth (field 10), as depth below the water surface elevation. The water surface elevation at the time of the sampling should be recorded in the Water Level file (see Section 3.5).

Each Chemistry Sample Result EDD file should be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR2SMP_v1.txt (or .csv)

Note: Field parameters

Table 3-4. Chemistry sample file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	sys_sample_code	Text(40)	Required	Unique sample identifier. Each sample must have a unique value to identify the sample, including spikes and duplicates. If no sample ID is available, enter the sys_loc_code plus the sample_date. (e.g., MW01 + March 11, 1991=> MW01031191). For trip blanks that do not have unique sample IDs, enter "TB" plus the date, e.g., TB + April 5, 2000 => TB04052000.	No
2	sys_loc_code	Text (20)	Required*	Sample collection location. Enter the same sys_loc_code, such as MW-01, A24, SW12, or SB-2S, as it appeared in the Location EDD file. *Field should be null if sample is not associated with a location, such as a field QC sample (e.g., field blank or trip blank).	No
3	sample_name	Text (30)	If available	Additional sample identification information, if necessary. Should be the same value as in the sys_sample_code field if no further naming information applies.	No

Table 3-4. Chemistry sample file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
4	sample_matrix_code	Text (3)	Required	Code that identifies the matrix, such as soil, groundwater, and sediment, being sampled. For acceptable valid values, see Table A-1 in the EDD Specification Manual Valid Value Appendix. Definitions should be provided for all codes where valid values are not used.	Table A-1
5	sample_type_code	Text (3)	Required	Code which distinguishes between different types of samples, for example field samples versus laboratory method blank samples	Table A-12
6	sample_source	Text (5)	Required	This field indicates if the sample originated in the field or in the lab. For the BasicCHEM EDD file, in almost all cases the correct entry will be "Field."	No
7	parent_sample_code	Text (40)	Required for field duplicate samples	This field applies to duplicate samples only and should contain the entry in the "sys_sample_code" field for the sample from which the duplicate sample was derived, i.e., the "parent" sample. If the sample is not a duplicate sample, the field should be left null. A value other than "null" is required whenever the entry in the "sample_type_code" column is FD, FR, FS, or LR.	No
8	sample_date	Date (10)	Required	Date sample was collected in MM/DD/YYYY format. If exact date is not known, enter the best estimate for the date of sampling. If an estimated date is entered, note this and provide an explanation for how the estimate was made in both the EDD cover letter and in the comment field in this file (field 36).	MM/DD/YYYY format
9	start_depth ?	Number w/precision of up to 15	Required if applicable	Beginning depth (top) of sample in feet below ground surface. Required for soil boring or grab samples with a depth component. Use only for groundwater samples if discrete samples are collected from different depths from a single well (i.e., the samples have the same "sys_well_id"). An example of this situation would be multiple well packer samples. Default to null if not applicable.	No

Table 3-4. Chemistry sample file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
10	end_depth	Number w/precision of up to 15	Required if applicable	Ending depth (bottom) of sample in feet below ground surface. Required for soil boring or grab samples with a depth component. Use only for groundwater samples if discrete samples are collected from different depths from a single well (i.e., the samples have the same "sys_well_id"). An example of this situation would be multiple well packer samples. Default to null if not applicable..	Ni
11	depth_unit	Text (15)	Required if applicable	Unit of measurement for the sample beginning and ending depths Default to null if not applicable.	Table A-18
12	composite_yn	Text (1)	If available	Code used to indicate whether a sample is a composite sample. Enter "Y" for yes and "N" for no. Default to null if the data are not available.	Y=yes N=no
13	lab_anl_method_name	Text (35)	Required	Laboratory analytic method name or description. Default to 'unknown' if the information is not available.	Table A-16
14	analysis_date	Date(10)	Required	Date of sample analysis. Should refer to either beginning or end time of the analysis as required by EPA. Please report the analysis date as the collection date plus 30 days where the analysis date is unknown, or with another approximate date if a more accurate estimated date of analysis is known. For measurements taken in the field (e.g., pH, dissolved oxygen), use the same date as sample date (see Pos# 8). Whenever an approximate date is used, document the way the date was determined in the comment field (column 36 of this EDD file) and in the cover letter that accompanies the EDD.	MM/DD/YYYY format
15	total_or_dissolved	Text (1)	Required	Enter "D" for results from a sample that was filtered and a 'T" for samples that were not filtered or were analyzed for total metals. Use "T" if unknown or data are from field measurements.	D= Filtered T= not filtered
16	test_type	Text (10)	Required	Type of test. Valid values include "initial," "reextract1," "reextract2," "reextract3," "reanalysis," "dilution1," "diluton2," and "diluton3." ." Use "initial" if unknown or data is from measurements taken in the field (e.g., pH, dissolved oxygen).	Initial, reextract1, reextract2, reextract3, reanalysis, dilution1, dilution2, dilution3

Table 3-4. Chemistry sample file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
17	lab_matrix_code	Text (3)	If available	Code that identifies the matrix, such as soil, groundwater, and sediment, being sampled.. This field is included because the matrix of the sample as analyzed in the lab may differ from the matrix in which it arrived at the lab (e.g., TCLP leachate samples).	Table A-1
18	analysis_location	Text (2)	Required	Must be either "FI" for field instrument or probe (i.e, "in the field" measurements such as pH, temperature, conductivity, and dissolved oxygen), "FL" for mobile field laboratory analysis, or "LB" for an analysis done at a laboratory.	FI = field instrument or probe FL = mobile field lab analysis LB = lab analysis
19	basis	Text (3)	If available	Must be either "wet" for wet weight basis reporting, "dry" for dry weight basis reporting, or "NA" for tests for which this distinction is not applicable. EPA prefers that results be reported on the basis of dry weight. Default to null if data are not available.	Wet Dry NA
20	dilution_factor	Number w/ precision of up to 7	If available	Effective test dilution factor. Default to null if data are not available or is not applicable.	No
21	qc_level	Text (6)	Required	May be either "screen" for screening data or "quant" for quantitative data. Default value is "quant."	screen quant
22	lab_sample_id	Text (20)	If available	Laboratory LIMS sample identifier. If necessary, a field sample may have more than one LIMS lab_sample_id (maximum one per each test event). Default to null if data are not available.	No
23	cas_rn	Text (15)	Required	Analyte code.	Table A-15
24	chemical_name	Text(75)	Required	Chemical name	Table A-15
25	result_value	Text (20)	Required *for all detect results	Analytic result reported using an appropriate number of significant digits. Insert "null" for non-detect results. * Required if detect_flag = Y and result_type_code = "TRG" or "TIC"	No

Table 3-4. Chemistry sample file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
26	result_type_code	Text (3)	Required	Should be either "TRG" for a target or regular result, "TIC" for a tentatively identified compound, "SUR" for a surrogate, "IS" for an internal standard, or "SC" for spiked compound. Provide definitions if other codes are used. Use "TRG" for data from field measurements.	No
27	reportable_result	Text (3)	Required	Must be either "Yes" for results that are considered reportable, or "No" for other results. This field can be used to distinguish between multiple results when a sample is retested after dilution. It can also be used to indicate which of the first or second column result should be considered primary. In both examples, the proper value for this field should be provided by the laboratory, i.e., only one result should be flagged as reportable.	Yes No
28	detect_flag	Text (1)	Required	Enter "Y" for detected analytes and for estimated results above detection limit but below the quantitation limit. Enter "N" for non-detects. For tests such as flash point, use ">" and "<." [Note do not use "<" to indicate non-detects.]	Y=detected N=non detected ">""<" = flash point
29	lab_qualifiers	Text (2)	If available	Qualifier flags assigned by the laboratory. Definitions must be provided in comment field (field 36) and in EDD cover letter for all qualifiers which do not appear in the list of valid values.	Table A-10
30	validator_qualifiers	Text (2)	If available	Qualifier flags assigned by the person who validates the data received from the lab. Definitions must be provided in comment field and cover letter for all qualifiers if valid values are not used. A request for adding the value to the EPA Region 2 list of valid values should be included in the cover letter also.	Table A-10
31	Interpreted_qualifier	Text(2)	If available	Interpreted qualifier flag assigned by the data provider	No
32	organic_yn	Text (1)	Required	Must be either "Y" for organic constituents or "N" for inorganic constituents. Use "Y" for data from field measurements.	Y=organic N=inorganic

Table 3-4. Chemistry sample file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
32	reporting_detection_limit	Text (20)	Required if non-detect	Concentration level above which results can be quantified with confidence. Required if result is a non-detect (i.e., detect_flag = 'Y'). The value must reflect conditions such as dilution factor and moisture content and must be sample-specific. Required for all results for which such a limit is available. If the detection limit is unknown, enter null as the detection limit and record "Detection limit unknown" in the comment field (field 36). [The value entered in this field should be the sample-specific detection limit Do not enter the contract required quantitation limit (CRQL) in this field.	No
33	result_unit	Text (15)	Required if the result is a detect	Unit of measurement for the result	Table A-18
34	detection_limit_unit	Text (15)	Required if non-detect	Unit of measurement for the detection limit. This field is required if a value other than null appears in the reporting_detection_limit field.	Table A-18
35	method_detection_limit	Text(20)	If available	Report as null. The minimum concentration of an analyte that can be measured and reported with 99% confidence that the analyte concentration is greater than zero, as determined for a specific procedure.	No
36	quantitation_limit	Text(20)	If available	Concentration level above which results can be quantified with confidence. The value must reflect conditions such as dilution factors and moisture content, and must be sample-specific.	No
37	task_code	Text(20)	If available	Code used to associate individual samples to a specific sampling event. The format for this field is XX-P#, where XX is the type of task required (PR = Pre Remedial, RI = Remedial Investigation, FS = Feasibility Study, PD = Pre-Design, RD = Remedial Design, RA = Remedial Construction, PC = Post Construction, RM = Removal Action, BD = Before Dredge, AD = After Dredge, BR = Brown Fields, SP = Special Project); P# is the phase the sampling event started. For example, if sampling was performed for a Phase 1 Post Construction site, the task_code would be PC-P1.	No
38	result_comments	Text (255)	If needed	Record any comments here.	No

3.4 Water Level EDD File

The Water Level EDD file includes information on water level measurements collected at the site over the years. Groundwater levels and surface water elevations should be reported using this file; however, in most cases, the file will be used to report groundwater levels. All fields in the Water Level file should be populated for groundwater elevation data (if data is available). For surface water data, use only the first six fields (fields 1 through 6) and the "remark" field (field 10).

Each Water Level file containing historical data should be named according to the following convention:

SiteNameDate.EPAIDCode.BasicWTR_v1.txt (or .csv).

Table 3.5. Water Level file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	sys_loc_code	Text (20)	Required	Sample location ID, such as MW-01, from which water level measurement was collected. Must be the same sys_loc_code as reported in the Location EDD file.	No

Table 3.5. Water Level file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
2	Well_id	Text(4)	If available	Well identification number	No
3	measurement_date	Date(10)	Required	Date of water level measurement. If exact date is not known, enter the best estimate for the date of sampling. If an estimated date is entered, note this and provide an explanation for how the estimate was made in both the EDD cover letter and in the comment field in this file (field 10).	MM/DD/YYYY format
4	measurement_time	Time(5)	Required	Time of water level measurement Default to 00:00 if unknown.	24-hr HH:MM format
5	ref_elev	Number with precision of up to 15	Required	For groundwater samples, the value in this field should be the elevation, in feet above mean sea level, of the reference point used to take measurements of the water level depth. Typically the reference point for groundwater measurements is the top of the well casing. For surface water samples, the value in this field should be the elevation of the surface water in feet above mean sea level.	No
6	water_level_depth	Number with precision of up to 7	Required if available	Water level depth in feet below the reference elevation. Default to null if data are not available.	No
7	water_level_elev	Number with precision of up to 7	Required if available	Water level elevation in feet below the reference elevation. Default to null if data are not available.	No
8	measured_depth_of_well	Number with precision of up to 7	If available	Depth below ground surface to bottom of well. Default to null if data are not available.	No
9	depth_elev_unit	Text (15)	Required if available	Unit used for depth and elevation measurements..	Table A-18
10	remark	Text (255)	If needed	Remark or comment on measurement. Default to null where the data are not available.	No

Table 3.5. Water Level file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
11	dry_indicator_yn	Text (1)	If available	Enter "Y" if the well was dry and "N" if it was not dry. Default to null if data are not available.	Y= dry N=not dry
12	Lnapl_cas_rn	Text (15)	If applicable	Analyte code of the light non-aqueous phase liquid (lnapl) present in the well. Use appropriate valid value from Table A-15 in the EDD Specification Manual Valid Value Appendix.	Table A-15
13	Lnapl_depth	Text Number with precision of up to 7	If applicable	Depth to the top surface of the lnapl in feet below the reference elevation.	No
14	Dnapl_cas_rn	Text (15)	If applicable	Analyte code of the dense non-aqueous phase liquid (dnalp) present in the well..	Table A-15
15	Dnaple_depth	Number with precision of up to 7	If applicable	Depth to the top surface of the dnapl in feet below the reference elevation	No
16	Task_code	Text(20)	If available	Code used to associate individual samples to a specific sampling event. The format for this field is XX-P# where XX is the type of task required (PR = Pre Remedial, RI = Remedial Investigation, FS = Feasibility Study, PD = Pre-Design, RD = Remedial Design, RA = Remedial Construction, PC = Post Construction, RM = Removal Action, BD = Before Dredge, AD = After Dredge, BR = Brown Fields, SP = Special Project); P# is the phase; For example, if sampling was performed for a Phase 1 Post Construction site, the task_code would be PC-P1.	No

3.5 Geology EDD File - Optional

The Geology file contains general information on geology data collected at and in the vicinity of the site.

Note: This file is an optional file that Region 2 requests be submitted if the data is readily available. However, this file may become a required submittal at the discretion of the responsible Remedial Project Manager (RPM) in order to perform certain analyses.

The historical Geology EDD file should be named according to the following naming convention: SiteNameDate.EPAIDCode.BasicGEO_v1.txt (or .csv).

Table 3-6. Geology file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	sys_loc_code	Text (20)	Required	Sample location ID, such as MW-01. Must be the same sys_loc_code as reported in the Location EDD file.	
2	start_depth	Number w/precision up to 15	Required	Start depth of the geologic unit in feet below ground surface.	
3	material_type	Text(40)	If applicable	The type of material that composes the lithologic unit. Acceptable valid values are listed in Table A-19 of the EDD Specification Manual. Must be filled in all cases except if a depth-specific comment is being made.	
4	geo_unit_code_1	Text (20)	Required	The data provider's interpretation of the hydrogeologic unit. This field may be used to indicate the geologic unit in terms of general hydrostratigraphy (e.g., aquifer1, aquiclude, aquifer2) or in terms of a grouping of lithologic layers (e.g., fill, clay, gravel). Examples of possible geologic groupings are provided in Figure A-2 of the EDD Specification Manual.	

Table 3-6. Geology file data structure

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
5	geo_unit_code_2	Text (20)	If available	Alternate geologic unit grouping. This can be a sub-classification of geologic_unit_code_1 or a layer used for groundwater flow and/or transport computer modeling that contains the lithologic unit. Examples of possible geologic groupings are provided in Figure A-2 of the EDD Specification Manual.	
6	remarks	Text (255)	If needed	General remarks concerning the lithologic or geologic unit(s).	

3.6 Extraction – Injection Well EDD File

The Extraction-Injection Well (EIW) EDD file should be submitted on a regular (e.g., quarterly) basis for all sites where extraction and/or injection wells are a part of the remedial action at the site. The purpose of the EIW EDD file is to provide EPA Region 2 with designed pumping rates as well as the actual pumping rates for each well during a particular reporting period. This information will be useful for determining if the remedial system is successfully capturing the contaminant plume. This file is identical to the file described in the EPA Region 2 Electronic Data Deliverable (EDD) Specification Manual. When checking this file with the Electronic Data Processor (EDP), use the EPAR2EIW-v1 format. Each Extraction-Injection Well EDD file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR2EIW_v1.txt (or .csv)

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
1	sys_loc_code	Text(20)	Required	Well installation location. Must be a valid code for the facility and must match one of the reported values in the sys_loc_code field of the location EDD file (Table 3-2) submitted in the current or previous EDD.	No
2	Well_id	Text(4)	If available	Well identification number	No
3	start_measure_date	Date	Required	Date that the pumping rate measurements began..	MM/DD/YYYY format
4	start_measure_time	Text(5)	Required	Time that the pumping rate measurements began.	24_hr (military) HH:MM format
5	end_measure_date	Date	Required	Date that the pumping rate measurements concluded.	MM/DD/YYYY format.
6	end_measure_time	Text(5)	If available	Time that the pumping rate measurements concluded.	24_hr (military) HH:MM format
7	avg_pump_rate	Number	Required	Average pumping rate. Recommended method is to use volume pumped divided by the reported date span. i.e., from the start_measurement_date to end_measurement_date)	No
8	pump_rate_unit	Text(15)	Required	Unit of measure for the pumping rate.	Table A-18
9	pct_operating_time	Text(3)	If Available	Percentage of the measurement time interval during which the well was operating. Use a value from 0 to 100 (do not include the percent symbol ,"%").	No
10	operating_mode	Text(13)	Required	Mode in which well was operating during the reported interval. Select from the followoing valid values: EXTRACTION, INJECTION, RECIRCULATION, PULSE, DEVEL, UNUSE.	No
11	design_rate	Text(14)	Required	Pumping rate as specified in the approved remedial design report for fully capturing site groundwater contamination.	No
12	design_rate_unit	Text(14)	Required	Unit of measure for the design pumping rate.	Table A-18

Pos#	Column Name	Data Type	Required	Description	Valid Values In Appendix
13	rate_measurement_type	Text(9)	If available	Type of measurements used for averaging. Select from the following valid values: TOTALIZER (totalizing flow meter), MANIFOLD (estimated from total manifold flow), ESTIMATE (estimate from prior values), AVERAGE (average of instantaneous measurements).	Totalizer Manifold Estimate Average
14	suction	Text(14)	If available	Vacuum in well (e.g., wellpoint vacuum) or well casing (e.g., vacuum well), reported in equivalent feet of water.	No
15	remark	Text(255)	If available	Remarks regarding the pumping rate measurements.	No

Attachment 1

EXAMPLES OF EDD FILES

EXAMPLES OF EDD FILES READY FOR CONVERSION TO TEXT FILES

Examples of EDD files with the first few rows of the EDD populated with a typical data set are presented in Figures 1 through 7. These examples were produced using Excel worksheets. To submit these files, the data provider would save the files as text delimited files (txt) or comma separated files (csv) (see section 2.1), check the files using the EDP (see section 2.11), and then send the error free files to Region 2. In order to fit the examples on one page, not all of the fields (i.e., columns) were included for certain files (e.g., Site, Location, Chemistry Result). The notation "*Additional Fields*" has been inserted where, for purposes of these examples, one or more fields have been omitted.. It should be noted that all fields must appear in the EDD files you submit regardless of whether or not the field is populated (see Section 2.5 regarding reporting blanks, or "null" values).

Figure 1. Example of Site File Ready for Conversion to Text File

site_code	facility_id	site_name	site_task_code	site_desc1	site_desc2	contact_name	address1	*Additional Fields*	email_address
01	FAC123456723	Example Site				John Smith	23 Main Street		abc@abd.com

Figure 2. Example of Location File Ready for Conversion to Text File

Location (LOC) File:

sys_loc_code	sys_well_id	Primary_site_code	x-coord	y-coord	surf_elev	coord_sys_desc	Loc_name	Loc_desc	Loc_type	Loc_purpose	*Additional Fields*	comment
MW01	MW01	01	414456.78	4424543.21	120.2	UTM Zone 17	Lagoon		MW			
SB-01	NONE	01	414709.23	4424304.12	126.3	UTM Zone 17			Soilbore			
MW03	MW03	01	414601.23	4424700.33	130.1	UTM Zone 17	Landfill	Shallow well	MW			
MW04	MW04	01	414601.23	4424700.33	130.1	UTM Zone 17	landfill	Deep well	MW			

Notes: SB-01 has no well therefore "NONE" is entered in sys_well_id.
MW03 and MW03 are multiple wells within same boring.

Figure 3. Example of Chemistry Result File Ready for Conversion to Text File

sys_sample_ code	Sys_loc_ code	sample_ name	sample_ matrix_ code	sample_ type_ code	sample_ source	parent_samp le_code	sample_ date	Start_ depth	End_ depth	Depth unit	Composite y/n	lab_anl_ method_ name	Analysis date	Total or disolved
MW01040198	MW-01		WG	N	Field		04/01/1998	10	12	Ft		SW8240	04/02/1998	D
MW02040198	MW-03		WG	N	Field		04/01/1998				N	SW8240	04/02/1998	D
MW02040198	MW-03		WG	N	Field		04/01/1998				N	SW8240	04/02/1998	D

Figure 3. Example of Chemistry Result File Ready for Conversion to Text File (continued)

test_ type	Lab Matrix code	analysis location	*Additional Fields*	qc_ level	lab_ sample id_	*Additional Fields*	Cas_rn	Chemical name	Result value	Result type code	reportable result	Detect flag	*Additional Fields*	reporting detection limit	*Additional Fields*
Initial	WG	LB		quant			71-43-2	BENZENE	23.20	TRG	Yes	Y		5	
Initial	WG	LB		quant	LAB02		108-88-3	TOLUENE		TRG	Yes	N		100	
Reanalysis	WG	LB		quant			1330-20-7	XYLENES		TRG	Yes	N		10	

Figure 4. Example of Water Level File Ready for Conversion to Text File

sys_loc_code	sys_well_id	measurement _date	measurement _time	ref_elev	water_level_depth	water_level_elev	*Additional Fields*	remark
MW01	MW01	05/10/1999	13:10	120.2	31.1	89.1		
MW02	MW02	05/10/1999	13:45	123.1	34.1	89.0		

Figure 5. Example of Extraction – Injection Well File Ready for Conversion to Text File

sys_loc _code	sys_well _code	Start_ measurement _date	Start_ measurement _time	end_measure _date	end_measure _time	avg_pump_rate	pump_rate_unit	*Additional Fields*	remark
EX-01	EX-01	05/12/2000	11:23	06/12/2000	11:30	2.5	mgd		
EX-02	EX-02	11/12/2000	12:00	12/12/2000	13:10	1.75	mgd		

Figure 6. Example of Geology File Ready for Conversion to Text File

sys_loc_code	start_depth	material_type	geo_unit_1	geo_unit_2	Remark
MW-03	0	CL	Glacial	Aquifer0	
MW-03	10	SW	Outwash	Aquifier1	
MW-03	23	SP	Outwash	Aquifer2	
SB-01	0	ML	Alluvial	Aquifer0	

ATTACHMENT 9

USEPA, SOP No. HW-32 SOP for Implementing the National Strategy for Procuring Analytical Services

SOP NO. HW-32

STANDARD OPERATING PROCEDURE

FOR

IMPLEMENTING THE NATIONAL STRATEGY FOR PROCURING ANALYTICAL SERVICES FOR ALL OSWER PROGRAMS (SUPERFUND, RCRA AND BROWNFIELDS)

Revision 5, March 17, 2005

By: _____ Date: 3/21/05
Jennifer E. Feranda, CLP Project Officer
Hazardous Waste Support Section

Concurred By: _____ Date: 3/21/05
Linda Mauel, Chief
Hazardous Waste Support Section

Approved By: _____ Date: 3/21/05
Robert Runyon, Chief
Hazardous Waste Support Branch

Overview

Superfund's Field and Analytical Services Teaming Advisory Committee (FASTAC) analytical services strategy requires Agency personnel to utilize a tiered decision tree for procuring Superfund analytical services for all non-time critical data collection projects. Region 2 has and continues to utilize that sequential decision tree for procuring Superfund analytical services. The decision tree is as follows:

Tier 1: EPA Region 2 DESA laboratory (including ESAT support)
Tier 2: National Analytical Services Contract Laboratories (CLP RAS and Non-RAS)
Tier 3: Region Specific Analytical Services (SAS) Contract Laboratories
Tier 4: Contractor, IAGs and Field Contractor Subcontract laboratories

Region 2 has taken many steps to assure that the FASTAC process is being followed and that Regional and National laboratory resources are being utilized to the fullest extent by the Superfund program. Some of these steps include:

1. Centralization of all Superfund analytical services procurement activities through the Regional Sample Control Coordinator (RSCC).

2. Coordination between the RSCC and the Regional DESA laboratory.

3. Outreach/training on the FASTAC process and procuring analytical services to the Superfund Program Office on a regular basis.

4. Participation in annual (or more frequent as needed) meetings with Superfund field contractors and their EPA Project Officers to outline the FASTAC process and associated requirements.

5. Operation of a Regional non-RAS tracking database, in addition to the National Analytical Services Tracking System (ANSETS) database, to track what non-RAS analytical services are being provided by the Regional DESA laboratory and what is being subcontracted out. The Regional database and ANSETS are compared on a monthly basis to assure that the FASTAC sequential decision tree for procuring analytical services is being followed.

The following is the step by step process by which the RSCC receives and processes RAS and non-RAS analytical requests.

Definitions:

Routine Analytical Services (RAS): Standard Target Compound List (TCL) (VOA/Semi-VOA/Pesticide/PCB Aroclors) and Target Analyte List (TAL) (metals and cyanide)

Non-Routine Analytical Services (Non-RAS): All analytical services not considered as RAS as follows:

1. Non-RAS analytical services able to be performed using the CLP RAS contracts flex clause
2. Non-RAS National CLP methods (Dioxin, PCB Congener, Air, etc.)
3. All other Non-RAS

Analytical Service Requestor: The EPA site Project Manager (OSC, RPM, etc.) or their designated representative (i.e., field contractor, State, Army Corp of Engineers, etc.).

Process:

RSCC Contact Information

Jennifer Feranda: Primary RSCC and CLP Project Officer, e-mail: feranda.jennifer@epa.gov; phone# (732) 321-6687
Adly Michael: RSCC, Database Coordinator, e-mail: Michael.adly@epa.gov; phone# (732) 906-6161
Robert Toth: RSCC, e-mail: toth.robert@epa.gov; phone# (732) 906-6171

The procurement of analytical services often starts with EPA PMs and/or their representatives contacting the RSCC to determine appropriate steps for procuring their analytical services and what documentation is required to submit these requests. The following steps delineate the process beginning with the RSCC's receipt of the formal request for analytical services:

1. **All analytical requests should be submitted to the RSCC at the earliest possible date.** Requests for all Superfund analytical services, both RAS and Non-RAS, are submitted to the RSCC up to one week prior to the sampling event. It is strongly recommended that all requests for non-Routine services be submitted at least four (4) weeks prior to the actual sampling event.* All requests should be submitted to RSCC by noon Tuesday. Any requests submitted after noon on Tuesday may not be considered until the following week.

2. DESA supplies analytical service requestors with electronic versions of the following analytical request forms: "U.S. EPA Region 2 CLP Analytical Services Request Form" (Attachment 1) and "U.S. EPA Region 2 Laboratory Analysis Request Form" (Attachment 2). All requests and subsequent correspondence relating to the request for booking are required to be transmitted electronically via e-mail. All requests should be

E-mailed to the RSCC, Jennifer Feranda with a cc: to Adly Michael and Robert Toth per the contact information provided above. This assures timely consideration of the analytical services request and serves as a Record of Communication (ROC) and the basis for hard copy documentation, as well as traceability for all requests being made.

3. Upon RSCC receipt of a request, a case folder is generated for that project. Hard copies of requests, ROC(s), additional e-mail and documentation relating to that case are placed in the file as they are received.

4. Upon receipt, analytical services requests are reviewed for completeness, accurate content, and confirmation of an approved (or approval pending) QAPP for the project. **No analytical services will be scheduled without an approved QAPP.**

5. Once requests have been reviewed for accuracy, completeness and QAPP status, they are submitted via e-mail to the DESA Lab. The DESA Lab holds booking meetings on Tuesday afternoons or Wednesday mornings to determine what projects (or portions thereof) they can accommodate.

6. No later then noon of Wednesday following the submittal of the request, the DESA Lab responds to the RSCC as to what analytical services they will provide. **All communications are done via e-mail in order to provide timely communication and a basis for a documented record.**

7. When the RSCC receives the information from the DESA Lab as to what services they will provide, several things occur:

   a. For RAS requests that will not be conducted by the DESA laboratory, the information is entered into the **S**uperfund **P**roject **R**equest **S**ystem (SUPRS) to be processed through the CLP. SUPRS is a national web based database that provides regional information to the Sample Management Office (SMO) to enable them to procure the appropriate CLP laboratory for the services requested.

   b. For non-RAS samples the CLP Organic and Inorganic Program Managers (PM) (located in HQ-Analytical Services Branch [ASB]) are consulted to see if special analyses can be performed through the CLP RAS contract(s) using the contracts "Flexibility Clause". If they can be analyzed through the CLP, RAS contract flex clause modifications are written by the PMs and requests are entered into SUPRS.

   c. Requests for Non-RAS national contracts (Dioxin, PCB Congener and Air analysis) are provided to the DESA Non-RAS program Task Order Project Officer (TOPO) for processing. The TOPO will write a specific Task Order Request for each individual project and submit it to ASB and the HQ Office of

Acquisition Management (OAM) Contracting Officer (CO) for review and to be offered for bid to contract labs under the National Non-RAS Blanket Purchase Agreements (BPAs). Once the lab(s) come back with a bid price, a lab is selected by the OAM CO and a procurement is prepared by the Region to transfer funds in to the national Non-RAS contracts. Laboratory information and special instructions are forwarded, via-email, to the EPA PM and their sampling representative at the time the procurement is to be prepared. Analytical services can be initiated upon OAM's receipt of the procurement.

d. For non-RAS requests that can be accommodated by DESA and/or the CLP flex clause, the analytical service requestor will be notified of such and will be provided contact and delivery, as well as any special, instructions.

e. For non-RAS requests that can not be accommodated through the DESA Lab, the CLP flex clause or the national Non-RAS program, the analytical services requestor is notified via e-mail that alternative means for analytical services will have to be obtained i.e., subcontract.

8. For work to be performed by the CLP for RAS and flexibility clause Non-RAS, SMO provides the RSCC, via e-mail, a Case number and laboratory assignments.

9. Once laboratory and case information are received from SMO (for CLP RAS and flex clause non-RAS), RSCC transmits this information, via e-mail to analytical services requestor. This information is transmitted via e-mail.

10. Two databases are maintained by the RSCC:

a. **Database #1:** This database tracks all RAS, flexibility clause non-RAS, and national contract non-RAS which are analyzed through the DESA Laboratory and the CLP (this database tracks all information from the time the samples are booked through sampling, analysis, data validation, and archiving). RAS analyses performed by the DESA lab are entered into this database, but only to the point of sample scheduling by the DESA lab. All work done after the scheduling is tracked by the DESA lab. (Attachment 3)

b. **Database #2:** This database tracks all other non-RAS analyses whether handled by the DESA laboratory or subcontracted out. It tracks non-RAS Superfund analytical work not tracked in Database #1(flex clause non-RAS and Non-RAS done through national contracts). The information in this database includes specifics about the project, the required analysis, number of samples, how those samples are analyzed (DESA vs. sub-contract lab), etc. (Attachment 4)

By COB Friday of each week, all new projects and relevant information are entered into each database as appropriate. The databases are updated with new information as needed.

11. At the end of each month, ANSETS (non-RAS tracking) information is provided to the RSCC by the analytical service requestors (Attachment 5). The information is entered into the Regional Database # 2 and the national ANSETS database. Monthly ANSETS reports are sent to the RSCC, by SMO, for their review. Concurrently, these reports are compared to the Regional Database #2 to try and determine whether the Superfund program and their representatives are following the FASTAC process as outlined by EPA HQ and Region 2.

12. If, after lab assignments are made, there is a change in the sampling event (i.e., change in date; cancellation; change in the number of samples being collected, etc.) the RSCC must be notified immediately upon the knowledge of any changes to the project, via e-mail. If there is a change in the sampling date or the number of samples being collected, a new laboratory request form (for the DESA laboratory or the CLP, as appropriate) must be submitted to the RSCC. (Reference Attachment 6).

* In FY' 03/04 DESA staff initiated a concerted effort to have RPMs involve DESA staff in scoping meetings for their projects. Early involvement in project planning enables the DESA lab to better accommodate the needs for the individual projects.

Names and Organizations Involved in the Procurement Process

<u>RSCC</u>: Jennifer Feranda and Adly Michael
EPA Region 2, Division of Environmental Science and Assessment (DESA)
Hazardous Waste Support Branch (HWSB), Hazardous Waste Support Section (HWSS)
DESA-HWSB-HWSS

- Regional Sample "Broker" all analytical services; oversight National CLP and National Non-RAS

<u>**DESA Lab Analytical Coordinator**</u>: John Birri,
EPA Region 2, DESA Laboratory Branch (LAB), DESA-LAB

- Coordination/Contact for all samples analyzed by the DESA Laboratory

Contractors and EPA Project Officers (PO):

Contractor: CDM Federal RACS
EPA PO: Fernando Rosado
CDM : Jeniffer Oxford

Contractor: Tetra Tech Environmental RACS
EPA PO: Keith Moncino
Tetra Tech: Lynn Arabia

Contractor: Weston RST
EPA PO: Helen Eng
Weston: Smita Sumbaly

Contractor: Weston SAT
EPA PO: Helen Eng
SAT: Yunru Yang

IAG: U.S. Army Corp of Engineers
EPA PO: Shaheer Alvi
USACE: Andrea Pouliet

ATTACHMENT 1

U.S. EPA REGION II
CLP ROUTINE ANALYTICAL SERVICES REQUEST FORM

Assigned CLP Case #: **Canceled:**

Site Name: **City/State:** **Site Spill ID:**

CERCLIS ID: **Operable Unit:** **Purpose Code:**

Sampling Contact: **Phone#:** **Organization:**

EPA Project Manager: **QAPP Approved by EPA:** Y/N **Date of QAPP Approval:**

E-Mail Lab Assignments: Y/N **E-Mail for Lab Info:** **E-Mail for Data:**

Proposed Sampling Date(s): **Proposed Ship Date(s):** **Saturday Delivery:** Y/N

Oversight/Split Sampling (PRP/Fed. Facility): Y/N **Labs Used by PRP,FF:**

Contaminant(s) of Concern (If known):

Number of Samples	Conc. Level L/M	Matrix (soil, aqueous, etc.)	Analysis	Turn Around Time 7, 14, or 21 days	SOW# and/or Method (i.e. OLM0x.x ,Modified 5035)	LabAssignment

Comments:

Sampling Project Manager: _____ **Signature/Date:** _____

RSCC: _____ **Signature/Date:** _____

ATTACHMENT 2

US EPA REGION 2 LABORATORY
non-RAS ANALYSIS REQUEST FORM

SURVEY NAME: _____ DATE OF INITIAL REQUEST _____ REVISED REQUEST DATE _____

REQUESTOR: _____ PHONE NUMBER _____ E-MAIL: _____

AFFILIATION: _____ Purpose Code: ____ Site Spill ID: ____ Operable Unit: ____

Address for Final Report: Check to E-mail Final Report: ☐

# SAMPLES	ANALYTE	MATRIX	# SAMPLES	ANALYTE	MATRIX	# SAMPLES	ANALYTE	MATRIX	# SAMPLES	ANALYTE	MATRIX
	SANITARY			*NITRITE			*E. COLI			VOA, 524.2 (DW levels)	
	ACIDITY			OIL & GREASE			*ENTERO-COCCUS, MF			HALOACETIC ACIDS	
	ALKALINITY, TOTAL			*ORTHOPHOS-PHATE			*ENTERO-COCCUS, MPN			ORGANOTINS	
	AMMONIA			PHENOLICS			*F-COLIFORM, MF			PCB CONGENERS (Identify list)	
	ASPHALTENES			PHOSPHORUS			*F-COLIFORM, MPN			PCBs, TCL	
	*BOD, 5 DAY			SOLIDS, % 105degC			HETERO. PLATE COUNT (HPC)			PCBs, TSCA	
	*CBOD, 5 DAY			SPECIFIC CONDUCT.			*T-COLIFORM, COLILERT			PESTICIDES, TCL	
	CHLORIDE			SULFATE			*T-COLIFORM, MF			*PESTICIDES, WEST NILE	
	COD			SULFIDE			*T-COLIFORM, MPN			PESTICIDES, other (Identify)	
	*COLOR			SULFIDE, UNIONIZED			***METALS***			***BIOLOGY***	
	CORROSIVITY			SULFUR			METAL:			#EFFLUENT TOXICITY - ACUTE	
	CYANIDE			TDS			ARSENIC			#EFFLUENT TOXICITY - CHRONIC	
	CYANIDE AMENABLE TO CHLORINATION			TKN			LEAD			#SED. TOXICITY - FRESH WATER	
	CYANIDE, WEAK ACID DISSOC (FREE)			TOC			METALS - SLUDGE			#SED. TOXICITY - MARINE WATER	
	DENSITY			TPH			HARDNESS			***GRAIN SIZE:***	
	*DO (Diss. Oxygen)			TSS			METALS FINISHING			1. Check Grain Size Method:	
	FLUORIDE			*TURBIDITY			METALS TAL (DW levels)		☐	Pipet Method (Plumb 1981) OR	
	*HEX. CHROMIUM			VISCOSITY			METALS, TAL		☐	Hydrometer Method (ASTM 422D-63)	
	IGNITABILITY			***MICRO***			METALS - TCLP			2. Check Sand/Sieve Reporting Units:	
	*MBAS [surfactants]			ASBESTOS			***ORGANICS***		☐	% Total Sand OR	
	*NITRATE			*CLOSTRIDIUM PERFRINGENS			NVOA, TCL		☐	% Sand Fractions (Very Coarse Sand, Coarse Sand, Medium Sand, Fine Sand, Very Fine Sand)	
	NITRATE + NITRITE			*CRYPTO/ GIARDIA			NVOA - TCLP			3. Check Fine or Mud Fraction Reporting Units:	
							PAHs		☐	% Total Fines (Silt + Clay combined) OR	
							TRIHALO- METHANES (THMs)		☐	% Total Silt and % Total Clay	
							VOA, TCL				
							VOA, TCLP				

☐ REQUEST ACCEPTED

☐ REQUEST NOT ACCEPTED

ABOVE STATUS APPROVED BY: JOHN BIRRI

DATE APPROVED: _____

NOTE: NO WEEKEND DELIVERIES ACCEPTED

SAMPLING DATES: from _____ to _____

SAMPLING TIMES FOR SHORT HOLDING TIME [asterisked]TESTS (check one):

☐ 0000 - 0600 ☐ 0600 - 1200 ☐ 1200 - 1800 ☐ 1800 - 2400 HRS

ARRIVAL DATES: from _____ to _____

ARRIVAL TIMES (check one): ☐ 8-11am ☐ 11am-4pm ☐ After 4pm

METHOD OF SHIPMENT: _____

SPECIAL REQUESTS: (e.g. - turnaround time, additional analytes, etc.)

REPORTING REQUIREMENTS (attach separate sheet, if more room is needed):

MATRIX KEY: A = AQUEOUS; D = DISSOLVED; S = SOLID; SL = SLUDGE; N = NON-AQUEOUS LIQUID/ OIL; O = OTHER (Describe)
- Specify organism, endpoints and test duration

VERSION DATE: 1/03/2005

ATTACHMENT 3

Database I / DATA TRACKING SUMMARY REPORT*

Site Name / Location	Case No./ Sampler	Request Rec'd Date	DESA Accept	CLP Accept	Requestor Notified Date	Case Booked Date	LAB	Analysis	Proj'd No. of Sample	TAT	Sampling Start Date	Sampling End Date	Data Due to HWSS	Act'l No. of Sample	Data Rec'd from Lab
Mohonk Road Industrial	**33937**														
High Falls NY	**USACE**														
		2/22/2005	No, Odd Analyte(s)	Yes	3/4/2005	3/4/2005	LIBRTY	LC-VOA+1,4-di	5	14	3/10/2005	3/10/2005	3/25/2005		
Juana Diaz Wells	**33938**														
Juana Diaz PR	**PREQB**														
		2/24/2005	No, Capacity	Yes	3/4/2005	3/10/2005	DATAC	LC-VOA	25	21	3/7/2005	3/11/2005	4/4/2005	17	
		2/24/2005	YES		3/2/2005	3/10/2005	DESA	LC-BNA	18	21	3/7/2005	3/11/2005		0	
		2/24/2005	YES		3/2/2005	3/10/2005	DESA	LC-Pest/PCBs	18	21	3/7/2005	3/11/2005		0	
		2/24/2005	YES		3/2/2005	3/10/2005	DESA	TAL-Metals+Hg	18	21	3/7/2005	3/11/2005		0	
		2/24/2005	YES		3/2/2005	3/10/2005	DESA	CN	18	21	3/7/2005	3/11/2005		0	
Lightman Drum Compan	**33939**														
Winslow Twp. NJ	**CDM**														
		[illegible]/1/2005	No, Capacity	Yes	[illegible]3/4/2005	3[illegible]2005	[illegible]A4	TC[illegible]VOA	[illegible]5	21	3/[illegible]2005	3/18/2005	4/4/2005		
		[illegible]/1/2005	YES		[illegible]1/2005	3[illegible]1/2005	[illegible]ESA	TA[illegible]Metals+Hg	[illegible]3	21	3/[illegible]2005	3/18/2005		0	
Fried Industries	**33940**														
East Brunswick NJ	**TTFW**														
		2/25/2005	YES		3/1/2005	3/1/2005	DESA	TAL-Metals+Hg	7	21	3/7/2005	3/11/2005		0	
		2/25/2005	No, Odd Analyte(s)	Yes	3/4/2005	3/4/2005	LIBRTY	LC-VOA+1,4-di	10	21	3/7/2005	3/11/2005	4/4/2005		

EXAMPLE

* Summary Report of RAS, modified RAS analyses, and national non-RAS contracts information.

ATTACHMENT 4

Database II / DATA TRACKING SUMMARY REPORT*

Site Name	Request Received Date	DESA Accept	Requestor Notified Date	Laboratory Name	Sampling Begin	Sampling End	Projected Samples	Collected Samples	Matrix	Analysis	TAT	Method
Consolidated Iron and Metals												
	6/1/2004	No, Capacity	6/3/2004	GPL Laboratories	6/7/2004	6/30/2004	5	3	Water	Volatiles	1	
	6/1/2004	No, Capacity	6/3/2004	GPL Laboratories	6/7/2004	6/30/2004	10	9	Water	TPH	21	SW-846 8015B
	6/1/2004	No, Capacity	6/3/2004	GPL Laboratories	6/7/2004	6/30/2004	3	2	Soil	TPH	21	SW-846 8015B
							18	14				
Lawrence Aviation Industries												
	4/2/2004	No, Capacity	4/6/2004	STL-Laboratories	4/12/2004	4/23/2004	12	11	Water	Titanium	21	SW-846 6010B
	4/2/2004	No, Capacity	4/6/2004	STL-Laboratories	4/12/2004	4/23/2004	140	136	Soil	pH	21	SW-846 9045C
	4/2/2004	No, Capacity	4/6/2004	STL-Laboratories	4/12/2004	4/23/2004	140	136	Soil	TOC	21	Lloyd Kahn
	4/2/2004	No, Capacity	4/6/2004	STL-Laboratories	4/12/2004	4/23/2004	140	136	Soil	Grain size	21	ASTM-D421-85
	4/2/2004	No, Capacity	4/6/2004	STL-Laboratories	4/12/2004	4/23/2004	130	122	Soil	Titanium	21	SW-846 6010B
							562	541				
							580	555				

EXAMPLE

* Summary Report of non-RAS analyses (other than non-RAS under National Contracts) either by EPA lab or subcontracted out.

ATTACHMENT 5

Analytical Services Tracking System (ANSETS) Reporting in Region 2

The following details EPA Region 2's procedures/process for reporting under ANSETS.

1. All sampling organizations (EPA, state, US Army Corp, and contractors) in Region 2 that procure analytical services under Tier 4 of the FASTAC process (sub-contract, IAG, etc.) must submit a form (Exhibit 1)detailing these analytical services (i.e., site information, matrix, analysis, number of samples, laboratory, etc) to the Regional Sample Control Coordinator (RSCC) on a monthly basis.

2. All of the data provided by the sampling organizations are entered into the Regional Database #2 and a Regional copy of the ANSETS database.

3. The information from the Regional ANSETS database is then exported (on a monthly basis) to the Sample Management Office (SMO) for incorporation into the National ANSETs Database.

4. Once SMO collects all of the information, they prepare a report of all the information collected from the Region and send the RSCC a report detailing information on each site in which information that was submitted for that month as well as a running total of the different types of analyses reported for the Fiscal Year. This report is sent to the CLP Project Officer (PO)/RSCC monthly.

5. The CLP PO/RSCC reviews the report, compares it with the regional database (Database #2) and disseminates the information as necessary to the DESA Lab, HWSS and HWSB management. The CLP PO/RSCC also may contact EPA Project managers or their designated representatives when questions arise as to why sub-contracts were used vs. the EPA DESA lab or the CLP.

Contacts for ANSETS Reporting

Jennifer Feranda: EPA Region 2 CLP PO/RSCC; DESA-HWSB-HWSS
- Overall coordination; review of reports and dissemination of information

Adly Michael: EPA Region 2 RSCC
- Regional ANSETs Database management and data entry
- Maintains files on all ANSETS documentation submitted to RSCC

Sampling Organization Contacts (Responsible for submitting ANSETS information)

Dianne Salkie: US EPA Region 2 DESA-HWSB-SCST
Jenniffer Oxford: CDM Federal Programs
Lynn Arabia: Tetra Tech Environmental Corp.
Smita Sumbaly: Weston Removal Support Team (RST)
Yunru Yang: Weston Site Assessment Team (SAT)

Frank Sorce: NJ Department of Environmental Protection (NJDEP)
Lisa Greco-Segazi: Malcolm Pirnie Inc. (MPI)
David Evans: U.S. Army Corp of Engineers, Kansas City District

United States Environmental Protection Agency

EXHIBIT 1

Attachment 2 - ANSETS Data Requirement (List of Required Data)

Date:

Sampling Start Date:
Sampling End Date:

Project Numbers			
Project Number:	Regional Account Number:	DAS Number:	Assoc. CLP Case No:
Site Information			
Site Name:		City:	State:
CERCLIS ID:	Operable Unit:	Action:	Funding Lead:
Responsible EPA Project Individual:		Sampling Organization:	

Analytical Services Information	
If field analytical services are used during this project write "field analysis" in the Laboratory Name Column. If fixed laboratory is used write the name of the laboratory in the Laboratory Name Column. Please specify in this box all field analytical techniques used.	COST:

Laboratory Name (include location if multiple lab locations)	No. Samples	Matrix	Analysis	Requested Turnaround (Days)
Completed by:		Organization:		Date:

ATTACHMENT 6

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II

DATE: October 13, 2004

SUBJECT: Procedures for Notification of Changes in Sampling/Analytical Schedules

FROM: Robert Runyon, Chief
Hazardous Waste Support Section (2DESA-HWSB)

TO: Vince Pitruzzello, Chief
Program Support Branch (2ERRD-PSB)

The purpose of this memo is to provide you with an update on requirements for procuring any Superfund analytical services through EPA Region 2's Division of Environmental Science and Assessment (DESA) laboratory and the National Contract Laboratory Program (CLP).

Over the past several months there has been a significant increase in the number of sampling events that have; 1) been postponed; 2) been cancelled; 3) been extended beyond the sampling period previously designated; or 4) changed the number of samples submitted to laboratories for analysis from the number scheduled (increased or decreased, often significantly). While it is understood that sampling and field work can sometimes be unpredictable with delays and/or changes in sample numbers, sampling events requiring changes are occurring more frequently among Region 2 field contractors. In addition, RPMs and/or samplers are not notifying the Regional Sample Control Coordinator (RSCC) and/or DESA lab of any such changes in a timely manner. Often, the RSCC or DESA laboratory are notified after the samples were expected to arrive at the lab(s), and/or DESA staff are required to initiate contact with sampling contractors to determine the status of scheduled samples that have not been received.

Delays in notification of changes in scheduled sampling projects result in costly workload inefficiencies. DESA sample coordinating staff spend unnecessary time tracking down the status of specific projects when samples don't arrive on schedule, and the scheduled analytical resources requested are unavailable for use on other projects while committed to scheduled projects.

The following procedures are being implemented to make most cost effective use of analytical resources, and to ensure that proper communication on sampling issues is being maintained between EPA Project Managers, their contractors, and DESA staff:

1) It is the Site Project Manager's (RPM, OSC, SAM, etc.) and their contractor's responsibility to notify the RSCC of any changes to sampling schedules or numbers of samples being submitted. Notifications should be made immediately upon the knowledge of any changes to the sampling project schedule or sampling numbers. Failure to appropriately notify the RSCC could result in samples not being analyzed or an extension in the time to complete analysis. This holds true for both the DESA laboratory and the CLP.

2) All notification of changes in sampling schedules or the number of samples being submitted for analysis (either to the DESA laboratory or the CLP) **must** go through the RSCC, currently Jennifer Feranda.

3) For any changes in sampling dates or the number of samples being submitted, a new Booking request form must be completed and submitted to the RSCC. The appropriate form must be

used dependent on which lab(s) are scheduled to receive the samples (i.e., the DESA laboratory or the CLP).

4) Once all scheduling issues have been resolved, communication on other sampling and technical issues can be directed to the appropriate contacts: John Birri (732) 906-6886 for the DESA laboratory and Adly Michael (732) 906-6161 for the CLP.

Should you have any questions or require further information, please contact me at (732) 321-6645 or Jennifer Feranda of my staff at (732) 321-6687.

Attachments

cc: Deb Szaro
Linda Mauel
Jennifer Feranda
John Bourbon
John Birri
Adly Michael

ATTACHMENT 10

USEPA Region 2 Memorandum: Tracking Superfund Non-CLP Analytical Data, Directive # 9240.0-2C

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II

DATE:

SUBJECT: Tracking Superfund Non-CLP Analytical Data (ANSETS): Directive # 9240.0-2C

FROM: Jennifer E. Feranda, CLP Project Officer and Regional Sample Control Coordinator
Hazardous Waste Support Section (2DESA-HWSB)

TO: See Addressees

The purpose of this memo is to inform you about OSWER Directive # 9240.0-2C (attached) concerning the requirements for nationally tracking non-Contract Laboratory Program (CLP) analytical services. This directive supersedes OSWER Directives 9240.0-2A and 2B which established the Analytical Services Tracing System (ANSETS). The primary focus of the new directive is on tracking analytical data generated via EPA field contractors and their subcontractors at federal fund lead sites and at sites where EPA is the lead agency overseeing federal facility cleanups under Interagency Agreements. Per the Directive, RS&T Division laboratories, State-funded sites, and Potentially Responsible Parties (PRPs) do not need to comply with ANSETS data submission. However, under the Region 2 non-CLP tracking system that was established in 2000, the Region requires PRPs to report this information. Site Project Managers should be writing this requirement into their action memos, orders, etc. Although this information is not currently required by HQ, the Region will continue to require PRPs to submit this data to the Regional Sample Control Coordinator (RSCC).

The EPA Field and Analytical Services Teaming Advisory Committee (FASTAC) established a decision tree for selecting analytical services. The Tiers (with Tier 1 being the most favorable option) are:

Tier 1: RS&T Division Laboratories (preferred option for special analytical services)
Tier 2: CLP (preferred option for routine analytical services)
Tier 3: Region specific analytical services contracts
Tier 4: Obtaining analytical services using subcontractors via field contracts.

Tier 4 is the least preferred option due to lack of direct oversight of these contractors, quality assurance potentially not meeting EPA standards, and often higher costs for services. By requiring contractors to use the ANSETS tracking system, the Superfund program can determine whether the FASTAC strategy is being implemented, analyze trends in new services needed, track national laboratory analyses acquired for the Superfund program, and plan for quality assurance oversight.

The directive outlines several options for submitting ANSETS data, however, it also allows each Region to use their discretion on how the ANSETS information will be provided to HQ. Region 2 already has a system in place for reporting Non-CLP analytical services information, and will continue to utilize this system. To provide consistency between the Region 2 and National requirements, the region will now utilize the "ANSETS Data Requirement" form (copy attached) in place of the "Non-CLP Tracking Form" which is currently being used. The forms should be completed and submitted to the RSCC, currently myself, by the first of each month for the previous months sampling. Once the information is compiled in the Region, it will be sent to HQ for inclusion in the national database.

The requirements for ANSETS reporting became effective as of January 1, 2003. Per the

directive, Regional Contracting Officers and Project Officers will need to amend their assessment and response contracts to reinforce the ANSETS analytical services tracking requirements. If you have any questions regarding the implementation of these requirements, both national and regional, please contact me at (732) 321-6687.

Attachments

Addressees:

Shaheer Alvi
Helen Eng
Keith Moncino
Richard Graciano
Fernando Rosado
Kathy Moyik
Lisa Guarnieri
Superfund Remedial Project Managers
Superfund Site Assesment Managers
Superfund On-Scene Coordinators
HWSB

cc:
Vince Pitruzzello
Deb Szaro
Kevin Kubik

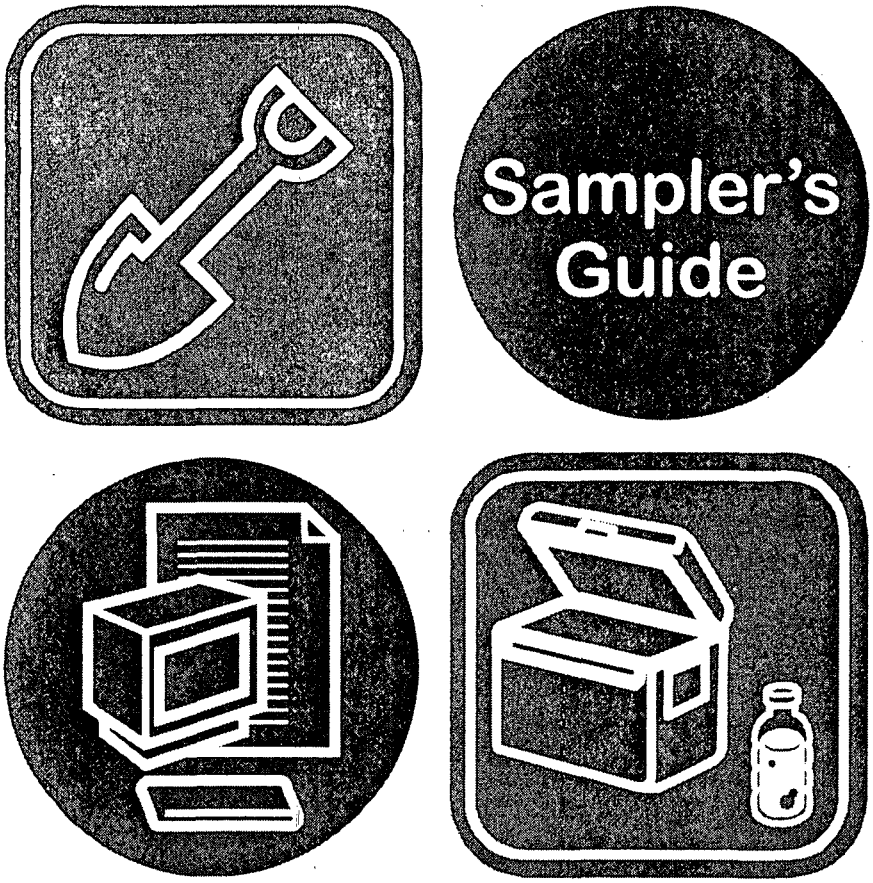
ATTACHMENT 11

Contract Laboratory Program Guidance for Field Samplers

OSWER 9240.0-44
EPA 540-R-07-06

FINAL July 2007

Office of Superfund Remediation and Technology Innovation



Contract Laboratory Program Guidance for Field Samplers

Disclaimer: The final version of the document replaces any prior versions of the document in their entirety.

Foreword

The intent of the Contract Laboratory Program (CLP) Guidance for Field Samplers is to replace the CLP Samplers Guide. This guidance document is designed to provide users with general information regarding environmental sample collection for the United States Environmental Protection Agency's (USEPA) Contract Laboratory Program (CLP). This document provides minimum CLP requirements, an explanation of the general sampling process sequence of events, and any related information. The appendices contain useful reference information and checklists to aid in planning and documenting sampling activities.

CLP users also are encouraged to review the Introduction to the Contract Laboratory Program document that contains a general overview of the CLP, how it works, and how to access the program. The CLP requires samplers to use the functionality provided by the Field Operations Records Management System (FORMS) II Lite™ software, which is the preferred means of creating CLP sample documentation. For guidance in using the software to record and submit sampling data, users should reference the FORMS II Lite User's Guide.

Both the Introduction to the Contract Laboratory Program and the Contract Laboratory Program Guidance for Field Samplers can be downloaded from the CLP Web site at the following address:

http://www.epa.gov/superfund/programs/clp/guidance.htm

The FORMS II Lite User's Guide can be downloaded from the CLP Web site at the following address:

http://dyncsdao1.fedcsc.com/itg/forms2lite/doc.html

For more information regarding the CLP or this guide, please contact Elizabeth Holman via email at Holman.Elizabeth@epa.gov or via telephone at (703) 603-8761.

Key Information

Text in blue and underlined indicates an external link to information outside of this document.

The images below are located throughout the document to draw attention to important information and each are labeled accordingly:

Important

Note

Table of Contents

1.0 INTRODUCTION 1

1.1 About this Guide 1
1.2 Overview of the CLP 1
1.2.1 Key Players Within the CLP 1
1.3 Overview of the Sampling Process 3
1.3.1 Procedures Must be Consistent 3
1.3.2 Analytical Data Must be Accurate and Defensible 3
1.3.3 Sampling Procedures and Guidelines Must Meet Minimum Requirements 4
1.4 Overview of Sampling Documentation Requirements 4
1.4.1 CLP Documentation Requirements 4

2.0 PRE-FIELD ACTIVITIES 7

2.1 Prepare for a Sampling Event 7
2.2 Communicate During a Sampling Event 8
2.3 Review Project Plans Containing Regional Requirements 8
2.4 Plan to Meet Documentation Requirements 9
2.4.1 Request Scheduling of Analysis, SMO-assigned Case Numbers, CLP Sample Numbers, and Laboratory Contact Information 9
2.4.2 Prepare Sample Cooler Return Documentation 10
2.5 Obtain Municipal Permits, Licenses, and Clearances 11
2.5.1 Request Access to County, State, Tribal, Military, and/or Federal Property 11
2.5.2 Contact Private Property Owners 11
2.5.3 Contact Utility Companies 11
2.6 Identify and Obtain Sampling Materials 12
2.6.1 Procure Appropriate Equipment and Supplies 12
2.6.2 Procure Sample Containers 12
2.6.3 Procure Shipping Supplies 13
2.7 Comply with Transportation and Shipping Requirements 13
2.8 Provide Shipment Notification 14
2.9 Perform Readiness Review/Dry Run 14

3.0 IN-FIELD ACTIVITIES 15

3.1 Collect Samples 15
3.1.1 Determine Types of Samples to be Collected 15
3.1.2 Meet Volume, Preservation, and Holding Time Requirements 17
3.2 Complete Documentation 22
3.2.1 Identify a Sample with a CLP Sample Number and SMO-assigned Case Number 22
3.2.2 Complete TR/COC Records 22
3.2.3 Complete and Attach Custody Seals 28
3.2.4 Complete and Attach Sample Labels 28
3.2.5 Complete and Attach Sample Tags 29
3.3 Provide Sample Receipt 30
3.4 Pack and Ship Samples 31
3.4.1 Sample Containers 31
3.4.2 Inventory of Samples and Documentation 31
3.4.3 Shipping Regulations 31
3.4.4 Sample Packaging for Shipment 31
3.4.5 Shipment Notification 34

Appendix A: Functions within a Sampling Project 1

Appendix B: CLP Sample Collection Guidelines for VOAs in Soil by SW-846 Method 5035A 1

Appendix C: General CLP Sample Collection Guidelines VOAs in Water 1

Appendix D: Sampling Techniques and Considerations 1

Table of Contents (Cont.)

Appendix E: Sampling Checklists 1
Appendix E-1: Personnel Preparation Checklist 1
Appendix E-2: General Sample Collection Checklist 2
Appendix E-3: Completing Field Logbook Checklist 3
Appendix E-4: Completing Handwritten Sample Labels Checklist 4
Appendix E-5: Completing Handwritten Sample Tags & Custody Seals Checklists 5
Appendix E-6: Packing Sample Container Checklist 6
Appendix E-7: Packing Shipping Container Checklist 7
Appendix E-8: Shipping & Reporting CLP Samples Checklist 8

Appendix F: Glossary 1

List of Figures

Figure 3-1. Packaged Sample with Identification and Chain-of-Custody Documentation (Excluding TR/COC Record) 22
Figure 3-2. Organic Traffic Report & Chain of Custody Record (Laboratory Copy) 24
Figure 3-3. Inorganic Traffic Report & Chain of Custody Record (Laboratory Copy) 25
Figure 3-4. Organic Traffic Report & Chain of Custody Record (Region Copy) 26
Figure 3-5. Inorganic Traffic Report & Chain of Custody Record (Region Copy) 27
Figure 3-6. Custody Seal 28
Figure 3-7. Completed Sample Tag 30
Figure 3-8. Sample Receipt Created Using the FORMS II Lite Software 30
Figure 3-9. Sample Cooler with Attached TR/COC Record and Cooler Return Documentation 33
Figure 3-10. Sample Weight Log 33
Figure 3-11. Shipping Cooler with Custody Seals 34

List of Tables

Table 1-1. Participants in the CLP Sampling Process 2
Table 2-1. CLP Sample Number Letter Codes 10
Table 2-2. Container Type Specifications 13
Table 3-1. QC Sample Types and CLP Submission Requirements 16
Table 3-2. Sample Collection Requirements for CLP SOW SOM01 (VOAs) 19
Table 3-3. Sample Collection Requirements for CLP SOW SOM01 (SVOAs, Pesticides and Aroclors) 20
Table 3-4. Sample Collection Requirements for CLP SOW ILM05 21
Table 3-5. Completing and Attaching a Custody Seal 28
Table 3-6. Completing and Attaching a Handwritten Sample Tag 29
Table 3-7. Packing Samples for Shipment 32
Table D-1. Mixing a Sample and Filling Sample Containers D-2

List of Acronyms

ASB	Analytical Services Branch
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLP	Contract Laboratory Program
CLP PO	CLP Project Officer
CRQL	Contract Required Quantitation Limit
CVAA	Cold Vapor Atomic Absorption
DOT	Department of Transportation
DQO	Data Quality Objective
dbf	Database File
ET	Eastern Time
FORMS II Lite™	Field Operations Records Management System II Lite
FSP	Field Sampling Plan
HCN	Hydrocyanic acid
IATA	International Air Transport Association
ICP-AES	Inductively Coupled Plasma-Atomic Emission Spectroscopy
ICP-MS	Inductively Coupled Plasma-Mass Spectrometry
MS	Matrix Spike
MSD	Matrix Spike Duplicate
$NAHSO_4$	Sodium Bisulfate
NPL	National Priorities List
OSC	On-scene/on-site Coordinator
OSHA	Occupational Safety and Health Administration
OSRTI	Office of Superfund Remediation and Technology Innovation
OSWER	Office of Solid Waste and Emergency Response
PCBs	Polychlorinated Biphenyls
PE	Performance Evaluation
PM	Program Manager
ppb	Parts-Per-Billion
ppt	Parts-Per-Trillion
PRP	Potentially Responsible Party
PT	Proficiency Testing
PTFE	Polytetrafluoroethylene
PVC	Polyvinyl Chloride
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QASPER	Quality Assurance Sampling Plan for Environmental Response
QATS	Quality Assurance Technical Support
QC	Quality Control
RAS	Routine Analytical Services
RPM	Remedial Project Manager
RSCC	Regional Sample Control Center Coordinator
RSM	Regional Site Manager
SAM	Site Assessment Manager
SAP	Sampling Analysis Plan
SARA	Superfund Amendments and Reauthorization Act
SDG	Sample Delivery Group
SMC	System Monitoring Compound
SMO	Sample Management Office
SOP	Standard Operating Procedure
SOW	Statement of Work
SVOA	Semivolatile Organic Analyte
TR/COC	Traffic Report/Chain of Custody
txt	Text File
UN	United Nations
USEPA	United States Environmental Protection Agency
VOA	Volatile Organic Analyte
XML	eXtensible Markup Language

THIS PAGE INTENTIONALLY LEFT BLANK

1.0 INTRODUCTION

1.1 About this Guide

This document describes the important organizational roles and responsibilities for those who plan and conduct environmental sample collection projects for analysis through the Superfund's Contract Laboratory Program (CLP). This chapter introduces the structure and purpose of this document. Chapter 2, *Pre-field Activities*, addresses pre-field planning activities that the sampling team could complete prior to the actual sampling event. Chapter 3, *In-field Activities*, addresses those activities that need to be completed during the sampling event.

Appendix A describes the functions within a sampling project which are taken from the Quality Assurance Project Plan requirements. Appendix B and Appendix C contain the sample collection guidelines for Volatile Organic Analytes (VOAs) in soil and in water. Appendix D recommends sampling techniques. Appendix E contains checklists to help the sampler ensure that all necessary steps are completed.

A project and site-specific Quality Assurance Project Plan (QAPP) providing Regional guidance will override guidance given within this document.

1.2 Overview of the CLP

The CLP is a national program of commercial laboratories under contract to support the USEPA's nationwide effort to clean up designated hazardous waste sites by supporting its Superfund program. The Superfund program was originally established under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 and presently exists under the Superfund Amendments and Reauthorization Act (SARA) of 1986.

The CLP uses state-of-the-art technology to provide users with analytical services. The program provides data of known and documented quality to support USEPA enforcement activities or other user needs. To achieve this goal, the CLP has established strict Quality Control (QC) procedures and detailed documentation requirements. Current CLP users include the USEPA Regions, States and Tribal governments, and other Federal agencies. CLP users also are encouraged to review the *Introduction to the Contract Laboratory Program* document that contains a general overview of the CLP, how it works, and how to access the program.

1.2.1 Key Players Within the CLP

In coordinating Superfund sampling efforts, the Analytical Services Branch (ASB) is supported by the Sample Management Office (SMO) contractor, the Regional CLP Project Officers (CLP POs), the Regional Sample Control Center Coordinators (RSCCs), and the Regional Site Managers (RSMs), including Site Assessment Managers (SAMs), On-scene/On-site Coordinators (OSCs), and Remedial Project Managers (RPMs). Samplers may work directly with the RSCC and/or RSM (or equivalent), and/or an OSC from the Field Support Section during a sampling event. See Table 1-1 for a brief description of the functions performed by key participants (functions may vary by Region).

Table 1-1. Participants in the CLP Sampling Process

Participants	Responsibilities
Analytical Services Branch	USEPA ASB directs the CLP from within the Office of Superfund Remediation and Technology Innovation (OSRTI) in the Office of Solid Waste and Emergency Response (OSWER). ASB responsibilities include: • Development of the Statements of Work (SOWs) that define required analytical methods (including QC, detection/quantitation limits, and holding times) for the analytical services procured under the CLP; • Development and implementation of policies and budgets for Superfund analytical operations; • Development of information management policies and products for analytical data; • Management of SMO and Quality Assurance Technical Support (QATS) contracts; • National administration, evaluation, and management of the CLP; and • Direction of CLP Quality Assurance (QA) activities in coordination with overall OSWER QA activities. To obtain the most current ASB contact list, refer to the following Web site: http://www.epa.gov/superfund/programs/clp/contacts.htm#ASB
CLP Sample Management Office	The contractor-operated SMO provides necessary management, operations, and administrative support to the CLP. SMO receives Regional analytical requests, coordinates and schedules sample analyses, and tracks sample shipments. SMO also receives and checks data for completeness and compliance, processes laboratory invoices, and maintains a repository of sampling records and program data.
CLP Contract Laboratories	The contractor-operated laboratories within CLP provide necessary analytical services for the isolation, detection, and quantitation of the CLP's target compounds and analytes.
Regional CLP Project Officer	The CLP PO monitors the technical performance of the contract laboratories in each Region. The CLP PO works closely with ASB Program Managers (PMs) to identify and resolve laboratory technical issues, and leads laboratory on-site evaluations. To obtain the most current CLP PO contact list, refer to the following Web site: http://www.epa.gov/superfund/programs/clp/polist.htm
Regional Sample Control Center Coordinator	In most Regions, the RSCC coordinates sampling efforts and serves as the central point-of-contact for sampling questions and problems. The RSCC works with SMO to schedule sample shipments to laboratories. In addition, the RSCC's activities may include: informing SMO of sample shipment, cancellations, special instructions, and sampling issues. To obtain the most current RSCC contact list, refer to the following Web site: http://www.epa.gov/superfund/programs/clp/rscclist.htm
Regional Site Manager	The RSM Coordinates the development of acceptance or performance criteria and oversees project-specific contractors, state officials, or private parties conducting site sampling efforts. The RSM could be the SAM, the OSC, or the Remedial Project Manager (RPM).
Field Support Section	The Field Support Section consists of personnel such as the OSC, SAM, and RPM. In most Regions, the Field Support Section develops Standard Operating Procedures (SOPs) for field sampling and related procedures, and assists sampling teams in following those SOPs. The sampling team determines what type(s) of CLP services will be required for a particular sampling event. The Field Support Section reviews Sampling Analysis Plans (SAPs) prepared by sampling teams and oversees sampling teams in the field. The Field Support Section may also prepare their own SAPs, perform sampling activities in the field, and analyze and report the results of their sampling events to the RSM.

1.3 Overview of the Sampling Process

Once USEPA has determined that physical, chemical, and/or biological testing of a site is necessary, samples of material from the site area must be collected. The type of material that must be collected and the analytical method to be used depends upon the physical location of the site, detection level(s), site history (previous sampling), and known or unknown conditions and contaminants. The sampling process includes carefully planned and consistently applied procedures that produce accurate and legally defensible data. The sampling team should consider the procedures and plans presented in this guide as minimum sampling process guidelines to maintain sample integrity and identity. Samples should be collected according to the approved project and site-specific QAPP and SAP. This document does not define specific sampling procedures because specific sampling protocols depend on individual site conditions, Regional requirements, and acceptance and performance criteria. Since Regions may have their own specific requirements for individual sampling programs, they are responsible for generating Region-specific sampling SOPs.

At-a-Glance:
Overview of the Sampling Process

- ✓ Procedures must be consistent.
- ✓ Analytical data must be accurate and defensible.
- ✓ Procedures must meet minimum requirements.

1.3.1 Procedures Must be Consistent

The purpose of sampling is to collect representative portions from a suspected contaminated site. Sample collection is critical to determining the presence, type, concentration, and extent of environmental contamination by hazardous substances, thus it is a crucial part of every sampling and environmental testing effort. Sampling procedures must be consistently written and followed to mitigate risk of error and the expense of re-sampling.

Failure to follow proper sampling and shipping procedures could result in samples that are contaminated, broken, mislabeled, lost during shipping, or unusable because of a missed holding time. If procedures are inconsistently or improperly followed, any resultant analytical data may be inaccurate and may not be defensible in a court of law.

Note: If re-sampling is needed due to improper sampling, the sampling team may incur the cost.

1.3.2 Analytical Data Must be Accurate and Defensible

The data gathered during sampling activities helps to accurately characterize contaminated waste sites so that the impact on human health and the environment can be properly evaluated. Acquiring accurate and defensible data that will be accepted in a court of law is the CLP's primary objective; therefore, the sampler must collect samples according to strict sampling procedures, plans, and guidelines. USEPA and many other Federal agencies use data resulting from analytical testing of soil/sediment/aqueous samples to:

- Determine if a site is contaminated with organic and/or inorganic compounds;
- Identify pollution sources and Potentially Responsible Parties (PRPs);
- Validate remedial design methodologies;
- Assess response and remedial priorities;
- Assess risk to human health and the environment;
- Determine appropriate cleanup actions; and
- Determine cleanup achievements.

1.3.3 Sampling Procedures and Guidelines Must Meet Minimum Requirements

It is imperative that samplers be aware of the minimum CLP and Regional requirements that directly impact and define how a sampling event will take place. It is important to note that the procedures and guidelines set forth in this document are considered minimum CLP requirements. Samplers should reference the following sections within this document that specifically address important requirements that must be met for a successful sampling event:

- Section 1.4.1 CLP Documentation Requirements;
- Section 2.4.1 Request Scheduling of Analysis, SMO-assigned Case Numbers, CLP Sample Numbers, and Laboratory Contact Information;
- Section 2.7 Comply with Transportation and Shipping Requirements;
- Section 2.8 Provide Shipment Notification;
- Section 3.1 Collect Samples; and
- Section 3.2 Complete Documentation.

1.4 Overview of Sampling Documentation Requirements

The sampler must properly document samples collected for analysis in order to uniquely identify each sample and ensure adequate chain-of-custody procedures. When collecting samples, the sampler should always keep in mind that any samples collected may be used in future litigation. This is especially important when samples are from privately owned property. If sampling on privately owned property, samplers should also provide the property owner with a receipt for samples collected and removed from that owner's property. Samplers may also be required by a Region to use a sample label, sample tag, or field operations records documenting information such as daily activities, equipment and materials used, personnel involved, site security, etc. These types of documentation help ensure proper sample identification and provide additional chain-of-custody records.

The documentation required by a Region for a sampling event is outlined in project plans such as the QAPP, SAP, and Field Sampling Plan (FSP).

At-a-Glance:
Overview of the Sampling Document Requirements

✓ Must use FORMS II Lite to create sample documentation. Analytical data must be accurate and defensible.

✓ CLP documentation requirements:
- CLP Sample Number
- SMO-assigned Case Number
- Traffic Report/Chain of Custody (TR/COC) Record
- Sample Labels
- Sample Tags
- Custody Seals
- Field Operation Records

Under no circumstances should the site name appear on any documentation that is sent to the laboratory (for the CLP).

1.4.1 CLP Documentation Requirements

Samplers must:

1) Record the CLP Sample Number on each sample bottle;
2) Complete the Traffic Report/Chain of Custody (TR/COC) Record using the FORMS II Lite software, making sure to indicate on the TR/COC Record if the samples require the use of a Modified Analysis;
3) Complete and attach sample labels;
4) Complete and attach sample tags to meet Regional requirements;
5) Complete and attach custody seals to meet Regional requirements; and
6) Complete field operations records, as necessary.

Please contact your RSCC (see Table 1-1) for information regarding CLP Sample Numbers, SMO-assigned Case Numbers, TR/COC Records, and chain-of-custody seals for sampling events.

For information regarding using FORMS II Lite to create and complete a TR/COC Record, refer to the following Web site:

http://www.epa.gov/superfund/programs/clp/f2lite.htm

1.4.1.1 CLP Sample Number

A CLP Sample Number is unique per sampling location and is used to identify and track samples throughout the sampling and analytical processes and is recorded on many types of sampling documentation (e.g., TR/COC Records, sample labels, and sample tags). CLP Sample Numbers are provided to samplers by their RSCC or SMO.

Samplers must contact their RSCC (or their designee) to obtain CLP Sample Numbers for their sampling event. Samplers must correctly assign the CLP Sample Numbers to the appropriate sample bottle or container. Please refer to Section 3.2.1 for more detailed information regarding the use of CLP Sample Numbers.

If the sampler has any questions regarding the assignment of CLP Sample Numbers, they should contact their RSCC.

1.4.1.2 SMO-assigned Case Number

SMO-assigned Case Numbers are used to track groups of samples throughout the sampling and analytical processes and are recorded on many types of sampling documentation (e.g., TR/COC Records, sample labels, and sample tags). Samplers must correctly assign the SMO-assigned Case Number to the appropriate sample bottle or container. To obtain a SMO-assigned Case Number, samplers must contact their RSCC (or their designee).

1.4.1.3 Laboratory Assignment

Samplers are responsible for shipping samples to the appropriate SMO-assigned laboratory for analysis. Samplers must contact their RSCC (or their designee) to obtain their laboratory assignment or they may be provided by SMO.

1.4.1.4 TR/COC Record

The TR/COC Record is used as physical evidence of sample custody and functions as a permanent record of each sample collected.

Per CLP documentation requirements, each cooler must contain a TR/COC Record that lists all the samples contained therein.

In an effort to automate sample documentation in the field, ASB has developed a stand-alone, Windows-based software application that samplers can use to automatically create and generate sample documentation. The FORMS II Lite software allows users to enter information prior to and during sampling events. It allows users to multi-task and electronically create, edit, and print documentation associated with sampling activities. Users can customize data entry screens throughout the entire documentation process. Users can also customize the format and content of sample labels based on specific requirements.

The program simplifies and accelerates the tedious manual sample documentation process by reducing the generation of handwritten documents by almost 70%. The FORMS II Lite software enables samplers to:

- Increment CLP Sample Numbers or manually assign their own unique, project-specific non-CLP Sample Numbers;
- Input the SMO-assigned Case Number into the appropriate field;
- Create sample labels, sample tags, TR/COC Records, Sample Weight forms, and receipts for samples taken from a site;
- Track samples from the field to the laboratory;

- Electronically capture sample information into databases; and
- Export electronic data as a database File (.dbf), Text (.txt), or eXtensible Markup Language (.xml) file.

USEPA requires samplers to use the FORMS II Lite software for all CLP sampling efforts. For assistance with obtaining or using the FORMS II Lite software, please contact the FORMS II Lite Help Desk at 703-818-4200 from 9:00 AM - 5:00 PM Eastern Time (ET). For additional information regarding FORMS II Lite use and training, please refer to the following Web site:

http://www.epa.gov/superfund/programs/clp/f2lite.htm

1.4.1.5 Chain-of-Custody Seals

A chain-of-custody seal is any adhesive label or tape that can be used to seal a sample bottle, container, plastic bag, or shipping cooler such that if it is opened or tampered with, the seal will be broken. Custody seals must be placed on each sample bottle, container, or bag (as appropriate) and each shipping cooler or container. The custody seal is an excellent means of maintaining a record of chain-of-custody, as well as guarding against possible sample contamination or tampering during shipping.

1.4.1.6 Sample Labels

A sample label is a sticker attached to a sample bottle or container that contains a sample. Sample labels are affixed to each sample container as samples are collected in the field or affixed prior to going in the field. A sample label must contain, at a minimum, a CLP Sample Number so that they can be associated with, and listed on, the associated TR/COC Record. The sample label may also include the required analysis/fraction and preservative used (to eliminate confusion at the laboratory). Samplers should refer to their project plans for Region-specific sample label requirements.

1.4.1.7 Sample Tags

A sample tag identifies a sample bottle or container that contains a sample. The tag also provides specific analytical direction and proof that a sample existed. To support the use of sample data in potential enforcement actions, samples with other than in situ measurements (e.g., pH, temperature, conductivity) can be identified with a sample tag. A CLP Sample Number and SMO-assigned Case Number must be recorded on a sample tag to indicate that the sample container comprises the whole sample in the case where there is just one container of sample, or part of the indicated sample in the case of multiple containers of sample. Samplers should refer to their project plans for Region-specific sample tag requirements.

1.4.1.8 Field Operation Records

Samplers should maintain complete, accurate, and legible field operations records as they perform a sampling activity. The following records are included: Field Logbooks; Corrective Action Reports; Sampling Trip Reports; supplemental standardized forms; logs; and records such as maps or photographs that document each step of the work performed in the field. Samplers should refer to their project plans for Region-specific field operations record requirements. These records are very important tools because they are considered part of the official project file when legal issues arise.

1.4.1.9 Weight Logs

A sample weight log identifies the tared, sample and final weights per bottle for VOA samples. In order to support Method 5035 for VOAs, samplers should enter tared and final weights per bottle in the CLP Sample Weight Log.

2.0 PRE-FIELD ACTIVITIES

This chapter provides instructions for completing the suggested pre-field activities that samplers could complete prior to performing sampling activities. These important pre-field activities will save time and help the sampler to better prepare for the sampling event. Samplers should be aware of issues routinely arise during the sampling process so that samplers can avoid making the same mistakes or having the same problems that could adversely affect their sampling event. Samplers are also expected to review all pertinent project plans and meet both CLP and Regional requirements that directly impact the structure and purpose of a sampling event.

At-a-Glance:
Pre-field Activities

- ✓ Prepare for and communicate during a sampling event.
- ✓ Review project plans containing Regional requirements.
- ✓ Plan to meet documentation requirements.
- ✓ Obtain any necessary permits, licenses, and clearances.
- ✓ Identify and obtain sampling materials.
- ✓ Comply with transportation and shipping requirements.
- ✓ Provide shipment notification.
- ✓ Perform Readiness Review/Run-through.

The project plans provide information such as the types and numbers of samples to be collected, the analytical methods to be used based on the desired level of quantitation, and the necessary equipment and supplies. The plans also describe the sampling method which may require different specific sample volumes/masses, containers, preservation, shipping, and handling to maintain the integrity of the samples without degradation or contamination.

In addition to reviewing project plans, samplers should determine if the sampling site is privately or publicly owned and obtain the necessary permission to access the sampling site. If the site is privately owned, samplers should make sure to have receipts for available samples to provide to the owner for all samples collected and removed from their property. Samplers must also prepare to identify and obtain sampling materials, prepare to meet documentation requirements by obtaining and learning to use the required software, comply with transportation and shipping requirements, and perform a readiness review/dry run of the sampling process.

2.1 Prepare for a Sampling Event

Samplers must prepare to meet CLP and Regional requirements for a sampling event, appropriately use the CLP Sample Number and SMO-assigned Case Number, complete the TR/COC Record using the FORMS II Lite software, and complete and attach the custody seal(s). It is very important that the sampler include the correct CLP Sample Number on each sample. It is also imperative that the TR/COC Record be accurately completed and submitted with the sample(s). Finally, the sampler must accurately and legibly complete and attach a custody seal to each sample container, or plastic sample bag (as appropriate), and each shipping cooler or container.

However, meeting the sampling requirements requires more than just the proper application of a CLP Sample Number on each sample, completion of the TR/COC Record, and use of a custody seal. The actual collection of samples, packaging, and shipping of those samples are equally important to a successful sampling event.

For example, if a sampler collects an insufficient volume of a sample, the laboratory may not be able to perform the requested analysis. Insufficient sample volumes may also result in a laboratory being unable to perform laboratory quality control, such as Matrix Spike (MS), Matrix Spike Duplicate (MSD), and Duplicate sample analysis. Additionally, if the laboratory receives a sample that is either unpreserved or the sample pH is outside of the required range, the sample cannot be properly analyzed.

Unfortunately, improper shipping and labeling processes and procedures often result in:

- Samples being shipped to the wrong laboratory;
- Broken or empty samples being received at the laboratory; and
- Custody seals or sealant tape that is missing or broken on sample bottles, containers, plastic bags, or shipping coolers shipped to the laboratories.

The importance of completing the paperwork associated with a sampling event cannot be overemphasized. Samplers must make a conscientious effort to accurately complete the TR/COC Record since this is the main document used to derive vital information about a particular sample. The person completing a TR/COC Record

must be careful to avoid errors such as the appropriate sample(s) not being listed, or the wrong samples being listed. In an effort to eliminate such errors and the confusion that can be associated with handwritten TR/COC Records, samplers must use the FORMS II Lite software to complete the TR/COC Record and other associated sampling documentation.

It is extremely important that QC samples, including field sample duplicates, field samples for Matrix Spike and Matrix Spike Duplicate analyses, and Proficiency Testing (PT) samples, also known as Performance Evaluation (PE) samples, be designated and labeled per Regional guidance by samplers in the field. Mislabeling of QC samples can result in improper and/or inaccurate analysis of a sample at the laboratory.

2.2 Communicate During a Sampling Event

Communication is a key element in planning, administrating, and conducting a sampling event. It is extremely important that all parties involved in a sampling event be in contact throughout the sampling process. The procedures and recommendations outlined in this guide are based on more than 20 years of experience. It has been demonstrated that approximately 50% of all sampling efforts have been negatively affected by incorrect sampling procedures and poor communication among participants.

The key elements of communication for a sampling event include the relationship between the RSCC, SMO, the samplers in the field, and the laboratories who will be accepting the samples. For instance, the samplers must contact the RSCC to start the process for setting up a sampling event. The RSCC will in turn contact SMO who will schedule the sampling event, establish laboratory availability, and arrange for the laboratory to accept projected samples. SMO will then communicate the laboratory assignment to the Region and possibly the sampler.

The sampler should contact the RSCC (per Regional guidelines) and allow enough time for the RSCC to contact SMO at least a week prior to the sampling event.

SMO provides SMO-assigned Case and CLP Sample Numbers in time for the sampling event. SMO also schedules a laboratory and makes sure the laboratory will not have any capacity problems. Communication is also important because if there is a change in the sampling event due to a cancellation or an increase or decrease in the number of samples that will be sent to the laboratory, the sampler can contact the RSCC who can work with SMO to remedy potential capacity, availability, or overbooking problems.

2.3 Review Project Plans Containing Regional Requirements

In addition to meeting CLP requirements, the sample collection process must fulfill numerous Regional requirements. These requirements are determined by a variety of factors that affect how samples should be collected for an individual sampling event. These factors include:

- The type of samples being collected (organic/inorganic, water, soil/sediment, etc.);
- The method by which the samples will be analyzed;
- The acceptance or performance criteria (i.e., Data Quality Objectives [DQOs]); and
- The type of data needed.

The QAPP for each sampling project is written to meet requirements outlined in the documents *EPA Requirements for Quality Assurance Project Plans* (QA/R-5), *EPA Guidance on Quality Assurance Project Plans* (G-5), and Regional QAPP preparation documents. The QAPP is prepared in advance of field activities and is used by samplers to develop any subsequent plans such as the Sampling SAP or the FSP. Samplers should review the QAPP and any subsequent project plans for information outlining the basic components of a sampling activity. QAPP and project plans should be finalized and approved by appropriate Regional QA personnel, the OSC, SAM, or the RPM before providing them to the sampling team. This should be done prior to the start of field activities. Appendix A explains the functions within a sampling project (as these functions relate to a sampling event) and the elements of that function as described in a typical QAPP. Copies of all project plans and relevant SOPs should be maintained in the field for the duration of the sampling project.

2.4 Plan to Meet Documentation Requirements

At-a-Glance:
Plan to meet documentation requirements.

- ✓ Request SMO-assigned Case and CLP Sample Numbers.
- ✓ Prepare sample cooler return documentation.
- ✓ Prepare to use the FORMS II Lite software.

Sampling events require a variety of accurate and complete documentation. Samplers should review their project plans to determine the types of documentation that must be completed for a sampling project and to ensure that the appropriate documentation will be on-hand in the field. The CLP documentation requirements include the CLP Sample Number, the SMO-assigned Case Number, the TR/COC Record, sample labels, sample tags, custody seals, and field operations records (as necessary). Samplers need to request SMO-assigned Case and CLP Sample Numbers for each sampling event prior to starting field activities. Samplers also need to make sure that the correct TR/COC Records (Organic TR/COC Record for organic analysis or Inorganic TR/COC Record for inorganic analysis) are being used within the FORMS II Lite software. Finally, samplers should be prepared to complete the appropriate shipping cooler return documentation.

Since samplers are required to use the FORMS II Lite software to prepare and submit sampling project documentation and maintain sample chain-of-custody, software users must be familiar with all emergency back up procedures that should be followed in the event of a system failure. Samplers must have access to FORMS II Lite-generated TR/COC Records at sampling events. If problems are experienced while using the FORMS II Lite software, please contact the FORMS II Lite Help Desk at 703-818-4200 from 9:00 AM - 5:00 PM ET.

In the event of a system crash, samplers must have backup hardcopies of FORMS II Lite TR/COC Records. For information regarding emergency backup procedures, please refer to the following Web site:

http://www.epa.gov/superfund/programs/clp/trcoc.htm

2.4.1 Request Scheduling of Analysis, SMO-assigned Case Numbers, CLP Sample Numbers, and Laboratory Contact Information

SMO-assigned Case Numbers are assigned based on a request for CLP Routine Analytical Services (RAS), which is processed though the RSCC (or his/her designee). The sampler must request the RSCC to schedule CLP RAS analysis. The CLP does have the capacity to schedule sampling on an emergency basis, however the sampler must contact the RSCC (or his/her designee) to obtain details regarding how to handle such a situation. When scheduling a sampling event that will last for more than one week, it is recommended that the sampler contact the RSCC (or his/her designee) on a weekly basis to provide updates. This contact between the sampler, the RSCC (or his/her designee), and SMO is very important because it will ensure better availability of laboratory capacity.

In addition to SMO-assigned Case and CLP Sample Numbers, samplers should make sure to have accurate laboratory contact information, such as:

- Laboratory name;
- Laboratory address;
- Contact name; and
- Laboratory phone number.

This information is used for both TR/COC Records and chain-of-custody documentation and shipping paperwork such as address labels and airbills.

The SMO-assigned Case Number is used to track groups of samples throughout the sampling and analytical processes. Samplers must correctly indicate the assigned Case Number on the appropriate sample bottle or container.

Note: The RSCC (or his/her designee) provides the CLP Case Numbers and Sample Numbers for each sampling event to samplers. Once the CLP Sample Numbers have been provided to the sampler, the sampler can use FORMS II Lite to print them onto sample labels.

The following characters are not to be used in generating CLP Sample Numbers and should never appear on any paperwork submitted to the laboratory: I, O, U, and V.

A CLP *Sample Number* is defined as a number that is unique per sampling location and identifies each CLP sample (see Section 1.4.1.1). Since samples must be identified per analytical program (either organic or inorganic), there are two types of TR/COC Records and two letter codes to denote organic vs. inorganic analysis.

A CLP *sample* is defined as one discrete portion of material to be analyzed that is contained at one concentration level, from one station location for each individual or set of analytical fractions -- provided the fractions are all requested for the same CLP analytical service (i.e., organic or inorganic), and identified by a unique Sample Number.

When samples are collected from several station locations to form a composite sample, the composite sample should be assigned either a number from one of the station locations used during collection, or a unique number that represents the composite sample for tracking purposes. The numbering scheme used internally at a sampling event for identifying composite samples should also be documented appropriately (e.g., in the field logs).

Organic CLP Sample Numbers begin with the Regional letter code, followed by four letters and/or numbers. Inorganic CLP Sample Numbers begin with "M", followed by the Regional letter code and then four letters and/or numbers. See Table 2-1 for Region and letter codes for each sample type (i.e., organic or inorganic).

Table 2-1. CLP Sample Number Letter Codes

Region	Letter Code	
	Organic	Inorganic
1	A	MA
2	B	MB
3	C	MC
4	D	MD
5	E	ME
6	F	MF
7	G	MG
8	H	MH
9	Y	MY
10	J	MJ

According to CLP guidelines, each individual inorganic water sample may be analyzed for total metals or dissolved metals, but not both. Therefore, water samples collected for total metal and dissolved metal analyses from the same sampling location must be assigned separate (unique) CLP Sample Numbers. A sampler can use the same CLP Sample Number for an inorganic soil or water sample collected for total metals, mercury and cyanide analyses.

Organic soil and water samples may be collected for analysis under the SOM01 SOW to detect:

- Aroclors;
- Semivolatile Organic Analytes (SVOAs);
- Pesticides;
- Volatile Organic Analytes (VOAs); and/or
- Trace Volatile Analytes

Inorganic soil and water samples may be collected for analysis for cyanide, and for metals using Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES) and Cold Vapor Atomic Absorption (CVAA), under the ILM05.X SOW.

Inorganic water only samples may be collected for analysis for cyanide, and for metals using Inductively Coupled Plasma-Mass Spectrometry (ICP-MS) and CVAA, under the ILM05 SOW.

2.4.2 Prepare Sample Cooler Return Documentation

CLP laboratories must routinely return sample shipping coolers to the appropriate sampling office within 14 calendar days following receipt of shipment from the sampler. For sample coolers to be returned, the

sampler must complete the appropriate cooler documentation and work with Regions and government agencies to provide a cost-effective mechanism for laboratories to return the empty coolers to the appropriate sampling office. The sampling cooler return documentation can be prepared in advance and provided to samplers before field activities begin. **The sampler (not the CLP laboratory) is responsible for paying for return of the cooler and should also include shipping airbills bearing the sampler's account number, as well as a return address to allow for cooler return.**

To maintain consistency among cooler transportation programs, samplers should:

- Minimize the use of multiple transportation carriers to avoid confusion;
- Use multiple-copy labels so the laboratory and the sampling team can each retain a copy for their records;
- Prepare labels in advance so that the laboratory can simply affix a completed shipping label on the cooler;
- Include third-party billing information (i.e., their shipping account number) on labels so the laboratory will not be billed by the transportation carrier;
- Confirm that the laboratory knows which transportation carrier to use; and
- Include the SMO-assigned Case Number on return information.

2.5 Obtain Municipal Permits, Licenses, and Clearances

Before starting a sampling event, samplers must make sure to obtain the proper municipal permits, accesses to the property, and any government clearances, if required. The sampler must also contact any appropriate utility companies to ascertain where any underground pipes, cables, etc., may be located.

At-a-Glance:
Obtain permits, licenses, and clearances.

- ✓ Request access to County, State, Tribal, military, and/or Federal property.
- ✓ Contact private property owner(s).
- ✓ Contact utility companies.

2.5.1 Request Access to County, State, Tribal, Military, and/or Federal Property

Proper access to perform sampling activities is important not only for legal reasons, but also to eliminate delays in work and possible refusal to allow sampling to take place. It is crucial that the appropriate permits, licenses, and clearances be secured to obtain access for sampling activities that will be performed on County, State, Tribal, military, and/or Federal property. The sampler must contact the appropriate government offices or personnel well in advance to determine what kinds of approval are required. Pre-approval may be required for specific types of sample collection such as drilling or excavation. For example, drilling on a military base requires pre-approval. Base security may require clearances for all members of the sampling team, including subcontractors. This process may take two or more days.

If arrangements are not made in advance, the team may not be allowed to enter the site until their clearances are processed and the team has been approved to drill. As a result, the sampling schedule is delayed, costing extra time and money.

2.5.2 Contact Private Property Owners

The sampler must obtain written permission from the private property owner(s) before sampling on their property, even if verbal permission has been granted. It is recommended that samplers obtain verbal permission prior to their arrival at the sampling location, but written permission can be obtained on the day of sampling. If a property owner refuses to grant access to their property, it may be necessary for sampling participants to contact the appropriate authorities for assistance.

2.5.3 Contact Utility Companies

The sampler should contact local utility companies (e.g., power, phone, gas, cable, sanitation, etc.) at least one week prior to the sampling event to have underground cables, lines, and pipes flagged and marked. This is required by law. A national one-call directory can be found at:

http://www.digsafely.com/contacts.htm.

This will eliminate potential safety hazards and service disruption. For example, soil sampling in a residential area may require digging below the soil's surface. It is very important to know where utility lines and pipes are located so that samplers do not hit live electrical wires or rupture gas lines. Samplers should follow Regional or other appropriate program procedures for the procurement of such services. The utility service(s) disruption dates should be confirmed at least two days prior to sampling activities.

Note: Pre-payment of survey fees to local utility companies may be required.

2.6 Identify and Obtain Sampling Materials

Samplers must make sure to be prepared for a sampling project with the appropriate sampling materials (equipment, supplies, sample containers, packing materials, and shipping materials). The equipment and supplies must be properly cleaned, calibrated, and tested as necessary to meet the needs of the sampling project.

At-a-Glance:
Identify and obtain sampling materials.

- ✓ Procure appropriate equipment and supplies.
- ✓ Procure sample containers.
- ✓ Procure shipping supplies.

2.6.1 Procure Appropriate Equipment and Supplies

Each sampling event requires the procurement of equipment and materials to collect, document, identify, pack, and ship samples. The proper field sampling equipment is vital to a successful sample collection. Regional or other samplers should obtain, and arrange in advance, all of the equipment and supplies required for each sampling event. Samplers should review the project plans to verify that the proper equipment is being used for sample collection.

At a minimum, the following materials are generally required during a sampling event:

- Sample storage containers;
- Packing material;
- Sample containers;
- Shipping containers;
- Access to the FORMS II Lite software for creating sample labels, stickers, tags, and TR/COC Records;
- Custody seals; and
- Sampling equipment such as bowls, augers, pumps, etc.

Sampling events may also require specific items such as:

- Cooler temperature blanks;
- Trip blanks for VOA analysis;
- Preservation supplies (e.g., ice or acid); and
- Specially prepared sample vials (e.g., for SW-846 Method 5035A).

2.6.2 Procure Sample Containers

The analytical protocol(s) to be used for sample analysis often requires the use of a particular type of sample container. The type of container also may depend on the sample matrix and analysis. It is recommended that samplers use borosilicate glass containers, which are inert to most materials, when sampling for pesticides and/or other organics. Conventional polyethylene is recommended when sampling for metals because of the lower cost and absorption rate of metal ions.

Using the wrong container may result in breakage, gathering of an insufficient volume needed to perform sample analysis, or the container material may interfere with the analysis. Therefore, samplers should identify and use the correct sample containers for each sampling event.

Containers procured for a sampling event are usually pre-cleaned and shipped ready-for-use from the manufacturer to the sampling site. Regardless of the type of container used, samplers must ensure that the containers have been analyzed or certified clean to levels below concern for the project. These containers must meet the USEPA container type specifications listed in Table 2-2.

Table 2-2. Container Type Specifications

Reference Number	Container Type	Specifications	
		Closure	Septum
1	40 mL amber glass vial, 24 mm neck finish.	Polypropylene or phenolic, open-top screw-cap, 15 cm opening, 24-400 size.	24 mm disc of 0.005 in. Polytetrafluoroethylene (PTFE) bonded to 0.120 in. silicone for total a thickness of 0.125 in.
2	1 L high density polyethylene, cylinder-round bottle, 28 mm neck finish.	Polyethylene cap, ribbed, 28-410 size; F217 polyethylene liner.	N/A
3	8 oz short, wide mouth, straight-sided, glass jar, 70 mm neck finish.	Polypropylene or phenolic cap, 70-400 size; 0.015 in. PTFE liner.	N/A
4	4 oz (120 mL) tall, wide mouth, straight-sided, glass jar, 48 mm neck finish.	Polypropylene or phenolic cap, 48-400 size; 0.015 in. PTFE liner.	N/A
5	1 L amber round glass bottle, 33 mm pour-out neck finish.	Polypropylene or phenolic cap, 33-430 size; 0.015 in. PTFE liner.	N/A
6	500 mL high density polyethylene, cylinder-round bottle, 28 mm neck finish.	Polypropylene cap, ribbed, 28-410 size; F217 polyethylene liner.	N/A
7	Coring tool used as a transport device (e.g., 5 g Sampler).	Has built-in closing mechanism.	N/A
8	250 mL high density polyethylene, cylinder-round bottle, 28 mm neck finish.		N/A

The information contained in this table is also cross-referenced in the sample collection parameters discussed in Chapter 3. The container Reference Numbers are used in Tables 3-2 and 3-3 under the Containers column. For example, samples collected for low-level soil VOA analysis using SW-846 Method 5035A may require the sampler to use pre-prepared, tared closed-system purge-and-trap vials with a preservative (refer to Appendix B).

Note: Have extra containers readily available for each sampling event in case of breakage, loss, or contamination.

2.6.3 Procure Shipping Supplies

Samples should be correctly packaged into the appropriate shipping containers to reduce the risk of breakage or leakage, and the shipping containers should be appropriately prepared for shipment. Before heading into the field, samplers should refer to the appropriate project plans to determine the types of samples that will be taken during the sampling project so that samplers will have the proper packaging materials at the site for all pertinent samples container types and sample matrices. Samplers should also make sure to obtain the appropriate shipping paperwork (e.g., shipping forms required by the delivery service).

2.7 Comply with Transportation and Shipping Requirements

Samplers are expected to review the applicable project plans to be aware of all State, Federal, Department of Transportation (DOT), and International Air Transport Association (IATA) regulations governing environmental and hazardous sample packaging. The person who ships the samples is responsible for being in compliance with applicable packaging, labeling, and shipping requirements.

Samplers should request and receive sample permits for outside the continental United States, prior to shipping.

Additional information can be obtained on Hazardous Materials Safety Program regulations from the DOT's Research and Special Programs Administration. Federal transportation regulations can be found in 49-CFR Parts 100-185, are available on the Internet at:

http://www.myregs.com/dotrspa/

2.8 Provide Shipment Notification

Some Regions may require that samplers notify their RSCC (or his/her designee) when samples are shipped. Some Regions allow samplers to contact SMO directly to provide shipment notification. It is recommended that samplers contact the RSCC of sample origin to verify if such notification is necessary. If samplers are shipping samples after 5:00 PM ET, samplers must notify the RSCC (or designee) or SMO by 8:00 AM ET on the following business day.

For Saturday delivery at the laboratory, samplers MUST contact the RSCC (or designee) or SMO so that SMO will receive the delivery information by 3:00 PM ET on the Friday prior to delivery.

2.9 Perform Readiness Review/Dry Run

A readiness review/dry run is a test run of the proposed sampling event. This is a recommended practice since it gives samplers a chance to check all plans, documentation software (i.e., FORMS II Lite), and equipment lists for accuracy and completeness prior to sampling activities. It also provides an opportunity to consult with sampling team members to make sure all the elements are in place and everyone understands their tasking before actually going out to the field. Sampling project managers should provide the test or dry run dates and schedules to samplers so that samplers can prepare accordingly.

3.0 IN-FIELD ACTIVITIES

This chapter addresses the in-field activities a sampler will focus on during a sampling event such as: determining the type of samples to be collected; collecting the samples; meeting volume, preservation, and holding time requirements; completing documentation; and packing and shipping samples.

At-a-Glance:
In-field Activities

- ✓ Collecting samples
- ✓ Completing documentation
- ✓ Sampling considerations
- ✓ Procuring shipping supplies

When performing a sampling event, the sampler is expected to follow prescribed sampling techniques. The sampler should also be aware of any special sampling considerations, contamination issues, and sample compositing and mixing methods that could affect their sampling efforts. Please refer to Appendix D for more detailed information.

Note: Appropriate Regional guidance and procedures should be consulted for detailed sample collection, preservation, handling and storing, equipment decontamination, and QA/QC procedures.

3.1 Collect Samples

CLP RAS are generally used to analyze samples from Superfund sites. The matrices can be water, soil, or sediment. In some instances, a mixed-matrix sample may be collected which contains either a supernate (for a sediment/soil sample) or a precipitate (for a water sample). In this event, samplers should consult their management plans and/or discuss the required procedures with the RSM or their designee.

A CLP sample consists of all sample aliquots (portions):

- for each individual or set of analytical fractions;
- from one station location;
- for one sample matrix;
- at one concentration level;
- for one laboratory; and
- for one analytical program;

provided that the fractions are all requested from the same CLP analytical service.

In general, it is recommended that two individual samples be collected by separating the aqueous layer from the solid/precipitate layer at the point of collection. They may be assigned two different sample IDs (e.g., Sample IDs ABC124 and ABC125 for Sample ID ABC123), along with a note in the field sample log or tracking system that the sample IDs are derived or related to the same sample ID, to ensure correct follow-up upon receipt of results from the laboratory. Alternatively, they may be assigned the same sample ID, along with a notation of each individual sub-sample or fraction (e.g., Sample IDs ABC123-1 and ABC123-2 or Sample ID ABC123 Fraction 1 and Sample ID ABC123 Fraction 2 for Sample ID ABC123).

3.1.1 Determine Types of Samples to be Collected

Samplers may be required to take several types of samples or sample aliquots during a sampling event. They should refer to their project plans to determine the types of samples or aliquots to be taken, the volumes needed of each sample or aliquot, and the preservation needed for each sample. For an explanation of the various sample types and the requirements for collecting and submitting each particular type, refer to Table 3-1.

Table 3-1. QC Sample Types and CLP Submission Requirements

Sample Type	Purpose	Collection[1]	CLP Sample Number
Field Duplicate	To check reproducibility of laboratory and field procedures. To indicate non-homogeneity.	Collect from areas that are known or suspected to be contaminated. Collect one sample per week or 10% (Regions may vary) of all field samples per matrix, whichever is greater.	Assign two separate (unique) CLP Sample Numbers (i.e., one number to the field sample and one to the duplicate). Submit blind to the laboratory.
Field Blanks	To check cross-contamination during sample collection, preservation, and shipment, as well as in the laboratory. Also to check sample containers and preservatives.	Collect for each group of samples of similar matrix per day of sampling. Organics - Use water (demonstrated to be free of the contaminants of concern). Inorganics - Use metal-free (deionized or distilled) water.	Assign separate CLP Sample Numbers to the field blanks.
Trip Blank (Volatile Organic Analysis Only)	To check contamination of VOA samples during handling, storage, and shipment from field to laboratory.	Prior to going into the field, prepare and seal one sample per shipment per matrix using water demonstrated to be free of the contaminants of concern (deionized water is appropriate). Place this sample in the cooler used to ship VOA samples.	Assign separate CLP Sample Numbers to the trip blanks.
Equipment Blank or Rinsate Blank	To check field decontamination procedures.	Collect when sampling equipment is decontaminated and reused in the field or when a sample collection vessel (bailer or beaker) will be used. Use blank water (water demonstrated to be organic-free, deionized or distilled for inorganics) to rinse water into the sample containers.	Assign separate CLP Sample Numbers to the equipment blanks.
Matrix Spike (MS) and Duplicate (MSD)[2] (Organic Analysis Only)	To check accuracy and precision of organic analyses in specific sample matrices.	Collect from areas that are known or suspected to be contaminated. For smaller sampling events (i.e., 20 samples or less), MS/MSD additional volume should be collected in the first round of sampling and included in the first shipment of samples to the laboratory. Collect double or triple volume[3] for aqueous samples and soil VOA samples designated for MS/MSD analyses. Additional sample volume is not required for soil samples requiring SVOA, Pesticide, and/or Aroclor analysis. See Appendix B for VOA collection volumes.	Assign the same CLP Sample Number to the field sample and the extra volume for MS/MSD. Identify the sample designated for MS/MSD on the TR/COC Record.
Matrix Spike (MS) and Duplicate (MSD) (Inorganic Analysis Only)	To check accuracy and precision of inorganic analyses in specific sample matrices.	Collect from areas that are known or suspected to be contaminated. For smaller sampling events (i.e., 20 samples or less), Matrix Spike and Duplicates should be collected in the first round of sampling and included in the first shipment of samples to the laboratory. Additional sample volume may be required for inorganic analysis.[4]	Assign the same CLP Sample Number to the field sample and extra volume (if collected). Identify the sample(s) designated for Matrix Spike and Duplicates on the TR/COC Record.
PE Samples	Specially-prepared QC samples used to evaluate a laboratory's analytical proficiency.	The PE samples contain analytes with concentrations unknown to the laboratory. Designated Regional or authorized personnel (depending on Regional policy) arrange for Case-specific CLP PE samples to be prepared and shipped by the QATS contractor. The PE samples can be shipped to the site, or shipped per Regional direction. QATS provides the appropriate preparation instructions and chain-of-custody materials.	Samplers have no direct interaction with the PE sampling process, but should be aware that such samples do exist within the CLP sampling process. Samplers must, however, order PE samples and ship them to the laboratory if required by the Region.

[1] Consult Regional or Project Manager Guidance for field QC sample frequencies; laboratory QC sample frequencies are generally fixed in the laboratory subcontracts or specified in analytical methods. Current frequency for MS/MSD (organic) and MS/duplicate (inorganic) for the CLP is one sample per twenty field sample of similar matrix.

[2] Samples sent under the Organic SOW (SOM01) do not require an MS or MSD for Trace VOA, VOA and BNA fractions, but the Region may opt to send them at their discretion.

[3] Example of double volume: An aqueous sample for SVOA analysis would require the field sampler to collect at least 2 L of field sample and at least 1 L each for the MS and MSD samples for a total volume of 4 L. If Pesticide or Aroclor MS/MSD analyses are required for the same sample, an additional 4 L must be collected. Double volume is the MINIMUM allowable volume for samples designated for MS/MSD analysis. Triple volume may be sent for MS/MSD samples to allow for sufficient volume for these analyses in the event sample volume is lost as a result of samples breaking, leaking, or laboratory accidents.

[4] Double volume may be sent for inorganic aqueous MS and MSD samples to allow for sufficient volume for these analyses in the event sample volume is lost as a result of samples breaking, leaking or laboratory accidents.

3.1.1.1 Collect Field QC Samples

Samplers can collect field QC samples and laboratory QC samples to verify that sample quality is maintained during a sampling project.

Field QC samples are designed to assess variability of the media being sampled and to detect contamination and sampling error in the field. The types of field QC samples that are generally collected include field duplicates and field blanks (such as equipment, trip, or rinse blanks). Generally, field duplicate samples should remain "blind" to the laboratory (i.e., they should have separate CLP Sample Numbers).

3.1.1.2 Collect Laboratory QC Samples

A laboratory QC sample is an additional analysis of a field sample, as required by the laboratory's contract. There are three types of laboratory QC samples:

- MS [for organic and inorganic samples];
- MSD [for organic samples only]; and
- Duplicates [for inorganic samples only].

Samplers should obtain Regional guidance regarding the collection of MS and MSD samples (especially for organics analyses).

Samplers should select one sample per matrix per 20 samples as a "laboratory QC" sample. Designated organic laboratory QC samples should be noted on the Organic TR/COC Record. Designated inorganic laboratory QC samples should be noted on the Inorganic TR/COC Record. The laboratory QC sample must not be designated only in the "Field QC Qualifier" column on either the Organic or Inorganic TR/COC Records. Make sure that the laboratory QC sample is included in TR/COC Record samples to be used for the Laboratory QC field.

The sampler should select a field sample as the laboratory QC sample. If the sampler does not select a field sample as the laboratory QC sample, then it is possible that the laboratory could select the field blank (e.g., an equipment or rinsate blank) sample to meet contractual QC requirements. The use of field blanks for laboratory MS/MSD/Duplicate analysis reduces the usability of the data to assess data quality.

In the event of multiple sample shipments during a sampling event, it is recommended that the sampler submit laboratory QC samples in the first sample shipment.

3.1.2 Meet Volume, Preservation, and Holding Time Requirements

Samplers should refer to their project plans to obtain the specific sample volumes to be collected, the preservation needed for those samples, and the technical holding times under which they must submit samples to the scheduled CLP laboratory. Sample collection parameters (to include sample volumes, preservatives, and technical holding times) for organic collection and analysis are listed in Tables 3-2 and 3-3. Sample collection parameters for inorganic analysis and collection are listed in Table 3-4.

3.1.2.1 Collect Sample Volume

Collecting sufficient sample volume is critical. There must be sufficient physical sample volume for the analysis of all required parameters and completion of all QC determinations. The type of analytical procedure(s) to be performed will often dictate the sample volume to collect. For example, each water sample collected for VOA analysis by CLP SOW SOM01 or ILM05 requires a minimum of three vials, each filled completely to a 40 mL capacity. See Appendix C for information regarding the collection of VOAs in water. It is extremely important that samplers refer to their specific project plans to identify and collect the correct sample volume during each sampling event.

When sampling for VOAs in soils, samplers must use SW-846 Method 5035A guidelines included in Appendix B.

3.1.2.2 Preserve Samples

Degradation of some contaminants may occur naturally (e.g., VOAs). The sampler must chemically preserve some water samples for certain analytes before shipping them to the laboratory. The sampler should preserve and immediately cool all samples to 4°C (±2°C) upon collection and samples should remain cooled until the time of analysis (do not freeze water samples). Preservation techniques vary among Regions so the sampler should obtain Region-specific instructions and review the appropriate project plans and SOPs. See Appendix C for information regarding the collection of VOAs in water.

3.1.2.3 Ship within Holding Times

Samplers should ship samples to scheduled CLP laboratories as soon as possible after collection. Daily shipment of samples to CLP laboratories is preferred whenever possible. If samples cannot be shipped on a daily basis, they must be properly preserved and maintained to meet CLP-specified temperatures, holding times, and custody requirements.

The technical holding times are the maximum time allowed between a sample collection and the completion of the sample extraction and/or analysis. In contrast, contractual holding times are the maximum lengths of time that the CLP laboratory can hold the sample prior to extraction and/or analysis. These contractual holding times are described in the appropriate CLP SOW. Contractual holding times are shorter than the technical holding times to allow for sample packing and shipping.

Note: If samplers are shipping samples after 5:00 PM ET, they must notify the RSCC (or designee) or SMO by 8:00 AM ET on the following business day. When making a Saturday delivery, samplers shall contact the RSCC (or designee) or SMO by 3:00 PM ET on the Friday prior to delivery.

Table 3-2. Sample Collection Requirements for CLP SOW SOM01 (VOAs)

Matrix	Container Type	Sample Type	Minimum Number of Containers Needed				Minimum Volume/ Mass	Important Notes	Preservative	Technical Holding Time
			with Water	Dry	% Moisture	TOTAL				
Water	See Table 2-2, Reference Number 1.	Samples Only	-	-	-	**3**	Fill to capacity	Containers/vials must be filled to capacity with no headspace or air bubbles. Refer to Appendix C for samples requiring QC analyses.	Preserve to a pH of 2 with HCl and cool to 4°C (±2°C) immediately after collection. DO NOT FREEZE water samples.	14 days
		Samples with SIM	-	-	-	**4**				
		Samples with MS/MSD	-	-	-	**6**				
		Samples with SIM and MS/MSD	-	-	-	**8**				
Soil/ Sediment	**OPTION 1** Closed-system Vials See Table 2-2, Reference Number 1.	Samples Only	-	3	1	**4**	5g	Place samples on side prior to being frozen. Refer to Appendix B for samples requiring QC analyses.	Frozen (-7°C to -15°C) or iced to 4° (±2°C).	14 days
		Samples with MS/MSD	-	9	1	**10**				48 hours
	OPTION 2 Closed-system containing Water Vials See Table 2-2, Reference Number 1.	Samples Only	2	1	1	**4**	5g	Containers/vials must be filled to capacity with no headspace or air bubbles. Place samples on side prior to being frozen. Refer to Appendix B for samples requiring QC analyses.	Frozen (-7°C to -15°C) or iced to 4° (±2°C). DO NOT FREEZE water samples.	14 days
		Samples with MS/MSD	6	1	5	**12**				48 hours
	OPTION 3 See Table 2-2, Reference Number 7.	Samples Only	-	3	1	**4**	5g	Refer to Appendix B for samples requiring QC analysis.	Frozen (-7°C to -15°C) or iced to 4°C (±2°C).	48 hours
		Samples with MS/MSD	-	9	1	**10**				48 hours

Notes

[1] Minimum volume/mass to be collected in order to ensure sample analysis can be performed.

[2] Check Regional guidance regarding use of acid as a preservative of samples that may contain carbonates, residual chlorine, and other oxidants.

[3] This technical holding time is calculated from the time of sample collection to sample extraction. Sample extracts are to be analyzed within 40 days of extraction. It is recommended that samplers ship samples to the laboratory on the same day that they are collected, or as soon as possible thereafter.

[4] Check Regional guidance regarding use of acid preservatives when testing for carbonates, residual chlorine, and other oxidants.

Table 3-3. Sample Collection Requirements for CLP SOW SOM01 (SVOAs, Pesticides and Aroclors)

Analysis	Matrix	Containers	Minimum Volume/ Mass	Important Notes	Preservative	Technical Holding Time
Semivolatile Analytes	Water	See Table 2-2, Reference Number 5.	2L	If amber containers are not available, the samples should be protected from light.	Cool all samples to 4°C (±2°C) immediately after collection. DO NOT FREEZE water samples.	7 days
	Soil/ Sediment	See Table 2-2, Reference Numbers 3 and 4.	Fill to capacity		Cool all samples to 4°C (±2°C) immediately after collection.	14 days
Pesticides/ Aroclors	Water	See Table 2-2, Reference Number 5.	2L	If amber containers are not available, the samples should be protected from light.	Cool all samples to 4°C (±2°C) immediately after collection. DO NOT FREEZE water samples.	7 days
	Soil/ Sediment	See Table 2-2, Reference Numbers 3 and 4.	Fill to capacity		Cool all samples to 4°C (±2°C) immediately after collection.	14 days

Notes

[1] Minimum volume/mass to be collected in order to ensure sample analysis can be performed.

[2] Check Regional guidance regarding use of acid as a preservative of samples that may contain carbonates, residual chlorine, and other oxidants.

[3] This technical holding time is calculated from the time of sample collection to sample extraction. Sample extracts are to be analyzed within 40 days of extraction. It is recommended that samplers ship samples to the laboratory on the same day that they are collected, or as soon as possible thereafter.

[4] Check Regional guidance regarding use of acid preservatives when testing for carbonates, residual chlorine, and other oxidants.

Table 3-4. Sample Collection Requirements for CLP SOW ILM05

Analysis	Matrix	Containers	Minimum Volume/ Mass[1]	Important Notes	Preservative	Technical Holding Time[4]
Metals/ICP-AES and/or Mercury by CVAA	Water	See Table 2-2, Reference Number 2.	1L	If collecting for both ICP-AES AND ICP-MS methods, a separate 1L volume of sample must be collected for each method per sample location.	Acidify to pH < 2 with HNO_3 and cool to 4°C (±2°C) immediately after collection.[2] NOT FREEZE water samples. DO	6 months for all metals except Mercury (28 days)
	Soil/ Sediment	See Table 2-2, Reference Number 3.	Fill to capacity		Cool to 4°C (±2°C) immediately after collection.	6 months
Cyanide/ Spectrophotometric Determination[3]	Water	See Table 2-2, Reference Number 2.	1L		To neutralize residual chlorine, immediately upon collection, add 0.6 g ascorbic acid for each liter of sample collected. Add NaOH until pH >12 and cool to 4°C (±2°C) immediately after collection.[5] DO NOT FREEZE water samples.	14 days
	Soil/ Sediment	See Table 2-2, Reference Number 3.	Fill to capacity		Cool to 4°C (±2°C) immediately after collection.	14 days

Notes

1 Minimum volume/mass to be collected in order to ensure sample analysis can be performed.

2 Check Regional guidance regarding use of acid as a preservative of samples that may contain carbonates, residual chlorine, and other oxidants.

3 Samplers must test for sulfide and oxidizing agents (e.g., chlorine) in aqueous samples in the field upon collection. Please refer to the SAP and Appendix C for guidance. Sulfides adversely affect the analytical procedure. The following can be done to test for and neutralize sulfides. Place a drop of the sample on lead acetate test paper to detect the presence of sulfides. If sulfides are present, treat 25 mL more of the sample than that required for the cyanide determination with powdered cadmium carbonate or lead carbonate. Yellow cadmium sulfide or black lead sulfide precipitates if the sample contains sulfide. Repeat this operation until a drop of the treated sample solution does not darken the lead acetate test paper. Filter the solution through a dry filter paper into a dry beaker, and from the filtrate measure the sample to be used for analysis. Avoid a large excess of cadmium carbonate and a long contact time in order to minimize a loss by complication or occlusion of cyanide on the precipitated material. Sulfide removal should be performed in the field, if practical, prior to pH adjustment with NaOH.

4 This technical holding time is calculated from the time of sample collection to sample extraction. Sample extracts are to be analyzed within 40 days of extraction. It is recommended that samplers ship samples to the laboratory on the same day that they are collected, or as soon as possible thereafter.

3.2 Complete Documentation

Samplers must complete all documentation, including the recording of the CLP Sample Number on the sample container or bottle, sample labels, and chain-of-custody seals (as appropriate), the completion of the TR/COC Record, and the completion of field operations records (as necessary).

Samplers should use the FORMS II Lite software to create and print sample labels and the TR/COC Record. Samplers can create and print out two copies of a sample label and attach one to the sample container or bottle, and place the other on the sample tag that may be attached to the sample container or bottle.

Samplers are expected to review their project plans to determine what documentation they are expected to include during a sampling event. It is highly recommended that samplers provide documentation, even if the Region does not require it.

Under no circumstances should the site name appear on any documentation being sent to the laboratory.

An example of a packaged sample is shown in Figure 3-1. A description of each type of documentation and instructions for accurate completion are included in the following sections.

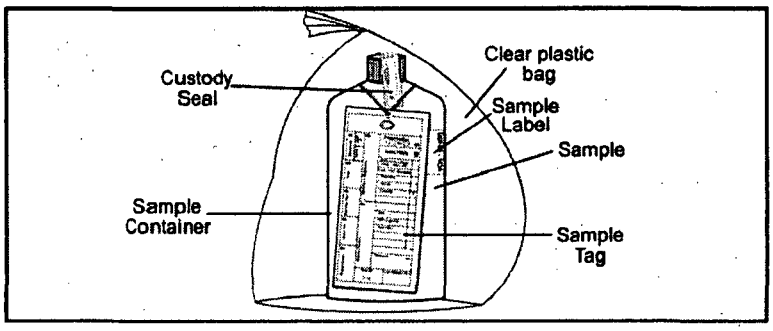


Figure 3-1. Packaged Sample with Identification and Chain-of-Custody Documentation (Excluding TR/COC Record)

3.2.1 Identify a Sample with a CLP Sample Number and SMO-assigned Case Number

The CLP Sample Number and SMO-assigned Case Number **must** be recorded on each sample taken during a sampling event (see Section 1.4.1.1). Samplers can record these numbers on the sample bottle or container using permanent ink. The numbers must also be recorded on the sample tag, if required.

Dissolved metal samples and total metal samples taken from the same sampling location cannot have the same CLP Sample Number because two different sets of data will be generated.

3.2.2 Complete TR/COC Records

A Traffic Report is used as physical evidence of sample custody and as a permanent record for each sample collected. A chain-of-custody record documents the exchange and transportation of samples from the field to the laboratory.

The ASB requires samplers to use the FORMS II Lite software to create documentation for all CLP sampling efforts. For assistance with obtaining or using the FORMS II Lite software, please contact the FORMS II Lite Help Desk at 703-818-4200 from 9:00 AM - 5:00 PM ET.

To meet CLP sample documentation and chain-of-custody requirements, the sampler must attach a separate TR/COC Record to each cooler they ship. The TR/COC Record must document each sample within the cooler. Samples shipped in other coolers should not be documented. This practice maintains the chain-of-custody for all samples in case of incorrect shipment.

If more than one TR/COC Record is used for the samples within one cooler, all of the records must have complete header information and original signatures. Samplers are responsible for the care and custody of samples from the time of collection to the time of shipment to the laboratories for analysis. A sample is considered under custody if:

- It is in possession or in view after being in possession;
- It was in possession and then secured or sealed to prevent tampering; or
- It was in possession when placed in a secured area.

Each time the custody of samples is turned over to another person, the TR/COC Record must be signed off by the former custodian and accepted by the new custodian. Samplers are, therefore, responsible for properly completing any forms or other Region-required documentation used to establish the chain-of-custody for each sample during a sampling event.

3.2.2.1 Complete a TR/COC Record Using the FORMS II Lite Software

Once the sampler inputs sample collection information into FORMS II Lite, a TR/COC Record will be generated electronically. The software automatically displays only the information to be entered by the sampler. FORMS II Lite then generates a laboratory and a Regional copy of the TR/COC Record (see Figures 3-2 through 3-5). The sampler can print out multiple copies of the TR/COC Record as necessary. The sampler must sign and submit original copies of the TR/COC Record as appropriate.

An electronic TR/COC Record created using the FORMS II Lite software contains basic header information; however, the sampler can also include some additional detailed information. For example, not only is the sample matrix listed on the electronic TR/COC Record, but the name of the sampler taking the sample can also be entered. Samplers should note that certain information will not appear on the electronic TR/COC Record (e.g., matrix and preservative descriptions).

3.2.2.2 Indicate Modified Analysis on FORMS II Lite TR/COC Records

When completing a TR/COC Record using FORMS II Lite, the sampler should identify any samples that will be analyzed using a CLP Modified Analysis. Samplers should indicate use of a Modified Analysis by creating a new analysis within the FORMS II Lite Wizard or through the FORMS II Lite Reference Tables. This newly-created analysis should contain the Modification Reference Number within the name assigned to the analysis. For example, if a Region submits a Modified Analysis for an additional analyte, and SMO assigns the Modification Reference Number 1301.0, the FORMS II Lite analysis could be named "VOA by M.A. 1301.0". The associated abbreviation for this analysis could be "VOA M.A.". If you have any questions regarding identification of Modified Analysis using FORMS II Lite, please contact the FORMS II Lite Help Desk at 703-818-4200 from 9:00 AM - 5:00 PM ET.

3.2.2.3 Make Manual Edits to Printed FORMS II Lite TR/COC Records

If a FORMS II Lite TR/COC Record has been printed and deletions or edits need to be made by the sampler, the following procedures must be followed:

- If making a deletion, manually cross out the information to be disregarded from the TR/COC Record, initial and date the deletion.
- If making an addition, enter the new information and initialsign and date the newly added information.

Note: All modifications made on a printed TR/COC Record must be initialed and dated.

EPA **USEPA Contract Laboratory Program**
Organic Traffic Report & Chain of Custody Record

Case No:	39400
DAS No:	DAS9000
SDG No:	

L

Date Shipped:	2/20/2001
Carrier Name:	DHL
Airbill:	121212
Shipped to:	Organic Laboratory 1234 Smith Drive Anywhere, USA 12345 (123) 456-7890

Chain of Custody Record

Relinquished By	(Date / Time)	Received By	(Date / Time)
1			
2			
3			
4			

Sampler Signature:

For Lab Use Only

Lab Contract No:
Unit Price:
Transfer To:
Lab Contract No:
Unit Price:

ORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		INORGANIC SAMPLE No.	FOR LAB USE ONLY Sample Condition On Receipt
C0075	Industrial Process Wastewater/ BOBBY SAMPLER	H/C	BNA/PEST (21), VOA (21)	6486, 6487 (2)	LOCATION ONE	S: 2/20/2001 E: 2/23/2001	16:02 16:02	MC0075	
C0076	Ground Water/ JOE SAMPLER	L/C	BNA/PEST (21), VOA (21)	6494, 6495 (2)	LOCATION TWO	S: 2/20/2001 E: 2/21/2001	16:01 16:01	MC0076	
C0077	Industrial Effluent Wastewater/ JOE SAMPLER	M/G	BNA/PEST (21), VOA (21)	6502, 6503 (2)	LOCATION ONE	S: 2/16/2001 E: 2/20/2001	15:55 15:55	MC0077	

Shipment for Case Complete?N	Sample(s) to be used for laboratory QC: C0077	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Custody Seal Intact? ___	Shipment Iced? ___

BNA/PEST = CLP TCL Semivolatiles and Pesticides/PC, VOA = CLP TCL Volatiles

TR Number: 3-103823254-022001-0001

LABORATORY COPY

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
Send Copy to: Sample Management Office, Attn: Heather Bauer, CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3819; Phone 703/818-4200; Fax 703/818-4602

F2V5.1.047 Page 1 of 1

Figure 3-2. Organic Traffic Report & Chain of Custody Record (Laboratory Copy)

EPA **USEPA Contract Laboratory Program**
Inorganic Traffic Report & Chain of Custody Record

Case No:	39400
DAS No:	DAS9000
SDG No:	

L

Date Shipped:	2/20/2001
Carrier Name:	DHL
Airbill:	121212
Shipped to:	Inorganic Laboratory 1234 Smith Drive Anywhere, USA 12345 (123) 456-7890

Chain of Custody Record

Relinquished By	(Date / Time)	Received By	(Date / Time)
1			
2			
3			
4			

Sampler Signature:

For Lab Use Only

Lab Contract No:
Unit Price:
Transfer To:
Lab Contract No:
Unit Price:

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		ORGANIC SAMPLE No.	FOR LAB USE ONLY Sample Condition On Receipt
MC0075	Industrial Process Wastewater/ BOBBY SAMPLER	H/C	Al (21), Ba (21), Ca (21), Cr (21), TM/CN (21)	6481, 6482, 6483, 6484, 6485 (5)	LOCATION ONE	S: 2/20/2001 E: 2/23/2001	16:02 16:02	C0075	
MC0076	Ground Water/ JOE SAMPLER	L/C	Al (21), Ba (21), Ca (21), Cr (21), TM/CN (21)	6489, 6490, 6491, 6492, 6493 (5)	LOCATION TWO	S: 2/20/2001 E: 2/21/2001	16:01 16:01	C0076	
MC0077	Industrial Effluent Wastewater/ JOE SAMPLER	M/G	Al (21), Ba (21), Ca (21), Cr (21), TM/CN (21)	6497, 6498, 6499, 6500, 6501 (5)	LOCATION ONE	S: 2/16/2001 E: 2/20/2001	15:55 15:55	C0077	

Shipment for Case Complete?N	Sample(s) to be used for laboratory QC: MC0077	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Custody Seal Intact? ___	Shipment Iced? ___

Al = Aluminum, Ba = Barium, Ca = Calcium, Cr = Chromium, TM/CN = CLP TAL Total Metals and Cyanide

TR Number: 3-103823254-022001-0003

LABORATORY COPY

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
Send Copy to: Sample Management Office, Attn: Heather Bauer, CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3819; Phone 703/818-4200; Fax 703/818-4602

F2V5.1.047 Page 1 of 1

Figure 3-3. Inorganic Traffic Report & Chain of Custody Record (Laboratory Copy)

EPA USEPA Contract Laboratory Program
Organic Traffic Report & Chain of Custody Record

Case No: 39400
DAS No: DAS9000
R

Region:	3	Date Shipped:	2/20/2001	Chain of Custody Record	Sampler Signature:
Project Code:		Carrier Name:	DHL	Relinquished By (Date / Time)	Received By (Date / Time)
Account Code:	QW-123 ACCT000	Airbill:	121212	1	
CERCLIS ID:		Shipped to:	Organic Laboratory 1234 Smith Drive Anywhere, USA 12345 (123) 456-7890	2	
Spill ID:	ID3			3	
Site Name/State:	REAL SITE, UT			4	
Project Leader:	DAN SAMPLER				
Action:	Other				
Sampling Co:	SMITH CO.				

ORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		INORGANIC SAMPLE No.	QC Type
C0075	Industrial Process Wastewater/ BOBBY SAMPLER	H/C	BNA/PEST (21), VOA (21)	6486, 6487 (2)	LOCATION ONE	S: 2/20/2001 E: 2/23/2001	16:02 16:02	MC0075	--
C0076	Ground Water/ JOE SAMPLER	L/C	BNA/PEST (21), VOA (21)	6494, 6495 (2)	LOCATION TWO	S: 2/20/2001 E: 2/21/2001	16:01 16:01	MC0076	Spike
C0077	Industrial Effluent Wastewater/ JOE SAMPLER	M/G	BNA/PEST (21), VOA (21)	6502, 6503 (2)	LOCATION ONE	S: 2/16/2001 E: 2/20/2001	15:55 15:55	MC0077	--

Shipment for Case Complete? N	Sample(s) to be used for laboratory QC: C0077	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Iced? _____
BNA/PEST = CLP TCL Semivolatiles and Pesticides/PC, VOA = CLP TCL Volatiles			

TR Number: 3-103823254-022001-0001

REGION COPY

PR provides preliminary results. Requests for preliminary results will increase analytical costs.

Send Copy to: Sample Management Office, Attn: Heather Bauer, CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3819; Phone 703/818-4200; Fax 703/818-4602

F2V5.1.047 Page 1 of 1

Figure 3-4. Organic Traffic Report & Chain of Custody Record (Region Copy)

EPA USEPA Contract Laboratory Program
Inorganic Traffic Report & Chain of Custody Record

Case No: Y6767
DAS No: DAS9000
R

Region:	3	Date Shipped:	2/20/2001
Project Code:	QW-123	Carrier Name:	DHL
Account Code:	ACCT000	Airbill:	121212
CERCLIS ID:		Shipped to:	Clayton Environmental Consultants, Inc 22345 Roethel Drive Novi MI 48375 (248) 344-1770
Spill ID:	ID3		
Site Name/State:	REAL SITE, UT		
Project Leader:	DAN SAMPLER		
Action:	Other		
Sampling Co:	SMITH CO.		

Chain of Custody Record

Relinquished By	(Date / Time)	Received By	(Date / Time)
1			
2			
3			
4			

Sampler Signature:

INORGANIC SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		ORGANIC SAMPLE No.	QC Type
MC0075	Industrial - Process Wastewater/ BOBBY SAMPLER	H/C	Al (21), Ba (21), Ca (21), Cr (21), TM/CN (21)	6481, 6482, 6483, 6484, 6485 (5)	LOCATION ONE	S: 2/20/2001 E: 2/23/2001	16:02 16:02	C0075	--
MC0076	Ground Water/ JOE SAMPLER	L/C	Al (21), Ba (21), Ca (21), Cr (21), TM/CN (21)	6489, 6490, 6491, 6492, 6493 (5)	LOCATION TWO	S: 2/20/2001 E: 2/21/2001	16:01 16:01	C0076	Spike
MC0077	Industrial Effluent Wastewater/ JOE SAMPLER	M/G	Al (21), Ba (21), Ca (21), Cr (21), TM/CN (21)	6497, 6498, 6499, 6500, 6501 (5)	LOCATION ONE	S: 2/16/2001 E: 2/20/2001	15:55 15:55	C0077	--

Shipment for Case Complete? N	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Chain of Custody Seal Number:
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Shipment Iced? _____

Al = Aluminum, Ba = Barium, Ca = Calcium, Cr = Chromium, TM/CN = CLP TAL Total Metals and Cyanide

TR Number: 3-103823254-022001-0003

REGION COPY

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
Send Copy to: Sample Management Office, Attn: Heather Bauer, CSC, 15000 Conference Center Dr., Chantilly, VA 20151-3819; Phone 703/818-4200; Fax 703/818-4602

F2V5.1.047 Page 1 of 1

Figure 3-5. Inorganic Traffic Report & Chain of Custody Record (Region Copy)

3.2.3 Complete and Attach Custody Seals

Custody seals are usually pre-printed stickers that are signed (or initialed) and dated by the sampler after sample collection and placed on sample bottles or containers and/or shipping coolers or containers (see Figure 3-6). The custody seals document who sealed the sample container and verifies that the sample has not been tampered with. The seals must be placed such that they will break if the sample bottle or container or the shipping cooler or container is tampered with or opened after leaving custody of samplers. Custody seals can also be used to maintain custody of other items such as envelopes containing videotapes of the sample collection process.

Note

Custody seals should never be placed directly onto a coring tool used as a transport device (e.g., 5 g Sampler) or tared, 40 mL closed-system vials. The seals must be placed on the bag for the coring tool used as a transport device, or on the bag used to enclose the vials. Refer to Appendix B for details.

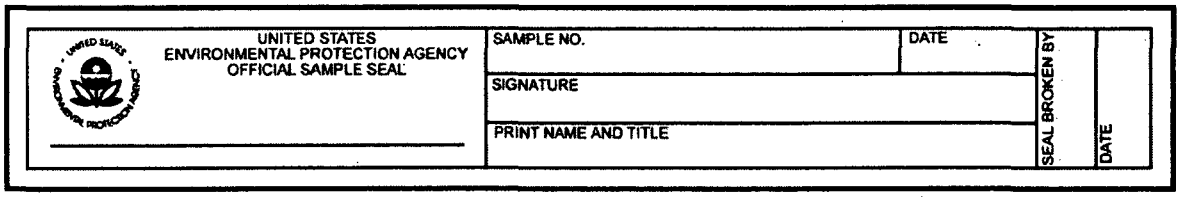


Figure 3-6. Custody Seal

Instructions for completing and attaching a custody seal are included in Table 3-5.

Table 3-5. Completing and Attaching a Custody Seal

Step	Action	Important Notes
1	Record the CLP Sample Number.	The space for the CLP Sample Number does not need to be completed on custody seals being placed on the opening of a cooler, only on those being placed on the opening of sample bottles or containers.
2	Record the month, day, and year of sample collection.	
3	Sign the seal in the Signature field.	
4	Print your name and title in the Print Name and Title field.	
5	Place the custody seal over the edge of the sample bottle or container such that it will break if tampered with.	Custody seals can be placed directly on any sample container except for coring tools used as a transport device (e.g., 5 g Samplers) and tared VOA bottles. If packing coring tools used as a transport device or tared VOA bottles, place them in a clear plastic bag and place the custody seal on the outside of the bag.
6	If possible, cover the custody seal with clear plastic tape to protect it.	Take special care to not place the protective tape over the seal in such a way that it can be removed and then re-attached without signs of tampering.

The use and type of custody seals can vary by Region or collecting organization. Samplers should obtain the appropriate custody seals and specific instructions for correctly attaching them from the RSCC.

3.2.4 Complete and Attach Sample Labels

Samplers affix sample labels to each sample container. A sample label must contain the associated CLP Sample Number (either written or pre-printed), SMO-assigned Case Number, and the preservative used. It must also denote the analysis/fraction. Samplers may also include additional information such as the station location or the date/time of collection. Samplers should use FORMS II Lite to create and print sample labels. The sampler can print two labels and attach one to the sample container or bottle, and place the other label on the sample tag that should also be attached to the sample container or bottle. The

labels should then be covered with clear packaging tape to protect the label and maintain legibility. If handwriting a sample label, the sampler should complete the label information using waterproof ink, place the label on the outside of the sample bottle or container, then cover the label with clear packaging tape to protect the label and maintain legibility (see Figure 3-1).

Do not attach labels to tared VOA sample vials. A label should already be pre-attached to the tared vial.

3.2.5 Complete and Attach Sample Tags

To support use of sample data in potential enforcement actions, sample characteristics other than on-site measurements (e.g., pH, temperature, conductivity) can be identified with a sample tag. Typically, site-specific information is written on the tags using waterproof ink. The use and type of sample tags may vary by Region. For each sampling event, samplers should receive the required sample tags and type of information to include from the RSCC. The sampler can use FORMS II Lite to create and print out multiple sample labels, one of which can be attached to the sample tag and then covered with clear packaging tape to protect the label and maintain legibility. If FORMS II Lite-created sample labels are not available, a detailed set of instructions for completing and attaching a handwritten sample tag are included in Table 3-6.

The use and type of sample tags may vary among Regions.

Table 3-6. Completing and Attaching a Handwritten Sample Tag

Step	Action	Important Notes
1	Under the "Remarks" heading, record the CLP Sample Number and SMO-assigned Case Number.	Make sure to record the correct CLP Sample Number and SMO-assigned Case Number in a legible manner.
2	Record the project code (e.g., Contract Number, Work Assignment Number, Interagency Agreement Number, etc.) assigned by USEPA.	
3	Enter the station number assigned by the sampling team coordinator.	
4	Record the month, day, and year of sample collection.	
5	Enter the military time of sample collection (e.g., 13:01 for 1:01 PM).	
6	Identify the designate and place an "X" in either the "Comp." or "Grab" box if the sample is either a composite or grab sample.	
7	Record the station location.	
8	Sign the sample tag in the Signature area.	
9	Place an "X" in the box next to Yes or No to indicate if a preservative was added to the sample.	
10	Under "Analyses", place an "X" in the box next to the parameters for which the sample is to be analyzed.	
11	Leave the box for "Laboratory Sample Number" blank.	
12	It is recommended that the sample tag be attached to the neck of the sample bottle or container using regular string, stretch string, or wire (see Figure 3-1).	Do **NOT** use wire to attach a sample tag to a metals sample.

An example of a completed sample tag is included in Figure 3-7 below:

Project Code 2	Station No. 3	Mo./Day/Year 4	Time 5	Designate: 6	
00-030	1	01/10/2004	8:45 AM	Comp.	Grab x

Tag No. 3-3001

Lab. Sample No. DD001

Station Location 7

Sampler's (Signature) 8: John Smith

Remarks: 1			SVOA organics	Pesticides	VOA organics	ABN			Cyanide	Metals	Phenolics	COD, TOC, Nutrients	BOD Anions Solids (TSS) (TDS) (SS)	ANALYSES 10	Preservative: Y [x] N [ ] 9
					x										

Figure 3-7. Completed Sample Tag

3.3 Provide Sample Receipt

After samples have been taken from private property, the sampler should prepare a receipt for these samples and provide this receipt to the property owner. This is especially important when sampling on private property since these samples could be used during future litigation and the receipt will verify that the owner granted approval for the removal of the samples from the property. An example of a sample receipt created using FORMS II Lite is shown in Figure 3-8.

EPA Region 3
U.S. ENVIRONMENTAL PROTECTION AGENCY

RECEIPT FOR SAMPLES

PROJECT NO.	PROJECT NAME	NAME & LOCATION OF FACILITY/SITE
QW-123		EXAMPLE SITE
SAMPLERS: (SIGNATURES)		

STATION NO.	LOCATION/DESCRIPTION	DATE	TIME	Comp/Grab	NO. OF EPA CONTAINERS	SPLIT SAMPLE Y OR N	EPA SAMPLE TAG NO.'S
STATION ONE	LOCATION ONE	2/20/2001	15:55	G	11	Yes	112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122
STATION ONE	LOCATION TWO	2/20/2001	16:01	C	11	Yes	123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133
STATION TWO	LOCATION ONE	2/20/2001	16:02	C	11	Yes	134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144

SPLIT SAMPLES TRANSFERRED BY: (PRINT)	DATE	SPLIT SAMPLES RECEIVED BY ☐ OR DECLINED BY ☐ (PRINT)	DATE/TIME
(SIGN)	TIME	(SIGN) / TITLE	TELEPHONE

FZV5.1.047 Page 1 of 1

Figure 3-8. Sample Receipt Created Using the FORMS II Lite Software

3.4 Pack and Ship Samples

Once the samples have been collected, it is very important that the sampler properly package the samples for shipment and ensure that the samples are sent to the appropriate laboratory as quickly as possible. Prompt and proper packaging of samples will:

- Protect the integrity of samples from changes in composition or concentration caused by bacterial growth or degradation from increased temperatures;
- Reduce the chance of leaking or breaking of sample containers that would result in loss of sample volume, loss of sample integrity, and exposure of personnel to toxic substances; and
- Help ensure compliance with shipping regulations.

3.4.1 Sample Containers

Once samples are collected, they must be stored in conditions that maintain sample integrity. All samples should be placed in shipping containers or other suitable containers with ice to reduce the temperature as soon as possible after collection. Ideally, all samples should be shipped the day of collection for overnight delivery to the laboratory. If samples cannot be shipped on the day of collection, the sample temperature should be maintained at 4°C (±2°C) until they are shipped to the laboratory.

One CLP RAS sample may be contained in several bottles and vials. For example, one soil sample may consist of all containers needed for three of the analytical fractions available under this service (i.e., SVOA fraction, Pesticide fraction, and Aroclor fraction), even though the fractions are collected in separate containers. Therefore, the analysis to be performed and the matrix type will determine the type of container(s) that will be used, as well as the volume that must be collected for that particular sample fraction.

3.4.2 Inventory of Samples and Documentation

Prior to shipment, samplers should conduct an inventory of the contents of the shipping cooler or container against the corresponding TR/COC Record when packing for shipment to laboratories. An inventory will ensure that the proper number of containers have been collected for each analysis of the samples, that the required PE and QC samples and cooler temperature blanks are included, and the correct Sample Numbers and fractions have been assigned to each sample.

3.4.3 Shipping Regulations

Sample shipping personnel are legally responsible for ensuring that the sample shipment will comply with all applicable shipping regulations. For example, hazardous material samples must be packaged, labeled, and shipped in compliance with all IATA Dangerous Goods regulations or DOT regulations and USEPA guidelines. Refer to Appendix B for detailed shipping guidelines when using SW-846 Method 5035A to preserve and ship samples.

3.4.4 Sample Packaging for Shipment

Samplers are responsible for the proper packaging of samples for shipment. To ensure that samples are appropriately packaged (e.g., to avoid breakage and/or contamination) the sampler should consult their respective project plans to determine the proper packing and shipping procedures. The sampler must determine the sample type, pack the shipping containers correctly, include necessary paperwork, label and seal shipping containers or coolers, and ship the samples.

3.4.4.1 Determine the Sample Type and Container

Samplers should know what kinds of samples they are handling to ensure proper packaging. Samplers should refer to their appropriate project plans to determine which type of sample container should be used for each type of sample being taken during the sampling event.

Please follow Regional guidance with reference to samples containing dioxin or radioactive waste.

3.4.4.2 Pack Shipping Containers

It is imperative that samples are correctly and carefully packed in shipping containers to prevent the sample containers from breaking or leaking. Samplers must prepare and pack a shipping cooler or container according to the instructions outlined in Table 3-7.

Table 3-7. Packing Samples for Shipment

Step	Action	Important Notes
1	Seal all drain holes in the shipping container, both inside and out, to prevent leakage in the event of sample breakage.	
2	Check all lids/caps to make sure the samples are tightly sealed and will not leak.	
3	Seal samples within a clear plastic bag.	Custody seals can be placed directly on any sample container except for coring tools used as a transport device (e.g., 5 g Samplers) and tared VOA bottles. If packing coring tools used as a transport device or tared VOA bottles, place them in a clear plastic bag and place the custody seal on the outside of the bag.
4	Fully chill samples to 4°C (±2°C) prior to placement within suitable packing materials.	
5	Prior to placing samples within the shipping cooler, it is recommended that samplers line shipping containers with non-combustible, absorbent packing material.	
6	Place samples in CLEAN, sealed, watertight shipping containers (metal or hard plastic coolers).	
7	Conduct an inventory of the contents of the shipping cooler/container against the corresponding TR/COC Record.	
8	Cover samples in double-bagged ice to prevent water damage to packing materials.	Do NOT pour loose ice directly into the sample cooler. The ice is used to maintain the temperature of the samples within the shipping cooler.
9	It is recommended a temperature blank be included within each cooler being shipped.	The temperature blank is generally a 40 L vial filled with water and labeled "temperature blank" but does not have a Sample Number.
10	Ensure that the site name or other site-identifying information does not appear on any documentation being sent to the laboratory.	The laboratory should not receive any site-identifying information.

3.4.4.3 Include Necessary Paperwork

Samplers must properly place the necessary paperwork in the shipping cooler. All paperwork must be placed in a plastic bag or pouch and then secured to the underside of the shipping cooler lids (see Figure 3-9).

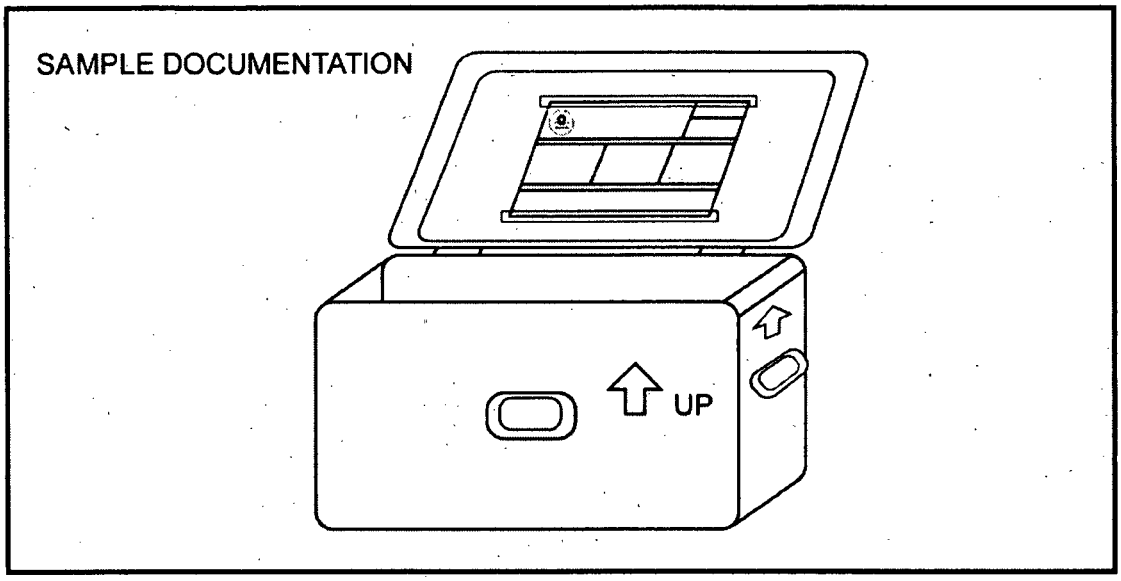


Figure 3-9. Sample Cooler with Attached TR/COC Record and Cooler Return Documentation

Necessary paperwork includes TR/COC Records and sample weight logs (see Figure 3-10), if required (for VOA samples). Samplers should contact their RSCC (or designee) for specific paperwork requirements.

USEPA Contract Laboratory Program
Sample Weight Log

Shipped to: AAA Testing Laboratory
1700 Mill Avenue
Houston TX 77099
(281) 983-1234

Case No. 39563
DAS No. DAS34
Date Shipped: 9/29/2003

Sample No.	Matrix	Analysis	Preservative	Bottle/ Tag Number	Tared Weight (g)	Final Weight (g)	Sample Weight (g)	Laboratory Weight	Traffic Report No.
C0036	Subsurface Soil (>12")	CLP TCL Volatiles	Ice Only	199546	32.80	37.20	4.40		3-103018225-092903-0001
C0036	Subsurface Soil (>12")	CLP TCL Volatiles	Ice Only	199547	32.10	38.30	6.20		3-103018225-092903-0001
C0036	Subsurface Soil (>12")	CLP TCL Volatiles	Ice Only	199549	31.20	38.60	7.40		3-103018225-092903-0001
C0037	Surface Soil (0"-12")	CLP TCL Volatiles	Ice Only	199552	32.00	36.90	4.90		3-103018225-092903-0001
C0037	Surface Soil (0"-12")	CLP TCL Volatiles	Ice Only	199551	32.40	37.10	4.70		3-103018225-092903-0001
C0037	Surface Soil (0"-12")	CLP TCL Volatiles	Ice Only	199550	31.90	35.90	4.00		3-103018225-092903-0001

Completed By:	Date:

All weights are measured in grams

Figure 3-10. Sample Weight Log

3.4.4.4 Return Sample Shipping Coolers

CLP laboratories must routinely return sample shipping coolers within 14 calendar days following shipment receipt. Therefore, the sampler should also include cooler return instructions with each shipment. The sampler (not the CLP laboratory) is responsible for paying for return of the cooler and should also include shipping airbills bearing the sampler's account number, as well as a return address to allow for cooler return.

3.4.4.5 Label and Seal Sample Shipping Coolers

After samples are packaged within shipping coolers, samplers must carefully secure the top and bottom of the coolers with tape, place return address labels clearly on the outside of the cooler, and attach the required chain-of-custody seals (see Figure 3-11).

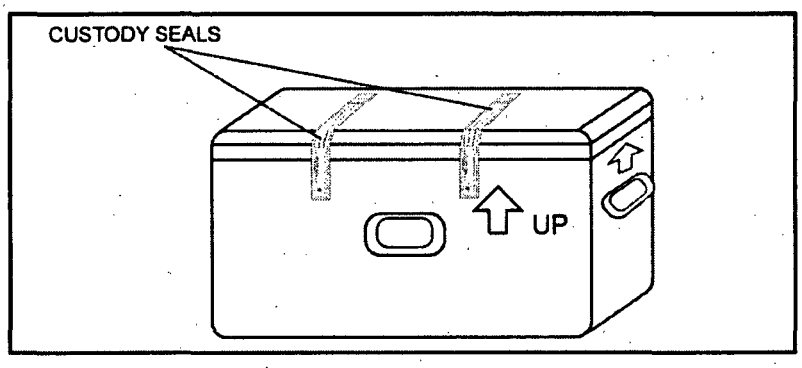


Figure 3-11. Shipping Cooler with Custody Seals

If more than one cooler is being delivered to a laboratory, samplers should mark each cooler as "1 of 2", "2 of 2", etc. In addition, samplers must accurately complete and attach shipping airbill paperwork for shipment of the samples to the laboratory. An airbill, addressed to the Sample Custodian of the receiving laboratory, should be completed for each cooler shipped. Samplers should receive the correct name, address, and telephone number of the laboratory to which they must ship samples from the RSCC or SMO. To avoid delays in analytical testing, samplers should make sure they are sending the correct types of samples to the correct laboratory when collecting samples for multiple types of analysis. For example, inorganic samples may be shipped to one laboratory for analysis, while organic samples may need to be shipped to another laboratory.

3.4.4.6 Ship Samples

The sampling contractor should ensure that samplers know the shipping company's name, address, and telephone number. In addition, they should be aware of the shipping company's hours of operation, shipping schedule, and pick-up/drop-off requirements.

Overnight Delivery

It is imperative that samples be sent via overnight delivery. Delays caused by longer shipment times may cause technical holding times to expire, which in turn may destroy sample integrity or require the recollection of samples for analysis.

Saturday Delivery

For shipping samples for Saturday delivery, the sampler MUST contact the RSCC (or their designee) or SMO so that SMO will receive the delivery information by 3:00 PM ET on the Friday prior to delivery.

3.4.5 Shipment Notification

When samples are shipped to CLP Laboratories, samplers **must immediately** report all sample shipments to the RSCC (or their designee) or to SMO. **Under no circumstances should the sampler contact the laboratory directly.** If samplers are shipping samples after 5:00 PM ET, they must notify the RSCC (or

designee) or SMO by 8:00 AM ET on the following business day. Samplers should receive the name and phone number of the appropriate SMO coordinator to contact from the Region/RSCC.

Samplers must provide the following information to the RSCC (or their designee) or to SMO:

- Name and phone number at which they can easily be reached (preferably closest on-site phone number if still in the field);
- SMO-assigned Case Number (see Section 2.4.1);
- Number, concentration, matrix and analysis of samples being shipped;
- Name of laboratory (or laboratories) to which the samples were shipped;
- Airbill number(s);
- Date of shipment;
- Case status (i.e., whether or not the Case is complete);
- Problems encountered, special comments, or any unanticipated issues;
- When to expect the next anticipated shipment; and
- An electronic export of the TR/COC Record (must be sent as soon as possible after sample shipment). For information regarding electronic export of TR/COC Records, refer to the following Web site:

http://www.epa.gov/superfund/programs/clp/f2lsubmit.htm

For Saturday delivery, samplers MUST contact the RSCC (or their designee) or SMO so that SMO will receive the delivery information by 3:00 PM ET on the Friday prior to delivery.

Samplers should be aware if their Region requires them to notify the RSCC (or designee) and/or SMO of sample shipment.

THIS PAGE INTENTIONALLY LEFT BLANK

Appendix A: Functions within a Sampling Project

The following table describes Quality Assurance Project Plan (QAPP) requirements taken from *EPA Requirements for Quality Assurance Project Plans* (EPA QA/R-5).

Functions Within a Sampling Project	Elements of that Function
Project Management	
Project/Task Organization	Identifies the individuals or organizations participating in the project and defines their specific roles and responsibilities.
Problem Definition/Background	States the specific problem to be solved or decision to be made and includes sufficient background information to provide a historical and scientific perspective for each particular project.
Project/Task Description	Describes the work to be performed and the schedule for implementation to include: • Measurements to be made during the course of the project; • Applicable technical, regulatory, or program-specific quality standards, criteria, or objectives; • Any special personnel and equipment requirements; assessment tools needed; and • A work schedule and any required project and quality records, including types of reports needed.
Quality Objectives and Criteria	Describes the project quality objectives and measurement performance criteria.
Special Training/Certification	Ensures that any specialized training for non-routine field sampling techniques, field analyses, laboratory analyses, or data validation should be specified.
Documents and Records	• Itemizes the information and records that must be included in the data report package and specifies the desired reporting format for hard copy and electronic forms, when used. • Identifies any other records and/or documents applicable to the project such as audit reports, interim progress reports, and final reports that will be produced. • Specifies or references all applicable requirements for the final disposition of records and documents, including location and length of retention period.
Data Generation and Acquisition	
Sampling Process Design (Experimental Design)	• Describes the experimental design or data collection design for the project. • Classifies all measurements as critical or non-critical.
Sampling Methods	• Describes the procedures for collecting samples and identifies sampling methods and equipment. Includes any implementation requirements, support facilities, sample preservation requirements, and materials needed. • Describes the process for preparing and decontaminating sampling equipment to include the disposal of decontamination by-products, selection and preparation of sample containers, sample volumes, preservation methods, and maximum holding times for sampling, preparation, and/or analysis. • Describes specific performance requirements for the method. • Addresses what to do when a failure in sampling occurs, who is responsible for corrective action, and how the effectiveness of the corrective action shall be determined and documented
Sample Handling and Custody	• Describes the requirements and provisions for sample handling and custody in the field, laboratory, and transport, taking into account the nature of the samples, the maximum allowable sample holding times before extraction and analysis, and the available shipping options and schedules. • Includes examples of sample labels, custody forms, and sample custody logs.

Analytical Methods	• Identifies the analytical methods and equipment required, including sub-sampling or extraction methods, waste disposal requirements (if any), and specific method performance requirements. • Identifies analytical methods by number, date, and regulatory citation (as appropriate). If a method allows the user to select from various options, the method citations should state exactly which options are being selected. • Addresses what to do when a failure in the analytical system occurs, who is responsible for corrective action, and how the effectiveness of the corrective action shall be determined and documented. • Specifies the laboratory turnaround time needed, if important to the project schedule. • Specifies whether a field sampling and/or laboratory analysis Case Narrative is required to provide a complete description of any difficulties encountered during sampling or analysis.
Quality Control (QC)	• Identifies required measurement QC checks for both the field and laboratory. • States the frequency of analysis for each type of QC check, and the spike compounds sources and levels. • States or references the required control limits for each QC check and corrective action required when control limits are exceeded and how the effectiveness of the corrective action shall be determined and documented. • Describes or references the procedures to be used to calculate each of the QC statistics.
Instrument/Equipment Testing, Inspection, and Maintenance	• Describes how inspections and acceptance testing of environmental sampling and measurement systems and their components will be performed and documented. Identifies and discusses the procedure by which final acceptance will be performed by independent personnel. • Describes how deficiencies are to be resolved and when re-inspection will be performed. • Describes or references how periodic preventative and corrective maintenance of measurement or test equipment shall be performed. • Identifies the equipment and/or system requiring periodic maintenance. • Discusses how the availability of spare parts identified in the operating guidance and/or design specifications of the systems will be assured and maintained.
Instrument/Equipment Calibration and Frequency	• Identifies all tools, gauges, instruments, and other sampling, measuring, and test equipment used for data collection activities affecting quality that must be controlled, and at specific times, calibrated to maintain performance within specified limits. • Identifies the certified equipment and/or standards used for calibration. • Describes or references how calibration will be conducted using certified equipment and/or standards with known valid relationships to nationally recognized performance standards. If no such standards exist, documents the basis for calibration. • Indicates how records of calibration shall be maintained and traced to the instrument.
Inspection/Acceptance of Supplies and Consumables	• Describes how and by whom supplies and consumables shall be inspected and accepted for use in the project. • States acceptance criteria for such supplies and consumables.
Non-direct Measurements	• Identifies any types of data needed for project implementation or decision-making that are obtained from non-measurement sources (e.g., computer databases, programs, literature files, historical databases). • Describes the intended use of data. • Defines the acceptance criteria for the use of such data in the project. • Specifies any limitations on the use of the data.
Data Management	• Describes the project data management scheme, tracing the data path from generation in the field or laboratory to their final use or storage. • Describes or references the standard record-keeping procedures, document control system, and the approach used for data storage and retrieval on electronic media.

Appendix B: CLP Sample Collection Guidelines for VOAs in Soil by SW-846 Method 5035A

A. Preferred Options for the Contract Laboratory Program (CLP) are Options 1, 2, and 3:

Note: Soil samples must be placed on their sides prior to being frozen.

Option 1.

Closed-system Vials:

Container - tared or preweighed 40 mL VOA Vials containing a magnetic stir bar.

Collect 5 g of soil per vial (iced or frozen in the field).

Regular Samples	3 Vials - Dry (5 g soil per vial) 1 Vial - Dry (filled with soil, no headspace) 4 Total Vials
Regular Samples Requiring QC Analysis	9 Vials - Dry (5 g soil per vial) 1 Vial - Dry (filled with soil, no headspace) 10 Total Vials

Option 2.

Closed-system Vials Containing Water:

Container - tared or pre-weighed 40 mL VOA vials containing a magnetic stir bar and 5 mL water.

Collect 5 g of soil per vial (iced or frozen in the field).

Regular Samples	2 Vials with water added (5 g soil and 5 mL water per vial) 1 Vial - Dry (5 g soil in vial) 1 Vial - Dry (filled with soil, no headspace) 4 Total Vials (2 with water and 2 dry)
Regular Samples Requiring QC Analysis	6 Vials with water added (5 g soil and 5 mL water per vial) 5 Vials - Dry (5 g soil per vial) 1 Vial - Dry (filled with soil, no headspace) 12 Total Vials (6 with water and 6 dry)

Option 3.

Coring Tool used as a Transport Device

Container - 5 g Samplers or equivalent.

Note: All Samplers should be iced or frozen in the field and bagged individually.

Regular Samples	3 Samplers (5 g soil per Sampler) 1 Vial - Dry (filled with soil, no headspace) 4 Total (3 Samplers and 1 Vial)
Regular Samples Requiring QC Analysis	9 Samplers (5 g soil per Sampler) 1 Vial - Dry (filled with soil, no headspace) 10 Total (11 Samplers and 1 Vial)

B. Options 4, 5, and 6 are NOT preferred options for the CLP:

Option 4.

Closed-system Vials:

Container - tared or preweighed 40 mL VOA Vials containing a magnetic stir bar and preservative.

Collect 5 g of soil per vial and add Sodium bisulfate ($NaHSO_4$) preservative (5 mL water + 1 g $NaHSO_4$) - iced or frozen in the field.

Caution: **This option is NOT a Preferred Option for the CLP because:**

NaHSO4 preservation creates low pH conditions that will cause the destruction of certain CLP target analytes (e.g., vinyl chloride, trichloroethene, trichlorofluoromethane, cis- and trans-1,3-dichloropropene). Projects requiring the quantitation of these analytes should consider alternative sample preservation methods. NaHSO4 also cannot be used on carbonaceous soils. Check the soil before using this method of collection! Soil can be checked by placing a test sample in a clean vial, then adding several drops of NaHSO4 solution. If the soil bubbles, use Option 4b and note this issue on the TR/COC Record.

Option 4a. Samples preserved in the field

Regular Samples	2 Vials with $NaHSO_4$ preservative added (5g soil per vial) 1 Vial without $NaHSO_4$ preservative added (5g soil per vial) 1 Vial - Dry (filled with soil, no headspace) 4 Total Vials (2 with $NaHSO_4$ preservative and 2 without)
Regular Samples Requiring QC Analyses	4 Vials with $NaHSO_4$ preservative added (5g soil per vial) 5 Vials without $NaHSO_4$ preservative added (5 g soil per vial) 1 Vial - Dry (filled with soil, no headspace) 10 Total Vials (4 with $NaHSO_4$ and 6 without)

Option 4b. Samples are preserved by the laboratory (No $NaHSO_4$ preservative is added to these samples in the field).

Regular Samples	3 Vials - Dry (5 g soil per vial) 1 Vial - Dry (filled with soil, no headspace) 4 Total Vials
Regular Samples Requiring QC Analyses	9 Vials - Dry (5 g soil per vial) 1 Vial - Dry (filled with soil, no headspace) 10 Total Vials

Option 5.

Methanol Preservation (medium-level analysis only):

Container - tared or pre-weighed 40 mL VOA vials containing 5-10 mL methanol.

Collect 5 g of soil per vial (iced in the field).

Caution: **This is NOT a preferred option for the CLP because:**

Samples preserved with methanol can only be analyzed by the medium-level method. Low-level Contract Required Quantitation Limit (CRQLs) cannot be achieved when samples are preserved this way.

Additional problems associated with use of methanol as a preservative in the field include:

- Possible contamination of the methanol by sampling-related activities (e.g., absorption of diesel fumes from sampling equipment);
- Leakage of methanol from the sample vials during shipping, resulting in loss of VOAs prior to analysis.

Regular Samples	2 Vials (5 g soil and 5-10 mL methanol per vial) 1 Vial - Dry (filled with soil, no headspace) 3 Total Vials (2 with methanol and 1 dry)
Regular Samples Requiring QC Analysis	6 Vials (5 g soil and 5-10 mL methanol per vial) 1 Vial -Dry (filled with soil, no headspace) 7 Total Vials (6 with methanol and 1 dry)

If shipping samples containing methanol as a preservative, a shipping label must be used to indicate methanol. This label must also contain the United Nations (UN) identification number for methanol (UN 1230), and indicate Limited Quantity.

Option 6.

Glass Containers filled with sample - No Headspace:

Container - 4 oz Glass Jars.

Glass container filled with soil with no headspace and iced.

Caution: **This is NOT a preferred option for the CLP because:**

Samples collected in this manner lose most of their volatile analytes prior to analysis when the sample containers are opened and sub-sampled in the laboratory. This option is only available due to Regional requirements.

Regular Samples	2 Glass Jars (4 oz) filled with sample, no headspace 1 Vial - Dry (filled with soil, no headspace) 3 Total Containers
Regular Samples Requiring QC Analysis	2 Glass Jars (4 oz) filled with sample, no headspace 1 Vial - Dry (filled with soil, no headspace) 3 Total Containers

C. Caution:

1. Extreme care must be taken to ensure that frozen samples do not break during shipment.
2. Before adding soil to pre-weighed vials containing a stir bar, weigh the vials to confirm the tared weight. If the weight varies by more than 0.1 g, record the new weight on the label and the sample documentation. Do NOT add labels to these vials once the tared weight has been determined/confirmed.

D. Dry Samples:

All options include taking a sample in a dry 40 mL VOA vial (or a 4 oz wide mouth jar) with no headspace. No additional water, $NaHSO_4$, or methanol is added to this sample. This sample is taken to determine moisture content; therefore, it does not need to be tared or have a stir bar.

E. Iced or Frozen Samples:

1. Iced means cooled to 4°C (±2°C) immediately after collection.
2. Frozen means cooled to between -7°C and -15°C immediately after collection.

F. Sample Delivery:

CLP strongly recommends that all samples reach the laboratory by COB the next day after sample collection.

G. Notes:

1. For Option 4, samples can be preserved with $NaHSO_4$ either:
   - In the field; or
   - In the laboratory upon receipt. In this case, the sampler should put the following information in the Preservation Column of the TR/COC Record - "To be preserved at lab with $NaHSO_4$". This Regional Request should also be communicated to SMO so that the laboratory can be notified.
2. Regional QAPPs may require the use of Option 5. Please note that this option is for medium-level analysis ONLY.
3. If water, methanol, or $NaHSO_4$ preservative is added to the vials in the field, a field blank containing the appropriate liquid used in the vials should be sent to the laboratory for analysis.

H. Number of Containers Rationale:

The rationale for the number of containers (vials or samplers) required for the field sample and the required laboratory QC for each option is given as follows:

Option 1.

Rationale for Regular Vials:	1 vial for low-level analysis (water purge) 1 vial for backup low-level analysis 1 vial for medium-level analysis (methanol extraction)
Rationale for QC Vials:	2 vials for MS and MSD low-level analysis 2 vials for MS and MSD medium-level analysis 2 vials for backup (MS and MSD) low-level or medium-level analysis

Option 2.

Rationale for Regular Vials:	1 vial for low-level analysis (water purge) 1 vial for back up low-level analysis 1 vial dry for medium-level analysis (methanol extraction)
Rationale for QC Vials:	2 vials for MS and MSD low-level analysis 2 vials for MS and MSD medium-level analysis 2 vials for backup (MS and MSD) low-level or medium-level analysis
Medium-level: Analysis	Methanol will be added in the laboratory

Option 3.

Rationale for Regular Samples:	1 sampler for low-level analysis (water purge) 1 sampler for back up low-level analysis 1 sampler for medium-level analysis (methanol extraction)
Rationale for QC Samples:	2 samplers for MS and MSD low-level analysis 2 samplers for backup MS and MSD low-level analysis 2 samplers for MS and MSD medium-level analysis 2 samplers for backup MS and MSD medium-level analysis

Option 4a ($NaHSO_4$ added in the field).

Rationale for Regular Vials:	1 vial with water for low-level analysis (water purge) 1 vial with water for backup low-level analysis 1 vial dry for medium-level analysis (methanol extraction)
Rationale for QC Vials:	2 vials with water for MS and MSD low-level analysis 2 vials dry for MS and MSD medium-level analysis 2 vials for backup (MS and MSD) low-level or medium-level analysis

Option 4b ($NaHSO_4$ added in the laboratory).

Rationale for Regular Vials:	1 vial for low-level analysis (water purge) 1 vial for backup low-level analysis 1 vial for medium-level analysis (methanol extraction)
Rationale for QC Vials:	2 vials for MS and MSD low-level analysis 2 vials for MS and MSD medium-level analysis 2 vials for backup (MS and MSD) low-level or medium-level analysis

Option 5.

Rationale for Regular Samples:	1 vial for regular medium-level analysis 1 vial for back up medium-level analysis
Rationale for QC Samples:	2 samples for MS and MSD 2 samples for backup MS and MSD

Option 6.

In this option, all Regular and QC samples for both low-level and medium analysis are taken as subsamples from the same container.

Rationale for Regular Analysis	1 glass jar for low-level analysis and medium-level analysis **1 glass jar for backup low-level analysis and medium-level analysis**
Rationale for QC Analysis:	1 glass jar for low-level analysis and medium-level analysis **1 glass jar for backup low-level analysis and medium-level analysis**

Appendix C: General CLP Sample Collection Guidelines VOAs in Water

Regional guidance and/or specific Project Plan requirements will supersede the guidelines listed below.

Collect the following:

- At least two 40 mL glass containers with polytetrafluoroethylene (PTFE)-lined septa and open top screw-caps that are filled to capacity with no air bubbles, preserved to a pH of 2 with HCl, and cooled to 4°C (±2°C) immediately after collection. DO NOT FREEZE THE SAMPLES.
- If Selected Ion Monitoring (SIM) analysis is requested, at least two additional 40 mL glass containers with PTFE-lined septa and open top screw-caps that are filled to capacity with no air bubbles, preserved to a pH of 2 with HCl, and cooled to 4°C (±2°C) immediately after collection.

Test for Carbonates, Residual Chlorine, Oxidants, and Sulfides:

- It is very important that samplers obtain Regional guidance when testing and ameliorating for:
  - Carbonates;
  - Residual chlorine (e.g., municipal waters or industrial waste waters that are treated with chlorine prior to use or discharge); or
  - Oxidants.
- VOA samples containing carbonates react with the acid preservative causing effervescence (due to formation of carbon dioxide), which can cause loss of volatile analytes.
- Residual chlorine present in VOA samples can continue to react with dissolved organic matter. This continuous reaction may lead to inaccurate quantitation of certain analytes present in the sample at the time of collection.
- Residual chlorine and oxidants present in VOA samples can cause degradation of certain volatile analytes (e.g., styrene).

Perform the following for *Pre-Preserved* Vials:

1. Pour the sample slowly down the edge of the sample vial to avoid excess aeration or agitation of the sample during filling.
2. Fill the vial completely so that a reverse (convex) meniscus is present and ensure that there are no air bubbles present (either in the body or especially at the top of the vial).
3. Place the septum on the vial so that the PTFE side is in contact with the sample, and then firmly tighten the cap.
4. Gently flip the vial a few times to ensure that the sample is mixed with the acid preservative.
5. While holding the vial upright, gently tap the sample to check for air bubbles (either in the body or especially at the top of the vial).
6. If air bubbles are present, discard the sample and select a new vial in which to recollect a new sample. Repeat Steps 1 - 5 above.
7. Do NOT mix or composite samples for VOAs.
8. Cool sample to a temperature of 4°C (±2°C). Samplers should begin the cooling process in the field as samples are being collected. Double-bagged ice should be used. DO NOT FREEZE WATER SAMPLES.
9. Immediately transfer the vial to the sample shuttle (device that contains a "set" of VOA vials) once it has been collected. Do NOT allow ice to touch the vials.

Perform the Following for *Empty* Vials:

1. Rinse the vial with sample water prior to actual sample collection and preservation.

Regions vary in their approach to pre-rinsing and/or re-using sample vials (e.g., some Regions do not recommend pre-rinsing and/or re-use of pre-cleaned containers using sample water). Be sure to follow Regional guidance.

2. Add 1-2 mL of acid preservative to the vial. Check to ensure that the sample you are collecting requires a preservative (follow Regional guidance).
3. Pour the sample slowly down the edge of the sample vial to avoid excess aeration and agitation of the sample.
4. Fill the vial completely so that a reverse (convex) meniscus is present and ensure that there are no air bubbles present (either in the body or especially at the top of the vial).
5. Place the septum on the vial so that the PTFE side is in contact with the sample, and then firmly tighten the cap.
6. Gently flip the vial a few times to ensure that the sample is mixed with the acid preservative.
7. While holding the vial upright, gently tap the vial to check for air bubbles (either in the body or especially at the top of the vial).
8. If air bubbles are present, discard the sample and recollect a new sample using the same sample vial. Repeat Steps 1 - 7 above.
9. Check the recollected sample for air bubbles. If air bubbles are present, additional sample water may be added to the vial to eliminate air bubbles. If there are air bubbles after three consecutive attempts to eliminate air bubbles by the addition of sample water, the entire sample and sample vial should be discarded and a new sample collected.
10. Do NOT mix or composite samples for VOAs.
11. Cool sample to a temperature of 4°C (±2°C). Samplers should begin the cooling process in the field as samples are being collected. Double-bagged ice should be used. DO NOT FREEZE WATER SAMPLES.
12. Immediately transfer the vial to the sample shuttle (device which contains a "set" of VOA vials) once it has been collected. Do NOT allow ice to touch the vials.

Things to Remember:

- Samples must be shipped as soon as possible, preferably on the same day as sample collection to avoid exceeding sample holding times. If overnight transit is not possible, samples should be maintained at 2 - 4°C until they are shipped to the laboratory.
- If samples are not preserved (a requirement for certain analytes), the technical holding time is shortened to 7 days.

Appendix D: Sampling Techniques and Considerations

During a sampling event, the sampler is expected to follow prescribed sampling techniques. The sampler should also be aware of any special sampling considerations, contaminant issues, and sample compositing and mixing methods that could affect their sampling efforts.

Note: Regional guidance will take precedence over any of the techniques and considerations listed below.

D.1 General Sampling Techniques

Information regarding surface water, sediment, soil, and groundwater sampling can be found in many documents including, but not limited to, the following sources:

- Compendium of ERT Surface Water and Sediment Sampling Procedures, EPA/540/P-91/005;
- Compendium of ERT Soil Sampling and Surface Geophysics Procedures, EPA/540/P-91/006;
- Compendium of ERT Groundwater Sampling Procedures, EPA/540/P-91/007;
- Quality Assurance Sampling Plan for Environmental Response (QASPER) software, Version 4.1, ERT; and
- *Requirements for the Preparation of Sampling and Analysis Plans*; United States Army Corps of Engineers, February 1, 2001, EM 200-1-3.

When working with potentially hazardous materials, samplers should follow USEPA and OSHA requirements, specific health and safety procedures, and DOT requirements.

D.2 Special Sampling Considerations

Samplers should refer to Regionally-developed SOPs to obtain specific procedures for properly collecting and preserving samples in the field. For additional guidance regarding sampling for VOAs in soil and water, see Appendices B and C. Samplers should obtain Regional guidance when testing and ameliorating for:

- Carbonates in VOA soil and water;
- Residual chlorine in VOA soil and water, or cyanide water;
- Oxidants in VOA soil and water; or
- Sulfides in cyanide.

D.3 Contaminant Sampling

Certain compounds can be detected in the parts-per-billion (ppb) and/or parts-per-trillion (ppt) range. Extreme care MUST be taken to prevent cross-contamination of these samples. The following precautions should be taken when trace contaminants are a concern:

- Disposable gloves should be worn each time a different location is sampled.
- When collecting both surface water and sediments, surface water samples should be collected first. This reduces the chance of sediment dispersal into surface water, and the resulting loss of surface water sample integrity.
- Sampling should occur in a progression from the least to the most contaminated area, if this information is known to the sampling team.
- Samplers should use equipment constructed of PTFE, stainless steel, or glass that has been properly pre-cleaned for collection of samples for trace organic and/or inorganic analyses. Equipment constructed of plastic or polyvinyl chloride (PVC) should NOT be used to collect samples for trace organic compound analyses.
- Equipment constructed of stainless steel should NOT be used to collect samples for trace metals analysis.

D.4 Sample Compositing

Sample compositing is a site-specific activity that must be conducted according to the SAP. Compositing is typically used for large sites under investigation to improve the precision (i.e., lower the variance) of the estimated average contaminant concentrations. **Samples for VOA analysis should NOT be composited to minimize loss of VOAs/analytes.**

Composite samples consist of a series of discrete grab samples that are mixed together to characterize the average composition of a given material. The discrete samples are usually of equal volume, but may be weighted to reflect an increased flow or volume. Regardless, all discrete samples must be collected in an identical manner and the number of grab samples forming a composite should be consistent. There are several compositing techniques that may be required such as:

- Flow-proportioned – Collected proportional to the flow rate during the compositing period by either a time-varying/constant volume or a time-constant/varying volume method. This technique is usually associated with wastewater or storm water runoff sampling.
- Time – Composed of a varying number of discrete samples collected at equal time intervals during the compositing period. This technique is typically used to sample wastewater and streams, and in some air sampling applications.
- Areal – Collected from individual grab samples collected in an area or on a cross-sectional basis. Areal composites are comprised of equal volumes of grab samples where all grabs are collected in an identical manner. This technique is typically used for estimating average contaminant concentrations in soils or sediments. This technique is useful when contaminants are present in nugget form (i.e., TNT chunks, lead shot, etc.), thus exhibiting large differences in concentration over a small sample area.
- Vertical – Collected from individual grab samples but taken from a vertical cross section. Vertical composites are comprised of equal volumes of grab samples where all grab samples are collected in an identical manner. Examples would include vertical profiles of a soil borehole or sediment columns.
- Volume – Collected from discrete samples whose aliquot volumes are proportional to the volume of sampled material. Volume composites are usually associated with hazardous waste bulking operations where the sample represents combined or bulked waste.

When compositing solid samples (i.e., sediment, soil, or sludge) for analysis of compounds present in trace quantities, use a stainless steel or PTFE bowl and spatula.

D.5 Sample Mixing and Homogenizing

Mixing of the sample for the remaining parameters is necessary to create a representative sample media. It is extremely important that solid samples be mixed as thoroughly as possible to ensure that the sample is as representative as possible of the sample location. Please refer to the project-specific SAP regarding instructions on removal of any extraneous materials (e.g., leaves, sticks, rocks, etc.). The mixing technique will depend on the physical characteristics of the solid material (e.g., particle size, moisture content, etc.). The mixing container should be large enough to hold the sample volume and accommodate the procedures without spilling. Both the mixing container (generally a bowl or tray) and the mixing implement should be properly decontaminated before use. Samples should be homogenized according to procedures listed in the project-specific SAP.

Samples for VOA analysis should not be mixed to minimize loss of volatile analytes.

Table D-1 provides a short procedure for mixing a soil sample with a small particle size (less than 1/4 in) and filling sample containers in the field.

Table D-1. Mixing a Sample and Filling Sample Containers

Step	Action
1	Roll the contents of the compositing container to the middle of the container and mix.
2	Quarter the sample and move to the sides of the container.
3	Mix each quarter individually, then combine and mix OPPOSITE quarters, then roll to the middle of the container.
4	Mix the sample once more, and then quarter the sample again.
5	Mix each quarter individually, then combine and mix ADJACENT corners, then roll to the middle of the container. The goal is to achieve a consistent physical appearance before sample containers are filled.
6	Flatten piled material into an oblong shape.
7	Using a flat-bottomed scoop, collect a strip of soil across the entire width of the short axis and place it into a sample container.
8	Repeat Step 7 at evenly-spaced intervals until the sample containers are filled.
9	Record the approximate quantity of each subsample in the field log book.

Appendix E: Sampling Checklists

Appendix E-1: Personnel Preparation Checklist
(Page 1 of 1)

Personnel Briefing	Yes	No	Comments:
1. Did you review sampling team responsibilities and identify individual(s) responsible for corrective actions?			
2. Did you ensure that you have met the appropriate personal safety and protection requirements?			
3. Did you identify sampling locations and receive permission to access them, as appropriate?			
4. Did you contact the appropriate utility companies PRIOR to the start of sampling? Note: By law, utility companies must be contacted prior to the start of digging/sampling so that any underground utilities (gas lines, water lines, electrical lines, etc.) can be marked. A list of one-call centers for each state may be found at: http://www.digsafely.com/contacts.htm.			
5. If sampling on private property, do you have sample receipts to provide to the property owner for all samples taken and removed from the property?			
6. Have you determined the number and type of samples to be collected?			
7. Did you review sample collection methods?			
8. Have you reviewed sample container requirements?			
9. Did you review decontamination requirements, procedures, and locations?			
10. Did you determine holding times and conditions?			
11. Did you determine Performance Evaluation (PE) and Quality Control (QC) sample requirements?			
12. Have you obtained shipping cooler temperature blanks, if required?			
13. Did you review sample label and tag requirements?			
14. Did you review Traffic Report/Chain of Custody (TR/COC) Record and custody seal requirements?			
15. Have you obtained the laboratory name, shipping addresses, and telephone number?			
16. Did you review cooler return instructions?			
17. Have you obtained shipping company information (name, telephone number, account number, pickup schedule)?			
18. Have you obtained shipping schedules?			
19. Did you review shipment reporting requirements and the appropriate contact names and telephone numbers for reporting?			
20. Have you included any sampler comments regarding sampling issues (e.g., low volumes, matrix, suspected concentrations based on field measurements)?			

Appendix E-2: General Sample Collection Checklist

(Page 1 of 1)

General Sample Collection	Yes	No	Comments:
1. Did you identify and mark the sampling location with buoys, flags, or stakes according to the sampling plans, maps, and grids?			
2. If the sampling location is inaccessible, did you contact the appropriate field or Regional personnel for instructions?			
3. Did you use the correct sampling equipment?			
4. Did you follow the correct decontamination procedures?			
5. Did you follow the correct collection procedures?			
6. Did you use the correct sample containers for each sample collected?			
7. Did you collect the correct volume for each sample?			
8. Did you collect the correct type of sample, including primary samples and Quality Control (QC) samples?			
9. Did you properly preserve each sample collected?			
10. Did you correctly document and label each sample with all necessary information? Under no circumstances should the site name appear on any documentation being sent to the laboratory.			
11. If sampling on private property, did you provide a sample receipt to the owner of the property for all samples taken and removed from the property?			

Appendix E-3: Completing Field Logbook Checklist

(Page 1 of 1)

Completing Field Logbook	Yes	No	Comments:
1. Did you use waterproof ink when writing in the field logbook?			
2. Did you document sampling project information such as: • Project name, ID, and location; • Names of samplers; • Geological observations, including maps; • Atmospheric conditions; • Field measurements; and • Sampling dates, times, and locations? Under no circumstances should the site name appear on any documentation being sent to the laboratory.			
3. Did you record sampling activity information such as: • Sampling dates and times; • Sample identifications; • Sample matrices; • Sample descriptions (e.g., odors and/or colors); • Number of samples taken; • Sampling methods/equipment; and • Description of QC samples?			
4. Did you document any and all deviations from the sampling plan?			
5. Did you document any and all difficulties in sampling and/or any unusual circumstances?			
6. Were all errors corrected by crossing a line through the error, initialing the error, dating the error, and then adding the correct information?			

Appendix E-4: Completing Handwritten Sample Labels Checklist

(Page 1 of 1)

Completing Handwritten Sample Labels	Yes	No	Comments:
1. Did the Region provide CLP Sample Numbers and SMO-assigned Case Numbers?			
2. If additional CLP Sample Numbers were needed, did you contact the appropriate Regional personnel?			
3. Were the CLP Sample Numbers and SMO-assigned Case Numbers on the labels correct? Organic CLP Sample Numbers begin with the Regional letter code, followed by letters and numbers. Inorganic CLP Sample Numbers begin with "M", followed by the Regional letter code, and then letters and numbers. Note: The following characters are not used in generating CLP Sample Numbers and should never appear on any paperwork send to the laboratory: I; O; U; and V. Also, the last character of a CLP Sample Number will never be a letter.			
4. Were samples uniquely numbered and designated to only one sample? Note: Samples collected for total metal and dissolved metal analyses must receive separate, unique, CLP Sample Numbers.			
5. Were Quality Control (QC) samples numbered accordingly?			
6. Were the specific requirements followed for total and dissolved metals analysis, QC and Performance Evaluation (PE) samples, and SW-846 Method 5035A?			
7. Were all temperature blanks labeled with "TEMPERATURE BLANK"?			
8. Was a sample label containing the CLP Sample Number, SMO-assigned Case Number, location, concentration, preservative, and the fraction/analysis, attached to each sample bottle or container as the sample was collected? Under no circumstances should the site name appear on any documentation being sent to the laboratory.			
9. Was clear tape placed over the sample labels to protect the labels from moisture and to help the labels adhere to the sample bottle?			
10. Were all errors corrected by crossing a line through the error, initialing the error, dating the error, and then adding the correct information?			

Appendix E-5: Completing Handwritten Sample Tags & Custody Seals Checklists

(Page 1 of 1)

Completing Handwritten Sample Tags	Yes	No	Comments:
1. Was waterproof ink used on the sample tags?			
2. If Regionally required for individual sample containers, was the project code on the sample tag completed?			
3. Was the station number on the sample tag completed?			
4 Was the date filled in using the format MM/DD/YYYY?			
5. Was the time of sample collection indicated in military time format HH:MM?			
6. Was the box checked indicating composite or grab sample?			
7. Was the station location on the sample tag completed?			
8. Did you indicate whether or not the sample was preserved by checking "yes" or "no?"			
9. Was the appropriate analysis indicated on the sample tag?			
10. Were the appropriate CLP Sample Number and SMO-assigned Case Number indicated and cross-referenced with the numbers on the sample label?			
11. Did you sign the sample tags?			
12 Did you attach the sample tag to the neck of the sample bottle with striang, stretch string, or wire (recommended method)? Do **NOT** use wire to attach a sample tag to a metal sample.			
13. Were all errors corrected by crossing a line through the error, initialing the error, dating the error, and then adding the correct information?			
Completing Custody Seals	**Yes**	**No**	**Comments:**
1. Did you sign and date the custody seal?			
2. Did you attach a completed custody seal to the sample bottle, container, or plastic bag, placing the seal over the cap or lid of each sample bottle or container or on the bag opening such that it will be broken if the sample bottle, container, or bag is opened or tampered with?			
3. As appropriate, did you attach the completed custody seal to the sample shipping container or cooler, placing the seal such that it will be broken if the container or cooler is opened or tampered with?			
4. Were all errors corrected by crossing a line through the error, initialing the error, dating the error, and then adding the correct information?			

Appendix E-6: Packing Sample Container Checklist

(Page 1 of 1)

Packing Sample Container	Yes	No	Comments:
1. Did you follow all State, Federal, Department of Transportation (DOT), and International Air Transportation Association (IATA) regulations governing the packaging of environmental and hazardous samples? Note: If samples contain methanol preservation (e.g., samples to be analyzed by SW-846 Method 5035A), refer to the packaging instructions in Appendix A.			
2. Were all CLP Sample Numbers, SMO-assigned Case Numbers, fractions/analyses, labels, tags, and custody seals attached to the correct sample containers?			
3. Was an inventory conducted of CLP Sample Numbers, SMO-assigned Case Numbers, fractions/analyses, and containers, and verified against the TR/COC Records?			
4. Were the correct number and type of Performance Evaluation (PE) and Quality Control (QC) samples collected?			
5. Were all sample containers sealed in clear plastic bags with the sample label and tag visible through the packaging?			
6. Were all soil/sediment samples known to contain dioxin securely enclosed in metal cans (e.g., paint cans) with the lids sealed?			
7. Was suitable absorbent packing material placed around the sample bottles or containers?			
8. Were the outsides of metal containers labeled properly with the CLP Sample Number, SMO-assigned Case Number, and the fraction/analysis of the sample inside?			

Appendix E-7: Packing Shipping Container Checklist

(Page 1 of 1)

Packing Shipping Container	Yes	No	Comments:
1. Were you shipping samples in a clean waterproof metal or hard plastic ice chest or cooler in good condition?			
2. Were all non-applicable labels from previous shipments removed from the container?			
3. Were all inside and outside drain plugs closed and covered with suitable tape (e.g., duct tape)?			
4. Was the inside of the cooler lined with plastic (e.g., large heavy-duty garbage bag)?			
5. Was the lined shipping cooler packed with noncombustible absorbent packing material?			
6. Were sample containers placed in the cooler in an upright position not touching one another?			
7. Was a sample shipping cooler temperature blank included in the cooler?			
8. Did the documentation in the cooler only address the samples in that cooler?			
9. Was the site name absent from all documentation? Under no circumstances should the site name appear on any documentation being sent to the laboratory.			
10. Was there sufficient packing material around and in between the sample bottles and cans to avoid breakage during transport?			
11. If required, was double-bagged ice placed on top and around sample bottles to keep the samples cold at 4°C (± 2° C)? Do Not Pack Loose Ice Into the Cooler!			
12. Was the top of the plastic liner fastened and secured with tape?			
13. Was a completed custody seal placed around the top of the fastened plastic liner (if required by the Region)?			
14. Were all sample documents enclosed within the cooler (e.g., TR/COC Record and cooler return instructions) in a waterproof plastic bag?			
15. Was the plastic bag, containing the documentation, taped to the underside of the cooler lid?			
16. Were cooler return instructions and airbills, if required, taped to the underside of the cooler lid?			
17. Was the return address of the cooler written with permanent ink on the underside of the cooler lid?			
18. Was tape placed around the outside of the entire cooler and over the hinges?			
19. Were the completed custody seals placed over the top edge of the cooler so the cooler cannot be opened without breaking the seals?			
20. Was the return address label attached to the top left corner of the cooler lid?			
21. Were instructional labels attached to the top of the cooler, as necessary (e.g., "This End Up," "Do Not Tamper With," or "Environmental Laboratory Samples")?			
22. If shipping hazardous samples, were the correct labels attached to the cooler (e.g., "Flammable Liquids", "Caution", or "Poison")?			
23. If shipping samples containing methanol as a preservative (e.g., samples to be analyzed by SW-846 Method 5035A), was a label used to indicate methanol, the United Nations (UN) identification number for methanol (UN 1230), and Limited Quantity?			

Appendix E-8: Shipping & Reporting CLP Samples Checklist

(Page 1 of 1)

Shipping CLP Samples	Yes	No	Comments:
1. Did you follow all State, Federal, Department of Transportation (DOT), and International Air Transportation Association (IATA) regulations governing the shipment of environmental and hazardous samples?			
2. Was a separate airbill filled out for each cooler being shipped?			
3. Was the airbill filled out completely, including correct laboratory name, address, and telephone number, identification of recipient as "Sample Custodian," and appropriate delivery option (e.g., overnight or Saturday)?			
4. Was the completed airbill attached to the top of the cooler with the correct laboratory address?			
5. If more than one cooler was being shipped to the same laboratory, were they marked as "1 of 2," "2 of 2," etc.?			
6. Were the samples being shipped "overnight" through a qualified commercial carrier?			
Reporting CLP Samples	**Yes**	**No**	**Comments:**
1. Did you contact the Contract Laboratory Program Sample Management Office (SMO) on the same day samples were shipped?			
2. If the samples were shipped after 5:00 PM Eastern Time (ET), were they reported to the RSCC (or designee) or to SMO by 8:00 AM ET the following business day?			
3. Did you notify the RSCC (or designee) or SMO so that SMO will receive the delivery information by 3:00 PM ET on Friday for sample shipments that will be delivered to the laboratory on Saturday?			
4. Did you provide the RSCC (or designee) or SMO with: • Your name, phone number, and Region number; • Case Number of the project; • Exact number of samples, matrix(ces), concentration(s), and type of analysis; • Laboratory(ies) to which the samples were shipped; • Carrier name and airbill number; • Date of shipment; • Date of next shipment; and • Any other information pertinent to the shipment?			

Appendix F: Glossary

Analyte -- The element, compound, or ion that is determined in an analytical procedure; the substance or chemical constituent of interest.

Analytical Services Branch (ASB) -- Directs the Contract Laboratory Program (CLP) from within the United States Environmental Protection Agency's (USEPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) in the Office of Solid Waste and Emergency Response (OSWER).

Aroclor -- Polychlorinated biphenyls (PCBs) or a class of organic compounds with 1 to 10 chlorine atoms attached to biphenyl and a general chemical formula of $C_{12}H_{10-x}Cl_x$. PCBs, commercially produced as complex mixtures containing multiple isomers at different degrees of chlorination, were marketed in North America under the trade name Aroclor.

Case -- A finite, usually predetermined, number of samples collected over a given time period from a particular site. Case Numbers are assigned by the Sample Management Office (SMO). A Case consists of one or more Sample Delivery Groups (SDGs).

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) -- Initiated in December 1980, CERCLA provided broad federal authority to respond directly to the release or possible release or hazardous substances that may endanger human health or the environment. CERCLA also established a trust fund to provide for cleanup when no responsible party could be identified; hence CERCLA is commonly referred to as "Superfund".

Contract Laboratory Program (CLP) -- A national program of commercial laboratories under contract to support the USEPA's nationwide efforts to clean up designated hazardous waste sites by providing a range of chemical analytical services to produce environmental data of known and documented quality. This program is directed by USEPA's Analytical Services Branch (ASB).

Contract Laboratory Program Project Officer (CLP PO) -- Monitors technical performance of the contract laboratories in each Region.

Contract Laboratory Program Sample Management Office (CLP SMO) -- A contractor-operated facility operated under the CLP, awarded and administered by the USEPA, which provides necessary management, operations, and administrative support to the CLP. SMO coordinates and schedules sample analyses, tracks sample shipments and analyses, receives and tracks data for completeness and compliance, and processes laboratory invoices.

Custody Seal -- An adhesive label or tape that is used to seal a sample bottle or container that maintains chain-of-custody and that will break if the sample bottle or container is opened or tampered with.

Cyanide (Total) -- Cyanide ion and complex cyanides converted to hydrocyanic acid (HCN) by reaction in a reflux system of a mineral acid in the presence of magnesium ion.

Data Quality Objective (DQO) -- The requirements established to maintain the quality of the data being collected.

Data Validation -- Data validation is based on Region-defined criteria and limits, professional judgment of the data validator, and (if available) the Quality Assurance Project Plan (QAPP) and Sampling and Analysis Plan (SAP).

Equipment Blank -- A sample used to check field decontamination procedures. See Field Blank.

Field Blank -- Any blank sample that is submitted from the field. Each field blank is assigned its own unique USEPA Sample Number. A Field Blank checks for cross-contamination during sample collection, sample shipment, and in the laboratory. A field blank includes trip blanks, rinsates, equipment blanks, etc.

Field Duplicate -- Checks reproducibility of laboratory and field procedures and indicates non-homogeneity.

Field Operations Reporting Management System (FORMS) II Lite -- A stand-alone, Windows-based software application that enables samplers to automatically create and generate sample documentation both prior to and during a sampling event.

Field QC Sample -- Used to detect for contamination or error in the field.

Field Sample -- Primary sample material taken out in the field from which other samples, such as duplicates or split samples are derived. A field sample can be prepared in the field and sent for analysis in one or multiple containers, and is identified by a unique EPA Sample Number.

Field Sampling Plan (FSP) -- Developed to outline the actual steps and requirements pertaining to a particular sampling event, and explains, in detail, each component of the event to all involved samplers.

Holding Time -- The elapsed time expressed in hours, days, or months from the date of collection of the sample until the date of its analysis.

Contractual -- The lengths of time that the CLP laboratory must follow to comply with the terms of the contract, and are described in the CLP analytical services Statements of Work (SOWs).

Technical -- The maximum lengths of time that samples may be held from time of collection to time of preparation and/or analysis and still be considered valid.

Laboratory Blank -- See Method Blank.

Laboratory Duplicate -- A sample required by the laboratory's contract to check the precision of inorganic analyses.

Laboratory QC Sample -- An additional volume of an existing sample, as required by the laboratory's contract, used to detect contamination or error in the laboratory's practices.

Matrix -- The predominant material of which a sample to be analyzed is composed.

Matrix Spike (MS) -- Sample required by the laboratory's contract to check the accuracy of organic and inorganic analyses. It is an aliquot of a sample (water or soil) that is fortified (spiked) with known quantities of a specific compound and subjected to the entire analytical procedure. See Matrix Spike Duplicate.

Matrix Spike Duplicate (MSD) -- Sample required by the laboratory's contract to check the accuracy and precision of organic analyses. It is a second aliquot of the same matrix as the Matrix Spike (MS) that is spiked to determine the precision of the method. See Matrix Spike.

Method Blank -- An analytical control consisting of all reagents, internal standards and surrogate standards [or System Monitoring Compounds (SMCs) for volatile organic analysis], that is carried throughout the entire analytical procedure. The method blank is used to define the level of laboratory, background, and reagent contamination, also referred to as laboratory blank when defining the level of laboratory contamination.

Performance Evaluation (PE) Sample -- A sample of known composition provided by the USEPA for contractor analysis. Used by USEPA to evaluate contractor performance.

Pesticides -- Substances intended to repel, kill, or control any species designated a "pest", including weeds, insects, rodents, fungi, bacteria, and other organisms. Under the CLP, only organochlorine pesticides are analyzed (e.g., DDT, Dieldrin, Endrin, etc.).

Polychlorinated Biphenyls (PCBs) -- A group of toxic, persistent chemicals used in electrical transformers and capacitors for insulating purposes, and in gas pipeline systems as a lubricant. The sale and new use of PCBs were banned by law in 1979.

Quality Assurance (QA) -- An integrated system of management activities involving planning, implementation, assessment, reporting, and quality improvement to ensure that a process, item, or service is of the type and quality needed and expected by the customer.

Quality Assurance Project Plan (QAPP) -- Document written to meet requirements outlined in the document *EPA Guidance for Quality Assurance Project Plans* (EPA QA/R-5). Prepared in advance of field activities and used by samplers to develop any subsequent plans such as the Sampling Analysis Plan (SAP) or the Field Sampling Plan (FSP).

Quality Control (QC) -- The overall system of technical activities that measures the attributes and performance of a process, item, or service against defined standards to verify that they meet the stated requirements established by the customer; operational techniques and activities that are used to fulfill requirements for quality.

Regional Sample Control Center (RSCC) Coordinator -- In most Regions, coordinates sampling efforts and serves as the central point-of-contact for sampling questions and problems. Also assists in coordinating the level of Regional sampling activities to correspond with the monthly projected demand for analytical services.

Regional Site Manager -- Coordinates the development of data quality objectives and oversees project-specific remedial or removal contractors, State officials, or private parties conducting site sampling efforts.

Rinse Blank -- A sample used to check decontamination procedures. Also see Field Blank.

Routine Analytical Service (RAS) -- The standard inorganic and organic analyses available through the CLP.

Sample -- A discrete portion of material to be analyzed that is contained in single or multiple containers, and identified by a unique Sample Number.

Sample Delivery Group (SDG) – A unit within a sample Case that is used to identify a group of samples for delivery. An SDG is defined by the following, whichever is most frequent:

- Each Case of field samples received; or
- Each 20 field samples (excluding PE samples) within a Case; or
- Each 7 calendar day period (3 calendar day period for 7-day turnaround) during which field samples in a Case are received (said period beginning with the receipt of the first sample in the SDG).

In addition, all samples and/or sample fractions assigned to an SDG must have been scheduled under the same contractual turnaround time. Preliminary Results have no impact on defining the SDG. Sample may be assigned to SDGs by matrix (e.g., all soil samples in one SDG, all water samples in another) at the discretion of the laboratory.

Sample Label -- An identification label attached to a sample bottle or container to identify the sample.

Sample Number -- A unique number used to identify and track a sample. This number can be recorded on a sample label or written on the sample bottle or container using indelible ink.

Sample Tag -- A tag attached to a sample that identifies the sample and maintains chain-of-custody.

Sampling Analysis Plan (SAP) -- A document that explains how samples are to be collected and analyzed for a particular sampling event.

Semivolatile Organic Analyte (SVOA) -- A compound amenable to analysis by extraction of the sample using an organic solvent.

Statement of Work (SOW) -- A document that specifies how laboratories analyze samples under a particular Contract Laboratory Program (CLP) analytical program.

Superfund -- The program operated under the legislative authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Superfund Amendments and Reauthorization Act (SARA) that funds and carries out USEPA removal and remedial activities at hazardous waste sites. These activities include establishing the National Priorities List (NPL), investigating sites for inclusion on the list, determining their priority, and conducting and/or supervising cleanup and other remedial actions.

Superfund Amendments and Reauthorization Act (SARA) -- The 1986 amendment to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

Traffic Report/Chain of Custody (TR/COC) Record -- A record that is functionally similar to a packing slip that accompanies a shipment of goods. Used as physical evidence of sample custody and functions as a permanent record for each sample collected.

Trip Blank -- A sample used to check for contamination during sample handling and shipment from field to laboratory. Also see Field Blank.

Volatile Organic Analyte (VOA) -- A compound amenable to analysis by the purge-and-trap technique. Used synonymously with the term purgeable compound.

THIS PAGE INTENTIONALLY LEFT BLANK

ATTACHMENT 12

Daily Quality Control Report

DAILY QUALITY CONTROL REPORT

Site: _____
Project No.: _____
Date: _____
Field Team: _____

Weather (circle)

	Bright Sun	Clear	Overcast	Rain	T-Storm	Snow
Temp:	0 to 32	32 to 50	50 to 70	70 to 85	> 85	
Wind:	Still	Gusty	Moder.	High	Direction:	
Humidity:	Dry	Moder.	Humid			

Subcontractors and Equipment on Site: _____

Health and Safety Levels: (circle)

D	Mod. D	C	B	A

Summary of Health and Safety Activities: _____

Instrument Used: (circle)	PID	LEL	pH	Cond	Therm.	Turbidity	DO	ORP
Calibrated: (check)								

For actual calibration results, see field calibration forms.

Summary of Work Performed: _____

All samples were collected according to the procedures outlined in the planning documents?

Yes _____ No _____

Problems encountered/corrective actions taken: _____

Time Project Manager Contacted: _____

Problems encountered/corrective actions taken: _____

Name: _____ Signature: _____

APPENDIX A

Cornell-Dubilier OU-1 Field Sampling Plan

MALCOLM PIRNIE

Final Field Sampling Plan

Cornell-Dubilier Electronics Superfund Site,
Operable Unit 1: Vicinity Property Pre-Design Sampling
South Plainfield, NJ

For: U.S. Army Corps of Engineers

USACE Contract No. W912DQ-06-D-0006
Task Order No. 0018

March 2008

Prepared by:
Malcolm Pirnie, Inc.
104 Corporate Park Drive
White Plains, New York 10602

U.S. Army Corps of Engineers
Kansas City District

CORNELL-DUBILIER ELECTRONICS SUPERFUND SITE
FINAL FIELD SAMPLING PLAN
FOR OPERABLE UNIT 1 (OU-1)
TABLE OF CONTENTS

1.0 Project Background 1-1

1.1. Site History and Contaminants 1-2

1.2. Summary of Existing Site Data 1-3

1.2.1 Historical Data 1-3

1.2.2 Completed Remedial Actions 1-8

1.3. Site-Specific Definition of Problem 1-10

1.3.1 Environmental Sampling 1-10

1.4. Subject Properties 1-11

2.0 Project Organization and Responsibilities 2-1

3.0 Project Scope and Objectives 3-1

3.1. Task Description 3-1

3.2. Vicinity Property Pre-Remedial Design sampling Report 3-1

3.3. Applicable Regulations/Standards 3-2

3.4. Project Schedule 3-2

4.0 Non-Measurement Data Acquisition 4-1

5.0 Field Activities For OU-1 Properties 5-1

5.1. Shallow Soil Sampling 5-1

5.1.1 Sample Locations 5-1

5.1.2 Sample Collection 5-1

5.1.3 QA/QC Sample Frequency and Collection 5-2

5.1.4 Laboratory Measurement Procedures and Criteria 5-2

5.1.5 Sample Containers and Preservation Techniques 5-3

5.1.6 Decontamination Procedures 5-3

5.2. Interior Dust Sampling 5-3
5.2.1 Sample Locations 5-3
5.2.2 Sample Collection 5-4
5.2.3 QA/QC Sample Frequency and Collection 5-4
5.2.4 Laboratory Measurement Procedures and Criteria 5-4
5.2.5 Sample Containers and Preservation Techniques 5-5
5.2.6 Decontamination Procedures 5-5
5.3. Health and Safety 5-5
5.4. Sample Management and Preservation 5-6

6.0 Field Operations Documentation 6-1

6.1. Non-Conformance/QC Reporting 6-1
6.1.1 Field Logbook, Field Data Sheet, and Calibration Log 6-1
6.2. Photographic Records 6-3
6.3. Sample Documentation 6-3
6.3.1 Sample Identification System 6-3
6.3.2 Sample Labels/Tags 6-4
6.3.3 Chain of Custody Records 6-4

7.0 Sample Packaging and Shipping Requirements 7-1

8.0 Field Investigation Derived Wastes (IDW) 8-1

9.0 Field Assessment/Three-Phase Inspection Procedure 9-1

9.1. Contractor Quality Control 9-1
9.1.1 Field Project Briefing 9-1
9.2. Checklist of Documentation, Sampling Apparatus and Field Instrumentation 9-2

10.0 Non-Conformance/Corrective Actions 10-1

11.0 References 11-1

FIGURES

Figure 1	Site Location Map

ATTACHMENTS

Attachment 1	SOP No. 2: Procedure for Shallow Soil Sample Collection and Processing
Attachment 2	SOP No. 3: Procedure for the Collection of Indoor Dust
Attachment 3	SOP No. 4: Procedure for Conducting Decontamination of Soil Sample Collection Equipment
Attachment 4	SOP No. 7: Procedure for Calibration and Operation of a Photoionization Detector
Attachment 5	Non-Conformance/Quality Control Report
Attachment 6	Instrument Calibration Table and Log
Attachment 7	Field Documentation and Equipment Master List

ABBREVIATIONS AND ACRONYMS

bgs	Below Ground Surface
CDE	Cornell Dubilier Electronics Corporation, Inc.
CEGS	Corps of Engineers Guide Specifications
CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
COPC	Constituents of Potential Concern
COC	Chain-of-Custody
DESA	Division of Environmental Science and Assessment
DOT	United States Department of Transportation
DQO	Data Quality Objective
ER	Engineer Regulation
FS	Feasibility Study
FSP	Field Sampling Plan
GIS	Geographic Information System
GPS	Global Positioning System
HEPA	High Efficiency Particulate Air
IDW	Investigative Derived Waste
MDL	Method Detection Limit
m	meter
mg/kg	Milligrams Per Kilogram
NIOSH	National Institute of Occupational Safety and Health
NJDEP	New Jersey Department of Environmental Protection
NYD	New York District (of the USACE)
OSHA	Occupational Safety and Health Administration
HTRW	Hazardous, Toxic, and Radioactive Waste
OU-1	Operable Unit 1
OU-2	Operable Unit 2
PCB	Polychlorinated Biphenyl
PID	Photoionization Detector

ABBREVIATIONS AND ACRONYMS

PPE	Personal Protective Equipment
ppm	Parts per Million
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
QC	Quality Control
RAOs	Remedial Action Objectives
RI	Remedial Investigation
ROD	Record of Decision
ROW	Right of Way
SOP	Standard Operating Procedure
SOW	Statement of Work
SSHP	Site Safety and Health Plan
SSL	Soil Screening Level
TAT	Turn-around Time
TCL	Target Compound List
TCE	Trichloroethylene
TPCB	Total Polychorinated Biphenyls
TSCA	Toxic Substances Control Act
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
USEPA	United States Environmental Protection Agency

1.0 PROJECT BACKGROUND

The Cornell-Dubilier Electronics Superfund Site (Site) is located at 333 Hamilton Boulevard in South Plainfield, Middlesex County, New Jersey (Figure 1). The Site consists of the former Cornell-Dubilier Electronics Corporation, Inc. (CDE) facility, recently known as the Hamilton Industrial Park, consisting of 26 acres that contained 18 subdivided buildings, contaminated portions of the Bound Brook adjacent to and downstream of the industrial park, and contaminated residential, municipal, and commercial properties in the vicinity of the former CDE facility. The buildings are currently being demolished by the US Environmental Protection Agency (USEPA) under separate contract.

The developed portion of the facility (the northwestern portion) comprises approximately 45 percent of the total land area and contains the remaining buildings, a system of catch basins to channel stormwater flow, and paved roadways. Several of the catch basins drain into a stormwater collection system whose outfalls discharge at various locations along Bound Brook. The other 55 percent of the property is predominantly vegetated. The central part of the undeveloped portion is primarily an open field, with some wooded areas to the northeast and south, and a deteriorated, partially paved area in the middle. The northeast and southeast boundaries consist primarily of wetland areas adjacent to Bound Brook, which flows from the eastern corner across the northeastern border of the undeveloped portion of the facility (Foster Wheeler, 2002).

The USEPA separated the Site into multiple Operable Units. Operable Unit-1 (OU-1) consists of the residential, commercial, and municipal properties in the vicinity of the former Cornell-Dubilier Electronics facility; OU-1 is the focus of this planning document. A Record of Decision (ROD) for OU-1 was signed on September 30, 2003. Operable Unit-2 (OU-2) consists of contaminated facility soils and buildings. A ROD for OU-2 was signed on September 30, 2004. Remedial design and remedial action for OU-2 is underway under separate contract at this time. Operable Unit-3 (OU-3) addresses the contaminated groundwater and Operable Unit-4 (OU-4) addresses contaminated

sediments in the adjacent Bound Brook; the Remedial Investigations/Feasibility Studies (RI/FSs) for OU-3 and OU-4 are ongoing.

The response action selected in the ROD dated September 2003 for OU-1 properties includes:

- Excavation of an estimated 2,100 cubic yards of contaminated soil from approximately 16 properties, backfilling with clean fill, and property restoration, as necessary;
- Transportation of the contaminated soil off-site for disposal, with treatment as necessary;
- Indoor dust remediation where polychlorinated biphenyl (PCB) contaminated dust is encountered; and
- Where necessary, temporary relocation of residents during indoor remediation.

The purpose of this Field Sampling Plan (FSP) is to provide procedures for the collection and analysis of soil and interior dust data for selected properties identified in support of the OU-1 ROD, dated September 2003.

1.1. SITE HISTORY AND CONTAMINANTS

CDE operated at what is now the Hamilton Industrial Park from 1936 to 1962, manufacturing electronic components including capacitors. PCBs and chlorinated organic degreasing solvents were used in the manufacturing process and it has been alleged that during CDE's period of operation, the company disposed of PCB-contaminated materials and other hazardous substances at the facility. A former employee has claimed that the rear of the property was saturated with transformer oils and that capacitors were also buried behind the facility during the same time period (Foster Wheeler, 2002). Based on historic site practices, portions of OU-2 have the potential to be contaminated with asbestos, lead, mercury, PCBs, trichloroethylene (TCE) and dechlorination products, and other constituents of potential concern (COPCs).

The historic practices described above at the former CDE facility (OU-2) raised the concern that nearby areas (OU-1 vicinity properties) had the potential to be contaminated with PCBs via the airborne entrainment of contaminated particulates (*i.e.*, fugitive dust emissions) and/or transport by vehicles (Foster-Wheeler, 2001). Studies performed on vicinity properties (summarized in Section 1.2, below) indicated that contamination from the OU-2 site had migrated to nearby areas. PCBs have been detected in groundwater, soils and in building interiors at the industrial park; at adjacent residential, commercial, and municipal properties; and in surface water and sediments of the Bound Brook (USEPA, 2003).

1.2. SUMMARY OF EXISTING SITE DATA

This section summarizes existing historical data and completed remedial actions for OU-1. The information below was culled from the Foster-Wheeler Final Remedial Investigation Report for OU-1 Off-Site Soils dated August 2002, the OU-1 ROD, other historical reports issued by Roy F. Weston, Inc., and the Draft Cape Environmental Remedial Action Closeout Report dated June 2007. Refer to the referenced report for more detailed information regarding historical data and remedial actions. In some cases, however, the summaries below represent all that was previously presented and no additional details are available.

1.2.1 Historical Data

USEPA Surface Soil Sampling, June 1997

The USEPA conducted soil sampling at residential properties located adjacent to the CDE facility on June 26 and 27, 1997. A total of 23 soil samples [20 environmental and three quality assurance/quality control (QA/QC) samples] were collected from a depth interval of 0 to 3 inches below ground surface (bgs) and analyzed for total lead, total cadmium, and PCBs. Detected concentrations ranged up to 4.8 milligrams per kilogram (mg/kg) for Aroclor 1254, up to 291 mg/kg for total lead, and up to 2.3 mg/kg for total cadmium (Weston, 1997).

USEPA Tier I Residential Soil Sampling, October 1997

The USEPA conducted soil sampling at 16 residential properties located in the vicinity of the CDE facility from October 27 through 30, 1997 as a follow-up to the June 1997 sampling event described above. A total of 363 soil samples (327 environmental and 36 QA/QC) were collected from a depth interval of 0 to 2 inches bgs and analyzed for PCB Aroclors and Total PCBs (Weston, 1998e).

Total PCB (TPCB) concentrations ranged from non-detect to 22 mg/kg, Aroclor 1254 concentrations ranged from non-detect to 22 mg/kg, and Aroclor 1260 concentrations ranged from non-detect to 2.2 mg/kg. The maximum TPCB and Aroclor 1254 concentrations were detected at [redacted] (Property E), and the maximum Aroclor 1260 concentration was detected at [redacted] (Property D). No other Aroclors were detected above their respective method detection limits (MDLs) (Weston, 1998e).

USEPA Interior Dust Sampling, November 1997

The USEPA collected interior dust samples from 12 residential properties located in the vicinity of the CDE facility on November 17 and 18, 1997 using Nilfisk GS-80 High Efficiency Particulate Air (HEPA) vacuums. The samples were analyzed for PCB Aroclors. Between two and four samples were collected from each property for a total of 37 samples (Weston, 1998f).

Twenty-nine of the 37 samples showed levels of weathered Aroclor 1254 above the MDL, with concentrations ranging from 0.12 mg/kg to 120 mg/kg. Ten of the 37 samples showed levels of weathered Aroclor 1260 above the MDL, with concentrations ranging from 0.054 mg/kg to 85 mg/kg. No other Aroclors were detected above their respective MDLs (Weston, 1998f).

USEPA Tier II Residential Soil Sampling, April 1998

The USEPA conducted soil sampling at 15 additional residential properties located in the vicinity of the CDE facility from April 20 through 23, 1998. A total of 325

samples (289 environmental and 36 QA/QC) were collected from a depth interval of 0 to 2 inches bgs and analyzed for PCB Aroclors and TPCB (Weston, 1998b).

TPCB concentrations ranged from non-detect to an estimated maximum of 60 mg/kg, Aroclor 1254 concentrations ranged from non-detect to an estimated maximum of 60 mg/kg, and Aroclor 1260 concentrations ranged from non-detect to an estimated maximum of 10 mg/kg. All maximum concentrations were detected at [redacted] (Property DD). No other Aroclors were detected above their respective MDLs (Weston, 1998b).

USEPA Residential Vacuum Sampling, April 1998

The USEPA collected interior dust samples from 36 residential properties located in the vicinity of the CDE facility from April 21 through 28, 1998 using Nilfisk GS-80 HEPA vacuums. A total of 64 samples were collected and analyzed for PCB Aroclors. Thirty-seven of the 64 samples were initial samples from 27 properties that had not been sampled previously, while the remaining 27 samples were collected at nine properties where PCB contamination had been identified above the action level during the initial November 1997 sampling effort and had subsequently undergone decontamination (Weston, 1998d).

Of the 37 dust samples collected at properties not sampled as part of the initial investigation, one sample showed a concentration of Aroclor 1242 above the MDL (3.6 mg/kg), and 17 samples showed levels of Aroclor 1254 above the MDL, with concentrations ranging from 0.11 mg/kg to 21 mg/kg. The peak ratios for four of the 17 were consistent with weathered Aroclor 1254. Three of the 37 samples showed levels of Aroclor 1260 above the MDL, with concentrations ranging from 0.65 mg/kg to 3.4 mg/kg. The peak ratios for two of the three were consistent with weathered Aroclor 1260. No other Aroclors were detected above their respective MDLs (Weston, 1998d).

Of the 27 dust samples collected at previously sampled properties, six showed levels of Aroclor 1254 above the MDL, with concentrations ranging from 0.13 mg/kg to 27 mg/kg. The peak ratios for two of these samples were consistent with weathered Aroclor 1254. Five samples showed levels of Aroclor 1260 above the MDL, with

concentrations ranging from 0.33 mg/kg to 5.4 mg/kg. The peak ratios for three of the five samples were consistent with weathered Aroclor 1260. No other Aroclors were detected above their respective MDLs (Weston, 1998d).

USEPA Tier III Residential Soil Sampling, May 1998

The USEPA conducted soil sampling at four residential property areas (designated Areas 1 through 4; refer to the Tier III Residential/Neighborhood Sampling and Analysis Summary Report for actual property locations) located in the vicinity of the CDE facility on May 4 and 5, 1998. A total of 82 samples (74 environmental and eight QA/QC) were collected from a depth interval of 0 to 2 inches bgs and analyzed for PCB Aroclors and TPCB. Samples were collected at 100 foot intervals along each of the four areas (Weston, 1998c).

TPCB concentrations ranged from an estimated 0.22 mg/kg to 2.9 mg/kg, Aroclor 1254 concentrations ranged from an estimated 0.22 mg/kg to 2.9 mg/kg, and Aroclor 1260 concentrations ranged from non-detect to 0.75 mg/kg. The maximum TPCB and Aroclor 1254 concentrations were detected at Area 1, and the maximum Aroclor 1260 concentration was detected at Area 2. No other Aroclors were detected above their respective MDLs (Weston, 1998c).

USEPA Commercial Surface Soil and Wipe Sampling and Residential Vacuum Sampling, October 1998

The USEPA conducted interior wipe sampling and exterior soil sampling at 13 businesses located in the vicinity of the CDE facility on October 26 and 27, 1998, and interior dust sampling at six residences on October 28, 1998. A total of 21 wipe samples and seven soil samples were collected from the 13 businesses; the soil samples were collected from five of the 13 properties, and the wipe samples were collected at all 13 properties. Seven dust samples were collected from six residences. Three of the seven residences had been sampled previously and were included to further quantify the level of contamination, as the earlier data showed levels of PCB contamination near the action level. All samples were analyzed for PCB Aroclors (Weston, 1998a).

No PCBs were detected above the MDL in any of the wipe samples. All seven soil samples showed levels of Aroclor 1254 above the MDL, with concentrations ranging from 0.120 mg/kg to 7.1 mg/kg. The peak ratios for one sample were consistent with weathered Aroclor 1254. All seven dust samples showed levels of Aroclor 1254 above the MDL, with concentrations ranging from 0.230 mg/kg to 39 mg/kg. The peak ratios for all samples were consistent with weathered Aroclor 1254. No other Aroclors were detected above their respective MDLs (Weston, 1998a).

USEPA Tier I Residential Soil Sampling (Addendum), November 1998

The USEPA conducted soil sampling at one additional property located in the vicinity of the CDE facility on November 14, 1998. A total of 35 soil samples (31 environmental and four QA/QC) were collected from a depth interval of 0 to 2 inches bgs and were analyzed for PCB Aroclors and TPCB (Weston, 1999).

TPCB concentrations ranged from 0.34 mg/kg to an estimated maximum of 6.2 mg/kg, Aroclor 1254 concentrations ranged from 0.310 mg/kg to 6 mg/kg, and Aroclor 1260 concentrations ranged from an estimated minimum of 0.066 mg/kg to 0.56 mg/kg. No other Aroclors were detected above their respective MDLs (Weston, 1999).

Foster-Wheeler Remedial Investigation – 2000

Soil sampling for the Foster-Wheeler RI investigation was performed from June 12, 2000 through August 1, 2000 (Foster-Wheeler, 2001). Soil samples were collected from 19 individual properties, and right-of-way (ROW) soil samples were taken from 13 roadways in the vicinity of the CDE facility, including areas within the Bound Brook Floodplain located northwest of the CDE facility. ROW samples were generally located within the two feet of property adjacent to the curb. Individual property and ROW soil samples were collected at two depth intervals: 0 to 2 inches bgs, and between 4 and 18 inches bgs (USEPA, 2003).

Some of the 19 individual properties were located in areas where previous testing had indicated a higher likelihood of finding elevated PCB levels, while others were situated further from the CDE facility where no elevated PCB levels were anticipated.

The ROW samples were collected from areas around the CDE facility to provide a broader scope to the investigation and identify PCB distribution trends that would not be found by sampling only individual properties (USEPA, 2003).

A total of 864 samples (630 shallow environmental, 177 deep environmental, 38 duplicate samples, and 19 field blanks) were analyzed for Target Compound List (TCL) PCBs by the USEPA Contract Laboratory Program (CLP) Statement of Work (SOW) OLM04.2 (Foster-Wheeler, 2001).

PCB concentrations ranged from non-detect to 310 mg/kg. A total of nine properties sampled had at least one sample which exceeded the USEPA Soil Screening Level (SSL) for direct ingestion of soil and dermal contact of 1 mg/kg TPCB. Twenty of the 25 samples that exceeded the SSL were collected from a depth interval of 0 to 2 inches bgs, while the remaining five were taken from between 4 and 18 inches bgs (Foster-Wheeler, 2001).

1.2.2 Completed Remedial Actions

Site Stabilization, March 1997

A unilateral administrative order was issued on March 25, 1997 to D.S.C. of Newark Enterprises, Inc. (the owner of the Hamilton Industrial Park at that time) that required a removal action be undertaken to stabilize the former CDE facility (OU-2). The scope of work included paving facility driveways and parking areas, installing security fencing and warning signs to limit access to the site, and installing silt fencing to limit off-site migration of surface soils (Foster-Wheeler, 2001, USACE 2003).

Interior Cleaning, March 1998

USEPA initiated a removal action on March 29, 1998 to clean the interiors of homes where PCBs were found in indoor dust at levels of potential health concern (*i.e.*, above the risk range used in the Superfund Program; Foster-Wheeler, 2001).

Soil Removal and Disposal, August 1998

On August 6, 1998, CDE and D.S.C. of Newark Enterprises, Inc. entered into an Administrative Order on Consent for a removal action that included the removal and disposal of contaminated soil from five Tier I residential properties and delineation of the vertical and horizontal extent of PCB contamination at one additional property. These properties included: [address redacted] (Foster-Wheeler, 2001, USEPA, 2003).

Soil Removal, February 1999

On February 23, 1999, the USEPA ordered the former owners, CDE and Dana Corporation, to conduct a removal action at seven Tier II residential properties, including [address redacted] (Foster-Wheeler, 2001, USEPA 2003).

Tier II Property Remediation, April 1999

On April 28, 1999, a "Participate and Cooperate Order" was issued to D.S.C. of Newark Enterprises, Inc. and Federal Pacific Electric Company for the remediation of Tier II residential properties (Foster-Wheeler, 2001, USEPA 2003).

Soil Removal, April 2000

On April 14, 2000, the USEPA ordered D.S.C. of Newark Enterprises, Inc. to remove contaminated soils at 126 Spicer Avenue (Foster-Wheeler, 2001). D.S.C. agreed to perform the work required, but had failed to do so as of September 2003 (USEPA, 2003). This work was subsequently performed by the USEPA, using federal funds. The remediation of this property was completed in September 2004.

Cape Environmental Remedial Action, 2005

In November 2005, Cape Environmental, under contract to the US Army Corps of Engineers (USACE), established the initial limits of excavation for four OU-1 properties identified in the September 2003 ROD as requiring the excavation of PCB-contaminated soil. The initial excavation limits for three of the properties were established using data from Foster-Wheeler's 2000 RI investigation, and those for the fourth were defined using data collected by Weston in 1997. Based on the initial delineation using existing data, excavation was performed in November 2005 at [address redacted]

Subsequent confirmation sampling at all four properties indicated that additional soil removal was necessary. Data gap samples were collected, and the remaining inventory was delineated based on the results (Cape, 2007). Contaminated soils were subsequently excavated from [address redacted] in April 2007.

A total of 2,326.82 tons of soil were removed and disposed of as non-hazardous/non-Toxic Substances Control Act (TSCA) soil and debris (Cape, 2007).

1.3. SITE-SPECIFIC DEFINITION OF PROBLEM

This FSP outlines sampling activities associated with the pre-remedial design sampling activities of the shallow soils and indoor dust at OU-1 vicinity properties.

1.3.1 Environmental Sampling

Previous investigations at OU-1 (performed by others) have included soil sampling performed within individual property limits and/or within adjacent ROWs.

In order to comply with the Selected Remedy described in the ROD, this FSP addresses a supplemental soil and indoor dust investigation that includes the sampling necessary to identify PCBs at OU-1 vicinity properties which have either 1) not been sampled previously but are adjacent to ROW samples that exceed ROD criteria, or 2) have been sampled previously, but additional data is required to adequately characterize

PCBs in soils or in indoor dust. Details on the field sampling program are included in Section 5.0.

1.4. SUBJECT PROPERTIES

The September 2003 ROD identifies approximately 59 properties where additional sampling is required. Additional sampling requirements of the ROD are addressed by this FSP and the associated Quality Assurance Project Plan (QAPP). Subsequent sampling needs may be determined based on results of the data collection undertaken as part of these pre-remedial design sampling activities, or for other reasons as determined by the USEPA.

2.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

The project will be staffed by Malcolm Pirnie. Project personnel were selected on the basis of appropriate skills, experience and availability. The Malcolm Pirnie organizational structure for this project and project personnel responsibilities are shown on Worksheet 5 and Figure 1 of the QAPP.

3.0 PROJECT SCOPE AND OBJECTIVES

3.1. TASK DESCRIPTION

This FSP presents the technical approach for conducting data collection as part of the pre-remedial design sampling activities of the OU-1 vicinity properties. This document addresses the following sampling programs:

- Shallow soil sampling.
- Indoor dust sampling.

3.2. VICINITY PROPERTY PRE-REMEDIAL DESIGN SAMPLING REPORT

Malcolm Pirnie will provide a detailed Vicinity Property Pre-Remedial Design Sampling Report to the USACE upon completion of field activities. The report will be submitted in both Draft and Final formats, and will outline findings at each of the properties investigated. The Draft and Final Reports will address the following:

- Site history.
- Data quality objectives.
- Field and laboratory data and analyses.
- Tabulated chemical/physical contaminant data for each sample (including the location, media sampled and detected concentrations).
- Photographic log.
- Summary of adjacent properties investigation results.
- Data Assessment, including recommendations for additional sampling, if necessary.
- Conclusions.

3.3. APPLICABLE REGULATIONS/STANDARDS

This FSP was developed to address environmental/chemical contamination data collection necessary to support remedial action of vicinity property soils and indoor dust. The collection of environmental/chemical contaminant data supports the Data Quality Objectives (DQOs) provided in Attachment 1.1 to the Quality Assurance Project Plan (QAPP), which were developed in accordance with the Remedial Action Objectives (RAOs) of the ROD.

3.4. PROJECT SCHEDULE

The implementation of this FSP will be conducted in accordance with the master project schedule as maintained by USACE and the Malcolm Pirnie Project Managers.

4.0 NON-MEASUREMENT DATA ACQUISITION

There are no non-measurement tasks included in this investigation; however, historical data presented in the Tier I, Tier II, and Tier III Residential Sampling Analysis and Summary Reports (Weston, 1997, 1998a-f, 1999) and the Final Remedial Investigation Report (Foster-Wheeler, Inc., August 2001) will be examined and utilized, if appropriate. These historical data are summarized in Section 1.2 of this document and in Worksheet 13 of the QAPP.

5.0 FIELD ACTIVITIES FOR OU-1 PROPERTIES

FSP activities at OU-1 vicinity properties will aid in identifying the presence and extent of PCB contamination in soils and indoor dust at the OU-1 properties. Standard Operating Procedures (SOPs) that are applicable to each field activity are provided in the following sections.

5.1. SHALLOW SOIL SAMPLING

Soil samples will be collected for the purposes of environmental characterization. It is anticipated that approximately 30 or more of the 59 properties identified in the 2003 ROD as requiring further investigation will be sampled during these pre-remedial design sampling activities; however, the specific list of properties will be determined by the USEPA.

5.1.1 Sample Locations

Individual sampling locations on each property will be selected by the USEPA, USACE-New York District (NYD), and Malcolm Pirnie during an initial visit to the property. It is expected that current site use by the property owner/tenant will help dictate specific sample locations, as will engineering judgment of the reconnaissance team. During the initial site visit, sample locations will be marked on a property-specific map prepared prior to the visit, and specific requirements for each boring will be identified (*i.e.*, number of samples, depth of samples).

5.1.2 Sample Collection

It is anticipated that 15 soil samples will be collected from each property: 10 samples from the 0 to 6 inch bgs depth interval, and five samples from the 24 to 30 inch bgs depth interval. The 15 samples will be collected from a total of 10 identifiable locations: five of the 10 locations will have only a 0 to 6 inch bgs depth interval sample

collected, and five of the 10 locations will have a 0 to 6 inch bgs depth interval sample and a 24 to 30 inch bgs depth interval sample.

If refusal is encountered before the desired depth is reached for any sample, the sampling team may attempt to collect the sample at an alternate location within 5 feet of the original sampling point. The sampling team may make up to three attempts to re-locate and collect a sample; if efforts still encounter refusal after the third attempt, the Field Team Leader may choose to abandon the location (if the sample is to be collected from the 0 to 6 inch bgs depth interval) or may elect to sample from a shallower depth (*e.g.*, from the 18 to 24 inch bgs depth interval if the 24 to 30 inch bgs sample cannot be collected).

Sample collection will be conducted as described in Attachment 1, SOP No. 2: Procedure for Shallow Soil Collection and Processing. Photoionization detector (PID) readings will be taken from each sample in accordance with Attachment 4, SOP No 7: Procedure for Calibration and Operation of a Photoionization Detector. Samples will be sent to a laboratory for PCB Aroclor analysis. Worksheet Nos. 12 and 15 of the QAPP provide a detailed listing of the PCB Aroclors for which the sample will be analyzed.

5.1.3 QA/QC Sample Frequency and Collection

For QA/QC purposes, field QC samples will be collected in accordance with Worksheet No. 20 of the QAPP. Duplicate samples will be collected by splitting a soil sample into two parts and jarring them separately. Each jar will then be labeled with non-sequential sample numbers and sent to the laboratory for analysis. The specific location of each duplicate sample will be based on the discretion of the Field Team.

5.1.4 Laboratory Measurement Procedures and Criteria

Analyses will be conducted in accordance with the analytical methods described in Worksheet No. 15 in the QAPP.

5.1.5 Sample Containers and Preservation Techniques

Soil samples will be containerized in certified clean sample jars for transport to the laboratory. Samples will be preserved as described in Worksheet No. 19 in the QAPP.

5.1.6 Decontamination Procedures

Each time a sample is collected, a new pair of disposable nitrile gloves will be used to prevent cross-contamination. Non-dedicated equipment will be decontaminated between samples. Equipment decontamination will be conducted as described in Attachment 3, SOP No. 4: Procedure for Conducting Decontamination of Soil Sample Collection Equipment.

At the conclusion of each sampling event, the sample location will be restored as necessary by sampling personnel, and any disposable items generated, including but not limited to nitrile gloves, plastic zip-lock bags, and paper towels, will be collected and disposed of in accordance with procedures described in Section 8.0. Decontamination fluids will be containerized in accordance with procedures described in Section 8.0.

5.2. INTERIOR DUST SAMPLING

Interior dust samples will be collected for the purpose of environmental characterization. It is anticipated that approximately 30 or more of the 59 properties identified in the 2003 ROD as requiring further investigation will be sampled during this pre-remedial design sampling activity; however, the specific list of properties will be determined by the USEPA. It is anticipated at this time that properties to be sampled for interior dust will coincide with properties at which soil samples will be collected.

5.2.1 Sample Locations

Property locations will be selected by the USEPA based on the review of historical information. Specific locations within each property will be determined by the USEPA, USACE-NYD, and Malcolm Pirnie during the initial site reconnaissance or during sampling events at each specific property.

5.2.2 Sample Collection

It is anticipated that two interior dust samples will be collected from each property building, one from highly-trafficked common areas in the residential living space (*e.g.*, living room, entry hall, family room with television, etc.) and one from the bedroom spaces. It is anticipated that a single vacuum bag or collection filter will be used to collect each interior dust sample – *i.e.*, one for the sample collected in the common areas, and one for the sample obtained from the bedroom spaces. A 1 m^2-sized area or larger will be marked off and vacuumed in a systematic pattern; the Field Team Leader will perform a finger-judgment test on the carpet to evaluate dust loading and select an area size based on the results. Additional areas (*e.g.*, hallways) will be sampled if it is anticipated that the dust loading is low and that obtaining the required dust volume will be difficult. The size of the area(s) sampled will be recorded in the field notebook, and on the field data sheet included as part of Attachment 2, SOP No. 3: Procedure for the Collection of Indoor Dust. .

Sample collection will be conducted as described in Attachment 2, SOP No. 3: Procedure for the Collection of Indoor Dust. Samples will be sent to a laboratory for PCB Aroclor analysis. Worksheet Nos. 12 and 15 of the QAPP provide a detailed listing of the PCB Aroclors for which the samples will be analyzed.

5.2.3 QA/QC Sample Frequency and Collection

For QA/QC purposes, field QC samples will be collected in accordance with Worksheet No. 20 of the QAPP. Duplicate samples will be collected by obtaining a dust sample from an area immediately adjacent to the area from which the original sample was collected. The specific properties and locations for each duplicate sample will be based on the discretion of the Field Team.

5.2.4 Laboratory Measurement Procedures and Criteria

Analysis will be conducted in accordance with the analytical methods described in Worksheet No. 15 in the QAPP.

5.2.5 Sample Containers and Preservation Techniques

Interior dust samples will be transported to the laboratory in the bags or collection filters in which they are collected. The analytical lab will perform any compositing activities. Samples collected will be preserved as described in Worksheet No. 19 in the QAPP.

5.2.6 Decontamination Procedures

Each time a sample is collected, a new pair of disposable nitrile gloves and a new vacuum bag or collection filter will be used to prevent cross-contamination. At the conclusion of each sampling event, the sample location will be cleaned as necessary by the Field Team, and any disposable items generated including but not limited to nitrile gloves and vacuum templates will be collected and disposed of in accordance with procedures described in Section 8.0.

5.3. HEALTH AND SAFETY

All FSP field tasks will be conducted in accordance with the Site-specific Site Safety and Health Plan (SSHP; Malcolm Pirnie, Inc., 2008b), prepared in accordance with the Occupational Safety and Health Administration (OSHA) requirements contained in 29 Code of Federal Regulations (CFR) 1910, including the final rule contained in 29 CFR 1910.120. The procedures are also consistent with the guidance contained in the following documents:

- Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities [prepared jointly by the USEPA, National Institute for Occupational Safety and Health (NIOSH), OSHA, and the US Coast Guard], October 1985;
- USACE's Safety and Health Requirements Manual, EM 385-1-1, November 2003 and amendments; and
- USACE's Safety and Occupational Health Requirements for Hazardous, Toxic, and Radioactive Waste (HTRW) Activities, ER-385-1-92, May 2007.

5.4. SAMPLE MANAGEMENT AND PRESERVATION

Since the USEPA Division of Environmental Science and Assessment (DESA) and CLP laboratories are to be used for sample analysis, sample management will comply with Contract Laboratory Program Guidance for Field Samplers (USEPA, 2007). As such, sample management will follow SOP 1 "Procedure to Conduct Sample Management for CLP and non-CLP Samples" attached to the QAPP. Samples will be preserved as described in Worksheet No. 19 of the QAPP.

6.0 FIELD OPERATIONS DOCUMENTATION

6.1. NON-CONFORMANCE/QC REPORTING

A non-conformance is defined as an identified or suspected deficiency or discrepancy with regard to an approved document (*e.g.*, improper sampling procedures, improper instrument calibration, calculation, computer program); or an item where the quality of the end product itself or subsequent activities using the document or item would be affected by the deficiency; or an activity that is not conducted in accordance with the established plans or procedures.

Any staff member engaged in project work that discovers or suspects a non-conformance is responsible for initiating a non-conformance report to the Project QC Officer. The Project QC Officer will evaluate each non-conformance report and respond with a disposition which describes the actions to be taken. The non-conformance/QC report to be used is included as Attachment 5.

The Project Manager will verify that no further project work dependent on the nonconforming item or activity is performed until approval is obtained and the non-conformance is properly addressed. If the non-conformance is related to material, the Project Manager will be responsible for marking or identifying, with the non-conformance report number, the nonconforming item (if practical) and indicating that it is nonconforming and is not to be used.

A copy of each non-conformance report will be included in the project file. Copies of all non-conformances shall be maintained by the Project QC Officer.

6.1.1 Field Logbook, Field Data Sheet, and Calibration Log

The following information will be recorded in either a field notebook (shallow soil sampling), on a field data sheet (indoor dust sampling), or on a calibration log at the time of environmental sampling:

- Sample or measurement designation and location.

- Name of field sampler.
- Method of collection.
- Time and date of sampling.
- Type of sample.
- Depth/location of sample.
- Analyses required and sample container type.
- Field measurements and calibration (as applicable).
- Locations where photographs are taken.
- Observations and remarks.

An example field data sheet is included in Attachment 2, SOP No. 3: Procedure for the Collection of Indoor Dust. A blank instrument calibration log is included in Attachment 6, and will be used to record instrument calibration readings. A bound field log book will be maintained for recording the daily activities. All entries will be made in indelible ink. Incorrect entries will be corrected by a single stroke through the error and will be verified with the recorder's initials. Entries to the log book, in addition to the required sampling entries will include:

- Date.
- Start and finish times.
- Summary of work performed (including samples or measurements collected).
- Sequential number and description of photographs.
- Names of personnel present.
- Personal protective equipment used.
- Names of visitors.
- Weather.
- Calibration of equipment.
- Log of drummed waste generated.
- Observations and remarks.

6.2. PHOTOGRAPHIC RECORDS

Photographs will be taken throughout the shallow soil sample collection activities, and will be taken of each indoor dust sampling location. Photographs will be arranged in a photo log for submission with the Vicinity Property Pre-Remedial Design Sampling Report.

6.3. SAMPLE DOCUMENTATION

Sample custody during the field investigations will be performed in three phases. The first custody phase encompasses sample collection, pre-laboratory treatment procedures, packaging, and shipping field custody procedures. The second custody phase involves sample shipment, where mode of shipment, airbill numbers, dates and times are documented. The third custody phase involves the custody procedures employed by the laboratory. All three phases of sample custody will be performed in accordance with QAPP Worksheet Nos. 26 and 27 to provide that:

All samples are uniquely identified.

The correct samples are tested and are traceable to their source.

Important sample characteristics are preserved.

Samples are protected from loss or damage.

A record of sample integrity is established and maintained through the entire custody process.

6.3.1 Sample Identification System

All samples collected from the Site must be identified with a sample label in addition to an entry on a chain-of-custody record. Indelible ink will be used to complete sample labels and the chain-of-custody record. In addition, each sample shall be identified by a unique sample number. The sample identification scheme to be used is included in QAPP Worksheet No. 26.

6.3.2 Sample Labels/Tags

In accordance with QAPP Worksheet No. 26 sample labels will require the field team to complete the following information for each sample container:

- Site Name.
- Sample Number.
- Sample Matrix.
- Parameters to be analyzed.
- Date of Collection.
- Time of Collection.
- Preservation Technique Employed (if applicable).
- Sampler's Name.

6.3.3 Chain of Custody Records

The chain-of-custody (COC) guidelines create an accurate written record that can be used to trace the possession and handling of the sample from the moment of its collection through analysis. COC forms will be completed for each sample at the time of collection and will be maintained while shipping the sample to the laboratory in accordance with Worksheet No. 27 and Attachment 2, SOP No. 1: "Procedure to Conduct Sample Management for CLP and Non-CLP Samples," both of which are included in the QAPP.

7.0 SAMPLE PACKAGING AND SHIPPING REQUIREMENTS

Custody of samples must be maintained through the shipment of samples to the selected laboratory. All samples will be packaged and shipped at the end of each day unless other arrangements are made with the laboratory. Samples are to be packaged and delivered directly to the laboratory in accordance with the procedure in QAPP Worksheet 27.

8.0 FIELD INVESTIGATION DERIVED WASTES (IDW)

It is anticipated that some disposable Personal Protective Equipment (PPE), dedicated sampling equipment and decontamination fluids will be generated during the field investigation.

Decontamination fluids and soils will be containerized in Department of Transportation (DOT) approved 55-gallon steel drums. Weather-resistant labels will identify drum contents and origin including the date of drum filling, type of materials and possible contaminants.

Every attempt will be made to remove gross surface contamination so that PPE (*e.g.*, Tyvek suits, gloves, and other disposable items) and dedicated sampling equipment may be disposed of in the normal domestic waste stream. If contamination is suspected, these materials will be drummed in the same fashion as the decontamination fluids.

Drummed materials will be staged at the Site in a designated location to be approved by USACE and USEPA. Drums will be securely sealed (*i.e.*, capped and banded). Malcolm Pirnie will maintain a log of the drums and drum contents. The USACE and the USEPA will be notified regarding the contents of each drum. Malcolm Pirnie will have the drum contents evaluated following the completion of the field investigation and will inform the USACE to determine and arrange for appropriate disposal. All handling, transport and disposal of these materials will be in accordance with requirements mandated by the Resource Conservation and Recovery Act (RCRA), TSCA, and other applicable federal, state, and local regulations.

Non-hazardous disposable items will be contained and disposed of in a dumpster or via a licensed waste hauler, as appropriate.

9.0 FIELD ASSESSMENT/THREE-PHASE INSPECTION PROCEDURE

It is required that Malcolm Pirnie ensure that quality is maintained throughout all field work by means of a three-phase control process [by Engineer Regulation (ER) 1180-1-6 and Corps of Engineers Guide Specifications (CEGS) 01450 and 1451]. The three phases of quality control: preparatory, initial, and follow-up will be performed on-Site by the Project QC Manager or delegate. The Project QC Manager will summarize the activities of each QC phase in the daily QC report for each definable feature of work. The definable feature is a task that is separate and distinct from other tasks and has separate control requirements. Examples of definable features of a sample collection task include each matrix being sampled such as shallow soil sampling or indoor dust sampling. A sample of a QC Report is included in Attachment 5.

9.1. CONTRACTOR QUALITY CONTROL

The Project QC Manager will be responsible for the preparatory phase inspection for each definable feature of work. Prior to the commencement of work, the Project QC Manager will review the daily work requirements, examine all required materials and equipment to do the work, examine work areas to ascertain completion of preliminary mobilization, demonstrate field activities to the field team. The Project QC Manager, assisted by the Field Team Leader, will oversee sampling activities to ensure that sampling activities are in compliance with contract requirements, instruments are properly calibrated, and field notes include pertinent data in accordance with the contract requirements.

9.1.1 Field Project Briefing

All Malcolm Pirnie field personnel will have reviewed the FSP, the QAPP, and the SSHP and will participate in a field team project briefing led by the Field Team

Leader prior to the commencement of on-Site field work. During the field team briefing team members will calibrate field instruments. The Field Team Leader will demonstrate how each type of sample will be collected, including sample containers, equipment, and decontamination and handling procedures. Additionally, sample numbering and labeling and laboratory turnaround time (TAT) will be discussed.

9.2. CHECKLIST OF DOCUMENTATION, SAMPLING APPARATUS AND FIELD INSTRUMENTATION

A list of documentation, sampling apparatus and field instrumentation, which must be present at the Site during the field investigation, is presented in Attachment 7.

10.0 NON-CONFORMANCE/CORRECTIVE ACTIONS

At the end of each sampling day, the sampling team will report any problems requiring corrective action that were encountered during the day. Corrective action will be undertaken when a non-conforming condition is identified. A non-conforming condition occurs when QA objectives for precision, accuracy, completeness, representativeness or comparability are not met, or when procedural practices or other conditions are not acceptable. A report will be filed that documents the problems encountered and the corrective action implemented (Attachment 5). The report will be submitted to the USACE. A stop-work order may be issued, upon authorization by the Project Manager, by the QC Officer, if corrective action does not adequately address a problem, or if no resolution can be reached. Further details on non-conformance reporting can be found in Section 6.1.

11.0 REFERENCES

Cape, 2007. Draft Cape Environmental Remedial Action Closeout Report. Cornell-Dubilier Electronics Superfund Site, South Plainfield, NJ. CAPE., June 2007

Foster-Wheeler, 2002. Final Remedial Investigation Report for Operable Unit 2 (OU-2) On-Site Soils and Buildings – Volume I and II" Cornell-Dubilier Electronics Superfund Site, South Plainfield, New Jersey. Tetra Tech-Foster Wheeler, Inc., December 2002.

Foster-Wheeler, 2001. Final Remedial Investigation Report for Operable Unit 1 (OU-1) Off-Site Soils for Cornell-Dubilier Electronics Superfund Site, South Plainfield, Middlesex County, New Jersey. Tetra Tech-Foster Wheeler, Inc., August 2001.

Malcolm Pirnie, 2007b. Final Site Safety and Health Plan. Cornell-Dubilier Electronics Superfund Site, Operable Unit OU-1: Vicinity Property Pre-Remedial Design Sampling, South Plainfield, NJ. Malcolm Pirnie, Inc. March 2008.

NJDEP, 2005. New Jersey Department of Environmental Protection Field Sampling Procedures Manual. New Jersey Department of Environmental Protection. August 2005.

New Jersey Department of Environmental Protection, N.J.A.C 7:26E: Technical Requirements for Site Remediation. December 2002 (Amended February 2003; July 2005; July 2005)

Weston, 2007. Draft Cape Environmental Remedial Action Closeout Report. Roy F. Weston, Inc. June 2007.

Weston, 1999. Tier I Residential Sampling and Analysis Summary Report, Addendum No. 1, Cornell Dubilier Electronics, South Plainfield, Middlesex County, New Jersey. Superfund Technical Assessment and Response Team, Federal Programs Division, Roy F. Weston, Inc. February 16, 1999.

Weston, 1998a. Final Report, Vacuum, Wipe and Soil Sampling, Cornell Dubilier Electronics, South Plainfield, NJ. Roy F. Weston, Inc. December 1998.

Weston, 1998b. Tier II Residential Sampling and Analysis Summary Report, Cornell Dubilier Electronics, South Plainfield, Middlesex County, New Jersey. Superfund Technical Assessment and Response Team, Federal Programs Division, Roy F. Weston, Inc. July 2, 1998.

Weston, 1998c. Tier III Residential/Neighborhood Sampling and Analysis Summary Report, Cornell Dubilier Electronics, South Plainfield, Middlesex County, New Jersey. Superfund Technical Assessment and Response Team, Federal Programs Division, Roy F. Weston, Inc. July 10, 1998.

Weston, 1998d. Final Report, Vacuum Dust Sampling, Cornell Dubilier Electronics, South Plainfield, NJ. Roy F. Weston, Inc. July 1998.

Weston, 1998e. Tier I Residential Sampling and Analysis Summary Report, Cornell Dubilier Electronics, South Plainfield, Middlesex County, New Jersey. Superfund Technical Assessment and Response Team, Federal Programs Division, Roy F. Weston, Inc. June 25, 1998.

Weston, 1998f. Final Report, Vacuum Dust Sampling, Cornell Dubilier Electronics, South Plainfield, NJ. Roy F. Weston, Inc. February 1998.

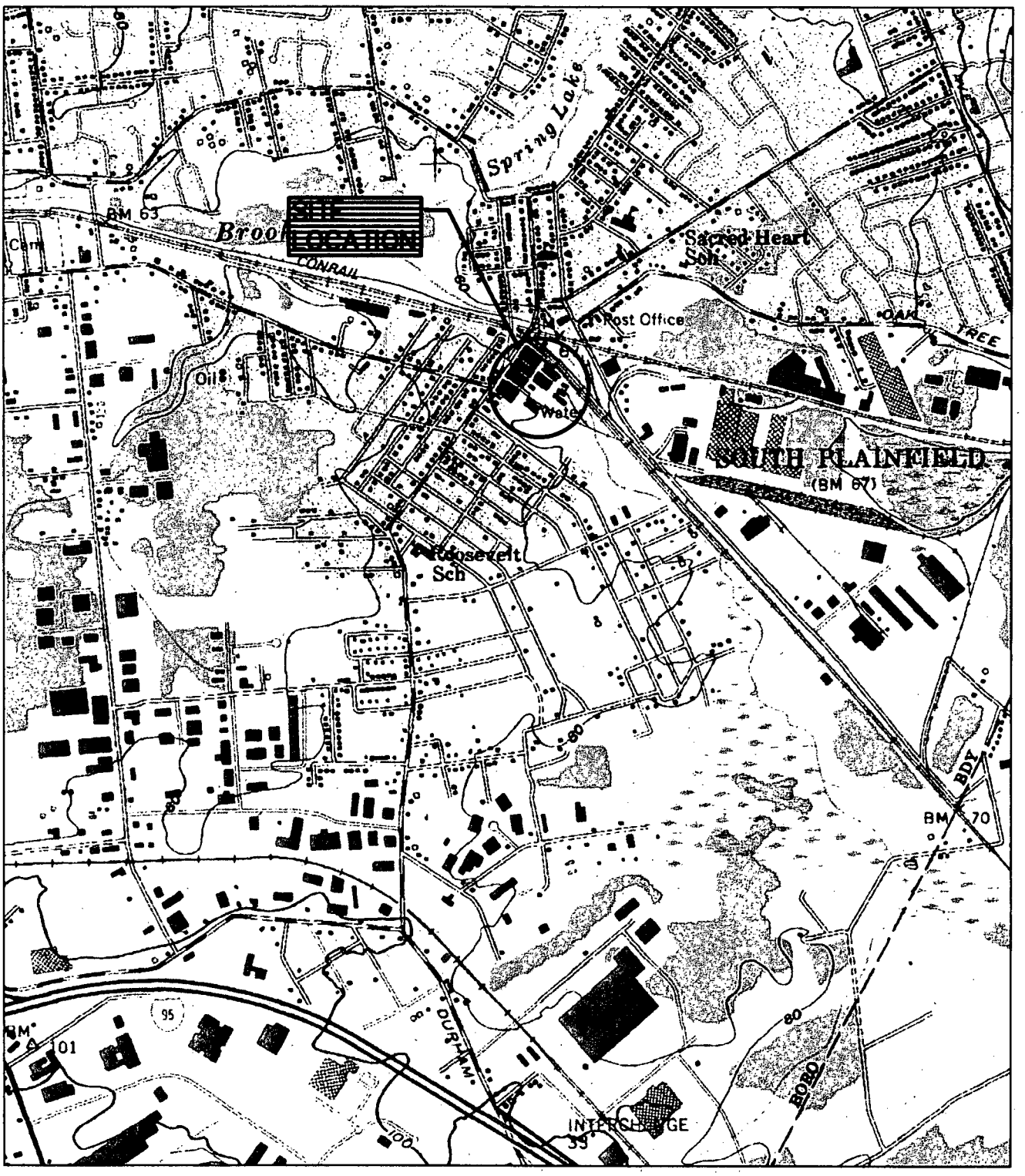
Weston, 1997. Sampling Trip Report. START-02-01157. Superfund Technical Action Branch, Region II, U.S. Environmental Protection Agency. July 1997.

USEPA, 2003. Record of Decision Operable Unit One Cornell-Dubilier Electronics Superfund Site, South Plainfield, Middlesex County, New Jersey. United States Environmental Protection Agency, Region II, September 2003.

USEPA, 2007. Contract Laboratory Program Guidance for Field Samplers. OSWER 9240.0-44; EPA 540-R-07-06. Office of Superfund Remediation and Technology Innovation, July 2007.

USACE 2001. Requirements for the Preparation of Sampling and Analysis Plans, Engineer Manual EM 200-1-3. US Army Corps of Engineers, 1 February 2001.

FIGURE



SOURCE: U.S.G.S. TOPOGRAPHIC MAP,
7.5 MINUTE SERIES, PLAINFIELD, NEW JERSEY
QUADRANGLE, 1955, PHOTOREVISED 1981

REF:

MALCOLM PIRNIE	U.S. ARMY CORPS OF ENGINEERS CORNELL–DUBILIER SUPERFUND SITE SOUTH PLAINFIELD, NJ CONTRACT: W912DQ-06-D-0006. TO 0018	SITE LOCATION MAP SCALE AS NOTED	MALCOLM PIRNIE, INC. MARCH 2008 FIGURE 1

ATTACHMENTS

ATTACHMENT 1
SOP No. 2: Procedure for Shallow Soil Sample Collection and Processing

Procedure for Shallow Soil Sample Collection and Processing

I. Introduction

This guideline is to provide information on soil sampling to be conducted at OU-1 vicinity properties adjacent to the Cornell-Dubilier Electronics Superfund Site.

II. Definitions

Soil Samples – Environmental samples of potentially contaminated soil, where soil is defined as a layer of weathered, unconsolidated material; often defined as containing organic matter and being capable of supporting plant growth.
Grab Sample – A discrete soil sample representative of a specific location at a given point in time.

Transfer Device – Any instrument or vessel that contacts the sample during collection or transport (e.g., stainless steel trowel).

Auger – An auger consists of a T-handle attached to a stainless steel bucket (which generally has a 3-to 4-inch diameter) with an attached cutting edge that is twisted downward into the soil. The stainless steel bucket allows for collection of subsurface soils during augering.

III. Equipment

1. Site planning documentation
2. Area maps for site identification and sampling locations
3. Field notebook and indelible ink pens
4. Quality control reports
5. Chain of custody forms
6. Shipping documents
7. Global positioning system (GPS)
8. Stainless steel bucket augers
9. T-handle and drill rods
10. Food-grade disposable pans (deep)
11. Stainless steel trowels, spoons, and spatulas
12. Disposable gloves
13. Plastic zip-lock bags
14. Plastic garbage bags
15. Measuring tapes
16. Polyethylene sheeting
17. Aluminum foil
18. MiniRAE 10.6 eV photoionization detector (PID)
19. Instrument operating manual
20. Calibration Standards
21. 8-oz glass sample jars and labels
22. Custody seals

23. Laboratory information: name address, phone number, point of contact, laboratory turn around time (TAT)
24. Sample packing material
25. Topsoil or potting soil
26. Paper towels
27. Sample coolers
28. Ice
29. Decontamination supplies (if decontamination will be performed in the field).

IV. Guidelines

Most of the methods employed for soil sampling at contaminated or potentially contaminated sites are adaptations of techniques long employed by foundation engineers and geologists. For this site, surface and shallow subsurface soil samples will be collected using hand augers. The following general guidelines should be taken when sampling:

1. Prior to entering the property, confirm with the person present (owner, tenant, landlord, etc.) that access to the property was granted.

2. Site Safety and Health Plan protocols will be followed. As needed, road cones, caution tape or other appropriate means may be used to identify the sample collection zone.

3. A clean pair of new, disposable gloves will be worn each time a different location is sampled and each time a new interval is sampled within the same auger/borehole. Gloves will be donned immediately prior to sampling.

4. All field activity information will be recorded in the field notebook.

5. Field personnel will use sample collection equipment constructed of stainless steel or carbon steel that has been properly decontaminated. Equipment decontamination will be performed in accordance with the procedures described in SOP No. 4: Decontamination.

6. Quality control/quality assurance (QA/QC) samples will be collected in accordance with SOP No. 1: Sample Management.

7. All used field equipment (trowels, spoons, etc.) to be decontaminated will be placed in plastic bags. All field waste (i.e., PPE, plastic sheeting, towels, etc.) to be disposed of will be placed in another plastic bag for disposal.

8. The chain of custody procedures described in SOP No. 1: Procedure to Conduct Sample Management for CLP and Non-CLP Samples (attached to the QAPP) will be followed.

9. The sample management procedures described in SOP No. 1: Procedure to Conduct Sample Management for CLP and Non-CLP Samples (attached to the QAPP) will be followed.

V. Procedure for Shallow Subsurface Soil Sample Collection Using a Bucket Auger

1. Identify the sample location using maps developed during the initial property walkthrough.

2. Record the field personnel and weather conditions in the field notebook.

3. Place plastic sheeting on the ground around the sampling location to prevent cross-contamination.

4. Clear the area to be sampled of surface vegetation, debris, or large stones.

5. Attach a decontaminated bucket auger to a drill rod extension. Attach the "T" handle to the drill rod.

6. For shallow samples from 0 to 6 inches below ground surface (bgs), begin turning the auger with a clockwise motion through the desired interval until the bottom depth has been reached.

7. Remove the auger from the boring, and follow Steps 12 through 14.

8. For deep samples from 18 to 24 inches bgs (or shallower, if the soil column is determined to not be 24 inches in depth), advance the same auger used to collect the shallow sample to the top of the deeper sampling interval.

9. Carefully remove the auger from the hole and replace with a dedicated decontaminated auger for collection of the environmental sample.

10. Advance the auger through the depth interval to be sampled and carefully withdraw the auger from the borehole.

11. If the sample has been collected from a depth greater than 12 inches, remove the top ½ inch of material and discard; this material likely originates from cave-in during the augering process and will not be representative of the target sampling interval. Likewise, remove any material from the outside of the auger to be sure it does not get included in the sample quantity.

12. Place the auger over a dedicated food-grade pan, and remove the soil from the auger by lightly tapping the side of the auger with a stainless steel trowel.

13. Scan the soil in the pan with the photoionization detector (PID) and record the readings in the field notebook. The PID will be calibrated and operated in accordance

with SOP No. 7 – Procedure for Calibration and Operation of a Photoionization Detector.

14. Homogenize the soil (see Section VI) in the pan using a stainless steel spoon. Record the soil type and color in the field notebook.

15. Record the following information in the field notebook:

    - sample identification number
    - method of sample collection
    - date and time of sample collection
    - preservatives used
    - analyses required
    - sample type (e.g., environmental or QC); and
    - associated rinsates; and
    - sampler's initials.

16. Place the material into the sample jar and cap tightly. Cover label with clear tape. Place the sample in a ziplock bag and place them on ice.

17. Restore the void created by sample collection prior to leaving the sampling location. Begin by placing the soil from the intervals not sampled back into the hole in order from the deepest interval to the shallowest interval. If necessary, commercially available potting soil or topsoil can be used to fill in the remainder of the void. Ensure that the area has been cleaned, and all sampling material has been removed.

18. Use the Global Positioning System (GPS) to obtain the coordinates for the location, and record in the field notebook.

VI. Homogenization Procedure

Thoroughly mix the sample using the same stainless steel spoon used during sample collection and a dedicated pan.

1. Scrape soil from the sides, corner, and bottom of the pan into the center and mix.

2. Separate the sample into quarters and push to separate parts of the pan.

3. Mix each quarter thoroughly and return to the center of the pan.

4. Thoroughly mix the quarters together.

5. Place homogenized sample into sample jar and manage in accordance with SOP No. 1: Procedure to Conduct Sample Management for CLP and Non-CLP Samples (attached to the QAPP).

VII. References

NJDEP, 2005. Field Sampling Procedures Manual. Chapter 5: Sampling Equipment, Section 5.3.1.2. New Jersey Department of Environmental Protection. August 2005.

ATTACHMENT 2

SOP No. 3: Procedure for the Collection of Indoor Dust

Procedure for the Collection of Indoor Dust Samples

I. Introduction

This guideline is to provide guidance for collection of indoor dust samples to be analyzed for PCBs. Procedures for dust sample collection using the Nilfisk GS-80 vacuum system (Section IV) and the Omega Ultivac vacuum system (Section V) are presented below.

The Nilfisk GS-80 system has been used previously to collect indoor dust samples at other OU-1 properties, but requires that the sampling train be decontaminated between sampling locations. Use of the Omega Ultivac would eliminate the need for field decontamination, as the collection filter is positioned at the head of the vacuum collection system.

The Omega vacuum system will be tested in the office environment prior to application in the field to evaluate whether or not the system can obtain sufficient volume for analytical testing. If the system proves successful, it will be used for the OU-1 dust sampling. If it does not, than the Nilfisk system will be used.

II. Scope

This procedure is applicable to the collection of dust samples on a variety of surfaces, including but not limited to carpeting, wood, and tile. Sample collection will be performed utilizing either the Nilfisk GS-80 vacuum cleaner or the Omega Ultivac vacuum system, both of which are equipped with a high efficiency particulate air (HEPA) filter.

The procedures outlined below describe the collection of dust, soil, and other particulate matter with an aerodynamic diameter equal to or greater than approximately 5 micrometers (μm) embedded within a carpet or present on a hard surface for submittal to an analytical laboratory for sieving and analysis.

The sieving process will utilize a shaker sieve with a 100 mesh screen, and is intended to remove any non-dust particulates (*i.e.*, pebbles, wood fragments, etc.) from the sample. Any collected particles that pass the 100 mesh sieve will be included as part of the sample material.

This standard operating procedure is a guidance document which may be varied or changed as required, dependent upon site conditions, equipment limitations or limitations imposed by the procedure. In all instances, the ultimate procedures employed should be documented in the field notes and associated final report.

III. Safety

Gloves and safety glasses should be worn when working with and collecting dust samples. Dusk masks should not be worn inside OU-1 properties, but may be worn outside of a home when handling vacuum bags if desired. Consult the project Site Safety and Health Plan for further safety instructions.

IV. Nilfisk GS-80 Vacuum Requirements and Procedure

The following sections describe the supplies required and the procedures that should be followed if the Nilfisk GS-80 vacuum system is used to collect indoor dust samples at the OU-1 adjacent properties.

IV.1 Supplies

1. Site planning documentation
2. Field Data Sheets
3. Field notebook and indelible ink pens
4. Quality control reports
5. Chain of custody forms
6. Shipping documents
7. Nilfisk Model GS-80 vacuum cleaner
8. Instrument operating manual
9. Two meter folding ruler or similar device
10. Masking tape
11. Clean aluminum foil
12. Tap water
13. Deionized water
14. Methanol
15. Vacuum collection bags
16. Bottle brush
17. Scrub brush
18. Polyliners
19. 32-ounce glass jars or plastic bags and sample labels
20. Custody seals
21. Laboratory information: name address, phone number, point of contact, laboratory turn around time (TAT)
22. Cooler
23. Sample packing material
24. Ice
25. Decontamination supplies (if decontamination will be performed in the field)
26. Battery-powered laboratory balance

IV.2 Preparation Procedure

The following steps should be taken prior to the initiation of field activities:

1. Obtain and organize the necessary sampling and monitoring equipment.

2. Decontaminate or pre-clean equipment, as specified in Section IV.5, and ensure that it is in working order.

3. Prepare schedule and coordinate with staff, client, regulatory agency, as appropriate.

4. Perform a general site survey prior to site entry in accordance with the site-specific Site Safety and Health Plan.

IV.3 Calibration Procedure

The Nilfisk GS-80 vacuum cleaner has no flow devices that need calibration prior to sampling. The sampling train must be thoroughly inspected to ensure that it has been cleaned, properly assembled, and is complete.

IV.4 Sample Collection Procedure

1. Select a sampling area according to the rationale described in the Field Sampling Plan (FSP). Each sample should be collected using a dedicated sampling train that has been properly assembled and decontaminated to ensure sample integrity. The weight of each sample should be 30 grams; if 30 grams of material cannot be obtained, a minimum weight of 10 grams is required; however, samples of 30 grams in size must be obtained at the required frequency for MS/MSD samples.

2. Recording the following information on the field data sheet:

   - Site
   - Property location
   - Samplers
   - Date/Time
   - Sample ID number
   - Surface type

3. Don a new, clean pair of disposable nitrile gloves.

4. Perform a finger-judgment test on the surface to be sampled to evaluate the dust loading and determine if adequate sample mass can be obtained from the recommended 1 m^2 area, or if sampling a larger area is necessary. The finger-judgment test is performed by donning a clean disposable glove and using a fingertip to test an area adjacent to the sampling area for a sufficient buildup of

settled dust. Once the size of the sampling area has been determined, record on the field data sheet.

5. Measure the area to be sampled and outline it using masking tape or other appropriate, temporary method that will not damage items in the residence.

6. Begin the sample collection at one corner of the delineated sample area, moving the vacuum back and forth four times over a strip running in a straight line between the defined edges. The width of the strip is defined by the width of the vacuum nozzle.

7. After completing the first strip, angle over to the second strip gradually on the next pass, again completing four double passes. Repeat until the entire sampling area has been subjected to four passes of the vacuum.

8. If it becomes necessary to sample a larger area in order to obtain adequate sample mass, measure and outline the added area and record the dimensions on the field data sheet.

9. Repeat Steps 6 and 7.

10. Tap the nozzle inlet with your hand to dislodge any dust remaining in the nozzle or the hose. This procedure will ensure complete sample recovery.

11. Turn off the vacuum cleaner and allow to sit undisturbed for at least 30 seconds.

12. Unsnap the two vacuum container clips to access the inside of the container, and remove the polyliner and the vacuum collection bag. Seal off the polyliner with the vacuum collection bag inside, and transfer to a properly labeled 32-oz. glass jar or plastic bag.

13. Photograph the sampled area(s) and record the photo number(s) on the field data sheet.

14. Draw a diagram of the room(s) where the sample(s) were taken, clearly indicating the sampled area(s).

15. Document the sample and store the sample in a cooler at 4° C for shipping to the laboratory. The laboratory should be requested to sieve the samples through a No. 100 sieve per the procedure described in Appendix A.

IV.5 Sampling Train Decontamination Procedure

To decontaminate the sampling trains, move them to a well-ventilated area and perform the following:

1. Assemble one of the sampling trains to be used as the decontamination unit for decontaminating the nozzles, hoses, and wands. This unit must be provided with a clean polyliner and dust bag.

2. With the vacuum cleaner turned on and wearing clean gloves, the nozzles, wands, and hoses are decontaminated as follows:

    a. Use the bottle brush to remove any accumulated dust in the hose and nozzle.

    b. Tap on the nozzle with your hand to remove any visible dirt that has accumulated and use the scrub brush to remove any hair or fibers entangled on the nozzle's brush.

    c. When the nozzle is considered to be clean, remove and rinse with tap water.

    d. Wash and scrub nozzle with a non-phosphate detergent. Alconox and water are generally used.

    e. Rinse nozzle with deionized water.

    f. Spray nozzle with reagent grade methanol and allow to air dry on a clean surface.

    g. Clean the wand and the hose with the bottle brush. Make sure to tap the wand inlet with your hand while cleaning with the bottle brush to remove any visible dirt.

    h. Repeat this procedure to decontaminate the other nozzles, wands, and hoses.

    i. Pull out the dirty dust bag from the decontamination unit and wipe clean the inside of the container with distilled water. Do the same to the other containers.

    j. Spray the inside of the containers with methanol and allow to air dry. If decontaminating in between rooms in the same home, wipe-cleaning the inside of the containers with distilled water is sufficient.

V. Omega Ultivac Vacuum Requirements and Procedure

The following sections describe the supplies required and the procedures that should be followed if the Omega Ultivac vacuum system is used to collect indoor dust samples at the OU-1 adjacent properties.

V.1 Supplies

1. Site planning documentation
2. Field Data Sheets
3. Field notebook and indelible ink pens Quality control reports
4. Chain of custody forms
5. Shipping documents
6. Omega Ultivac vacuum cleaner
7. Instrument operating manual
8. Two meter folding ruler or similar device
9. Masking tape
10. Clean aluminum foil
11. Isopropyl alcohol wipes
12. 32-ounce glass jars or plastic bags and sample labels
13. Custody seals
14. Laboratory information: name address, phone number, point of contact, laboratory turn around time (TAT)
15. Cooler
16. Sample packing material
17. Ice
18. Battery-powered laboratory balance

V.2 Preparation Procedure

The following steps should be taken to prepare the vacuum for sample collection:

1. Don a new, clean pair of disposable nitrile gloves.

2. Wipe the rim of the crevice tool and around the rim of the end of the vacuum extension rod with an isopropyl alcohol wipe and wait until the alcohol has completely dried before continuing.

3. Fold the vacuum sock in half lengthwise. Insert the filter part (white part) of the vacuum sock into the vacuum extension rod.

4. Flip down the fabric part (blue part) of the sock around the outside of the rod. Make sure that the filter part extends to the top of the extension rod.

5. Put the crevice tool over the filter, making sure that it is secure (do not twist, otherwise the filter may rip).

6. Adjust the flow of the vacuum by slightly opening the flow adjuster (half inch) before vacuuming, which will prevent overheating of the vacuum.

V.3 Sample Collection Procedure

1. Select a sampling area according to the rationale described in the FSP. Each sample should be collected using a dedicated sampling train that has been properly assembled and decontaminated to ensure sample integrity. The weight of each sample should be 30 grams; if 30 grams of material cannot be obtained, a minimum weight of 10 grams is required. Samples containing 30 grams of settled dust must be obtained at least the required MS/MSD frequency.

2. Recording the following information on the field data sheet:

   - Site
   - Property location
   - Samplers
   - Date/Time
   - Sample ID number
   - Surface type

3. Don a new, clean pair of disposable nitrile gloves.

4. Perform a finger-judgment test on the surface to be sampled to evaluate the dust loading and determine if adequate sample mass can be obtained from the recommended 1 m^2 area, or if sampling a larger area is necessary. Once the size of the sampling area has been determined, record on the field data sheet.

5. Measure the area to be sampled and outline it using masking tape or other appropriate method.

6. Begin the sample collection at one corner of the delineated sample area, moving the vacuum back and forth four times over a strip running in a straight line between the defined edges. The width of the strip is defined by the width of the vacuum nozzle/crevice tool.

7. After completing the first strip, angle over to the second strip gradually on the next pass, again completing four double passes. Repeat until the entire sampling area has been subjected to four passes of the vacuum.

8. If it becomes necessary to sample a larger area in order to obtain adequate sample mass, measure and outline the added area and record the dimensions on the field data sheet.

9. Repeat Steps 6 and 7.

10. Once sampling is complete, carefully remove the filter from the rod.

11. Flip back the blue fabric to its original shape and fold over blue fabric and binder clip to white filter.

12. Place the filter in a plastic bag and place in a clearly labeled 32-oz glass jar or plastic bag.

13. Photograph the sampled area(s) and record the photo number(s) on the field data sheet.

14. Draw a diagram of the room(s) where the sample(s) were taken, clearly indicating the sampled area(s).

15. Document the sample and store the sample in a cooler at 4° C for shipping to the laboratory. The laboratory should be requested to sieve the samples through a No. 100 sieve per the procedure described in Appendix A.

VI. References

ASTM International, Standard Test Method for Particle-Size of Soils, Designation: D 422-63 (Reapproved 2002).

Compendium of Emergency Response Team (ERT) Collection of Indoor Dust Samples from Carpeted Surfaces for Chemical Analysis Using a Nilfisk GS-80 Vacuum Cleaner. ASTM International, Standard Practice for Collection of Floor Dust for Chemical Analysis, Designation: D 5338-05.

Midwest Filtration Company, Cincinnati, OH. www.midwestfiltration.com

Nevada Division of Environmental Protection, Environmental Field Sampling Plan Churchill County, Nevada, Appendix E, November 13, 2001.

Protocol for Ambient and Indoor Sampling for Public Health Evaluations of Residential Areas Near World Trade Center, New York, New York, October 26, 2001.

FIELD DATA SHEET

Site:	Samplers:
Date/Time:	
Sample Location:	

Sample ID Number	Surface Type	Dimensions of Sample Area(s)	Total Area (m^2)	Photo #

Sketch/
General Comments:

Appendix A:
Laboratory Procedure for Processing Vacuum Dust Samples Prior To Analysis for Polychlorinated Biphenyls (PCBs)

Upon arrival at the laboratory, recovery of the dust samples from the dedicated vacuum collection bags or filters should be accomplished using the following procedure:

1. Select a clean working area in the laboratory to perform sample recovery (a 4-foot by 4-foot area will be sufficient). Make sure that the following equipment/apparatus is available, assembled, and in good working condition:

    - Shaker sieve (No. 100), as specified in ASTM D-422 with particle size separation of 150 m. A complete set consists of three components: the cover, the screen, and the receiver pan (the receiver pan must be pre-weighed and its weight recorded).

    - Sieve shaker for mechanical sieving. Models readily available are CSC Scientific Company, Inc. Catalog No. 18480 and Thomas Scientific Catalog No. 8324_A10 (Tel 800 345-2100).

    - Analytical balance sensitive to a minimum 0.1 milligrams (mg) and weighing range of 0.1 mg to 1000 grams (g).

    - Surgical gloves. Thomas Scientific Catalog No. 5761-W14 or equivalent.

    - Disposable dust mask. Thomas Scientific Catalog No. 8055- M20 or equivalent.

    - Camel's Hair Brush. Fisher Scientific Catalog No. 03-655 or equivalent.

    - Clean aluminum foil.

    - Kimwipes™ or other laboratory tissue.

2. Retrieve the vacuum collection bags or filters from the glass jars or plastic bags used during transport from the field to the laboratory. Clean surgical gloves and a dusk mask must be worn while handling the bags.

3. Empty the contents of the bag or filter into the No. 100 mesh sieve screen through the bag or filter opening.

    - For vacuum bags, complete this operation by removing the plastic adaptor from the collection bag inlet. Shake the bag as necessary to ensure that the contents have been transferred through the screen to the receiver pan.

- For filters, unclip the blue fabric part from the white filter and shake as necessary to ensure that the contents have been transferred through the screen to the receiver pan.

It is not expected that clumps of dirt will be encountered, but if any are observed once the contents of the bags or filters have been transferred to the screen, break apart prior to the initiating the shaking process.

4. Place the cover on the sieve screen and manually or mechanically shake the sieve for a minimum of 5 minutes and a maximum of 10 minutes, until all of the fine dust particles are collected in the bottom receiver pan.

   - If manual shaking is performed, the directions in D-422 of the ASTM must be followed: "Conduct the sieving operation by means of a lateral and vertical motion of the sieve, accompanied by a jarring action in order to keep the sample moving continuously over the surface of the sieve. Continue sieving until not more than 1 mass percent of the residue on a sieve passes that sieve during 1 minute of sieving."

   - If mechanical shaking is performed, set up the recommended sieve shaker on an even and stable surface. Proceed with the sieving operation following directions in the manufacturer's manual.

5. Re-weigh the receiving pan and record. The difference in weight is the weight of the sieved sample.

6. Transfer the sieved sample from the receiving pan to a clean, wide-mouth glass jar. Use the camel's hair brush to ensure complete transfer of the sample. Cap glass jar and secure sample.

7. Document the following information for each sample:
   - Sample ID number
   - Sample date and time
   - Sampling location
   - Analysis requested

8. Each sample must be recorded into a chain-of-custody form before delivery to the analytical laboratory.

9. Before processing the next sample, thoroughly wipe clean the shaker sieve set with a Kimwipe™ Wait until dry. Repeat steps 1 through 9.

10. The lab should report the analysis for PCBs as Aroclors per EPA CLP SOM01.1 or alternately by SW-846-8082.

ATTACHMENT 3

SOP No. 4: Procedure for Conducting Decontamination of Soil Sample Collection Equipment

ATTACHMENT 4

SOP No. 7: Procedure for Calibration and Operation of a Photoionization Detector

Procedure for Conducting Field Decontamination of Soil Sample Collection Equipment

I. Introduction

The purpose of this procedure is to provide general reference information for decontamination at properties adjacent to the Cornell-Dubilier Electronics Superfund Site.

II. Definitions

Decontamination – The process of neutralization, washing, rinsing, and/or removing contamination to minimize the potential for cross-contamination and/or contaminant migration.

Cross-Contamination – The transfer of contaminants from their known or suspected location into a non-contaminated location.

Fixed Contamination – The amount which can not be removed without affecting the removal of some portion of the surface which is contaminated or covering the contamination, where the potential for surface contaminant migration is impossible to occur due to the non-intrusive work during property investigations. Examples of fixed contamination can be contaminated soil or building structures covered with physical barriers (e.g., grass, asphalt, concrete, brick, tiles, foundation rocks, paint, wood), and contamination commingled with asphalt, concrete, or building structures.

Loose Contamination – The amount which can be easily removed where the potential for surface or airborne contaminant migration is likely to occur. Examples of loose contamination include contaminated and exposed surface soil, contaminated surface sediment, and loose surface contamination on building structures.

III. Equipment

1. Site planning documentation
2. Paper towels
3. Aluminum foil
4. Tap water
5. Non-phosphate detergent (e.g., Alconox or equivalent)
6. Deionized water (ASTM Type II)
7. Pesticide-grade acetone

IV. Decontamination Guideline

Decontamination is performed to minimize the potential for cross-contamination between sampling horizons and/or locations, and to minimize the potential for contaminant migration from the sampling area

V. Decontamination Procedures for Equipment Used to Collect Soil Samples

1. Remove any gross particulate contamination using paper towels.
2. Rinse with tap water.
3. Wash and scrub equipment with a non-phosphate detergent. Alconox and water are generally used.*
4. Rinse with tap water.
5. Rinse with Distilled and deionized (ASTM Type II) water
6. Rinse with acetone (pesticide-grade).
7. Allow to air dry
8. Rinse with Distilled and deionized (ASTM Type II) water
9. Allow to air dry
10. Wrap in aluminum foil for storage and/or transport.

VI. References

NJDEP, 2005. Field Sampling Procedures Manual. New Jersey Department of Environmental Protection; Chapter 2A, p. 10. August 2005.

USEPA, 1984. Characterization of Hazardous Waste Sites--A Methods Manual, Volume II, Available Sampling Methods. Second Edition. Appendix E: Decontamination Procedures Environmental Monitoring Systems Laboratory, Office of Research and Development. U.S. Environmental Protection Agency, Las Vegas, Nevada. EPA-600/4-84-076 December 1984.

USEPA, 1987. A Compendium of Superfund Field Operations Methods. Section 3.4: Decontamination, pp. 3-19 to 3-21. Office of Emergency and Remedial Response, Office of Waste Programs Enforcement. U.S. Environmental Protection Agency, Washington, D.C. EPA 540/P-87/001. December 1987.

U.S. EPA Region II CERCLA Quality Assurance Manual. Part II, Quality Control Handbook for CERCLA Sampling and Analysis, Sections V and VI. October 1989, Revision 1.

Procedure for Calibration and Operation of a Photoionization Detector

I. Introduction

This procedure describes the equipment and methods to be used to calibrate and operate a Photoionization Detector (PID).

II. Equipment and Supplies

The following equipment will be needed:

1. PID (HNU or similar model)
2. Operating manual
3. Probes: 10.2 eV
4. Battery charger for PID
5. Spare batteries
6. Tygon tubing
7. Traceable calibration gas
8. Isobutylene standards for calibration
9. Benzene reference standard
10. "T" valve for calibration
11. Field Data Sheets/Site Logbook
12. Intake assembly extension
13. Strap for carrying PID
14. Plastic bags for protecting the PID from moisture and dirt

III. Guidelines

Start-up/Calibration:

1. Allow the temperature of the unit to equilibrate to its surrounding. This should take about five minutes.

2. Attach the probe to the read-out unit. Match the alignment key, then twist the connector clockwise until a distinct locking action is felt.

3. Make sure the microswitch (red button) is depressed by the locking ring.

4. Turn the FUNCTION switch to the battery check position. Check to ensure that the indicator reads within or beyond the green battery arc on the scale plate. If the indicator is below the green arc, or if the red LED comes on, the battery must be charged prior to use.

5. To zero the instrument, turn the FUNCTION switch to the STANDBY position and rotate the ZERO POTENTIOMETER until the meter reads zero. Wait 15-20 seconds to ensure that the zero adjustment is stable; if not, then readjust.

6. Check to see that the SPAN POTENTIOMETER is set at the appropriate setting for the probe being used (i.e., 9.8 for the 10.2 eV probe, 5.0 for the 11.7 eV probe, 1 for the 9.5 eV probe. Note: The setting may vary based on the intensity of the light source).

7. Set the FUNCTION switch to the desired range (*i.e.,* 0-20, 0-200, 0-2000).

8. Listen for the fan operation to verify fan function.

9. Look for ultraviolet light source in the probe to verify light function. Do not look at light.

10. Record the following information in the site logbook: the instrument ID number (U.S. EPA decal or serial number if the instrument is a rental), the initial and final span settings, the date and time, the source and lot number of the calibration gas, concentration and type of calibration gas used, and the name of the person who field calibrated the instrument.

11. Check instrument with an organic point source such as a sharpie marker, prior to survey, to verify instrument function.

12. Under no circumstances is work to be done without a proper functioning instrument.

13. Set the FUNCTION switch to the range setting which includes the concentration of the calibration gas.

14. Attach a regulator to a disposable cylinder of calibration gas. Connect the regulator to the probe of the HNU with a piece of clean tygon tubing. Open the valve on the regulator.

15. After 15 seconds, the meter reading should equal the response value as indicated on the calibration gas cylinder used. If the reading is within ±15% of the response value, then the instrument can be field calibrated to the response value using the external SPAN ADJUSTMENT control. The SPAN ADJUSTMENT control should be adjusted to a lower setting until the correct reading has been obtained. The lower the number on the SPAN ADJUSTMENT control, the greater the instrument sensitivity. If the SPAN ADJUSTMENT control has to be adjusted below a setting of 4.00, the unit should be red-

tagged and returned for repairs. If the meter reading is greater than ±15% of the response value of the calibration gas used, then the instrument should be red-tagged and returned for re-calibration.

16. If the PID does not start up, check out, or calibrate properly, the instrument should not be used. Under no circumstances is work requiring air monitoring with a PID to be done without a proper functioning instrument.

17. In some field applications, with the exception of the probe's inlet and exhaust, the PID should be wrapped in clear plastic to prevent it from becoming contaminated and to prevent water from getting inside in the event of precipitation.

IV. Operation

1. All readings are to be recorded in the site logbook and on the daily calibration log. Readings should be recorded, following background readings, as ppm.

2. As with any field instrument, accurate results depend on the operator being completely familiar with the operator's manual. The instructions in the operating manual should be followed explicitly to obtain accurate results.

3. Position the probe assembly close to the area to be monitored because the low sampling rate allows for only very localized readings. Under no circumstances should the probe tip assembly be immersed in fluid. While taking care to prevent the PID from being exposed to excessive moisture, dirt, or contamination, monitor the work activity as specified in the Site Safety and Health Plan.

4. The PID survey should be conducted at a slow to moderate rate of speed and the intake assembly (the probe) slowly swept from side to side. There is a three to five second delay in read-out, depending upon the instruments sensitivity to the contaminant.

5. During sampling activities, PID readings will be taken for each shallow surface soil sample collected.

6. When the activity is completed or at the end of the day, carefully clean the outside of the PID with a damp disposable towel to remove any visible dirt.

V. References

Final Field Sampling Plan, Malcolm Pirnie Inc, 2008

http://www.dem.ri.gov/pubs/sops/wmsr2114.pdf

ATTACHMENT 5
Non-Conformance Quality Control Report

CORNELL DUBILIER ELECTRONICS SUPERFUND SITE
NON-CONFORMANCE/QUALITY CONTROL REPORT

Date: _____

Organization Name: _____

Initiator's Name & Title: _____

Problem Description:

_____
_____
_____
_____
_____
_____
_____

Reported To: _____

_____

Corrective Action:

_____
_____
_____
_____
_____
_____
_____

Reviewed and Implemented by: _____

ATTACHMENT 6
Instrument Calibration Table and Log

FIELD INSTRUMENT CALIBRATION TABLE

Instrument Manufacturer	Analyzer Name	Detector	Parameter	Calibration Requirement	Performance Checks
TBD[1]	TBD[1]	Photoionization Detector (PID)	Volatile Organic Compounds	Prior to the start of testing and every 4 hours thereafter	Daily

[1] TBD = To Be Determined

DAILY CALIBRATION LOG

Project Number: _____
Project Name: _____
Field Team Leader: _____

Date	Time	DO	pH	Conductivity	PID	Turbidity	Iron	ORP	Temp	LEL	Notes
		mg/L		µS	ppm	NTU	mg/L	mV	°C	%	
Standards:					100					25	

DO = Dissolved oxygen
PID = Photoionization detector
ppm = parts per million

NTU = Nephelometric Units
ORP = Oxidation Reduction Potential
Temp = ambient air temperature at time of calibration

ATTACHMENT 7
Field Documentation and Equipment Master List

Field Documentation and Master Equipment List

A list of documentation, sampling apparatus, and field instrumentation which must be present at the site during the field investigation is listed below. Equipment is organized by the type of fieldwork that is planned for the site. Field personnel are to ensure that they have all of the items required for the work that will be performed.

Shallow Soil Sample Collection and Processing

- ☐ Site planning documentation
- ☐ Area maps for site identification and sampling locations
- ☐ Field notebook and indelible ink pens
- ☐ Quality control reports
- ☐ Chain of custody forms
- ☐ Shipping documents
- ☐ Global positioning system (GPS)
- ☐ Stainless steel bucket augers
- ☐ T-handle and drill rods
- ☐ Food-grade disposable pans (deep)
- ☐ Stainless steel trowels, spoons, and spatulas
- ☐ Disposable gloves
- ☐ Plastic zip-lock bags
- ☐ Plastic garbage bags
- ☐ Measuring tapes
- ☐ Polyethylene sheeting
- ☐ Aluminum foil
- ☐ MiniRAE 10.6 eV photoionization detector (PID)
- ☐ Instrument operating manual
- ☐ Calibration Standards
- ☐ 8-oz glass sample jars and labels
- ☐ Custody seals

- ☐ Laboratory information: name address, phone number, point of contact, laboratory turn around time (TAT)
- ☐ Sample packing material
- ☐ Topsoil or potting soil
- ☐ Paper towels
- ☐ Sample coolers
- ☐ Ice
- ☐ Decontamination supplies (if decontamination will be performed in the field).

Indoor Dust Sample Collection

- ☐ Site planning documentation
- ☐ Field Data Sheets
- ☐ Field notebook and indelible ink pens Quality control reports
- ☐ Chain of custody forms
- ☐ Shipping documents
- ☐ Nilfisk Model GS-80 vacuum cleaner (or equivalent)
- ☐ Instrument operating manual
- ☐ Two meter folding ruler or similar device
- ☐ Masking tape
- ☐ Clean aluminum foil
- ☐ Shaker sieve, as specified in ASTM D422, with 100-mesh screen
- ☐ Analytical balance [sensitive to a minimum 0.1 milligram (mg) and weighing range of 0.1mg - 1000 grams(g)].
- ☐ Distilled water
- ☐ Methanol
- ☐ Kimwipes TM or other laboratory tissue
- ☐ Vacuum collection bags
- ☐ Bottle brush

- ☐ Scrub brush
- ☐ Polyliners
- ☐ 32-ounce glass jars or plastic bags and sample labels
- ☐ Custody seals
- ☐ Laboratory information: name address, phone number, point of contact, laboratory turn around time (TAT)
- ☐ Cooler
- ☐ Sample packing material
- ☐ Ice
- ☐ Decontamination supplies (if decontamination will be performed in the field)

Equipment Decontamination

- ☐ Site planning documentation
- ☐ Paper towels
- ☐ Clean aluminum foil
- ☐ Tap water
- ☐ Non-phosphate detergent (e.g., Alconox or equivalent)
- ☐ Deionized water (ASTM Type II)
- ☐ Pesticide-grade acetone

APPENDIX B

Residential Property Maps