SDMS Document
123101

# SAMPLING AND ANALYSIS PLAN

Field Sampling Plan – Revision 3
UFP-QAPP – Revision 0

CORNELL-DUBILIER ELECTRONICS SUPERFUND SITE
OPERABLE UNIT 2 – BUILDING DEMOLITION
SOUTH PLAINFIELD, NEW JERSEY

CONTRACT # W912DQ-04-D-0023
DELIVERY ORDER #0005

Prepared By:

SEVENSON ENVIRONMENTAL SERVICES, INC.
2749 Lockport Road
Niagara Falls, NY 14305

January 18, 2007

CORNELL-DUBILIER ELECTRONICS SUPERFUND SITE
OPERABLE UNIT 2 – BUILDING DEMOLITION
SOUTH PLAINFIELD, NEW JERSEY

SAMPLING AND ANALYSIS PLAN

TABLE OF CONTENTS


| | **SECTION A - FIELD SAMPLING PLAN** | **PAGE** |
|---|---|---|
| 1.0. | PROJECT DESCRIPTION | 1-1 |
| 2.0 | PROJECT ORGANIZATION AND RESPONSIBILITIES | 2-1 |
| 3.0 | SCOPE AND OBJECTIVES | 3-1 |
| 4.0 | FIELD ACTIVITIES | 4-1 |
| 5.0 | SAMPLE CUSTODY AND DOCUMENTATION | 5-1 |
| 6.0 | SAMPLE PACKAGING AND SHIPPING | 6-1 |
| 7.0 | CONTRACTOR QUALITY CONTROL | 7-1 |
| 8.0 | SITE REPORTING | 8-1 |
| 9.0 | CORRECTIVE ACTIONS | 9-1 |
| 10.0 | REFERENCES | 10-1 |

**SECTION B - QUALITY ASSURANCE PROJECT PLAN**

Quality Assurance Project Plan based on the Intergovernmental Data Quality Task Force Uniform Federal Policy for Quality Assurance Project Plans (Final Version 1, March 2005)

# APPENDICES

A STANDARD SAMPLE TRACKING AND DOCUMENTATION FORMS, REVIEW FORMS AND CHECKLISTS

- Sample Label and Custody Seal
- Chain of Custody Form
- Army Corp of Engineers Sample Receipt Form
- Preparatory Phase Checklist
- Initial/Follow-Up Phase Inspection Checklist
- Daily Chemical Quality Control Report
- Site QC Inspection Report
- Task Specific QC Checklist – Work Task: Packing, Storing and Shipment of Samples
- Task Specific QC Checklist – Work Task: Field Documentation
- Task Specific QC Checklist – Work Task: Decontamination
- Task Specific QC Checklist – Work Task: Sample Cooler Shipment
- Field Change Request Form
- Corrective Action Form
- Laboratory/Analytical Deficiency Notification
- Data Evaluation Checklist

B ANALYTICAL LABORATORY QUALITY ASSURANCE/QUALITY CONTROL PLAN

C MEASUREMENT PERFORMANCE CRITERIA

# FIELD SAMPLING PLAN – REVISION 3

CORNELL-DUBILIER ELECTRONICS SUPERFUND SITE
OPERABLE UNIT 2 – BUILDING DEMOLITION
SOUTH PLAINFIELD, NEW JERSEY

CLUSTER 12

CONTRACT # W912DQ-04-D-0023
DELIVERY ORDER #0005

Prepared By:

SEVENSON ENVIRONMENTAL SERVICES, INC.
2749 Lockport Road
Niagara Falls, NY 14305

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CORNELL-DUBILIER ELECTRONICS SUPERFUND SITE
OPERABLE UNIT 2 – BUILDING DEMOLITION
SOUTH PLAINFIELD, NEW JERSEY

FIELD SAMPLING PLAN

## TABLE OF CONTENTS


| | | | |
|---|---|---|---|
| **1.0** | | **PROJECT DESCRIPTION** | **1-1** |
| **1.1** | | **Introduction** | **1-1** |
| **1.2** | | **Site Description** | **1-1** |
| **1.3** | | **Site History and Contaminants** | **1-2** |
| **1.4** | | **Site-Specific Definition of the Problem** | **1-2** |
| **2.0** | | **PROJECT ORGANIZATION AND RESPONSIBILITIES** | **2-1** |
| **2.1** | | **Site Organization** | **2-1** |
| **2.2** | | **Resource Management** | **2-1** |
| **2.3** | | **Project Organization** | **2-2** |
| | 2.3.1 | Proposed Staffing Plan | 2-4 |
| | 2.3.2 | Home Office Personnel | 2-5 |
| | 2.3.3 | Field Personnel | 2-6 |
| **3.0** | | **SCOPE AND OBJECTIVES** | **3-1** |
| **3.1** | | **Waste Characterization Samples** | **3-1** |
| **3.2** | | **Topsoil and Backfill Material** | **3-3** |
| **3.3** | | **PCB Wipe Samples** | **3-6** |
| **4.0** | | **FIELD ACTIVITIES** | **4-1** |
| **4.1** | | **Solid Waste Characterization Samples** | **4-1** |
| **4.2** | | **Concrete Samples** | **4-4** |
| **4.3** | | **In-Situ Subsurface Soil and Concrete Samples** | **4-5** |
| **4.4** | | **Wastewater Characterization Samples** | **4-6** |
| **4.5** | | **Wipe Samples** | **4-7** |
| **4.6** | | **Offsite Topsoil/Backfill Sampling** | **4-7** |
| **4.7** | | **Investigative-Derived Wastes** | **4-9** |
| | 4.7.1 | Disposable Equipment and Debris | 4-9 |
| | 4.7.2 | Wastewater | 4-9 |
| | 4.7.3 | General Office Trash/Debris | 4-9 |
| **4.8** | | **QA/QC Samples** | **4-10** |
| | 4.8.1 | Replicate Samples | 4-10 |
| | 4.8.2 | Matrix Spike/Matrix Spike Duplicates | 4-10 |
| | 4.8.3 | Temperature Blanks | 4-11 |
| | 4.8.4 | Trip Blanks | 4-11 |
| **4.9** | | **Sampling Equipment Decontamination** | **4-11** |
| | 4.9.1 | Applicability | 4-11 |
| | 4.9.2 | Procedures | 4-12 |
| | 4.9.2.1 | Decontamination Equipment List | 4-12 |
| | 4.9.2.2 | General Equipment Decontamination Procedure | 4-13 |

| | | | |
|---|---|---|---|
| **5.0** | | **SAMPLE CUSTODY AND DOCUMENTATION** | **5-1** |
| **5.1** | | **Field Log Book** | **5-1** |
| **5.2** | | **Sample Numbering System** | **5-1** |
| **5.3** | | **Sample Documentation** | **5-3** |
| | 5.3.1 | Sample Labels and/or Tags | 5-3 |
| | 5.3.2 | Chain of Custody Records | 5-3 |
| | 5.3.3 | Custody Seals | 5-5 |
| **5.4** | | **Corrections to Documentation** | **5-5** |
| **5.5** | | **Field Variance System** | **5-6** |
| **6.0** | | **SAMPLE PACKAGING AND SHIPPING** | **6-1** |
| **6.1** | | **Sample Packaging** | **6-1** |
| **6.2** | | **Sample Shipping** | **6-2** |
| | 6.2.1 | Shipping Companies | 6-2 |
| | 6.2.2 | Shipping Destinations | 6-2 |
| **7.0** | | **CONTRACTOR QUALITY CONTROL** | **7-1** |
| **7.1** | | **Preparatory Phase** | **7-1** |
| **7.2** | | **Initial Phase** | **7-2** |
| **7.3** | | **Follow-Up Phase** | **7-2** |
| **8.0** | | **SITE REPORTING AND DAILY CHEMICAL QUALITY CONTROL REPORTS** | **8-1** |
| **8.1** | | **Daily Chemical Quality Control Reports** | **8-1** |
| **8.2** | | **Laboratory Analytical Data Reports** | **8-1** |
| **8.3** | | **Quality Control Summary Report** | **8-2** |
| **9.0** | | **CORRECTIVE ACTIONS** | **9-1** |
| **9.1** | | **Non-Conformance** | **9-1** |
| **9.2** | | **Corrective Action** | **9-2** |
| **10.0** | | **REFERENCES** | **10-1** |

## LIST OF TABLES AND FIGURES


| NUMBER | TABLES | PAGE |
|---|---|---|
| 2-1 | Points of Contact | 2-3 |
| 3-1 | Waste Characterization – Maximum Allowable Concentrations of Contaminants | 3-2 |
| 3-2 | Off-Site Source Material Acceptance Criteria | 3-3 |
| 4-1 | Sampling and Analysis Matrix | 4-2 |

| NUMBER | FIGURES | PAGE |
|---|---|---|
| 1-1 | Site Location Map | 1-3 |
| 1-2 | Site Plan With Cluster Designations | 1-4 |
| 2-1 | Organization Chart | 2-2 |
| 5-1 | Sample Numbering Scheme | 5-3 |


## APPENDICES


Appendix A: Standard Sample Tracking and Documentation Forms, Review Forms, and Checklists

- Sample Label and Custody Seal
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- Task Specific QC Checklist – Work Task: Sample Cooler Shipment
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- Corrective Action Form
- Laboratory/Analytical Deficiency Notification
- Data Evaluation Checklist

Appendix B: Analytical Laboratory Quality Assurance/Quality Control Plan

Appendix C: Measurement Performance Criteria

## List of Abbreviations and Acronyms

| | |
|---|---|
| CIH | Certified Industrial Hygienist |
| $cm^2$ | Square Centimeters |
| COC | Chain-of-Custody |
| CQC | Contractor Quality Control |
| CQCSM | Contactor Quality Control Systems Manager |
| DCQCR | Daily Chemical Quality Control Report |
| DQO | Data Quality Objective |
| FCR | Field Change Request |
| FedEx | Federal Express |
| FSP | Field Sampling Plan |
| $HNO_3$ | Nitric Acid |
| IDW | Investigation Derived Waste |
| µg | Microgram |
| mL | Milliliter |
| MS | Matrix Spike |
| MSD | Matrix Spike Duplicate |
| NCR | Non-Conformance Report |
| NJDEP | New Jersey Department of Environmental Protection |
| OU-2 | Operable Unit 2 |
| Oz | Ounce |
| PCB | Polychlorinated Biphenyl |
| pCi/g | Picocuries per gram |
| QA | Quality Assurance |
| QAPP | Quality Assurance Project Plan |
| QC | Quality Control |
| QCSR | Quality Control Summary Report |
| RDCSCC | Residential Direct Contact Soil Cleanup Criteria |
| SAP | Sampling and Analysis Plan |
| Sevenson | Sevenson Environmental Services, Inc. |
| SOP | Standard Operating Procedure |
| SSHO | Site Safety and Health Officer |
| SSHERP | Site Safety, Health, and Emergency Response Plan |
| SVOC | Semi-Volatile Organic Compound |
| TCLP | Toxicity Characteristic Leachate Procedure |
| TSCA | Toxic Substances Control Act |
| UPS | United Parcel Service |
| USACE | US Army Corps of Engineers |
| USDOT | US Department of Transportation |
| USEPA | US Environmental Protection Agency |
| VOC | Volatile Organic Compound |
| WST | Waste Stream Technology, Inc. |

# 1.0 PROJECT DESCRIPTION

## 1.1 Introduction

This Field Sampling Plan (FSP) is part of the Sampling and Analysis Plan (SAP), which has been prepared by Sevenson Environmental Services, Inc. (Sevenson) to fulfill the requirements of Contract W912DQ-04-D-0023, Delivery Order 0005 for the U.S. Army Corps of Engineers (USACE) at the Cornell-Dubilier Electronics Superfund Site (site), located in South Plainfield, New Jersey. The purpose of the SAP is to ensure that all data obtained from sampling during the implementation of the remedial action at the Site are of known and acceptable quality, legally defensible, and meet the requirements of the contract specifications and USACE Engineering Manual EM 200-1-3 (Requirements for the Preparation of Sampling and Analysis Plans, February 2001). The FSP describes the field sampling activities that must be performed and defines the procedures and methods that must be used to collect field measurements and samples. The FSP focuses on the performance of all data quality management activities and specifies the procedures for sample collection, packaging, shipping, and analysis. Additionally, the FSP describes field-sampling deliverables. The overall objective of the FSP is to develop and ensure the implementation of procedures for field sampling, chain-of-custody, laboratory analysis, and reporting that will provide legally defensible data of known quality. The FSP provides a framework to ensure that all sampling and analytical data are of known and acceptable quality required for meeting the needs of the end use of data.

## 1.2 Site Description

The site is located at 333 Hamilton Boulevard in South Plainfield, New Jersey in what is now the Hamilton Industrial Park occupied by an estimated fifteen commercial businesses. Through the years, numerous companies have operated at the site as tenants. It is estimated that approximately 540 people reside within 0.25 miles of the site and the nearest residential homes are less than 200 feet from the site (USEPA, 2006). An unnamed tributary to the Bound Brook traverses the southeast corner of the site property. A site location map is included as Figure 1-1. Operable Unit 2 (OU-2) addresses the remediation of source materials, including contaminated facility soils and buildings. OU-2 has been divided into clusters; Figure 1-2 shows a site plan with the cluster designations.

## 1.3 Site History and Contaminants

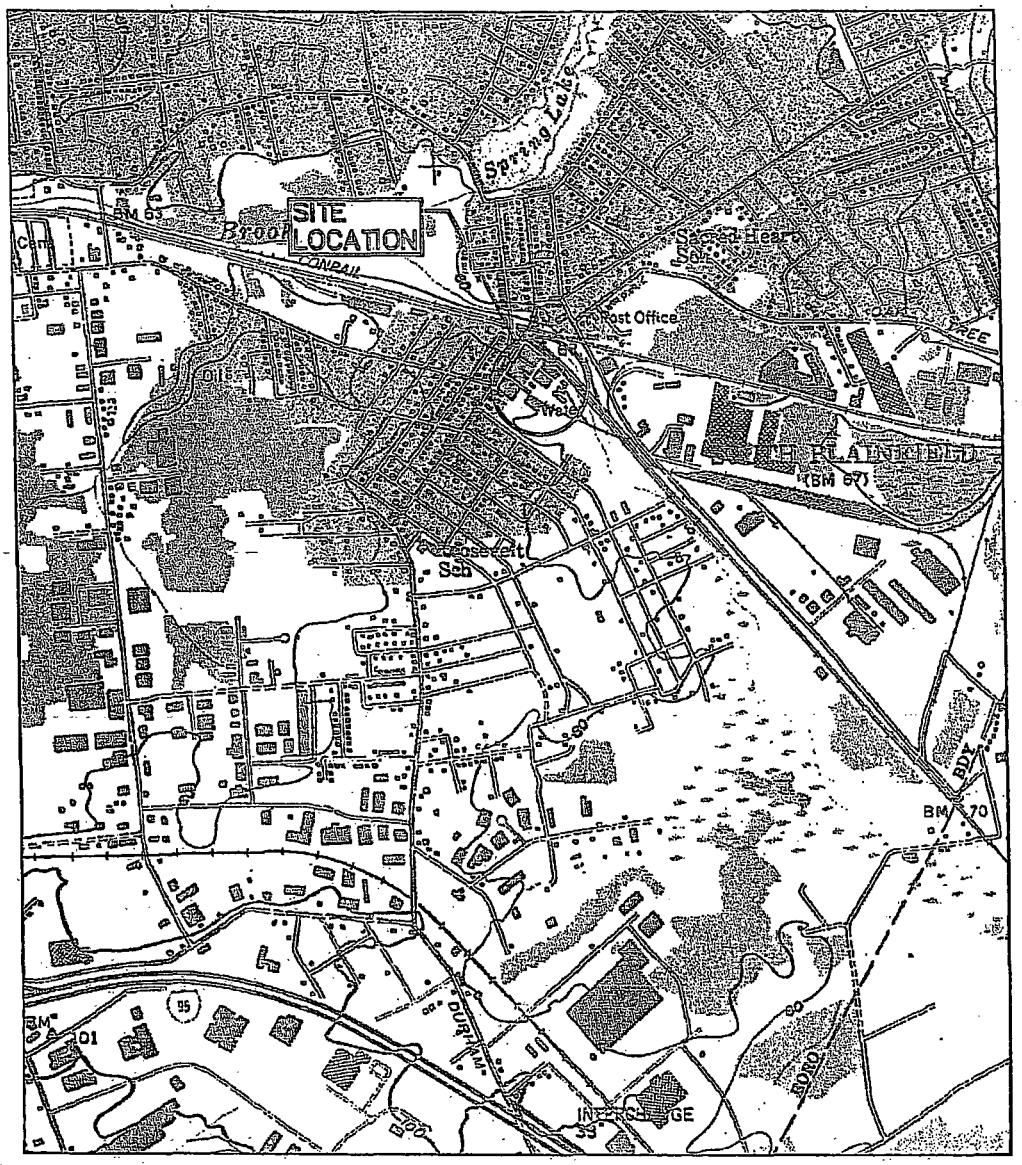
Cornell-Dubilier Electronics, Inc. manufactured electronic parts and components, including capacitors, from 1936 to 1962. Polychlorinated biphenyls (PCBs) and chlorinated organic degreasing solvents were used in the manufacturing process. It is alleged that during the period of operation, Cornell-Dubilier Electronics, Inc. dumped PCB-contaminated materials and other hazardous substances directly onto site soils. 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).

The soil at the site is contaminated with volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), inorganic constituents, and PCBs. In addition, building interiors at the site have been found to contain elevated levels of PCBs and metals. Historical site data pertaining to OU-2 was collected between 1997 and 2002 and are summarized in the *Final Remedial Investigation Report for OU-2 Onsite Soils and Buildings* (Foster Wheeler, 2002). In addition, summary tables of historical data pertaining to OU-2 buildings are included in the *Data Summary Report, Operable Unit 2 – Building Demolition, 100% Completion Phase* (Malcolm Pirnie, 2006).

## 1.4 Site Specific Definition of the Problem

Work is being conducted at the Cornell-Dubilier Electronics Superfund Site due to contamination found in soil and building materials associated with past industrial operations conducted at the site. Sevenson will be responsible for demolition of structures; transportation of all waste and offsite disposal of all waste including demolition debris and soil resulting from demolition; site restoration with backfill and pavement; sampling and analysis of soil, water, air, and building material; and other activities necessary for complete and proper demolition of the site.

## FIGURE 1-1: SITE LOCATION MAP




SOURCE: U.S.G.S. TOPOGRAPHIC MAP,
7.5 MINUTE SERIES, PLAINFIELD, NEW JERSEY
QUADRANGLE, 1955, PHOTOREVISED 1981

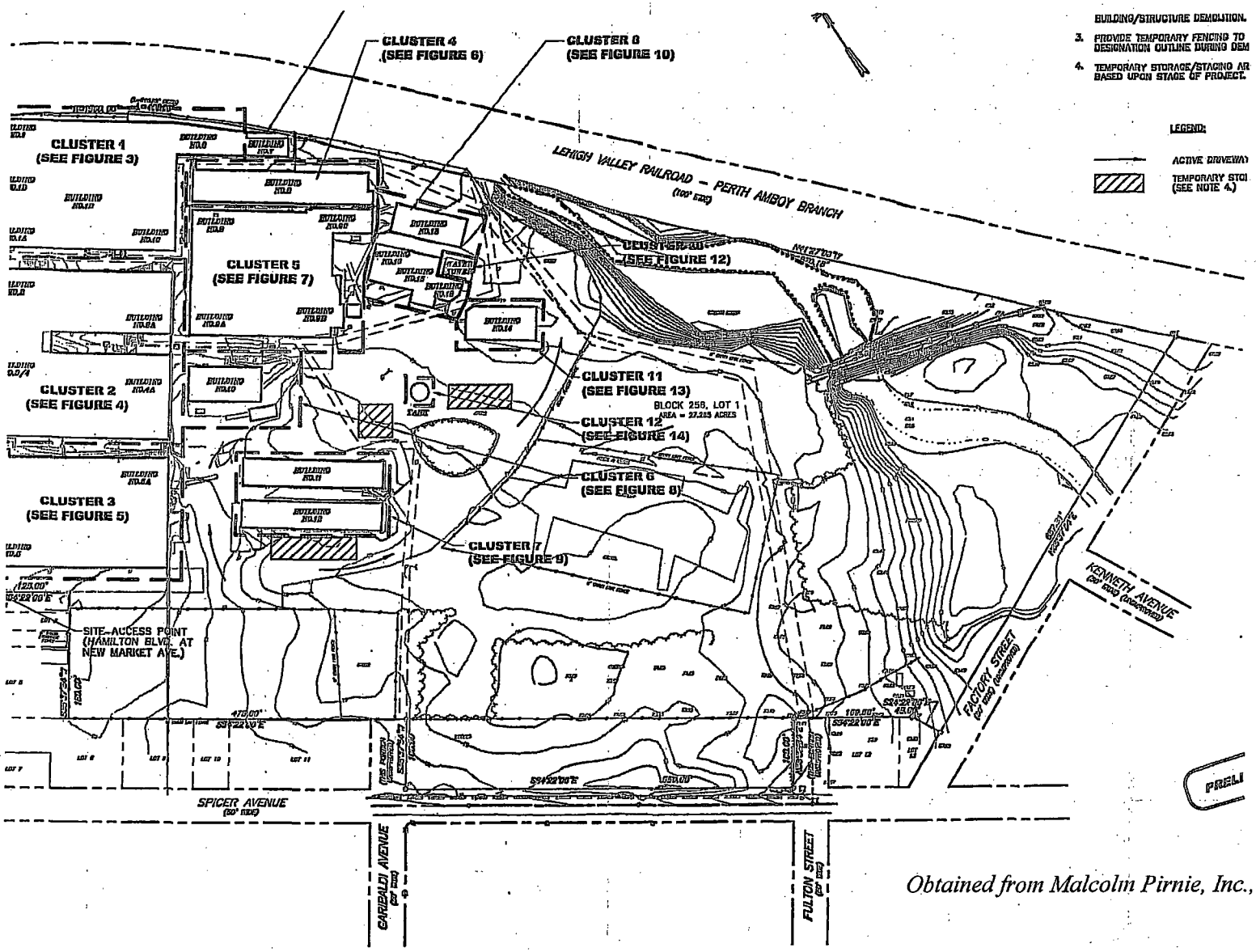
REF:

| MALCOLM PIRNIE | U.S. ARMY CORPS OF ENGINEERS<br>CORNELL–DUBILIER SUPERFUND SITE<br>SOUTH PLAINFIELD, NJ<br>CONTRACT No:<br>W912DQ–05–D–005 | SITE LOCATION MAP<br>SCALE AS NOTED | MALCOLM PIRNIE, INC.<br>JUNE 2006<br>FIGURE 1 |
|---|---|---|---|

User: WELSHANS Spec: PIRNIE STANDARD File: F:\Projects\4553023\CADD\Figures\SITE-LOCATION-4553023.DWG Scale: 1:1 Date: 06/19/2006 Time: 13:28 Layout: FIGURE 1

*Obtained from Malcolm Pirnie, Inc., 2006*

## FIGURE 1-2: SITE PLAN WITH CLUSTER DESIGNATIONS




*Obtained from Malcolm Pirnie, Inc., 2006*

# 2.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

## 2.1 Site Organization

The successful completion of any project requires an effective organization skilled in management techniques and controls. Sevenson distinguishes itself by its ability to organize, schedule, staff, and manage projects. Sevenson's corporate policy is to perform a quality job and earn a client's satisfaction, respect and repeat business. Sevenson's entire staff, including the President, involves themselves in project operations with project needs taking first priority. This approach is key to Sevenson's unmatched record for completing projects on time, within budget and to the customer's satisfaction.

Prior to mobilization to a job site, Sevenson establishes the project schedule, cost control system, prepares project submittals, and develops the required work plans and related documentation necessary to begin work. These are typically discussed with the owner of the project and their engineer.

These documents are reviewed weekly during job-site meetings and plan and/or work adjusted as conditions warrant.

## 2.2 Resource Management

Sevenson organizes projects with only the most qualified and experienced personnel from a company resource "pool". A project management team is assembled from the pool and is comprised of individuals who have the necessary experience to execute the work safely and efficiently and have experience working together, as a team, on past projects. Once project responsibilities are assigned, the onsite project manager establishes the lines of communications and reporting protocol. Keys to a successful project include teamwork, the development of close communication channels on every level, and clearly assigning responsibilities to project team members. The onsite project manager works closely with the corporate project manager to foster teamwork and cooperation.

Sevenson's employee turnover rate is nearly zero. Sevenson has earned the loyalty of its personnel by providing a secure and positive workplace environment. As a result of their commitment to the company, Sevenson employees are provided training and the real opportunity for personal and professional growth within

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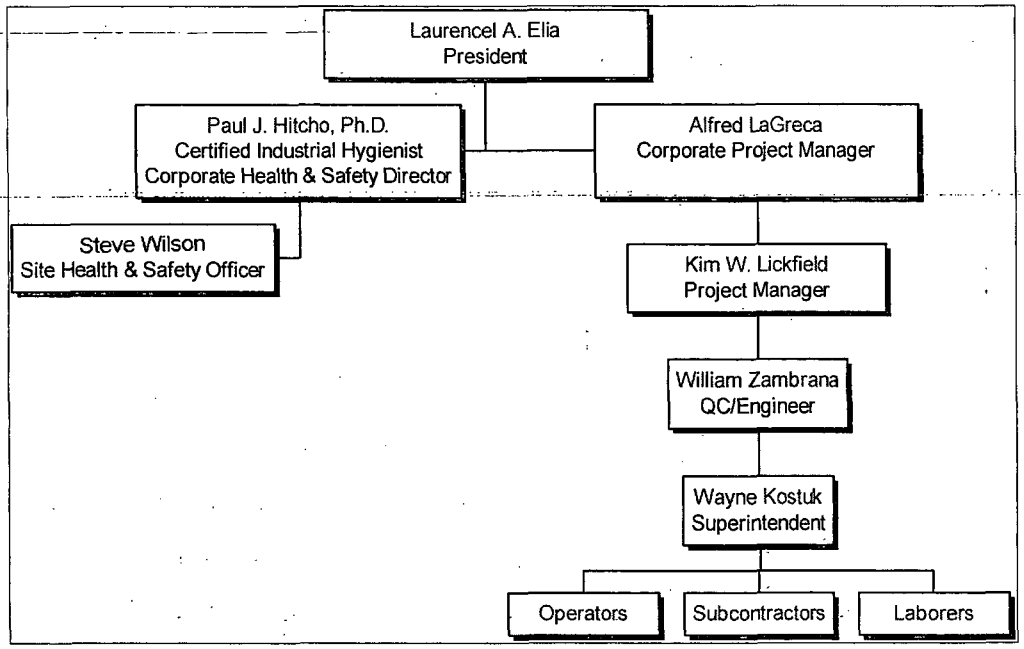
the organization. Their personal growth translates into gaining remedial construction insight and experience. Experience and well-trained employees translate into a better project.

When Sevenson engages subcontractors, subcontractor scheduling is incorporated into the Sevenson project planning process; and typically subcontractors work within the firm's project planning process.

## 2.3 Project Organization

The management structure that will be used to implement the project is presented in Figure 2-1. All individuals may be contacted as specified in Table 2-1.

**FIGURE 2-1: PROJECT ORGANIZATION**



| TABLE 2-1: POINTS OF CONTACT | | |
|---|---|---|
| **Name** | **Address** | **Phone Number** |
| Laurence Elia<br>(President) | Sevenson Environmental Services, Inc.<br>2749 Lockport Road<br>Niagara Falls, NY 14305 | Phone - 716-284-0431<br>Fax - 716-284-1796 |
| Al LaGreca<br>(Corporate Project Manager) | Sevenson Environmental Services, Inc.<br>2749 Lockport Road<br>Niagara Falls, NY 14305 | Phone - 716-284-0431<br>Fax - 716-284-1796 |
| Paul Hitcho<br>(Corporate Health and Safety Director) | Sevenson Environmental Services, Inc.<br>2749 Lockport Road<br>Niagara Falls, NY 14305 | Phone - 716-284-0431<br>Fax - 716-284-1796 |
| Kenneth Paisley<br>(Regulatory Specialist and Transportation Coordinator) | Sevenson Environmental Services, Inc.<br>2749 Lockport Road<br>Niagara Falls, NY 14305 | Phone - 716-284-0431<br>Fax - 716-285-4201 |
| Kim Lickfield<br>(Project Manager) | Sevenson Environmental Services, Inc.<br>2749 Lockport Road<br>Niagara Falls, NY 14305 | Phone - 716-284-0431<br>Fax - 716-284-1796 |
| William Zambrana<br>(CQCSM/Engineer) | Sevenson Environmental Services, Inc.<br>333 Hamilton Boulevard<br>South Plainfield, NJ 07080 | Phone – 908-769-5301<br>Fax – 908-769-5303 |
| Steve Wilson<br>(Site Safety and Health Officer) | Sevenson Environmental Services, Inc.<br>333 Hamilton Boulevard<br>South Plainfield, NJ 07080 | Phone – 908-769-5301<br>Fax – 908-769-5303 |
| Wayne Kostuk<br>(Superintendent) | Sevenson Environmental Services, Inc.<br>333 Hamilton Boulevard<br>South Plainfield, NJ 07080 | Phone – 908-769-5301<br>Fax – 908-769-5303 |
| Jennifer Singer<br>(Project Chemist) | Sevenson Environmental Services, Inc.<br>2749 Lockport Road<br>Niagara Falls, NY 14305 | Phone - 716-284-0431<br>Fax - 716-285-4201 |
| Dan Vollmer<br>(Laboratory Project Manager) | Waste Stream Technology, Inc.<br>302 Grote Street<br>Buffalo, NY 14207 | Phone - 716-876-5290<br>Fax - 716-876-2412 |

Sevenson, on behalf of USACE, has overall responsibility for the remedial activities at the Site. Sevenson will perform the sampling activities described in the FSP. In addition, Sevenson will be responsible for evaluating resultant sampling data and preparing required deliverables. Project direction and field quality assurance (QA) oversight will be provided by USACE.

Sevenson has assigned staff to the following key Chemical Quality Management positions:

- Laurence A. Elia – President

- Al LaGreca – Corporate Project Manager
- Paul Hitcho – Corporate Health and Safety Director
- Ken Paisely – Regulatory Specialist
- Kim Lickfield – On-Site Project Manager
- William Zambrana – Contractor Quality Control Systems Manager (CQCSM)/Engineer
- Steve Wilson – Site Safety and Health Officer (SSHO)
- Jennifer Singer – Project Chemist
- Wayne Kostuk – Superintendent

### 2.3.1 Proposed Staffing Plan

The project management and field supervision team assigned to the site possess a broad range of remedial action and construction skills. All have numerous years experience in the proper handling of contaminated material at hazardous waste sites. All are intimately familiar with components of a project team to work safely and efficiently on a day-to-day basis.

Sevenson's Project Manager and General Superintendent will be the persons with whom the USACE or its designated representative will deal on a daily basis at the job site.

When problems arise that cannot easily be handled in the field, Sevenson field personnel may rely completely on home office support. The first person to be notified in such case will be the Corporate Project Manager, namely, Mr. Al LaGreca. Mr. LaGreca will remain personally involved until the problem is resolved.

The site General Superintendent will report to Mr. LaGreca at least once a day on the progress of the job. Mr. LaGreca will in fact be present on the jobsite as required to ensure that the project is progressing on schedule. At a minimum, Mr. LaGreca will be present on site once a week for the first two months of the project.

Sevenson's health and safety staff consists of a certified site health and safety officer. The program is managed in-house by Dr. Paul Hitcho, a Board-Certified Industrial Hygienist (CIH). Dr. Hitcho is responsible for the preparation, implementation, and enforcement of the site-specific health and safety plans, as well as the air monitoring programs. The SSHO, Mr. Steve Wilson, will report to Dr. Hitcho on a regular basis. All job records generated are analyzed completely by Dr. Hitcho.

### 2.3.2 Home Office Personnel

**Laurence A. Elia – President.** Mr. Elia will be responsible for the project's success. He will make available all Sevenson resources required to ensure that the project is executed successfully. He will be informed of the project's progress and whether or not the contract is meeting its goals. Mr. Elia will resolve problems that cannot be resolved by the Program Manager. He will periodically visit the Site and become acquainted with field personnel and procedures.

**Paul Hitcho, PhD, CIH – Corporate Health and Safety Director.** Dr. Hitcho is a CIH with over 20 years experience in managing health and safety issues for government and private remedial projects. Dr. Hitcho will be responsible for review and approval of the Site Safety, Health, and Emergency Response Plan (SSHERP). He will also provide SSHO supervision, present initial site-specific training to all Site personnel, perform the respirator qualitative fit tests, and develop the air-monitoring program. He will conduct quarterly safety audits/inspections.

**Al LaGreca – Corporate Project Manager.** Mr. LaGreca will be ultimately responsible for the project's success. He will make available all Sevenson resources required to complete the project successfully. He will be kept informed of the project's progress and whether or not the contract is meeting its goals. Mr. LaGreca will resolve problems that cannot be resolved by the Project Manager or the Site Superintendent. He will periodically visit the site and become acquainted with field personnel and other representatives. It is anticipated Mr. LaGreca will be on-site once a month.

**Kenneth Paisley, CHMM – Regulatory Specialist/Transportation Coordinator.** Mr. Paisley has 17 years experience in the chemistry and environmental field. Mr. Paisley is committed to overseeing all field sampling and data acquisition plans, as well as interfacing with offsite laboratory concerns. Mr. Paisley will review laboratory reports with the selected laboratory in order to ensure compliance with project specifications and all required protocols. He will coordinate offsite waste removal, including transport, disposal, manifesting, waste profiles, regulatory compliance, and disposal requirements.

**Jennifer Singer – Project Chemist.** The Project Chemist will support the CQCSM. Ms. Singer will review and perform a data review of all analytical data reports received from the laboratory prior to the submission of the data to the USACE and prior to preparation and completion of the chemical data reporting.

### 2.3.3 Field Personnel

**Kim Lickfield – Onsite Project Manager.** The responsibilities of the Project Manager will include:

- Subcontractor coordination and oversight.
- Acting as Site liaison between Sevenson, USACE, and U.S. Environmental Protection Agency (USEPA).
- Charge of all field operations.
- Hiring and termination/reassignment of personnel as necessary to support successful task order implementation.
- Management and coordination of all aspects of the project as defined in the Contract Specifications with an emphasis on adhering to the objectives of the remedial activities.
- Assuring corrective actions are taken for deficiencies cited during audits of sampling/analytical activities.
- Project coordination to implement and comply with the SAP in coordination with the USACE, CQCSM, and Environmental Samplers, including the coordination of field and laboratory schedules pertaining to relevant operation/sampling activities and allocation of resources and staffing to implement the QA and quality control (QC) program.
- Implementation of the SSHERP, including temporarily suspending field activities if the health and safety of personnel are endangered and/or temporarily suspending an individual for field activities for infractions of the SSHERP, pending further consideration by the Health and Safety Director.
- Review of all documents prepared by project personnel, including all relevant field records and logs.

**William Zambrana – Contractor Quality Control Systems Manager/Engineer.** As CQCSM, Mr. Zambrana will report directly to the Project Manager on matters concerning quality control. He will have both the authority and the duty to stop whatever operation appears to be out of compliance with the contract documents. The CQCSM is responsible for field chemistry and environmental sampling staff, and responsibility for all records related to personnel, supplies, equipment use, equipment calibration, and waste transportation and disposal.

**Steve Wilson – Site Health and Safety Officer.** As SSHO, Mr. Wilson will report directly to the Corporate Health and Safety Director and be responsible for the implementation of Sevenson's approved SSHERP, including conducting required safety inspections, safety briefings, and reports of safety-related activities.

**Wayne Kostuk –Superintendent.** Mr. Kostuk will be in charge of all field operations. In conjunction with the Project Manager, he will arrange schedules for delivery of materials and equipment for the work and be responsible for equipment management. All foremen will report directly to Mr. Kostuk. He will also attend all meetings between Sevenson and the Engineer. His duties include supervision of equipment operators, truck drivers, laborers, and technical staff (e.g., survey crew).

## 3.0 SCOPE AND OBJECTIVES

The scope of the remedial action involves the removal and offsite disposal of site buildings and structures. Specific work items include:

- Verifying the location of and disconnecting all utilities to the individual buildings and structures.
- Acquiring all necessary permits and licenses.
- Implementing site monitoring and controls including temporary fencing and security.
- Removal, separation, and offsite disposal of trash, tires, and other wastes located within buildings to be demolished and throughout the site.
- Asbestos removal and disposal.
- Demolition of buildings and structures.
- Sampling, testing, removal, and disposal of hazardous materials and special wastes including PCB-containing materials and equipment, metals, transformers, and capacitors to an approved recycling or disposal facility.
- Foundation restoration.

Samples will be collected for characterization of debris, soil, concrete, and water to determine the offsite disposal requirements. In addition, samples will be collected to determine backfill and topsoil quality prior to bringing such materials to the site. Details of the sample collection procedures are included in Section 4.0 of this FSP.

### 3.1 Waste Characterization Samples

Debris, soil, concrete, and water samples will be collected for waste characterization and disposal facility approval. Samples for metal, VOC, SVOC, pesticide, and herbicide analyses will undergo toxicity characteristic leachate procedure (TCLP) extractions prior to laboratory analysis. Samples for PCB analysis will be analyzed for total PCBs. Waste characterization samples will be compared against the 40CFR261 *Characteristics of Hazardous Waste* and 40CFR761 *PCB Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions* to determine the disposal requirements. The regulatory criteria are summarized in Table 3-1. Any debris or soils containing concentrations of total PCBs greater than the regulatory standards will be disposed of as PCB remediation wastes.

| TABLE 3-1: WASTE CHARACTERIZATION - MAXIMUM ALLOWABLE CONCENTRATIONS OF CONTAMINANTS | | |
|---|---|---|
| **Contaminant** | **Regulatory Level** | **Laboratory Reporting Limit** |
| **Metals (mg/L)** | | |
| Arsenic | 5.00 | 0.045 |
| Barium | 100.00 | 0.025 |
| Cadmium | 1.00 | 0.025 |
| Chromium | 5.00 | 0.025 |
| Lead | 5.00 | 0.075 |
| Mercury | 0.20 | 0.001 |
| Selenium | 1.00 | 0.095 |
| Silver | 5.00 | 0.025 |
| **Volatile Organic Compounds (µg/L)** | | |
| Benzene | 500 | 10.0 |
| 2-Butanone | 200,000 | 100.0 |
| Carbon Tetrachloride | 500 | 10.0 |
| Chlorobenzene | 100,000 | 10.0 |
| Chloroform | 6,000 | 10.0 |
| 1,2-Dichloroethane | 500 | 10.0 |
| 1,1-Dichloroethene | 700 | 10.0 |
| Tetrachloroethene | 700 | 10.0 |
| Trichloroethene | 500 | 10.0 |
| Vinyl Chloride | 200 | 10.0 |
| **Semi-Volatile Organic Compounds (µg/L)** | | |
| Cresols (o, m, and p) | 200,000 | 24.0 |
| 1,4-Dichlorobenzene | 7,500 | 8.0 |
| 2,4-Dinitrotoluene | 130 | 8.0 |
| Hexachlorobenzene | 130 | 8.0 |
| Hexachlorobutadiene | 500 | 8.0 |
| Hexachloroethane | 3,000 | 8.0 |
| Nitrobenzene | 2,000 | 8.0 |
| Pentachlorophenol | 100,000 | 16.0 |
| Pyridine | 5,000 | 8.0 |
| 2,4,5-Trichlorophenol | 400,000 | 8.0 |
| 2,4,6-Trichlorophenol | 2,000 | 16.0 |
| **Pesticides (µg/L)** | | |
| Chlordane | 30 | 0.800 |
| Endrin | 20 | 0.040 |
| Heptachlor | 8 | 0.040 |
| Lindane (gamma-BHC) | 400 | 0.040 |
| Methoxychlor | 10,000 | 0.040 |
| Toxaphene | 500 | 1.00 |

| TABLE 3-1: WASTE CHARACTERIZATION - MAXIMUM ALLOWABLE CONCENTRATIONS OF CONTAMINANTS | | |
|---|---|---|
| **Contaminant** | **Regulatory Level** | **Laboratory Reporting Limit** |
| **Herbicides (µg/L)** | | |
| 2,4-D | 10,000 | 20 |
| 2,4,5-TP (Silvex) | 1,000 | 20 |
| **PCBs (mg/Kg)** | | |
| Total PCBs | 50 | 0.0033 (per Aroclor) |

## 3.2 Topsoil and Backfill Materials

Samples of topsoil and backfill materials from each offsite source will be collected and analyzed to verify that these materials do not contain contaminant levels that are hazardous to human health or the environment. Written approval from USACE will be received prior to bringing backfill or topsoil to the Site. New Jersey Department of Environmental Protection (NJDEP) Residential Direct Contact Soil Cleanup Criteria (RDCSCC) will be used to determine if borrow materials are free from contamination. A summary of the NJDEP RDCSCC are included in Table 3-2. Offsite source materials shall be analyzed for uranium and thorium decay chains. Analysis for the uranium and thorium decay chains will occur via gamma spectroscopy and use prominent nuclides such as radium-226 and radium-228 to assess the levels within these decay chains. The maximum acceptable levels for radiological testing of the off-Site source materials are the sum of radium-226 and radium-228 not to exceed 3 pico Curies per gram (pCi/g). With the exception of potassium-40, no other isotope shall exceed 5pCi/g. The radiological analytical method must be able to achieve a laboratory reporting limit of 1pCi/g.

| TABLE 3-2: OFF-SITE SOURCE MATERIAL ACCEPTANCE CRITERIA | | |
|---|---|---|
| **Contaminant** | **NJDEP RDCSCC** | **Laboratory Reporting Limit** |
| **TCL VOCs (µg/Kg)** | | |
| Acetone | 1,000,000 | 10.0 |
| Acrylonitrile | 1,000 | 10.0 |
| Benzene | 3,000 | 2.0 |
| Bromodichloromethane | 11,000 | 2.0 |
| Bromoform | 86,000 | 2.0 |
| Bromomethane | 79,000 | 10.0 |
| 2-Butanone | 1,000,000 | 10.0 |
| Carbon Tetrachloride | 2,000 | 2.0 |
| Chlorobenzene | 37,000 | 2.0 |

| TABLE 3-2: OFF-SITE SOURCE MATERIAL ACCEPTANCE CRITERIA | | |
|---|---|---|
| **Contaminant** | **NJDEP RDCSCC** | **Laboratory Reporting Limit** |
| Chloroform | 19,000 | 2.0 |
| Chloromethane | 520,000 | 10.0 |
| Dibromochloromethane | 110,000 | 2.0 |
| 1,1-Dichloroethane | 570,000 | 2.0 |
| 1,2-Dichloroethane | 6,000 | 2.0 |
| 1,1-Dichloroethene | 8,000 | 2.0 |
| cis-1,2-Dichloroethene | 79,000 | 2.0 |
| trans-1,2-Dichloroethene | 1,000,000 | 2.0 |
| 1,2-Dichloropropane | 10,000 | 2.0 |
| cis&trans-1,3-Dichloropropene | 4,000 | 2.0 |
| Ethylbenzene | 1,000,000 | 2.0 |
| Methylene Chloride | 49,000 | 2.0 |
| 4-Methyl-2-Pentanone | 1,000,000 | 10.0 |
| Styrene | 23,000 | 2.0 |
| 1,1,1,2-Tetrachloroethane | 170,000 | 2.0 |
| 1,1,2,2-Tetrachloroethane | 34,000 | 2.0 |
| Tetrachloroethene | 4,000 | 2.0 |
| Toluene | 1,000,000 | 2.0 |
| 1,1,1-Trichloroethane | 210,000 | 2.0 |
| 1,1,2-Trichloroethane | 22,000 | 2.0 |
| Trichloroethene | 23,000 | 2.0 |
| Vinyl Chloride | 2,000 | 10.0 |
| Xylenes (Total) | 410,000 | 4.0 |
| **TCL SVOCs (µg/Kg)** | | |
| Acenaphthene | 3,400,000 | 67 |
| Anthracene | 10,000,000 | 67 |
| Benzo(a)anthracene | 900 | 67 |
| Benzo(a)pyrene | 660 | 67 |
| Benzo(b)fluoranthene | 900 | 67 |
| Benzo(k)fluoranthene | 900 | 67 |
| Benzyl Alcohol | 10,000,000 | 67 |
| Butylbenzylphthalate | 1,100,000 | 67 |
| di-n-Butylphthalate | 5,700,000 | 67 |
| 4-Chloroaniline | 230,000 | 67 |
| bis(2-Chloroethyl)Ether | 660 | 67 |
| bis(2-Chloroisopropyl)Ether | 2,300,000 | 67 |
| 4-Chloro-3-Methylphenol | 10,000,000 | 133 |
| 2-Chlorophenol | 280,000 | 130 |
| Chrysene | 9,000 | 67 |
| Dibenzo(a,h)anthracene | 660 | 67 |

| TABLE 3-2: OFF-SITE SOURCE MATERIAL ACCEPTANCE CRITERIA | | |
|---|---|---|
| **Contaminant** | **NJDEP RDCSCC** | **Laboratory Reporting Limit** |
| 1,2-Dichlorobenzene | 5,100,000 | 67 |
| 1,3-Dichlorobenzene | 5,100,000 | 67 |
| 1,4-Dichlorobenzene | 570,000 | 67 |
| 3,3'-Dichlorobenzidine | 2,000 | 67 |
| 2,4-Dichlorophenol | 170,000 | 130 |
| Diethylphthalate | 10,000,000 | 67 |
| 2,4-Dimethylphenol | 1,100,000 | 130 |
| Dimethylphthalate | 10,000,000 | 67 |
| 2,4-Dinitrophenol | 110,000 | 130 |
| Dinitrotoluene (2,4-/2,6-mixture) | 1,000 | 67 |
| bis(2-Ethylhexyl)phthalate | 49,000 | 67 |
| Fluoranthene | 2,300,000 | 67 |
| Fluorene | 2,300,000 | 67 |
| Hexachlorobenzene | 660 | 67 |
| Hexachlorobutadiene | 1,000 | 67 |
| Hexachlorocyclopentadiene | 400,000 | 130 |
| Hexachloroethane | 6,000 | 67 |
| Indeno(1,2,3-cd)pyrene | 900 | 67 |
| Isophorone | 1,100,000 | 67 |
| 2-Methylphenol | 2,800,000 | 67 |
| 4-Methylphenol | 2,800,000 | 67 |
| Naphthalene | 230,000 | 67 |
| Nitrobenzene | 28,000 | 67 |
| N-Nitrosodiphenylamine | 140,000 | 67 |
| N-Nitroso-di-n-Propylamine | 660 | 67 |
| di-n-Octylphthalate | 1,100,000 | 67 |
| Pentachlorophenol | 6,000 | 130 |
| Phenol | 10,000,000 | 130 |
| Pyrene | 1,700,000 | 67 |
| 1,2,4-Trichlorobenzene | 68,000 | 67 |
| 2,4,5-Trichlorophenol | 5,600,000 | 67 |
| 2,4,6-Trichlorophenol | 62,000 | 130 |
| **TCL Pesticides (µg/Kg)** | | |
| Aldrin | 40 | 0.400 |
| 4,4'-DDD | 3,000 | 0.400 |
| 4,4'-DDE | 2,000 | 0.400 |
| 4,4'-DDT | 2,000 | 0.400 |
| Dieldrin | 42 | 0.400 |
| Endosulfan | 340,000 | 0.400 |
| Endrin | 17,000 | 0.400 |

| TABLE 3-2: OFF-SITE SOURCE MATERIAL ACCEPTANCE CRITERIA | | |
|---|---|---|
| **Contaminant** | **NJDEP RDCSCC** | **Laboratory Reporting Limit** |
| Gamma-BHC | 520 | 0.400 |
| Heptachlor | 150 | 0.400 |
| Methoxychlor | 280,000 | 0.400 |
| Toxaphene | 100 | 8.30 |
| **PCBs (µg/Kg)** | | |
| PCBs | 490 | 3.30 |
| **TAL Metals (mg/Kg)** | | |
| Antimony | 14 | 1.40 |
| Arsenic | 20 | 1.70 |
| Barium | 700 | 1.00 |
| Beryllium | 2 | 0.50 |
| Cadmium | 39 | 1.00 |
| Chromium – hexavalent (VI) | 240 | 1.00 |
| Chromium – trivalent (III) | 120,000 | 1.00 |
| Copper | 600 | 1.00 |
| Cyanide | 1100 | 0.50 |
| Lead | 400 | 4.10 |
| Mercury | 14 | 0.014 |
| Nickel | 250 | 1.00 |
| Selenium | 63 | 1.40 |
| Silver | 110 | 0.50 |
| Thallium | 2 | 1.30 |
| Vanadium | 370 | 1.00 |
| Zinc | 1500 | 4.00 |
| **Contaminant** | **Radiological Material Action Level (pCi/g)** | |
| Radium-226 + Radium-228 | 3 | |
| Gamma Spec (isotopes in Uranium and Thorium decay | 5 | |
| Reference: NJDEP SRP Regulations and Guidance, Last Updated 5/12/99; http://www.state.nj.us/dep/srp/regs/scc/ | | |

## 3.3 PCB Wipe Samples

Wipe samples will be collected from nonporous (i.e., metal) materials in order to determine offsite disposal requirements. Wipe samples with PCB concentrations greater than 10 micrograms (µg) per 100 centimeters square ($cm^2$) will require disposal at a Toxic Substances Control Act (TSCA) landfill.

# 4.0 FIELD ACTIVITIES

Field sampling activities in support of site remediation are presented in this section. The types of samples to be collected include: solid waste disposal characterization samples, concrete samples, wastewater (i.e., decontamination water) disposal characterization samples, PCB wipe samples, and backfill/topsoil samples. Specified sample collection and identification procedures, QA/QC requirements, and standard procedures necessary for obtaining data of acceptable quality are also presented in this and subsequent sections of the FSP. Qualified personnel experienced in the type of sampling being performed will conduct all sampling. Sampling personnel will adhere to health and safety requirements provided in the SSHERP. The following sections detail the methods of collection for each of the sampling matrixes listed above.

## 4.1 Solid Waste Characterization Samples

Prior to intrusive remediation activities, samples will be collected from building walls and floors based on pre-established construction drawings for each cluster. Samples will be collected for waste characterization and disposal facility approval. The waste characterization samples will be analyzed for corrosivity, ignitability, hydrogen cyanide reactivity, hydrogen sulfide reactivity, toxicity characteristic leachate procedure (TCLP) VOCs, TCLP SVOCs, TCLP pesticides, TCLP herbicides, TCLP metals, and total PCBs by the contract laboratory, as summarized in Table 4-1. The sample results and the completed waste profile will be sent to the offsite disposal facility for waste shipment approval.

Waste characterization samples will be collected as chip samples or core samples, depending upon site conditions and the material to be sampled.

Chip samples will be collected following the procedures included in the NJDEP *Field Sampling Procedures Manual* (NJDEP, 2005). To collect a chip sample, the following procedure will be followed:

- Place a new piece of polyethylene sheeting underneath the sampling location to catch any debris produced during collection of the chip samples.
- Wearing a new pair of disposable gloves and using a dedicated chisel or paint scraper and hammer, break up the surface to be sampled. The area should be chipped to less than one-quarter inch. Record how deep the chips were taken.

## Table 4-1: Sampling and Analysis Matrix

| *Sample* | *Location* | *Rationale* | *Parameter(s)* | *Sample Type* | *Type of Bottles*[1,2] | *Number of Bottles*[1,2] | *Methodology* | *Holding Time*[3] | *Preservative* |
|---|---|---|---|---|---|---|---|---|---|
| Solid Waste Characterization | Building walls and floors per construction drawings | Meet federal, state, and local regulations in accordance with the requirements of the disposal facility | Ignitability | Composite | 32oz. CWM | 1 | SW-846 1010 | 7 days | Cool 4°C |
| | | | Corrosivity | | | | SW-846 9045C | 14 days | |
| | | | Reactive Cyanide | | | | SW-846 Section 7.4.3.2/ Method 9014 | 14 days | |
| | | | Reactive Sulfide | | | | SW-846 Section 7.4.4.2/ Method 9034 | 7 days | |
| | | | TCLP Metals | | | | SW-846 1311/3015/6010B/ 7470A | 180 days to TCLP extraction (Hg 28 days) 180 days to analysis (Hg 28 days) | |
| | | | TCLP SVOCs | | | | SW-846 1311/3510C/8270C | 14 days to TCLP extraction 7 days to preparative extraction 40 days to analysis | |
| | | | TCLP Pesticides | | | | SW-846 1311/3510C/8081A | 14 days to TCLP extraction 7 days to preparative extraction 40 days to analysis | |
| | | | TCLP Herbicides | | | | SW-846 1311/3510C/8151A | 14 days to TCLP extraction 7 days to preparative extraction 40 days to analysis | |
| | | | Total PCBs | Composite | 4 oz. CWM | 1 | SW-846 3550C/8082 | 14 days to extraction 40 days to analysis | Cool 4°C |
| | | | TCLP VOCs | Grab | 4 oz. CWM | 2 | SW-846 1311/5030B/8260B | 14 days to TCLP extraction 14 days to analysis | Cool 4°C |
| Concrete | Concrete pads | Meet federal, state, and local regulations in accordance with the requirements of the disposal facility | Total PCBs | Composite | 2 oz. CWM | 1 | SW-846 3550C/8082 | 14 days to extraction 40 days to analysis | Cool 4°C |
| | | | TCLP Metals | Composite | 2oz. CWM | 2 | SW-846 3050/6010B/7471A | 180 days to TCLP extraction (Hg 28 days) 180 days to analysis (Hg 28 days) | Cool 4°C |
| Subsurface Soil and Concrete | Foundation walls and surrounding soils | Determine subsurface concentrations of total PCBs in order to determine remediation requirements | Total PCBs | Composite | 2 oz. CWM | 1 | SW-846 3550C/8082 | 14 days to extraction 40 days to analysis | Cool 4°C |
| Wastewater[4] | Storage tank | Meet federal, state, and local regulations in accordance with the requirements of the disposal facility | Ignitability | Composite | 1L AG | 3 | SW-846 1010 | 7 days | Cool 4°C |
| | | | Corrosivity | | | | SW-846 9040C | Immediately | |
| | | | Reactive Cyanide | | | | SW-846 Section 7.4.3.2/ Method 9014 | 14 days | |
| | | | Reactive Sulfide | | | | SW-846 Section 7.4.4.2/ Method 9034 | 7 days | |
| | | | TCLP Metals | | | | SW-846 1311/3015/6010B/ 7470A | 180 days to TCLP extraction (Hg 28 days) 180 days to analysis (Hg 28 days) | |

| *Sample* | *Location* | *Rationale* | *Parameter(s)* | *Sample Type* | *Type of Bottles*[1,2] | *Number of Bottles*[2] | *Methodology* | *Holding Time*[3] | *Preservative* |
|---|---|---|---|---|---|---|---|---|---|
| | | | TCLP SVOCs | | | | SW-846 1311/3510C/8270C | 14 days to TCLP extraction<br>7 days to preparative extraction<br>40 days to analysis | |
| | | | TCLP Pesticides | | | | SW-846 1311/3510C/8081A | 14 days to TCLP extraction<br>7 days to preparative extraction<br>40 days to analysis | |
| | | | TCLP Herbicides | | | | SW-846 1311/3510C/8151A | 14 days to TCLP extraction<br>7 days to preparative extraction<br>40 days to analysis | |
| | | | TCLP VOCs | Grab | 40 mL G vial w/Teflon septa | 4 | SW-846 1311/5030C/8260B | 14 days to TCLP extraction<br>14 days to analysis | Cool 4°C |
| | | | Total PCBs | Grab | 1L AG | 2 | SW-846 8082 | 7 days to extraction<br>40 days to analysis | Cool 4°C |
| Backfill/ Topsoil | Off-Site Borrow Source(s) | Establish that backfill and topsoil material brought on-Site for restoration activities are not hazardous to human health or the environment | VOCs | Grab | EnCore™ sampler | 2 | SW-846 5035/8260B | 48 hours to preservation by laboratory<br>14 days to analysis | Cool 4°C |
| | | | TCL SVOCs | Composite | 32oz. CWM | 2 | SW-846 3550C/8270C | 14 days to extraction<br>40 days to analysis | Cool 4°C |
| | | | TCL Pesticides | Composite | | | SW-846 3550C/8081A | 14 days to extraction<br>40 days to analysis | Cool 4°C |
| | | | Total PCBs | Composite | | | SW-846 3550C/8082 | 14 days to extraction<br>40 days to analysis | Cool 4°C |
| | | | Cyanide | Composite | | | SW-846 Section 7.4.3.2/ Method 9014 | 14 days | Cool 4°C |
| | | | TAL Metals | Composite | | | SW-846 3050/6010B/7471A | 180 days to digestion<br>180 days to analysis<br>(Hg 28 days) | Cool 4°C |
| Wipe | Non-porous surfaces | Establish disposal requirements | Total PCBs | Wipe | 3"x3" gauze soaked with 1:4 acetone/hexane | 1 | SW-846 8082 | 14 days to extraction<br>40 days to analysis | Cool 4°C |

Notes:
[1] Bottle types – AG: Amber Glass; HDPE: High Density Polyethylene Plastic; CWM: Clear wide mouth glass jar with Teflon lid
[2] All bottles should be filled completely with zero head space
[3] From Verified Time of Sample Collection
[4] For TCLP analysis on aqueous samples, the laboratory will filter the sample and the aqueous filtrate becomes the TCLP extract. If the aqueous sample contains visible solids, then a percent dry solids determination is performed. If the percent dry solids is >0.5% (about 50g of solids in 1L of aqueous sample), a TCLP extraction will be performed if there is at least 130g of solids present. The aqueous filtrate and TCLP extract are combined for analysis.

- Avoid scattering pieces outside of the sampling area boundary. Any pieces that fall outside of the sampling area should not be used.
- Collect the chipped pieces using a dedicated, decontaminated brush and dustpan lined with aluminum foil. Transfer the sample into the sample containers (Table 4-1).
- Each time a new sample is collected, a new pair of disposable gloves and a new sheet of aluminum foil will be used to prevent cross-contamination. In addition, if dedicated, disposable equipment is not used, the chisel and brush will be cleaned between each sample location.

Core samples will be collected as follows:

- At each sample location, a new pair of disposable gloves, safety glasses or goggles, and hearing protection will be donned.
- Place the coring device against the area to be sampled. Activate the coring device and advance the bit into the surface to the desired depth (i.e., at least one-third the depth of the concrete). Once the bit had advanced through the entire depth of the surface, the coring device will be removed and the core sample retrieved.
- The core will be placed into the sample containers (Table 4-1). If necessary, the cores will be crushed with a hammer or other appropriate means and sieved prior to filling the sample containers for submittal to the offsite laboratory.

## 4.2 Concrete Samples

Sampling of concrete pads will be performed in order to determine the disposal options for these materials. The concrete samples will be analyzed for TCLP metals and total PCBs by the contract laboratory, as summarized in Table 4-1. The sample results and the completed waste profile will be sent to the offsite disposal facility for waste shipment approval. Concrete samples will be collected as core samples, as follows:

- At each sample location, a new pair of disposable gloves, safety glasses or goggles, and hearing protection will be donned.
- Place the coring device against the area to be sampled. Activate the coring device and advance the bit into the surface to the desired depth (i.e., at least one-third the depth of the concrete). Once the bit had advanced through the entire depth of the surface, the coring device will be removed and the core sample retrieved.

- The core will be placed into the sample containers (Table 4-1). If necessary, the cores will be crushed with a hammer or other appropriate means and sieved prior to filling the sample containers for submittal to the offsite laboratory.

## 4.3 In-Situ Subsurface Soil and Concrete Samples

In-situ samples will be collected of the subsurface soil and concrete in order to determine remediation requirements. Samples will be analyzed for total PCBs by the contract laboratory, as summarized in Table 4-1. Building foundations will be exposed every 100-feet.

Concrete chip samples will be collected following the procedures included in the NJDEP *Field Sampling Procedures Manual* (NJDEP, 2005). To collect a chip sample, the following procedure will be followed:

- Wearing a new pair of disposable gloves and using a dedicated chisel or paint scraper and hammer, break up the surface to be sampled. The area should be chipped to less than one-quarter inch. Record how deep the chips were taken.
- Avoid scattering pieces outside of the sampling area boundary. Any pieces that fall outside of the sampling area should not be used.
- Collect the chipped pieces using a dedicated, decontaminated brush and dustpan lined with aluminum foil. Transfer the sample into the sample containers (Table 4-1).
- Each time a new sample is collected, a new pair of disposable gloves and a new sheet of aluminum foil will be used to prevent cross-contamination. In addition, if dedicated, disposable equipment is not used, the chisel and brush will be cleaned between each sample location.

Subsurface soil samples will be collected following the procedures included in the NJDEP *Field Sampling Procedures Manual* (NJDEP, 2005). The scoop/trowel method will be utilized to collected subsurface soil samples, as follows:

- Gloves will be donned immediately prior to sampling and a clean pair of new disposable gloves will be worn each time a different location is sampled.
- Insert trowel into soil to desired depth (e.g., six inches) and remove the sample.

- Place the sample into a new, clean ziplock-style bag or bowl to be homogenized. Samples will be homogenized by physically mixing the soil by hand from outside the bag or by mixing the soil by hand or with the trowel in the bowl. At no time will be bare hand come into contact with the sample.
- Transfer the sample to the appropriate container (Table 4-1). Ensure that the threads, lid, and outer edges of the sample container are free of soil particles. Use a clean paper towel to remove soil particles from the threads and sealing surface of the sample container. Make sure the container lid is firmly secure.

## 4.4 Wastewater Characterization Samples

Wastewaters generated during Site activities will include decontamination water and storm water which may accumulate in the remediation areas. Liquid wastes will be containerized in an aboveground storage tank. Aqueous samples will be collected to determine the waste management approach. The goal of sampling the wastewaters will be to meet Federal, state, and local regulations in accordance with the requirements of the disposal facility. Required analyses, sample container requirements, and sample analysis methods are presented in Table 4-1.

Samples will be collected using dedicated, disposable polyvinyl chloride or Teflon bailers. The following sample procedure is consistent with NJDEP sampling instructions (NJDEP, 2005):

- Prepare the work area by placing plastic sheeting on the ground to avoid cross-contamination.
- Attach a bailer to cable or line for lowering. Polyethylene or nylon rope is recommended.
- Lower the bailer slowly until it contacts the water surface.
- Allow the bailer to sink and fill.
- Slowly raise the bailer to the surface. Do not allow the bailer line or bailer to contact the ground surface.
- Fill sample bottles by tipping bailer to allow slow discharge from the top to flow gently down the side of the sample bottle with minimum turbulence. If a bottom drain is present on the bailer, achieve a slow steady flow.
- Repeat as necessary to acquire sufficient volume to fill all sample containers (Table 4-1).
- Secure all caps tightly and place the filled containers on ice immediately.
- Dispose of the bailer and line in accordance with Section 4.7. Decontaminate any non-dedicated sampling equipment.

## 4.5 Wipe Samples

Wipe samples will be collected in order to monitor surficial contamination on non-porous surfaces. Wipe samples will be collected following the procedures included in the NJDEP *Field Sampling Procedures Manual* (NJDEP, 2005). To collect a wipe sample, the following procedure will be followed:

- Place a clean, appropriately sized square template cutout over the area to be sampled (TSCA requires $100cm^2$). Secure the template to avoid any shifting during the sampling activity. Do not touch or walk on marked areas.
- Wearing a new pair of gloves, obtain a sterile wrapped gauze pad. The gauze should be 3 inches square. The use of filter paper is not recommended as it tends to rip and crumble if the surface is slightly rough. If filter paper is used, it should be four-inch diameter heavy gauge paper.
- Soak the gauze pad in appropriate solvent. For PCBs, the solvent of choice is a 1:4 acetone/hexane mixture. The gauze pad should be soaked and excess squeezed out immediately before the collection of each sample. Use of pre-soaked pads is not acceptable.
- Wipe the area framed by the template cutout with the moistened gauze, using 3 or more strokes in one direction covering the entire surface. Fold the exposed side of the pad in (i.e., fold in half).
- Using the once-folded pad, wipe the sample area at right angles to the first wipe. Fold the exposed side of the pad in.
- Using the twice-folded pad, wipe the sample area again in the original direction. Fold the exposed side of the pad or filter in.
- Place the pad in a laboratory-provided sample container (i.e., 2 ounce (oz) or 40 milliliter (mL) screw top container) and replace the container cap.
- If desired, place the sample containers on ice.

## 4.6 Offsite Topsoil/Backfill Sampling

Backfill and topsoil from offsite sources will be tested for physical suitability and chemical parameters prior to use. Samples of topsoil and backfill materials from each offsite source will be collected and analyzed to determine that these materials do not present a threat to human health and/or the environment.

For offsite borrow materials, a minimum of one set of laboratory analysis will be performed per 5,000 cubic yards of material used. No less than one set of analyses will be performed per borrow area. As quantities of

backfill/topsoil are brought onsite in excess of 5,000 cubic yards, one sample per additional 5,000 cubic yards of material will be analyzed. Documentation certifying that all criteria have been met for offsite backfill/topsoil (Table 3-2) will be forwarded to the USACE prior to bringing any material onsite.

VOC samples will be collected using 5-gram EnCore™ samplers and the spade and trowel method will be used for all other parameters. With the spade and trowel method, the top layer of the soil to desired sample depth is removed with a dedicated, pre-cleaned spade. A dedicated, pre-cleaned trowel is then used to collect samples from the desired depth. Soil samples for laboratory analysis will be collected into the appropriate containers identified in Table 4-1.

The following sampling procedure is consistent with USACE Sample Manipulation Instructions (USACE, 2001):

- The sample collection process should be completed in a minimal amount of time with the least amount of disruption as possible. Rough trimming of the sampling location surface layer should be considered if the material may have already lost VOCs (e.g., been exposed for more than a few minutes) or if other waste, different soil strata, or vegetation may have contaminated it. Surface layers can be removed by scraping the surface using a clean spade.
- Insert the clean coring tool into a fresh surface for sample collection. Take care not to trap air behind the sample. An undisturbed sample is collected by pushing the barrel of the coring tool into a freshly exposed surface and removing the corer once it is filled.
- The exterior of the barrel should be quickly wiped with a clean disposable towel to ensure a tight seal and the cap snapped on the open end.
- The sampler should be labeled, inserted into the sealable pouch, and immediately placed on ice.
- Collect samples for remaining analyses using a disposable sample trowel.
- Prepare the shipment to go to the laboratory. If samples are going to be shipped near the weekend or holiday, coordinate with the receiving laboratory to ensure that the 48-hour holding time for the EnCore™ sample is met.

The order of collection for analytical parameters will be organics and then metals. To maintain integrity of the collected samples, preservation techniques should include refrigeration and protection from light, and the sample jars should be closed immediately after filling. Gloves should be donned immediately prior to sampling and a clean pair of new disposable gloves will be worn each time a different location is sampled.

The sample trowels will be dedicated to the sample location, eliminating the need for equipment decontamination between locations and possible cross-contamination. The used sample trowels will be discarded as discussed in Section 4.7.1 of the FSP.

## 4.7 Investigative-Derived Wastes

Efforts will be made throughout the field program to minimize the volume of waste derived from sampling and decontamination procedures. Investigation-derived wastes (IDW) will be shipped to a commercial disposal facility, as necessary. IDW will be managed, stored, and disposed in accordance with USEPA and U.S. Department of Transportation (USDOT) regulation and requirements of the receiving facility.

### 4.7.1 Disposable Equipment and Debris

Disposable equipment and debris, such as health and safety equipment, plastic sheeting, sampling equipment, and other equipment or debris not reused during project operations will be collected in plastic bags during sampling and placed into appropriately labeled containers. The containers will be stored in a suitable location as determined by Site personnel. As possible, the debris will be consolidated with bulk solids for off-site disposal under an approved waste disposal profile that includes a percentage of site debris in the waste stream.

### 4.7.2 Wastewater

Field sampling equipment will be decontaminated following procedures specified in Section 4.9 of this FSP. Decontamination fluids and other aqueous wastes generated from sampling will be collected in the field in five gallon buckets, or other appropriate container, and returned to a designated storage area for transfer to the bulk storage tank, as appropriate. The wastewater will be sampled as described in Section 4.4 and tested as required for disposal at a permitted wastewater treatment facility.

### 4.7.3 General Office Trash/Debris

Any Site debris that is not generated during the collection of environmental samples will be considered municipal trash. This may include any paper or non-paper office wastes, non-contact sampling wastes (e.g., plastic wrapping, cardboard boxes), or other daily trash. All municipal trash will be deposited in a collection

container provided by and serviced for periodic removal by a commercial trash hauling and disposal company. No additional management, tracking, or testing of this waste will be conducted.

## 4.8 QA/QC Samples

QA/QC samples will be collected and analyzed as a check of field measurements and in order to verify the contract laboratory's performance on chemical samples. QA/QC samples will be collected at a frequency of 5% of field samples collected for offsite analysis per method per matrix and will include blind field replicates, matrix and matrix spike duplicates, and temperature blanks sent to the primary laboratory. All QA/QC samples shall be identified in the Field Logbook. Confirmation of the collection of the QA/QC samples at the required frequency will be initiated by the samplers in the field, and verified by the CQCSM during field audits and the offsite project chemist during analytical data review. A log of all samples obtained, including QA/QC samples, will be maintained at the Site.

### 4.8.1 Replicate Samples

A field QC duplicate sample is a second sample collected at the same location as the original sample used as an indicator of overall measurement (sampling and analytical) precision. Duplicate samples are collected using identical sampling techniques, and treated in an identical manner during storage, transportation, and analysis. QC samples will be collected as one sample, homogenized and split into two samples, separately containerized and shipped as two independent samples. Field QC samples will be collected at a rate of 5 percent of the total number of field samples that are collected for laboratory analysis per matrix. Field QC samples will be shipped to the contractor's primary analytical laboratory blindly, with notations made in the daily sample log as to which environmental sample the QC sample is associated. Replicate samples will be collected, containerized, preserved, and shipped in the same manner as environmental samples per Table 4-1.

### 4.8.2 Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples are environmental samples to which known concentrations of target analytes have been added by the laboratory. MS and MSD samples are analyzed to evaluate the effect of the sample matrix on the analytical methodology. MS and MSD samples are generated by taking a separate aliquot of an actual field sample and spiking it with the selected target analyte(s) prior to sample preparation or extraction. The MS and MSD samples then undergo the same extraction and analytical

procedures as the unfortified field sample. Additional sample volume will be collected at a rate of 5% (every 20 samples) for the analysis of MS/MSD duplicate pairs by the laboratory.

### 4.8.3 Temperature Blanks

Temperature blanks will accompany all sample coolers shipped from the Site. A temperature blank consists of potable water sealed in a small plastic bottle (e.g. a 40-mL polyethylene bottle). Use of these blanks enables the receiving laboratory to assess the temperature of the incoming sample shipment without disturbing any of the field samples.

### 4.8.4 Trip Blanks

Trip blanks will be included in all shipments containing aqueous VOC samples. A trip blank is an aliquot of analyte-free water that is sealed in a 40mL glass vial with a Teflon-lined septum cap prior to initiation of field work. These samples are kept with the field sample containers from the time they leave the laboratory until they are returned for analysis. The trip blank is used to determine whether samples are being contaminated during transit or sample collection. These sealed bottles will be prepared by the laboratory and included with each shipment of sample bottled for aqueous media to and from the laboratory and the site.

## 4.9 Sampling Equipment Decontamination

The following describes standard operating procedures for the decontamination of non-disposable sampling equipment and tools that may come into direct contact with a field sample intended for analytical analysis. This procedure only addresses the decontamination of equipment as it pertains to the chemical integrity of samples for analysis and is not intended for use in health and safety decontamination of personnel, materials, and equipment that may become contaminated during field operations.

### 4.9.1 Applicability

Decontamination of all analytical devices, sampling tools, and storage equipment that may come into direct contact with a field sample is necessary in order to achieve analytical results that are representative of true field conditions. To the extent practical, no sampling equipment will be decontaminated in the field and disposable sampling equipment will be utilized. Sufficient sampling equipment will be pre-cleaned, wrapped

in aluminum foil, and brought to the field. Sample containers will be pre-cleaned in accordance with USEPA protocols and will be supplied by the laboratory.

The decontamination procedures below may be modified, upon proper managerial approval, as long as the chemical integrity of the field sample is maintained and the sample source is not permanently compromised. Anticipated contaminants and concentrations, matrices (water, air, soil, etc.), surface area of possible cross contamination, method of sampling, and many other factors are considered when establishing a sampling equipment decontamination procedure. Any modifications of the procedures below will be carefully thought out, approved by Sevenson's CQCSM and the USACE Contracting Officer or a Designated Representative, and documented accordingly. Samples will be collected from locations with the lowest known concentrations of contaminants first, progressing toward the areas of highest known contaminations. This procedure will minimize the potential for cross contamination of samples.

### 4.9.2 Procedures

All equipment will be considered contaminated unless determined otherwise. In order to provide consistency to the decontamination procedure, a designated sampling team crewmember will be responsible for equipment decontamination. Similarly, it is desirable to decontaminate all the equipment necessary for a field task prior to mobilization. In this way, field decontamination will be limited. As an aid to field personnel and as part of the Site QC inspections, Sevenson Checklist Number 009, "Task Specific QC Checklist – Decontamination", is included in Appendix A.

#### 4.9.2.1 Decontamination Equipment List

The following supplies are needed for equipment decontamination:

- Clean disposable nitrile gloves
- Wastewater container (drum, basin, or buckets)
- Clean water spraying devices (plastic squirt or spray bottles)
- Clean brushes
- Plastic garbage bags
- Non-phosphate detergent (e.g., Alconox®)

- Deionized/distilled water
- Clean plastic buckets and other containers, as needed (e.g., small plastic swimming pool)
- Plastic sheeting to cover ground at work station
- Aluminum foil
- Package labels, ink pens, and black markers
- Potable water, warm if available

#### 4.9.2.2 General Equipment Decontamination Procedure

The following steps will be considered as Sevenson's general equipment decontamination procedure:

- Cover hands with disposable gloves.
- Wash and scrub, as necessary, with a solution of non-phosphate detergent (e.g., Alconox) and potable water.
- Rinse thoroughly with potable water.
- Rinse with deionized/distilled water.
- Air dry.

All waste liquids generated by the decontamination procedure will be containerized and tested for waste characterization. Any solid wastes generated, such as personal protective equipment, will be containerized, tested for waste characterization, and transported for disposal.

Decontaminated equipment not intended for immediate use will be wrapped in aluminum foil, placed in plastic bags, and sealed. All handling of decontaminated equipment will be performed using clean disposable gloves. Care will be exercised in the storage of decontaminated equipment, so as to not re-contaminate what has been cleaned. Sampling personnel will also avoid solvents, greases, oils, gasoline, water, dusts, and other potential sources that might contaminate the equipment before its use. Sampling personnel handling such materials shall wear protective gloves when doing so.

# 5.0 SAMPLE CHAIN OF CUSTODY/DOCUMENTATION

## 5.1 Field Log Book

Field logbooks are water resistant, bound notebooks that provide the means of recording data collecting activities. Sufficient information will be recorded in the logbooks to permit reconstruction of all site-sampling activities conducted. Information recorded on other project documents will not be repeated in the logbooks except in summary form where determined necessary. All field logbooks will be kept in the possession of field personnel responsible for completing the logbooks, or in a secure place when not being used during fieldwork. Upon completion of the field activities, all logbooks will be submitted to the USACE to become part of the final project file.

Entries into the logbook will be made in ink and will contain a variety of information, including:

- Date, start time, field observations, weather conditions, names of all sampling team members present, level of personal protection being used, and the signature of the person making the entry.
- Names of visitors to the Site and the purpose of their visit.
- Measurements made and samples collected, including the equipment used to make measurements, along with the date of calibration and record of results.
- Detailed description of the location of the sampling station.
- Time of sampling, sample description, depth or location at which the sample was collected, its type, volume, and number of containers.
- Field duplicate samples collected.
- Deviations from the approved procedures during collection, preparation, documentation, or transportation.
- Bottle lot numbers, reagent information, and any waste produced.

## 5.2 Sample Numbering System

A unique sample numbering scheme will be used to identify each sample designated for laboratory analysis. The purpose of this numbering scheme is to provide a tracking system for the retrieval of analytical and field data on each sample. Sample identification numbers will be used on all sample labels or tags, field data sheets or logbooks, chain of custody (COC) records, and all other applicable documentation used during the project.

A listing of all sample identification numbers will be maintained in the field logbook. The project database will be populated with sample numbers and information consistent with information found here and in the Quality Assurance Project Plan (QAPP). The sample identification scheme to be used is as follows:

**Waste characterization samples** will be labeled: CD-WC-cluster number-xx

- CD-WC — Project site and sample type (Cornell-Dubilier waste characterization sample)
- Cluster number — Specific cluster designation where samples were collected
- xx — Sequential sample number

**Water samples** will be labeled: CD-WW-cluster number-xx

- CD-WW — Project site and sample type (Cornell-Dubilier waste water sample)
- Cluster number — Specific cluster designation where samples were collected
- xx — Sequential sample number

**Backfill and topsoil samples** will be labeled: CD-BF-cluster number-xx or CD-TS-cluster number-xx

- CD-BF/CD-TS — Project site and sample type (Cornell-Dubilier backfill sample or Cornell-Dubilier topsoil sample)
- Cluster number — Specific cluster designation where sample was collected
- xx — Sequential sample number

**Concrete samples** will be labeled: CD-CON-cluster number-xx

- CD-CON — Project site and sample type (Cornell-Dubilier concrete sample)
- Cluster number — Specific cluster designation where sample was collected
- xx — Sequential sample number

**Wipe samples** will be labeled: CD-WIPE-cluster number-xx

- CD-WIPE — Project site and sample type (Cornell-Dubilier wipe sample)
- Cluster number — Specific cluster designation where sample was collected
- xx — Sequential sample number

## 5.3 Sample Documentation

### 5.3.1 Sample Labels and/or Tags

Immediately after a sample has been collected, a self-adhesive identification label will be completed in indelible ink and neatly affixed to the outside of the sample container. After completing the sample label, it will be covered with clear tape for protection. Appendix A of this SAP provides an example of a sample label. The following information will be legibly entered on all sample labels:

- Contractor name
- Sample type (grab or composite)
- Analysis/method to be performed
- Type of chemical preservative present in the container
- Site name
- Date and time of sample collection
- Sample identification number
- Sampler's name or initials

Sample logbooks and COC records will contain the same information as the labels affixed to the sample containers. These records will record all information related to the sampling effort and the process employed.

### 5.3.2 Chain of Custody Records

The primary objective of the COC procedures is to provide an accurate written or computerized record that can be used to trace the possession and handling of a sample from collection to completion of all required analyses. Persons will have custody of samples when the samples are in their physical possession, in their view after being in their possession, or in their physical possession and secured so they cannot be tampered with. In addition, when samples are secured in a restricted area accessible only to authorized personnel, they are deemed to be in the custody of such authorized personnel.

Sample COC forms will be used for each packaged lot of samples. Appendix A of the SAP provides an example of a blank COC form that will be used at the Site. Each cooler sent to the laboratory will contain COC form(s) listing the samples contained therein. The purpose of these forms is to document the transfer of a

group of samples traveling together from the field to the laboratory. The original of the COC always travels with the samples and the sampler keeps a copy with the Site sampling records. The chain of custody record must be fully completed by the field technician or other member of the Contractor's Quality Control Organization Staff who has been designated as responsible for sample shipment to the laboratory for analysis. When transferring the samples, the individuals relinquishing and receiving them must sign, date, and note the time on the chain of custody record.

The following documentation procedures will be followed for completion and utilization of the chain of custody record sheets:

- The field technician will fill in all requested information on the COC from the sample label. This includes the unique sample number, time and date acquired, sampler's name, analysis to be performed, matrix type, and any special instructions. In addition, if samples are known to require rapid-turnaround in the laboratory because of project time constraints or analytical concerns (e.g., extraction time or sample retention period limitations, etc.), the person completing the chain-of-custody record should note these constraints in the "Remarks" section of the custody record and the laboratory will be contacted in advance of the shipment of such samples. All samples shall be shipped from the site within 24 hours of collection.
- The sampler or a member of the Contractor's Quality Control Organization Staff will sign, date, and note the time in the "Relinquished by" box and will keep a copy of the chain-of-custody at the Site with the project records. The original chain-of-custody record will accompany the shipment of samples to the laboratory.
- In the instance where the sampler relinquishes custody to a common carrier such as Federal Express (FedEx) or United Parcel Service (UPS), the sampler will write FedEx or UPS in the "Received by" box. A copy of the accompanying shipment air bill will be retained as part of the permanent documentation and can be attached to the Site copy of the chain-of-custody.
- After delivery to the laboratory, the person receiving custody will sign and date in the "Received by" box. The person receiving custody will check the sample label against the custody record. He will also check sample condition and note anything unusual under "Remarks" on the chain of custody form. The receipt temperature of the temperature blank is immediately recorded and pertinent information as to shipment, pickup, and courier is entered in the "Remarks" section. Upon receipt of the sample containers, the person receiving custody will also complete the USACE Sample Receipt Form. A copy of this form is included in Appendix A. Any problems and/or discrepancies noted

during sample check-in will result in the laboratory project manager contacting the CQCSM. Any discrepancies noted during sample receipt (e.g., cooler received outside of the temperature requirements, samples improperly preserved, sample containers broken, etc.) that may affect sample integrity will result in the laboratory project manager contacting the Project Manager, CQCSM, and/or Project Chemist. The USACE will also be copied on all sample receipt problems for consultation regarding resolution (e.g., recollect samples, apply data qualifiers, analyze samples "as is", etc.), if necessary.

- The sample custodian then enters the sample identification number and other information into the laboratory sample tracking system. The custodian will then place each sample in the proper secure storage area. When a technician from sample preparation and/or analysis requests samples, the custodian will relinquish the samples to the technician using laboratory-stipulated logging out procedures. Upon return of the samples, laboratory-stipulated logging in procedures will be followed and the custodian will return the samples to the proper secure storage area.
- If for any reason the samples are left unattended or any personnel in the custody chain refuses to sign the chain-of-custody, this will be documented and explained on the COC.

### 5.3.3 Custody Seals

Shipping containers must be sealed with custody seals for shipment to the laboratory. An example of a sample cooler custody seal can be found in Appendix A of this SAP. When samples are shipped, two or more custody seals are to be placed on each shipping container, with at least one at the front and one on the side, located in a manner that would indicate if the container were opened in transit. Wide, clear packaging tape should be placed over the custody seals to ensure that the seals are not accidentally broken during shipment. Upon receipt of the sample coolers, the sample custodian must check and confirm that all custody seals on the coolers are intact.

## 5.4 Corrections to Documentation

All original data recorded in field notebooks and on sample identification labels, chain-of-custody records, and sample receipt forms are written in waterproof ink. These documents are not to be destroyed or thrown away, even if they are illegible or contain inaccuracies that require a replacement document.

If an error is made on a document, the individual entering the information/data will make the corrections. A single solid line (in indelible ink, preferably) will be made through the errant entry. Under no circumstances shall a correcting fluid (e.g., White-Out®) be used or any erasures made. The erroneous information should not be obliterated. Each correction shall be dated and initialed by the individual making the correction.

Should any improper correction of returned paperwork (e.g., laboratory-signed COCs, analytical reports) be suspected, it should be brought to the attention of the Site Project Manager immediately for further action, as necessary.

## 5.5 Field Variance System

Procedures cannot fully encompass all conditions encountered during field activities. Variances from the operating procedures, SAP, and/or SSHERP may occur. All variances that occur during field activities will be documented on a field change request (FCR) form and will be noted in the appropriate field logbooks. A sample of a typical FCR is included in Appendix A. If a variance is anticipated (e.g., because of a change in field instrumentation), the applicable procedure will be modified and the change noted in the field logbook.

# 6.0 SAMPLE PACKAGING AND SHIPPING

## 6.1 Sample Packaging

This section describes the procedures for properly packaging and shipping the environmental samples collected from the Site. These procedures will be performed after samples have been collected and placed in the proper containers and correctly preserved. As an aid to field personnel and as part of the Site QC inspections, Sevenson Checklist Number 007, "Task Specific QC Checklist – Packing, Storing, and Shipment of Samples" and Sevenson Checklist Number 010, "Task Specific QC Checklist – Sample Cooler Shipment" are included in Appendix A.

Samples should be prepared for shipment as follows:

- Follow all appropriate instructions for collecting the sample in accordance with the project FSP outlined in Section 4.0 and immediately chill upon collection with ice. Sample labels are placed on samples immediately after sample collection as described in Section 5.3.1.
- Secure the lid of the sample jar tightly. A thin strip of duct tape may be place around the edge of the lid of liquid sample jars (except for VOC samples) to prevent leakage.
- Securely wrap the sample jar with bubble-wrap. Tape the bubble-wrap to the sample jar to ensure the sample jar does not slide out.
- Each wrapped sample bottle/jar is placed in a separate Ziplock plastic bag, which is then sealed.
- A picnic cooler will be used as the shipping container. Only hard plastic, impact resistant coolers in good condition should be used. If the sample cooler has a drain plug, tape it shut on the inside and outside of the cooler. Place a large, new, clean garbage bag inside the cooler as a secondary liner.
- Place the sample jars in an upright position inside the lined cooler in such a way that they do not touch and will not touch during shipment. Place bubble-wrap, or other suitable material that will retain its integrity if it gets wet, between each sample bag to take up any void space and to prevent the containers from touching. Place a temperature blank in close proximity to the samples.
- Samples should be shipped to the laboratory on ice and chilled to 4°C. Place ice inside a Ziplock bag. Place the bag of ice inside a second Ziplock bag. The field team will determine the number of bags of ice needed. Place the double-bagged ice around, among, and on top of the sample bottles to assure samples will arrive at the laboratory at 4°C. Secure the liner bag with a twist-tie or knot.

- The paperwork (e.g., original chain-of-custody) going to the laboratory is placed inside a Ziplock bag and taped to the inside lid of the cooler. The chain-of-custody form should indicate the overnight carrier and the associated air bill number. A copy of the chain-of-custody is retained with the project files.
- The cooler is closed and taped shut with fiber-reinforced tape (strapping tape) by running the tape around both ends of the cooler at least two times.
- Orientation arrows and "Handle with Care" stickers are placed on at least two sides of the cooler.
- A minimum of two signed custody seals will be applied across the lid opening, one on the front and one on the side, to maintain the integrity of the sample custody process.
- The cooler is handed over to the overnight carrier. A standard air bill is necessary for environmental samples. The address label should contain both the shipped from and ship to address. The air bill is placed on the top of the cooler. A copy of the air bill is retained with the project document files.
- A copy of the COC and the air bill should be faxed to the laboratory to assist in tracking of potentially misrouted coolers and for planning of analysis.

## 6.2 Sample Shipping

All shipments will be in compliance with applicable USDOT regulations for environmental samples. The shipment of samples on Fridays is discouraged unless it is absolutely necessary, and the laboratory has assured that personnel will be present to receive the shipment and implement any necessary processing within the analytical holding times.

### 6.2.1 Shipping Companies

All project samples will be shipped to the laboratory via overnight courier services to ensure timely receipt of the samples by the laboratory.

### 6.2.2 Shipping Destinations

Project samples will be shipped to Waste Stream Technology, Inc. (WST) for chemical analysis. Samples will be delivered within 24 hours of their collection (except those collected on Friday which will be held under

appropriate conditions for shipment on Monday, unless prior arrangements have been made with the laboratory for Saturday sample receipt) to the laboratory at the following address:

Waste Stream Technology, Inc.
Attn: Sample Receipt
302 Grote Street
Buffalo, New York 14207
Phone: (716) 876-5290

The chain of custody form and sample shipment documentation will be faxed to the laboratory when samples are shipped for package tracking and sample analysis planning purposes.

The laboratory will be responsible for maintaining proper sample receipt protocols or identifying any sample receipt abnormalities as per their appropriate laboratory standard operating procedure (SOP), as described in the QAPP.

## 7.0 CONTRACTOR QUALITY CONTROL

Contactor quality control (CQC) is the means by which the contractor ensures that the field activities comply with the requirements of the contract. Sevenson will ensure that the CQCSM maintains quality throughout all fieldwork by means of a three-phase process performed onsite for each definable work element. The three phases of control include the preparatory phase, the initial phase, and the follow-up phase. Examples of the inspection checklists for the three-phase procedures have been provided in Appendix A of this SAP. These activities are further defined below.

### 7.1 Preparatory Phase

The preparatory phase of the CQC program will be performed prior to the initiation of remedial activities or phases of remedial activities, after all required plans, documents, and materials are accepted and approved, and will consist of a meeting conducted by the Sevenson CQCSM. This meeting will have minutes recorded and will occur prior to the initiation of sampling activities or phases of remedial activities. The meeting may include:

- Review of the planned activities to assure field personnel and subcontractors are aware of overall data quality objectives, the specific type of data being collected, and specific sampling and data analysis requirements.
- Review of all required forms.
- Review of equipment decontamination procedures.
- Review of proper IDW management and storage.
- Review of proper sample collection, packaging, and documentation.
- Review of field equipment and support material checklists.
- Confirm any required preliminary tasks are complete.
- Review safety issues and analyze for any potential hazards.
- Review of other issues as deemed necessary by the Sevenson CQC Representative.

The USACE will be notified at least 48 hours in advance of the preparatory control phase. The results of the preparatory phase actions will be documented by minutes prepared by the CQCSM and attached to the Daily Quality Control Report.

## 7.2 Initial Phase

The Sevenson CQCSM shall oversee and confirm compliance with the SAP at the initiation of each definable work feature. The CQCSM will observe and document compliance and/or deviations from the approved FSP and QAPP. Minutes of this phase will be prepared and attached to the daily QC report. Activities will include:

- Oversight of sampling and field activities to assure compliance with contract terms.
- Oversight of sample acquisition, labeling, and shipping.
- Oversight of sampling equipment decontamination.
- Inspection of all required documentation, including field notebooks and chain of custody forms to assure completeness, consistency, and accuracy.
- Completion of QC Inspection Report and Task-Specific QC Checklists (copies included in Appendix A of this SAP).
- Verification that activities are conducted according to the SSHERP to assure worker and community safety.

The USACE will be notified at least 48 hours in advance of the beginning the initial phase. The initial phase will be repeated for each new work crew to work onsite, or at any time acceptable quality standards are not being met.

## 7.3 Follow-Up Phase

The Sevenson CQCSM will provide daily inspections to ensure compliance with the SAP until completion of each definable work element. This daily inspection will document deficiencies noted during the initial phase, communicate any such deficiencies to both field personnel and the project manager, provide appropriate methods to correct the deficiencies, and follow up with the affected personnel to assure corrective measures are implemented. This phase will include the completion of the daily chemical quality control report (DCQCR), a copy of which is included in Appendix A and further discussed in Section 8.1 of the FSP.

# 8.0 SITE REPORTING AND DAILY CHEMICAL QUALITY CONTROL REPORTS

## 8.1 Daily Chemical Quality Control Reports

Sevenson's CQCSM or appropriate designee will prepare and sign a DCQCR on days that chemical sampling is performed. A copy of the DCQCR form is provided in Appendix A. The reports will be sequentially numbered and submitted on a regular basis to the Contracting Officer or a Designated Representative attached to the Daily Quality Control Report. The following will be attached to the DCQCR for final hard-copy submittal to the USACE: copies of COC forms, sample shipment bills of lading, copies of applicable field logbook pages, and any other relevant project forms (e.g., corrective action forms, field change request forms).

The CQCSM will report any deviations that may affect data quality objectives (DQOs) immediately to the USACE. Any instructions given by the USACE will be recorded in the DCQCR along with the appropriate corrective actions, as applicable.

The DCQCR will contain the following elements:

- Job identification and site number.
- Chemical data acquisition performed in the field and in the laboratory.
- Chemical data QC activities implemented as part of the three-phase control system.
- Sample and measurement problems that may affect project DQO requirements.
- Corrective actions and/or deviations from the approved SAP, including approvals.
- A summary of the feedback procedure for any corrective actions taken.
- Confirmation that all deviations or actions jeopardizing project DQOs have been forwarded to project management.

## 8.2 Laboratory Analytical Data Reports

Each sample collected during sampling events for offsite chemical analysis will be sent to the appropriate analytical laboratory. Upon completion of analysis, the laboratory will prepare an analytical data report for each sample. Specifics of analytical report preparation and requirements can be found in Section 10.4.1 of the

QAPP. The chemistry data package will contain information to demonstrate that the project DQOs have been fulfilled.

## 8.3 Quality Control Summary Report

A Quality Control Summary Report (QCSR) will be prepared for each remedial area (i.e., cluster) once all applicable data has been received by the laboratory. The QCSR will include a summary of all chemical sampling activities and will include an evaluation of the achievement of chemical DQOs.

The QCSR will contain the following elements:

- Summary of project scope and description.
- Summary of DCQCRs
- Summary of deviations from the chemical sample specifications.
- Summary of chemical samples performed as contingent measurements.
- Summary discussion of resulting data including achieving minimum data reporting requirements.
- Summary of achievement of project DQOs.
- Presentation and evaluation of data, including overall assessment of data quality and usability.
- Internal QC data generated during the project, including summaries of QC information from blanks, matrix spikes, surrogates, duplicates, laboratory control samples, batch identifiers, and chemical yields.
- A list of affected sample results, including appropriate data qualifier flag, where such results are negatively affected by adverse QC criteria.
- A summary of field and laboratory oversight activities.
- Conclusions and recommendations.
- Attachments, including final data packages.

## 9.0 CORRECTIVE ACTIONS

Corrective actions will be implemented when a discrepancy is discovered by field or laboratory personnel or during field or desk audits. The Sevenson CQCSM will coordinate and facilitate corrective actions. If the problem is determined to be minor, the corrective action will be recorded in the field notes, with verbal notifications to other field teams or subcontractors about the deficiency and the corrective action. If the deficiency is severe and may affect the project DQOs, a formal written review and corrective action will be initiated, called a Non-Conformance Report (NCR). The NCR will identify the deficiency, identify how the deficiency might affect the work product, propose corrective action, and document that the corrective action has been taken. The Sevenson CQCSM will supervise this process. In addition, the CQCSM will maintain a log of all NCRs for the project and ensure that the NCRs and corrective actions are maintained with final project files. Details of non-conformances and corrective actions are provided below.

### 9.1 Non-Conformance

A nonconformance is an unauthorized deviation from documented sampling or analysis procedures, practices or standards, or a defect in an item that is sufficient to render the quality of a sample or datum unacceptable or indeterminate. Field non-conformances may include, but are not limited to, the following:

- Incorrect sampling procedures.
- Failure of field instrumentation.
- Improper instrument calibration.
- Incorrect sample preservation.
- Incorrect sample packaging.
- Inappropriate sample shipment resulting in exceeded holding times.
- Incorrectly identified samples.

If a non-conformance is suspected, the CQCSM for the project will be notified as soon after the situation is identified as possible. For field non-conformances, the project manager or field sampler will make the notification; for laboratory non-conformances, the laboratory QC Manager will make the notification. After evaluation of the potential non-conformance situation, the CQCSM will notify the USACE Contracting Officer or a Designated Representative.

## 9.2 Corrective Action

Corrective actions are required for two classes of problems: analytical and equipment problems and noncompliance (i.e., those which do not follow the written procedures stated in the Site plans). A sample corrective action form is included in Appendix A of this SAP. Corrective actions for field and analytical activities may include:

- Repeating the measurement to check for error.
- Recalibration of instruments using freshly prepared calibration standards.
- Check for adequate power supply or operation.
- Replacement of sampling or analytical equipment.
- Reanalysis of samples.
- Re-sampling.
- Additional training of field personnel in correct implementation of sample preparation, collection, or analytical methods.
- Reassignment of personnel, if necessary, to improve the overlap between operator skills and sampling requirements.
- Communication with the CQCSM to determine the appropriate action (e.g., insufficient sample remaining for reanalysis).

Prior to implementation, Sevenson's CQCSM will approve all corrective actions planned to address deviations from the SAP. The CQCSM will ideally submit a report within 48 hours of the non-conformance event to the Contracting Officer or a Designated Representative. The CQCSM is responsible for ensuring that all corrective actions are initiated by:

- Evaluating all reported non-conformances.
- Modifying or stopping additional work on non-conformance items.
- Determining action to be taken.
- Maintaining a log of non-conformances.
- Reviewing non-conformance reports and corrective action reports.
- Ensuring that any non-conformance is included in the DCQCR and that all reports are made part of the final Site document files.

## 10.0 REFERENCES

Cornell Dubilier Electronics Site Information Sheet, USEPA, July 2006.

Data Summary Report, Operable Unit 2 – Building Demolition, 100% Completion Phase, Malcolm Pirnie, Inc., October 2006.

Field Sampling Procedures Manual, NJDEP, August 2005.

Final Remedial Investigation Report for Operable Unit 2 (OU-2) On-Site Soils and Buildings – Volume I and II, Tetra Tech – Foster Wheeler, Inc., December 2002.

Identification and Listing of Hazardous Waste, 40CFR261, 1999.

NJDEP SRP Regulations and Guidance, Last Updated 5/12/99; http://www.state.nj.us/dep/srp/regs/scc/

PCB Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions, 40CFR761, 1999.

Project Specifications for Cornell-Dubilier Electronics Superfund Site – OU2, USACE, June 2006.

Requirements for the Preparation of Sampling and Analysis Plans (EM 200-1-3), USACE, February 2001.

# QUALITY ASSURANCE PROJECT PLAN

# CORNELL-DUBILIER ELECTRONICS SUPERFUND SITE
# OPERABLE UNIT 2 – BUILDING DEMOLITION
# SOUTH PLAINFIELD, NEW JERSEY

Prepared by:
Sevenson Environmental Services, Inc.
2749 Lockport Road
Niagara Falls, New York 14305

Based on the Intergovernmental Data Quality Task Force
Uniform Federal Policy for Quality Assurance Project Plans
(Final Version 1, March 2005)

January 16, 2007

# TABLE OF CONTENTS

Introduction ..... 2
QAPP Worksheet #1. Title and Approval Page ..... 5
QAPP Worksheet #2. QAPP Identifying Information ..... 6
QAPP Worksheet #3. Distribution List ..... 11
QAPP Worksheet #4. Project Personnel Sign-Off Sheet ..... 12
QAPP Worksheet #5. Project Organizational Chart ..... 16
QAPP Worksheet #6. Communication Pathways ..... 17
QAPP Worksheet #7. Personnel Responsibilities and Qualifications Table ..... 18
QAPP Worksheet #8. Special Personnel Training Requirements Table ..... 19
QAPP Worksheet #9. Project Scoping Session Participants Sheet ..... 20
QAPP Worksheet #10. Problem Definition ..... 21
QAPP Worksheet #11. Project Quality Objectives/Systematic Planning Process Statements ..... 22
QAPP Worksheet #12. Measurement Performance Criteria Table ..... 24
QAPP Worksheet #13. Secondary Data Criteria and Limitations Table ..... 35
QAPP Worksheet #14. Summary of Project Tasks ..... 36
QAPP Worksheet #15. Reference Limits and Evaluation Table ..... 38
QAPP Worksheet #16. Project Schedule/Timeline Table ..... 53
QAPP Worksheet #17. Sampling Design and Rationale ..... 54
QAPP Worksheet #18. Sampling Locations and Methods/SOP Requirements Table ..... 55
QAPP Worksheet #19. Analytical SOP Requirements Table ..... 56
QAPP Worksheet #20. Field Quality Control Sample Summary Table ..... 59
QAPP Worksheet #21. Project Sampling SOP Reference Table ..... 60
QAPP Worksheet #22. Field Equipment Calibration, Maintenance, Testing, and Inspection Table ..... 61
QAPP Worksheet #23. Analytical SOP Reference Table ..... 62
QAPP Worksheet #24. Analytical Instrument Calibration Table ..... 64
QAPP Worksheet #25. Analytical Instrument and Equipment Maintenance, Testing, and Inspection Table ..... 68
QAPP Worksheet #26. Sample Handling System ..... 69
QAPP Worksheet #27. Sample Custody Requirements ..... 70
QAPP Worksheet #28. QC Samples Table ..... 73
QAPP Worksheet #29. Project Documents and Records Table ..... 85
QAPP Worksheet #30. Analytical Services Table ..... 86
QAPP Worksheet #31. Planned Project Assessment Table ..... 88
QAPP Worksheet #32. Assessment Findings and Response Actions ..... 89
QAPP Worksheet #33. QA Management Reports Table ..... 90
QAPP Worksheet #34. Sampling and Analysis Verification (Step I) Process Table ..... 91
QAPP Worksheet #35. Sampling and Analysis Validation (Steps IIa and IIb) Process Table ..... 92
QAPP Worksheet #36. Sampling and Analysis Validation (Steps IIa and IIb) Summary Table ..... 93
QAPP Worksheet #37. Data Usability Assessment ..... 94

# INTRODUCTION

## SITE OVERVIEW

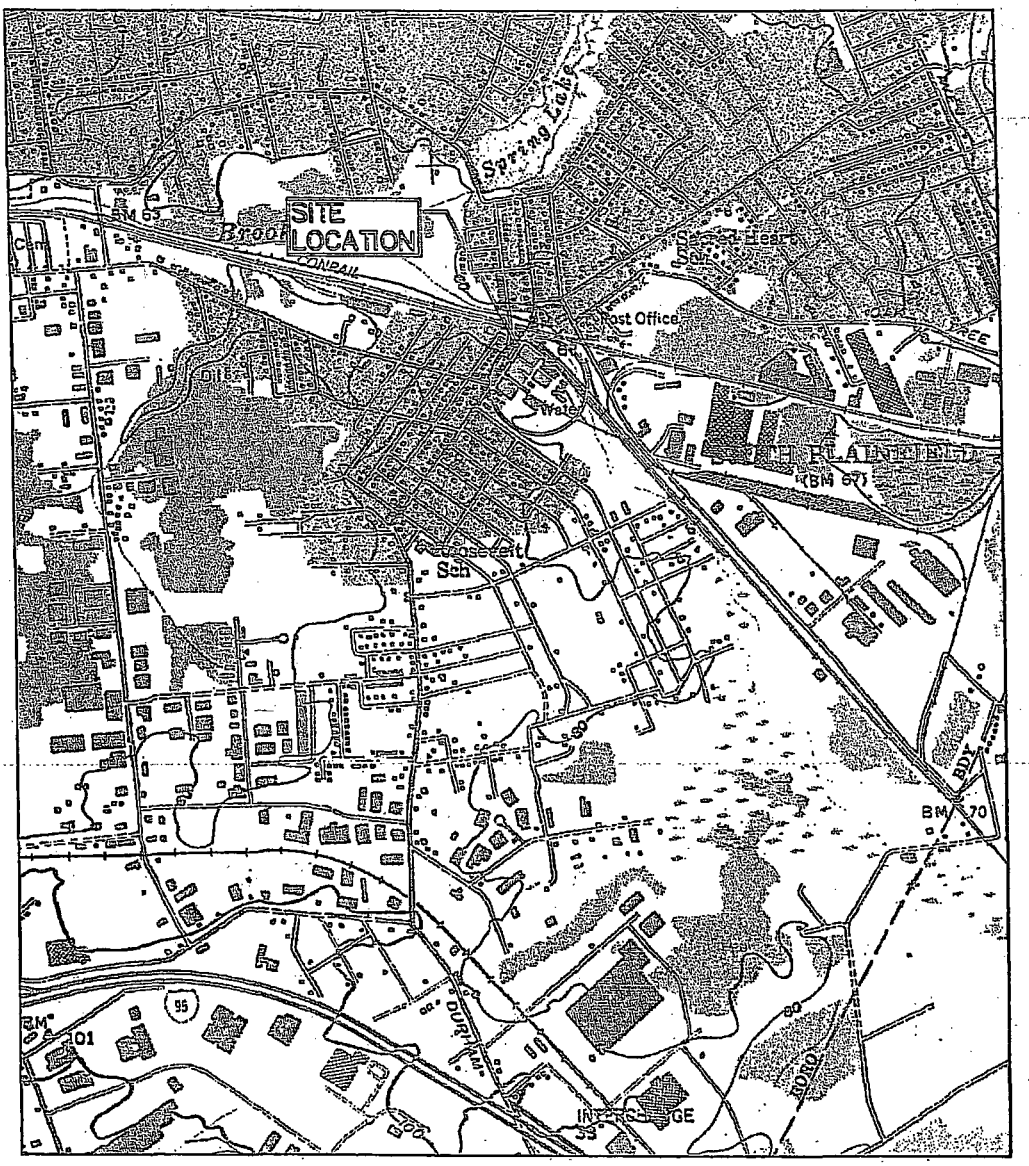
The Cornell-Dubilier Electronics Superfund Site is located at 333 Hamilton Boulevard in South Plainfield, New Jersey in what is now the Hamilton Industrial Park occupied by an estimated fifteen commercial businesses. Through the years, numerous companies have operated at the site as tenants. It is estimated that approximately 540 people reside within 0.25 miles of the site and the nearest residential homes are less than 200 feet from the site (USEPA, 2006). An unnamed tributary to the Bound Brook traverses the southeast corner of the site property. A site location map is included as Figure 1. Operable Unit 2 (OU-2) addresses the remediation of source materials, including contaminated facility soils and buildings. OU-2 has been divided into clusters; Figure 2 shows a site plan with the cluster designations.

## SITE DESCRIPTION, HISTORY & BACKGROUND

Cornell-Dubilier Electronics, Inc. manufactured electronic parts and components, including capacitors, from 1936 to 1962. Polychlorinated biphenyls (PCBs) and chlorinated degreasing solvents were used in the manufacturing process. It is alleged that during the period of operation, Cornell-Dubilier Electronics, Inc. dumped PCB-contaminated materials and other hazardous substances directly onto site soils. 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).

The soil at the site is contaminated with volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), inorganic constituents, and PCBs. In addition, building interiors at the site have been found to contain elevated levels of PCBs and metals. Historical site data pertaining to OU-2 was collected between 1997 and 2002 and are summarized in the *Final Remedial Investigation Report for OU-2 Onsite Soils and Buildings* (Foster Wheeler, 2002). In addition, summary tables of historical data pertaining to OU-2 buildings are included in the *Data Summary Report, Operable Unit 2- Building Demolition, 100% Completion Phase* (Malcolm Pirnie, 2006).

# FIGURE 1: SITE LOCATION MAP




SOURCE: U.S.G.S. TOPOGRAPHIC MAP,
7.5 MINUTE SERIES, PLAINFIELD, NEW JERSEY
QUADRANGLE, 1955, PHOTOREVISED 1981

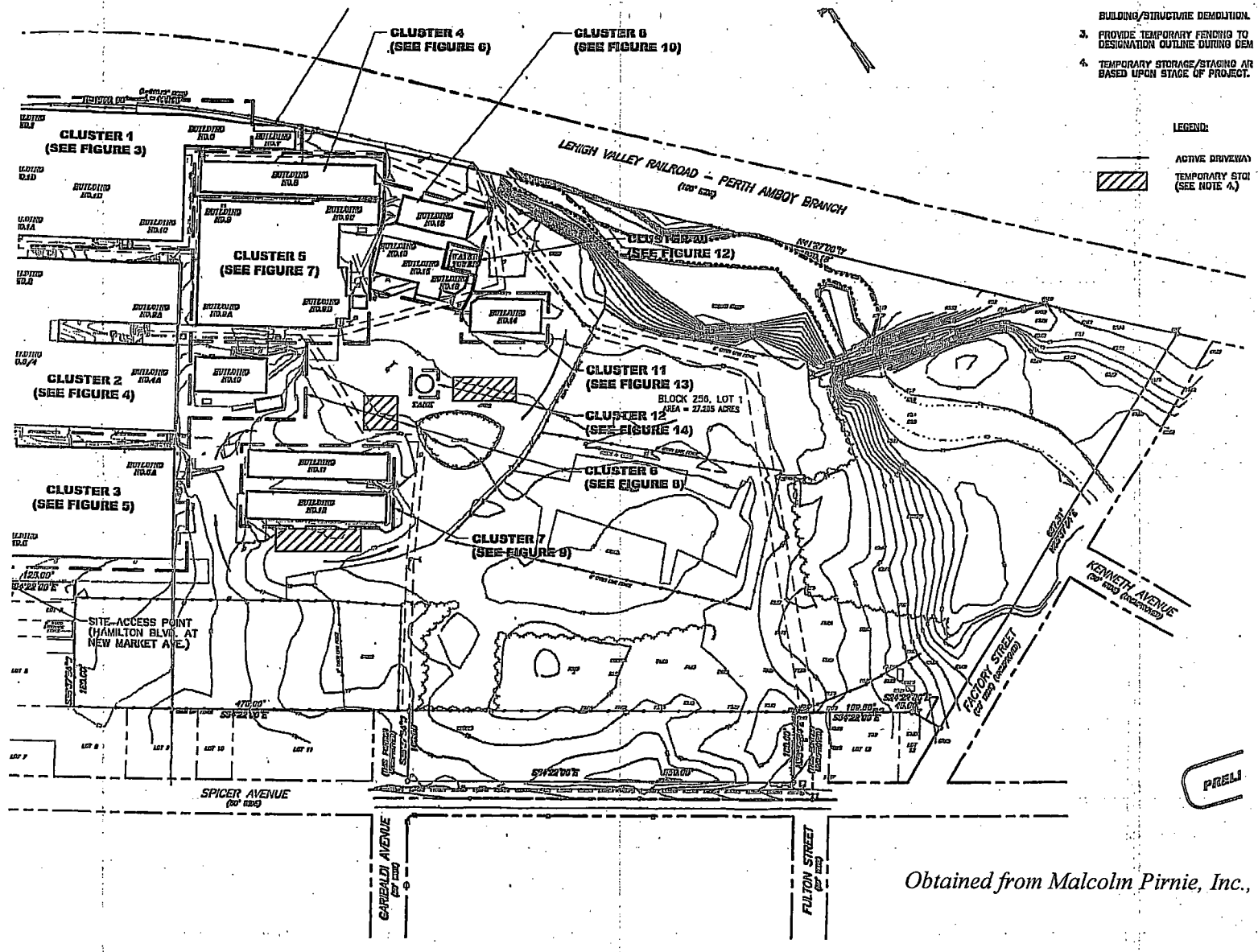
REF:

| | | | |
|---|---|---|---|
| MALCOLM PIRNIE | U.S. ARMY CORPS OF ENGINEERS<br>CORNELL–DUBILIER SUPERFUND SITE<br>SOUTH PLAINFIELD, NJ<br>CONTRACT No:<br>W912DQ–05–D–005 | SITE LOCATION MAP<br>SCALE AS NOTED | MALCOLM PIRNIE, INC.<br>JUNE 2006<br>FIGURE 1 |

User: WELSHANS Spec: PIRNIE STANDARD File: F:\Projects\4553023\CADD\Figures\SITE-LOCATION-4553023.DWG Scale: 1:1 Date: 06/19/2006 Time: 13:28 Layout: FIGURE 1

*Obtained from Malcolm Pirnie, Inc., 2006*

# FIGURE 2: SITE PLAN WITH CLUSTER DESIGNATIONS




*Obtained from Malcolm Pirnie, Inc., 2006*

## QAPP Worksheet #1
## Title and Approval Page

**Site Name/Project Name:** Cornell-Dubilier Electronics Superfund Site

**Site Location:** South Plainfield, New Jersey

**Document Title:** Quality Assurance Project Plan for Cornell-Dubilier Electronics Superfund Site, Operable Unit 2

**Lead Organization:** USACE – Kansas City District and USEPA Region II

**Preparer's Name and Organizational Affiliation:** Jennifer Singer, Sevenson Environmental Services, Inc.

**Preparer's Address, Telephone Number, and E-mail Address:** 2749 Lockport Road, Niagara Falls, New York 14305; (716) 284-0431; jsinger@sevenson.com

**Preparation Date:** January 16, 2007

**Investigative Organization's Project Manager:** 1-18-07
*Signature, Date*
Kim Lickfield, Sevenson Environmental Services, Inc.

**Investigative Organization's Project QA Officer:** _____
*Signature, Date*
William Zambrana, Sevenson Environmental Services, Inc.

**Lead Organization's Project Manager:** _____
*Signature, Date*
Ken Mass, USACE

**Approval Signatures:** _____
*Signature, Date*
Pete Mannino, USEPA

**Other Approval Signatures:** _____
*Signature, Date*
_____
*Printed Name/Title/Organization*

_____
*Signature, Date*
_____
*Printed Name/Title/Organization*

_____
*Signature, Date*
_____
*Printed Name/Title/Organization*

## QAPP Worksheet #2
## QAPP Identifying Information

**Site Name/Project Name:** Cornell-Dubilier Electronics Superfund Site

**Site Location:** South Plainfield, New Jersey

**Site Number/Code:** NJD981557879

**Operable Unit:** OU2 – Building Demolition

**Contractor Name:** Sevenson Environmental Services, Inc.

**Contractor Number:** W912DQ-04-D-0023

**Contract Title:** Small Business Northwest Division and Region II PRAC

**Work Assignment Number:** Delivery Order #0005

**1. Identify guidance used to prepare QAPP:**
Uniform Federal Policy for Quality Assurance Project Plans, Final Version 1, March 2005

**2. Identify regulatory program:**
USEPA Region II, Superfund

**3. Identify approval entity:**
USEPA Region II, USACE-Kansas City District

**4. Indicate whether the QAPP is a generic or a project-specific QAPP.**

**5. List dates of scoping sessions that were held:**

**6. List dates and titles of QAPP documents written for previous site work, if applicable:**
Quality Assurance Project Plan – OU2, Cluster 12 (Sevenson, November 2006)
Quality Assurance Project Plan – OU2, Cluster 12, Revision 1 (Sevenson, December 2006)
Quality Assurance Project Plan – OU2, Cluster 12, Revision 2 (Sevenson, December 2006)

**7. List organizational partners (stakeholders) and connection with lead organization:**
NJDEP

**8. List data users:**
USEPA Region II, USACE – Kansas City District, NJDEP, Sevenson

**9. 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 exclusion below:**
Field Instrumentation – no field measurements will be made

## QAPP Worksheet #2
## QAPP Identifying Information

| Required QAPP Element(s) and Corresponding QAPP Section(s) | QAPP Worksheet # in QAPP Workbook | Required Information |
|---|---|---|
| **Project Management and Objectives** | | |
| 2.1 Title and Approval Page | 1 | - Title and Approval Page |
| 2.2 Document Format and Table of Contents<br>2.2.1 Document Control Format<br>2.2.2 Document Control Numbering System<br>2.2.3 Table of Contents<br>2.2.4 QAPP Identifying Information | 2 | - Table of Contents<br>- QAPP Identifying Information |
| 2.3 Distribution List and Project Personnel Sign-Off Sheet<br>2.3.1 Distribution List<br>2.3.2 Project Personnel Sign-Off Sheet | 3<br>4 | - Distribution List<br>- Project Personnel Sign-Off Sheet |
| 2.4 Project Organization<br>2.4.1 Project Organizational Chart<br>2.4.2 Communication Pathways<br>2.4.3 Personnel Responsibilities and Qualifications<br>2.4.4 Special Training Requirements and Certification | 5<br>6<br>7<br>8 | - Project Organizational Chart<br>- Communication Pathways<br>- Personnel Responsibilities and Qualifications Table<br>- Special Personnel Training Requirements Table |
| 2.5 Project Planning/Problem Definition<br>2.5.1 Project Planning (Scoping)<br>2.5.2 Problem Definition, Site History, and Background | 9<br>10 | - Project Planning Session Documentation (including Data Needs tables)<br>- Project Scoping Session Participants Sheet<br>- Problem Definition, Site History, and Background<br>- Site Maps (historical and present) |
| 2.6 Project Quality Objectives and Measurement Performance Criteria<br>2.6.1 Development of Project Quality Objectives Using the Systematic Planning Process<br>2.6.2 Measurement Performance Criteria | 11<br>12 | - Site-Specific PQOs<br>- Measurement Performance Criteria Table |
| 2.7 Secondary Data Evaluation | 13 | - Sources of Secondary Data and Information<br>- Secondary Data Criteria and Limitations Table |

| Required QAPP Element(s) and Corresponding QAPP Section(s) | QAPP Worksheet # in QAPP Workbook | Required Information |
|---|---|---|
| 2.8 Project Overview and Schedule<br>2.8.1 Project Overview<br>2.8.2 Project Schedule | 14<br>15<br><br>16 | - Summary of Project Tasks<br>- Reference Limits and Evaluation Table<br>- Project Schedule/Timeline Table |
| **Measurement/Data Acquisition** | | |
| 3.1 Sampling Tasks<br>3.1.1 Sampling Process Design and Rationale<br>3.1.2 Sampling Procedures and Requirements<br>3.1.2.1 Sampling Collection Procedures<br>3.1.2.2 Sample Containers, Volume, and Preservation<br>3.1.2.3 Equipment/Sample Containers Cleaning and Decontamination Procedures<br>3.1.2.4 Field Equipment Calibration, Maintenance, Testing, and Inspection Procedures<br>3.1.2.5 Supply Inspection and Acceptance Procedures<br>3.1.2.6 Field Documentation Procedures | 17<br>18<br>19<br>20<br>21<br>22 | - Sampling Design and Rationale<br>- Sample Location Map<br>- Sampling Locations and Methods/ SOP Requirements Table<br>- Analytical Methods/SOP Requirements Table<br>- Field Quality Control Sample Summary Table<br>- Sampling SOPs<br>- Project Sampling SOP References Table<br>- Field Equipment Calibration, Maintenance, Testing, and Inspection Table |
| 3.2 Analytical Tasks<br>3.2.1 Analytical SOPs<br>3.2.2 Analytical Instrument Calibration Procedures<br>3.2.3 Analytical Instrument and Equipment Maintenance, Testing, and Inspection Procedures<br>3.2.4 Analytical Supply Inspection and Acceptance Procedures | 23<br>24<br>25 | - Analytical SOPs<br>- Analytical SOP References Table<br>- Analytical Instrument Calibration Table<br>- Analytical Instrument and Equipment Maintenance, Testing, and Inspection Table |
| 3.3 Sample Collection Documentation, Handling, Tracking, and Custody Procedures<br>3.3.1 Sample Collection Documentation<br>3.3.2 Sample Handling and Tracking System<br>3.3.3 Sample Custody | 26 | - Sample Collection Documentation Handling, Tracking, and Custody SOPs<br>- Sample Container Identification<br>- Sample Handling Flow Diagram<br>- Example Chain-of-Custody Form and Seal |

| Required QAPP Element(s) and Corresponding QAPP Section(s) | QAPP Worksheet # in QAPP Workbook | Required Information |
|---|---|---|
| 3.4 Quality Control Samples<br>3.4.1 Sampling Quality Control Samples<br>3.4.2 Analytical Quality Control Samples | 27 | - QC Samples Table<br>- Screening/Confirmatory Analysis Decision Tree |
| 3.5 Data Management Tasks<br>3.5.1 Project Documentation and Records<br>3.5.2 Data Package Deliverables<br>3.5.3 Data Reporting Formats<br>3.5.4 Data Handling and Management<br>3.5.5 Data Tracking and Control | 28<br>29 | - Project Documents and Records Table<br>- Analytical Services Table<br>- Data Management SOPs |
| **Assessment/Oversight** | | |
| 4.1 Assessments and Response Actions<br>4.1.1 Planned Assessments<br>4.1.2 Assessment Findings and Corrective Action Responses | 30<br>31 | - Assessments and Response Actions<br>- Planned Project Assessments Table<br>- Audit Checklists<br>- Assessment Findings and Corrective Action Responses Table |
| 4.2 QA Management Reports | 32 | - QA Management Reports Table |
| 4.3 Final Project Report | | |
| **Data Review** | | |
| 5.1 Overview | | |
| 5.2 Data Review Steps<br>5.2.1 Step I: Verification<br>5.2.2 Step II: Validation<br>5.2.2.1 Step IIa Validation Activities<br>5.2.2.2 Step IIb Validation Activities<br>5.2.3 Step III: Usability Assessment<br>5.2.3.1 Data Limitations and Actions from Usability Assessment<br>5.2.3.2 Activities | 33<br>34<br>35<br>36 | - Verification (Step I) Process Table<br>- Validation (Steps IIa and IIb) Process Table<br>- Validation (Steps IIa and IIb) Summary Table<br>- Usability Assessment |

| Required QAPP Element(s) and Corresponding QAPP Section(s) | QAPP Worksheet # in QAPP Workbook | Required Information |
|---|---|---|
| 5.3 Streamlining Data Review<br>5.3.1 Data Review Steps To Be Streamlined<br>5.3.2 Criteria for Streamlining Data Review<br>5.3.3 Amounts and Types of Data Appropriate for Streamlining | | |

## QAPP Worksheet #3
## Distribution List

| QAPP Recipients | Title | Organization | Telephone Number | Fax Number | E-mail Address | Document Control Number |
|---|---|---|---|---|---|---|
| Pete Mannino | RPM | USEPA | 212-637-4395 | | Mannino.pietro@epamail.epa.gov | NA |
| Ken Maas | KCD PM | USACE | 816-983-3709 | | Kenneth.e.maas@usace.army.mil | NA |
| Patrick Nejand | COR | USACE | 732-846-5830 | | Patrick.c.nejand@uace.army.mil | NA |
| Paula Higgins | Chief NYD Safety | USACE | | | | NA |
| Chris Nastasi | Project Engineer | USACE | 732-846-5830 | | Chris.j.nastasi@usace.army.mil | NA |
| Ed Dudek | PM | Malcolm Pirnie, Inc. | 914-641-2686 | | edudek@pirnie.com | NA |
| William Zambrana | CQCSM | Sevenson | 908-769-5301 | 908-769-5303 | Zambra973@aol.com | NA |
| Jennifer Singer | Data Quality Control Review Chemist | Sevenson | 716-284-0431 | 716-285-4201 | jsinger@sevenson.com | NA |
| Dan Vollmer | Quality Assurance Officer | WST | 716-876-5290 | 716-876-2412 | Dvollmer@wastestream.com | NA |

## QAPP Worksheet #4-1
## Project Personnel Sign-Off Sheet

**Organization:** Sevenson

| Project Personnel | Title | Telephone Number | Signature | Date QAPP Read |
|---|---|---|---|---|
| Kim Lickfield | Project Manager | (908) 769-5301 | | 1-18-07 |
| William Zambrana | Contractor Quality Control Systems Manager | (908) 769-5301 | | 1-18-07 |
| Ken Paisley | Regulatory Specialist | (716) 284-0431 | | 1/18/07 |
| Jennifer Singer | Data Quality Control Review Chemist | (716)284-0431 | Jennifer A Singer | 1/18/07 |
| | | | | |
| | | | | |
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## QAPP Worksheet #4-2
## Project Personnel Sign-Off Sheet

**Organization:** USEPA

| Project Personnel | Title | Telephone Number | Signature | Date QAPP Read |
|---|---|---|---|---|
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## QAPP Worksheet #4-3
## Project Personnel Sign-Off Sheet

**Organization:** USACE

| Project Personnel | Title | Telephone Number | Signature | Date QAPP Read |
|---|---|---|---|---|
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## QAPP Worksheet #4-4
## Project Personnel Sign-Off Sheet

**Organization:** Waste Stream Technology, Inc.

| Project Personnel | Title | Telephone Number | Signature | Date QAPP Read |
|---|---|---|---|---|
| Dan Vollmer | Quality Assurance Officer | (716) 876-5290 | | |
| | | | | |
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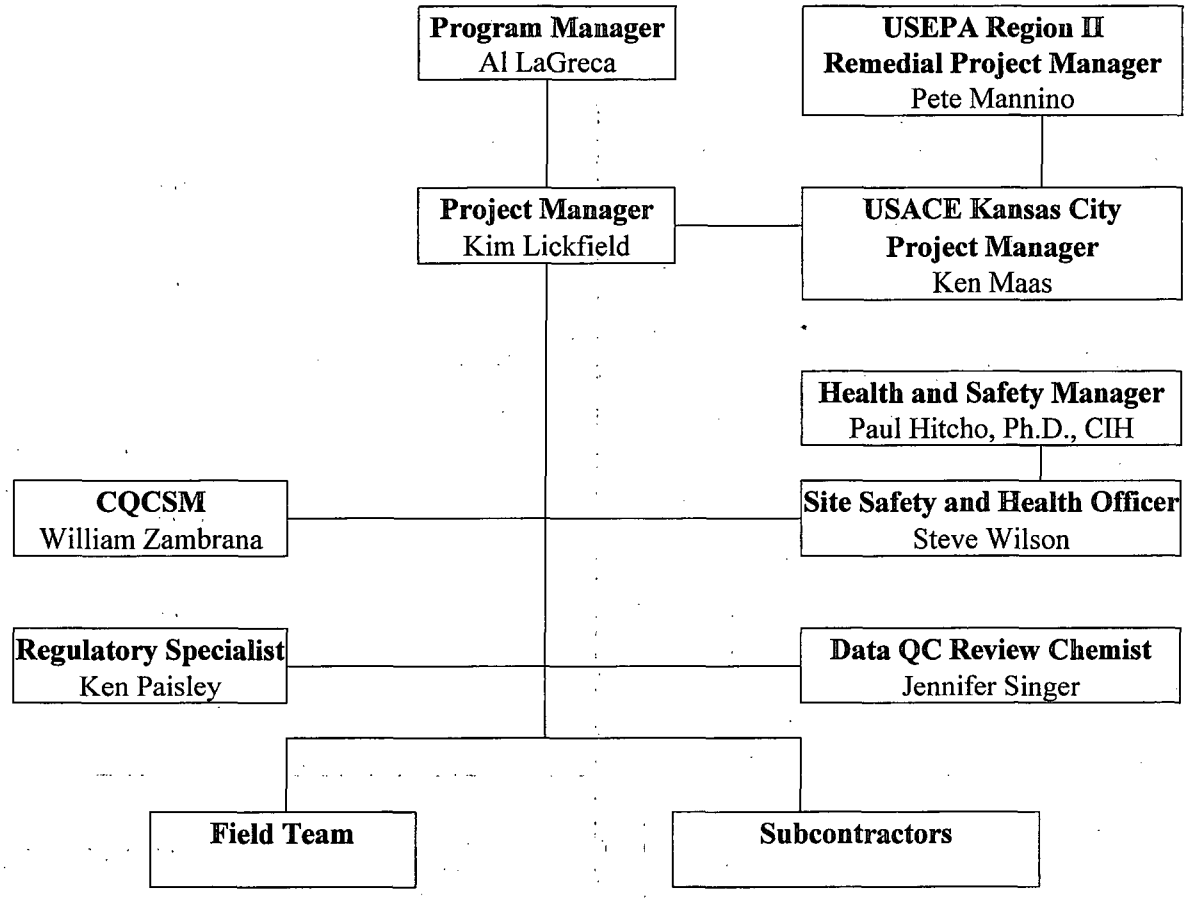
## QAPP Worksheet #5
## Project Organizational Chart



## QAPP Worksheet #6
## Communication Pathways

| Communication Drivers | Responsible Entity | Name | Phone Number | Procedure |
|---|---|---|---|---|
| QAPP Amendments | Sevenson | Jennifer Singer | (716) 284-0431 | Sevenson Project Manager and CQCSM will initiate changes in the QAPP. Jennifer Singer will be responsible for revisions to the document. USACE and USEPA must approve all changes prior to implementation. Copies of amendments will be forwarded to all parties. |
| Change to Field Work | Sevenson | Field Team Leader | (908) 769-5301 | Field Team Leader will notify Project Manager and CQCSM of any field variations. Project Manager will in turn notify USACE within 24 hours. Telephone and e-mail notifications are acceptable. All field changes will be documented as detailed in Section 5.5 of the FSP. |
| Analytical Data Reporting | Sevenson | Jennifer Singer | (716) 284-0431 | Jennifer Singer will review all analytical data. Any deficiencies will be reported to the Project Manager and laboratory Quality Assurance Officer. |
| Initiation of Corrective Action | Sevenson | William Zambrana | (908) 769-5301 | Sevenson Project Manager and/or Data Quality Control Review Chemist will notify CQCSM of any issues and/or deficiencies who will in turn determine whether the need for corrective action is warranted. |
| Health and Safety | Sevenson | Steve Wilson | (908) 769-5301 | The Site Safety and Health Officer (SSHO) will be responsible for ensuring the protocols specified in the Site Safety, Health, and Emergency Response Plan (SHERP) are carried out during field activities. All safety matters will be reported to the SSHO who will in turn inform the Project Manager. If any issues arise during the field activities that the SSHO cannot address, the Corporate Health and Safety Manager, Dr. Paul Hitcho, will be immediately contacted. |
| Daily Field Sampling Paperwork | Sevenson | William Zambrana | (908) 769-5301 | William Zambrana will e-mail or fax daily field sampling paperwork to the Project Manager and Data Quality Control Review Chemist within 2 business days. |
| Release of Analytical Data | Sevenson | Jennifer Singer and William Zambrana | (716) 284-0431 (908) 769-5301 | No analytical data can be released until Jennifer Singer has completed the data review and William Zambrana has approved the release. |
| Reporting Laboratory Data Quality Issues | WST | Dan Vollmer | (716) 876-5290 | Dan Vollmer will report all QA/QC issues with project field samples to the CQCSM and Data Quality Control Review Chemist within 2 business days. |

## QAPP Worksheet #7
## Personnel Responsibilities and Qualifications Table

| Name | Title | Organizational Affiliation | Responsibilities | Education and Experience Qualifications |
|---|---|---|---|---|
| Al LaGreca | Program Manager | Sevenson | Oversees project and responds to USEPA and USACE. | B.S. Civil Engineering |
| Kim Lickfield | Project Manager | Sevenson | Manages project – coordinates between lead agency and subcontractors | A.A.S. Construction Technology |
| William Zambrana | Contractor Quality Control Systems Manager | Sevenson | *QC oversight* | A.S. – *Radiation* Technology |
| Jennifer Singer | QAPP Preparer and Data Quality Control Review Chemist | Sevenson | Prepares QAPP and performs data review | M.S.- Environmental Pollution Control<br>B.S. - Biochemistry |
| Steve Wilson | Health and Safety Officer | Sevenson | Oversees health and safety for field activities | 3 years Health and Safety experience |
| Brian Schepart | Laboratory Manager | Waste Stream Technology, Inc. | Manages generation of analytical data | Ph.D. – Experimental Pathology<br>B.S. – Pharmacy<br>B.A. – Biology |
| Dan Vollmer | Laboratory Quality Assurance/Quality Control Manager | Waste Stream Technology, Inc. | Performs laboratory QA and QC oversight | B.A. - Biology |

## QAPP Worksheet #8
## Special Personnel Training Requirements Table[1]

| Project Function | Specialized Training By Title or Description of Course | Training Provider | Training Date | Personnel/Groups Receiving Training | Personnel Titles/Organizational Affiliation | Location of Training Records/Certificates[2] |
|---|---|---|---|---|---|---|
| All Field Activities[3] | 40-hour Annual 8-hour refresher | Sevenson | Various and Updated | All field team members | Sevenson staff, subcontractors | Sevenson database and onsite |
| Sample Collection | Trained in USEPA, USACE, and NJDEP standard sampling methods | Sevenson | Various and Updated | All field team members | Sevenson staff, subcontractors | Resumes |
| Sample Analysis | Trained in DOD Quality Systems Manual and USEPA SW-846 methods | WST | Various and Updated | WST | All personnel | Laboratory |
| Data Review and Assessment | None – review performed by an experienced project chemist | Sevenson | Various | Jennifer Singer | Sevenson Data Quality Control Review Chemist | Sevenson database |

[1] Other tasks requiring specialized skills and training will be performed by appropriately qualified subcontractors. Training, certification, and permit requirements will be outlined in separate scopes of work for each task.
[2] If training records and/or certificates are on file elsewhere, document their location in this column. If training records and/or certificates do not exist or are not available, then this should be noted.
[3] All field personnel will be required to be OSHA trained.

## QAPP Worksheet #9
## Project Scoping Session Participants Sheet

No scoping sessions have been held. Sessions will be scheduled as needed and worksheet will be updated.

| | |
|---|---|
| Project Name:<br>Projected Date(s) of Sampling:<br>_____<br>Project Manager: | Site Name:<br>Site Location: |

**Date of Session:**
**Scoping Session Purpose:**

| Name | Title | Affiliation | Phone # | E-mail Address | Project Role |
|---|---|---|---|---|---|
| | | | | | |
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| | | | | | |
| | | | | | |

Comments/Decisions:

Action Items:

Consensus Decisions:

# QAPP Worksheet #10
# Problem Definition

## PROBLEM DEFINITION

The Cornell-Dubilier Electronics Superfund Site facility buildings may contain materials that may be regulated when managed for disposal. Debris, concrete, and water need to be characterized to determine what materials require disposal as hazardous waste and as regulated non-hazardous waste. In addition, backfill and topsoil materials brought onsite for restoration activities will have to be shown to be below the New Jersey Department of Environmental Protection (NJDEP) Residential Direct Contact Soil Cleanup Criteria (RDCSCC).

## PROJECT DESCRIPTION

The scope of the remedial action involves the removal and offsite disposal of site buildings and structures. Specific work items include:

- Verifying the location of and disconnecting all utilities to the individual buildings and structures.
- Acquiring all necessary permits and licenses.
- Implementing site monitoring and controls including temporary fencing and security.
- Removal, separation, and offsite disposal of trash, tires, lights/ballasts, and other wastes located within buildings to be demolished and throughout the site.
- Asbestos removal and disposal.
- Demolition of buildings and structures.
- Sampling, testing, removal, and disposal of hazardous materials and special wastes including PCB-containing materials and equipment, metals, transformers, and capacitors to an approved recycling or disposal facility.

Samples will be collected for characterization of debris, concrete, and water to determine the offsite disposal requirements. In addition, samples will be collected to determine backfill and topsoil quality prior to bringing such materials to the site.

## PROJECT DECISION CONDITIONS

Debris, concrete, and water samples will be collected for waste characterization and disposal facility approval. Waste characterization samples will be compared against the 40CFR261 *Characteristics of Hazardous Waste* and 40CFR761 *PCB Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions* to determine the disposal requirements. Any materials containing concentrations of total PCBs greater than the regulatory standards will be disposed of as PCB remediation wastes.

Samples of topsoil and backfill materials from each offsite source will be collected and analyzed to verify that these materials do not contain contaminant levels that are hazardous to human health or the environment. Written approval from USACE will be received prior to bringing backfill or topsoil to the site. NJDEP RDCSCC will be used to determine if borrow materials are free from contamination.

Wipe samples will be collected from nonporous (i.e., metals) materials in order to determine offsite disposal requirements. Wipe samples with PCB concentrations greater than 10 micrograms (μg) per 100 centimeters square ($cm^2$) will require disposal at a Toxic Substances Control Act (TSCA) landfill.

## QAPP Worksheet #11
## Project Quality Objectives/Systematic Planning Process Statements

### WHO WILL USE THE DATA?

USEPA Region II, USACE – Kansas City District, Sevenson, and the offsite disposal facility will use the data to determine the disposal requirements. In addition, USEPA Region II, USACE – Kansas City District, and Sevenson will use the data from offsite source materials to determine its safety to human health and the environment prior to use for site restoration. All data and other information gathered during the project will be archived for five years. Electronic media (e.g., CD) will be used for a permanent archive.

### WHAT WILL THE DATA BE USED FOR?

Data will be used to determine whether or not there is any risk by assuming materials are either hazardous or non-hazardous for disposal. Data will also be used to determine whether offsite source materials pose a risk to human health or the environment prior to bringing such materials to the site.

### WHAT TYPES OF DATA ARE NEEDED?

The project will contain the following elements:

- Representative sampling locations will be chosen from each sample matrix.
- Standard protocols for sample collection, handling, preparation, and analysis.
- As consistent a sample type among sample locations.

### HOW "GOOD" DO DATA NEED TO BE?

The data must meet the regulatory permit requirements of the offsite disposal facility and the requirements of the NJDEP for offsite source materials for site restoration.

### WHEN WILL DATA BE COLLECTED?

Data will be collected over the duration of the project.

### WHO WILL COLLECT AND GENERATE THE DATA?

The Sevenson sampling team will collect all the samples. Sample analysis will be performed by WST.

### HOW WILL THE DATA BE REPORTED?

All samples collected during the remedial action will be sent to the offsite laboratory for analysis. Analytical data will be forwarded to Sevenson for internal validation and evaluation. Following completion of all laboratory analysis and receipt of all electronic and hard copy data, a report will be generated by Sevenson and submitted to USACE and USEPA.

## HOW WILL THE DATA BE ARCHIVED?

- Preliminary data will be faxed or e-mailed to Sevenson within the specified turn around time.
- Final data will be submitted in electronic format and hard copies consistent with USEPA Level III deliverables.
- WST will archive the raw data.
- Hard copies of analytical data received by Sevenson will be archived in the project file.
- Electronic analytical data will be archived on CDs and copies of the CDs will be forwarded to the USACE and USEPA.

## QAPP Worksheet #12-1
## Measurement Performance Criteria Table

| | |
|---|---|
| **Matrix** | Solid (e.g., concrete, debris) and aqueous |
| **Analytical Group** | TCLP Metals |
| **Concentration Level** | Unknown |

| Sampling Procedure | Analytical Method/SOP | Data Quality Indicators (DQIs) | Measurement Performance Criteria | QC Sample and/or Activity Used to Assess Measurement Performance | QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A) |
|---|---|---|---|---|---|
| FSP Section 4.1, 4.2, 4.3. 4.4 | M-1311-03-XX<br>M-ICP-06-XX<br>M-MERC-05-XX | Precision | RPD≤25% | Matrix Spike/Matrix Spike Duplicate | S&A |
| | | Accuracy | 75-125% recovery | Matrix Spike/Matrix Spike Duplicate | S&A |
| | | Accuracy | 80-120% recovery | Laboratory Control Sample | A |
| | | Accuracy | ±4°C | Temperature Blank | S |
| | | Sensitivity | ≤PQL | Method Blank | A |
| | | Completeness | ≥95% | Data Assessment | S&A |
| | | Comparability | Similar units and methods | Data results review | S&A |

## QAPP Worksheet #12-2
## Measurement Performance Criteria Table

| | |
|---|---|
| **Matrix** | Solid (e.g., concrete, debris) and aqueous |
| **Analytical Group** | TCLP VOCs |
| **Concentration Level** | Unknown |

| Sampling Procedure | Analytical Method/SOP | Data Quality Indicators (DQIs) | Measurement Performance Criteria | QC Sample and/or Activity Used to Assess Measurement Performance | QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A) |
|---|---|---|---|---|---|
| FSP Section 4.1, 4.2, 4.3. 4.4 | M-1311-03-XX<br>M-8260-07-XX | Precision | RPD≤20% | Laboratory Control Sample/Laboratory Control Sample Duplicate | A |
| | | Accuracy | See Appendix C | Matrix Spike | S&A |
| | | Accuracy | See Appendix C | Laboratory Control Sample | A |
| | | Accuracy | See Appendix C | Surrogate Spikes | S&A |
| | | Accuracy | ±4°C | Temperature Blank | S |
| | | Sensitivity | ≤PQL | Method Blank | A |
| | | Completeness | ≥95% | Data Assessment | S&A |
| | | Comparability | Similar units and methods | Data results review | S&A |

## QAPP Worksheet #12-3
## Measurement Performance Criteria Table

| | |
|---|---|
| **Matrix** | Solid (e.g., concrete, debris) and aqueous |
| **Analytical Group** | TCLP SVOCs |
| **Concentration Level** | Unknown |

| Sampling Procedure | Analytical Method/SOP | Data Quality Indicators (DQIs) | Measurement Performance Criteria | QC Sample and/or Activity Used to Assess Measurement Performance | QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A) |
|---|---|---|---|---|---|
| FSP Section 4.1, 4.2, 4.3. 4.4 | M-1311-03-XX<br>M-8270-05-XX | Precision | RPD≤30% | Laboratory Control Sample/Laboratory Control Sample Duplicate | A |
| | | Accuracy | See Appendix C | Matrix Spike | S&A |
| | | Accuracy | See Appendix C | Laboratory Control Sample | A |
| | | Accuracy | See Appendix C | Surrogate Spikes | S&A |
| | | Accuracy | ±4°C | Temperature Blank | S |
| | | Sensitivity | ≤PQL | Method Blank | A |
| | | Completeness | ≥95% | Data Assessment | S&A |
| | | Comparability | Similar units and methods | Data results review | S&A |

## QAPP Worksheet #12-4
## Measurement Performance Criteria Table

| | |
|---|---|
| **Matrix** | Solid (e.g., concrete, debris) and aqueous |
| **Analytical Group** | TCLP Pesticides |
| **Concentration Level** | Unknown |

| Sampling Procedure | Analytical Method/SOP | Data Quality Indicators (DQIs) | Measurement Performance Criteria | QC Sample and/or Activity Used to Assess Measurement Performance | QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A) |
|---|---|---|---|---|---|
| FSP Section 4.1, 4.2, 4.3. 4.4 | M-1311-03-XX<br>M-8081A-07-XX | Precision | RPD≤25% | Laboratory Control Sample/Laboratory Control Sample Duplicate | A |
| | | Accuracy | See Appendix C | Matrix Spike | S&A |
| | | Accuracy | See Appendix C | Laboratory Control Sample | A |
| | | Accuracy | See Appendix C | Surrogate Spikes | S&A |
| | | Accuracy | ±4°C | Temperature Blank | S |
| | | Sensitivity | ≤PQL | Method Blank | A |
| | | Completeness | ≥95% | Data Assessment | S&A |
| | | Comparability | Similar units and methods | Data results review | S&A |

## QAPP Worksheet #12-5
### *Measurement Performance Criteria Table*

| | |
|---|---|
| **Matrix** | Solid (e.g., concrete, debris) and aqueous |
| **Analytical Group** | TCLP Herbicides |
| **Concentration Level** | Unknown |

| Sampling Procedure | Analytical Method/SOP | Data Quality Indicators (DQIs) | Measurement Performance Criteria | QC Sample and/or Activity Used to Assess Measurement Performance | QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A) |
|---|---|---|---|---|---|
| FSP Section 4.1, 4.2, 4.3. 4.4 | M-1311-03-XX<br>M-8151A-05-XX | Precision | RPD≤30% | Laboratory Control Sample/Laboratory Control Sample Duplicate | A |
| | | Accuracy | See Appendix C | Matrix Spike | S&A |
| | | Accuracy | See Appendix C | Laboratory Control Sample | A |
| | | Accuracy | See Appendix C | Surrogate Spikes | S&A |
| | | Accuracy | ±4°C | Temperature Blank | S |
| | | Sensitivity | ≤PQL | Method Blank | A |
| | | Completeness | ≥95% | Data Assessment | S&A |
| | | Comparability | Similar units and methods | Data results review | S&A |

## QAPP Worksheet #12-6
## Measurement Performance Criteria Table

| | |
|---|---|
| **Matrix** | Solid (waste characterization and offsite source materials) |
| **Analytical Group** | PCBs |
| **Concentration Level** | Unknown |

| Sampling Procedure | Analytical Method/SOP | Data Quality Indicators (DQIs) | Measurement Performance Criteria | QC Sample and/or Activity Used to Assess Measurement Performance | QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A) |
|---|---|---|---|---|---|
| FSP Section 4.1, 4.2, 4.3. 4.4 | M-8082-03-XX | Precision | RPD≤30% | Matrix Spike/Matrix Spike Duplicate | S&A |
| | | Accuracy | See Appendix C | Matrix Spike/Matrix Spike Duplicate | S&A |
| | | Accuracy | See Appendix C | Laboratory Control Sample | A |
| | | Accuracy | See Appendix C | Surrogate Spikes | S&A |
| | | Accuracy | ±4°C | Temperature Blank | S |
| | | Sensitivity | ≤PQL | Method Blank | A |
| | | Completeness | ≥95% | Data Assessment | S&A |
| | | Comparability | Similar units and methods | Data results review | S&A |

## QAPP Worksheet #12-7
## Measurement Performance Criteria Table

| | |
|---|---|
| **Matrix** | Offsite Source Materials (i.e., soil) |
| **Analytical Group** | VOCs |
| **Concentration Level** | Unknown |

| Sampling Procedure | Analytical Method/SOP | Data Quality Indicators (DQIs) | Measurement Performance Criteria | QC Sample and/or Activity Used to Assess Measurement Performance | QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A) |
|---|---|---|---|---|---|
| FSP Section 4.6 | M-8260-07-XX | Precision | RPD≤25% | Matrix Spike/Matrix Spike Duplicate | S&A |
| | | Precision | RPD≤20% | Laboratory Control Sample/Laboratory Control Sample Duplicate | A |
| | | Accuracy | See Appendix C | Matrix Spike/Matrix Spike Duplicate | S&A |
| | | Accuracy | See Appendix C | Laboratory Control Sample | A |
| | | Accuracy | See Appendix C | Surrogate Spikes | S&A |
| | | Accuracy | ±4°C | Temperature Blank | S |
| | | Sensitivity | ≤PQL | Method Blank | A |
| | | Completeness | ≥95% | Data Assessment | S&A |
| | | Comparability | Similar units and methods | Data results review | S&A |

## QAPP Worksheet #12-8
## Measurement Performance Criteria Table

| | |
|---|---|
| **Matrix** | Offsite Source Materials (i.e., soil) |
| **Analytical Group** | SVOCs |
| **Concentration Level** | Unknown |

| Sampling Procedure | Analytical Method/SOP | Data Quality Indicators (DQIs) | Measurement Performance Criteria | QC Sample and/or Activity Used to Assess Measurement Performance | QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A) |
|---|---|---|---|---|---|
| FSP Section 4.6 | M-8270-05-XX | Precision | RPD≤35% | Matrix Spike/Matrix Spike Duplicate | S&A |
| | | Precision | RPD≤30% | Laboratory Control Sample/Laboratory Control Sample Duplicate | A |
| | | Accuracy | See Appendix C | Matrix Spike/Matrix Spike Duplicate | S&A |
| | | Accuracy | See Appendix C | Laboratory Control Sample | A |
| | | Accuracy | See Appendix C | Surrogate Spikes | S&A |
| | | Accuracy | ±4°C | Temperature Blank | S |
| | | Sensitivity | ≤PQL | Method Blank | A |
| | | Completeness | ≥95% | Data Assessment | S&A |
| | | Comparability | Similar units and methods | Data results review | S&A |

## QAPP Worksheet #12-9
## Measurement Performance Criteria Table

| | |
|---|---|
| **Matrix** | Offsite Source Materials (i.e., soil) |
| **Analytical Group** | Pesticides |
| **Concentration Level** | Unknown |

| Sampling Procedure | Analytical Method/SOP | Data Quality Indicators (DQIs) | Measurement Performance Criteria | QC Sample and/or Activity Used to Assess Measurement Performance | QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A) |
|---|---|---|---|---|---|
| FSP Section 4.6 | M-8081A-07-XX | Precision | RPD≤30% | Matrix Spike/Matrix Spike Duplicate | S&A |
| | | Precision | RPD≤25% | Laboratory Control Sample/Laboratory Control Sample Duplicate | A |
| | | Accuracy | See Appendix C | Matrix Spike/Matrix Spike Duplicate | S&A |
| | | Accuracy | See Appendix C | Laboratory Control Sample | A |
| | | Accuracy | See Appendix C | Surrogate Spikes | S&A |
| | | Accuracy | ±4°C | Temperature Blank | S |
| | | Sensitivity | ≤PQL | Method Blank | A |
| | | Completeness | ≥95% | Data Assessment | S&A |
| | | Comparability | Similar units and methods | Data results review | S&A |

## QAPP Worksheet #12-10
## Measurement Performance Criteria Table

| | |
|---|---|
| **Matrix** | Offsite Source Materials (i.e., soil) |
| **Analytical Group** | Metals |
| **Concentration Level** | Unknown |

| Sampling Procedure | Analytical Method/SOP | Data Quality Indicators (DQIs) | Measurement Performance Criteria | QC Sample and/or Activity Used to Assess Measurement Performance | QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A) |
|---|---|---|---|---|---|
| FSP Section 4.6 | M-ICP-06-XX<br>M-MERC-05-XX | Precision | RPD≤25% | Matrix Spike/Matrix Spike Duplicate | S&A |
| | | Accuracy | 75-125% recovery | Matrix Spike/Matrix Spike Duplicate | S&A |
| | | Accuracy | 80-120% recovery | Laboratory Control Sample | A |
| | | Accuracy | ±4°C | Temperature Blank | S |
| | | Sensitivity | ≤PQL | Method Blank | A |
| | | Completeness | ≥95% | Data Assessment | S&A |
| | | Comparability | Similar units and methods | Data results review | S&A |

## QAPP Worksheet #12-11
## Measurement Performance Criteria Table

| | |
|---|---|
| **Matrix** | Wipes |
| **Analytical Group** | PCBs |
| **Concentration Level** | Unknown |

| Sampling Procedure | Analytical Method/SOP | Data Quality Indicators (DQIs) | Measurement Performance Criteria | QC Sample and/or Activity Used to Assess Measurement Performance | QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A) |
|---|---|---|---|---|---|
| FSP Section 4.5 | M-8082-03-XX | Accuracy | See Appendix C | Laboratory Control Sample | A |
| | | Accuracy | See Appendix C | Surrogate Spikes | S&A |
| | | Accuracy | ±4°C | Temperature Blank | S |
| | | Sensitivity | ≤PQL | Method Blank | A |
| | | Completeness | ≥95% | Data Assessment | S&A |
| | | Comparability | Similar units and methods | Data results review | S&A |

## QAPP Worksheet #13
## Secondary Data Criteria and Limitations Table

| Secondary Data | Data Source (Originating Organization, Report Title, and Date) | Data Generator(s) (Originating Organization, Data Types, Data Generation/Collection Dates) | How Data Will Be Used | Limitations on Data Use |
|---|---|---|---|---|
| Soil and Building Materials | Final Remedial Investigation Report for OU-2 Onsite Soils and Buildings, Foster Wheeler, 2002 | Foster Wheeler, 1997-2002 | To determine areas which require removal | None |
| Building Materials | Data Summary Report, Operable Unit 2 – Building Demolition, 100% Completion Phase, Malcolm Pirnie, 2006 | Malcolm Pirnie, 2006 | To determine areas which require removal | None |

## QAPP Worksheet #14
## Summary of Project Tasks

**Sampling Tasks:**

- Waste characterization samples will be collected as concrete chip samples or core samples, depending on site conditions and the material to be sampled, using appropriate standard methods.
- In-situ subsurface soil and concrete samples will be collected in the vicinity of known PCB-containing walls using appropriate standard methods.
- Containerized waste samples will be collected using appropriate standard methods.
- Wastewater characterization sample will be collected from the holding tank using dedicated, disposable polyvinyl chloride or Teflon bailers following appropriate standard methods.
- Wipe samples will be collected to monitor surficial contamination on non-porous surfaces (i.e., metals) using appropriate standard methods.

**Analysis Tasks:**

- Waste Stream Technology, Inc. to prepare and analyze solid and liquid samples for PCBs and waste disposal characterization parameters.
- Waste Stream Technology, Inc. to prepare and analyze wipe samples for PCBs.

**Quality Control Tasks:**

- Implement field SOPs for sample collection, packaging, and transportation to the offsite laboratory.
- Implement laboratory SOPs for sample preparation and analysis.

**Secondary Data:**

- See Worksheet #13.

**Data Management Tasks:**

- Preliminary data will be faxed or e-mailed to Sevenson within the specified turn around time.
- Final data will be submitted to Sevenson in electronic copy consistent with Staged Electronic Data Deliverable (SEDD) format and hard copy consistent with USACE Level III deliverables. Sevenson will review all analytical data.
- Hard copies of analytical data received by Sevenson will be archived in the project file.
- Electronic data will be uploaded into the USACE Environmental Data Management System (EDMS) database after data review.
- Electronic analytical data will be archived on CDs and copies of the CDs will be forwarded to USACE and USEPA.

**Documentation and Records:**

- All samples collected will have locations documented and records of each sample collected in field logbooks. Chain of custody forms, shipment airbills, and sample logs will be prepared and retained for each sample.
- Copy of final, approved QAPP retained in central file area.

**Assessment/Audit Tasks:**

- Subsequent to the initiation of the field activities, Sevenson and USACE will perform a field audit to observe sample collection and documentation activities and compliance with the SHERP.
- Additional field audits and inspections will follow the three-phase process of quality control for each definable work element. Copies of quality control inspection checklists are included in Appendix A.
- Waste Stream Technology, Inc. will routinely conduct internal performance and system audits. National Environmental Laboratory Accreditation Program (NELAP) certification valid through April 1, 2007 and NJDEP certification valid through June 30, 2007.

**Data Review Tasks:**

- Waste Stream Technology, Inc. will verify that all data are complete for samples received. All data package deliverables requirements will be met. Sevenson will review data using USACE Automated Data Review (ADR) software, which reviews data using USEPA Region II criteria. Achievement of all project-specific measurement performance criteria specified in the QAPP and data review criteria will be evaluated using the project-specific ADR library. A data review report, which includes data qualifiers and quality control outlier reports, will be generated for each laboratory work order.
- Reviewed data and all related field notes, logbooks, and records will be reviewed to assess total measurement error and determine overall usability of the data for project purposes. Data limitations will be determined and data will be compared to project quality objectives and required action limits. Corrective action is initiated, as necessary. Final data are placed in the EDMS database, with any necessary qualifiers, and tables, charts, and graphs are generated.

## QAPP Worksheet #15-1
## Reference Limits and Evaluation Table

**Matrix:** Solid (e.g., concrete, debris) and Aqueous
**Analytical Group:** TCLP Metals
**Concentration Level:** Unknown

| Analyte | CAS Number | Project Action Limit (mg/L) | Project Quantitation Limit Goal (mg/L) | Analytical Method[1] | | Achievable Laboratory Limits[2] | |
|---|---|---|---|---|---|---|---|
| | | | | MDLs (mg/L) | Method QLs (mg/L) | MDLs (mg/L) | QLs (mg/L) |
| Arsenic | 7440-38-2 | 5.00 | 0.045 | NA | NA | NA | 0.045 |
| Barium | 7440-39-3 | 100.00 | 0.025 | NA | NA | NA | 0.025 |
| Cadmium | 7440-43-9 | 1.00 | 0.025 | NA | NA | NA | 0.025 |
| Chromium | 7440-47-3 | 5.00 | 0.025 | NA | NA | NA | 0.025 |
| Lead | 7439-92-1 | 5.00 | 0.075 | NA | NA | NA | 0.075 |
| Mercury | 7439-97-6 | 0.20 | 0.001 | NA | NA | NA | 0.001 |
| Selenium | 7782-49-2 | 1.00 | 0.095 | NA | NA | NA | 0.095 |
| Silver | 7440-22-4 | 5.00 | 0.025 | NA | NA | NA | 0.025 |

[1]Analytical MDLs and QLs are those documented in validated methods.

[2]Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method.

## QAPP Worksheet #15-2
## Reference Limits and Evaluation Table

**Matrix:** Solid (e.g., concrete, debris) and Aqueous
**Analytical Group:** TCLP VOCs
**Concentration Level:** Unknown

| Analyte | CAS Number | Project Action Limit (µg/L) | Project Quantitation Limit Goal (µg/L) | Analytical Method[1] | | Achievable Laboratory Limits[2] | |
|---|---|---|---|---|---|---|---|
| | | | | MDLs (µg/L) | Method QLs (µg/L) | MDLs (µg/L) | QLs (µg/L) |
| Benzene | 71-43-2 | 500 | 10.0 | NA | NA | NA | 10.0 |
| 2-Butanone | 78-93-3 | 200,000 | 100.0 | NA | NA | NA | 100.0 |
| Carbon Tetrachloride | 56-23-5 | 500 | 10.0 | NA | NA | NA | 10.0 |
| Chlorobenzene | 108-90-7 | 100,000 | 10.0 | NA | NA | NA | 10.0 |
| Chloroform | 67-66-3 | 6,000 | 10.0 | NA | NA | NA | 10.0 |
| 1,2-Dichloroethane | 107-06-2 | 500 | 10.0 | NA | NA | NA | 10.0 |
| 1,1-Dichloroethene | 75-35-4 | 700 | 10.0 | NA | NA | NA | 10.0 |
| Tetrachloroethene | 127-18-4 | 700 | 10.0 | NA | NA | NA | 10.0 |
| Trichloroethene | 79-01-6 | 500 | 10.0 | NA | NA | NA | 10.0 |
| Vinyl Chloride | 75-01-4 | 200 | 10.0 | NA | NA | NA | 10.0 |

[1]Analytical MDLs and QLs are those documented in validated methods.
[2]Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method.

## QAPP Worksheet #15-3
## Reference Limits and Evaluation Table

**Matrix:** Solid (e.g., concrete, debris) and Aqueous
**Analytical Group:** TCLP SVOCs
**Concentration Level:** Unknown

| Analyte | CAS Number | Project Action Limit (µg/L) | Project Quantitation Limit Goal (µg/L) | Analytical Method[1] | | Achievable Laboratory Limits[2] | |
|---|---|---|---|---|---|---|---|
| | | | | MDLs (µg/L) | Method QLs (µg/L) | MDLs (µg/L) | QLs (µg/L) |
| Cresols (o, m, and p) | 106-44-5 (m)<br>95-48-7 (o)<br>106-44-5 (p) | 200,000 | 24.0 | NA | NA | NA | 24.0 |
| 1,4-Dichlorobenzene | 106-46-7 | 7,500 | 8.0 | NA | NA | NA | 8.0 |
| 2,4-Dinitrotoluene | 121-14-2 | 130 | 8.0 | NA | NA | NA | 8.0 |
| Hexachlorobenzene | 118-74-1 | 130 | 8.0 | NA | NA | NA | 8.0 |
| Hexachlorobutadiene | 87-68-3 | 500 | 8.0 | NA | NA | NA | 8.0 |
| Hexachloroethane | 67-72-1 | 3,000 | 8.0 | NA | NA | NA | 8.0 |
| Nitrobenzene | 98-95-3 | 2,000 | 8.0 | NA | NA | NA | 8.0 |
| Pentachlorophenol | 87-86-5 | 100,000 | 16.0 | NA | NA | NA | 16.0 |
| Pyridine | 110-86-1 | 5,000 | 8.0 | NA | NA | NA | 8.0 |
| 2,4,5-Trichlorophenol | 95-95-4 | 400,000 | 8.0 | NA | NA | NA | 8.0 |
| 2,4,6-Trichlorophenol | 88-06-2 | 2,000 | 16.0 | NA | NA | NA | 16.0 |

[1]Analytical MDLs and QLs are those documented in validated methods.

[2]Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method.

## QAPP Worksheet #15-4
## Reference Limits and Evaluation Table

**Matrix:** Solid (e.g., concrete, debris) and Aqueous
**Analytical Group:** TCLP Pesticides
**Concentration Level:** Unknown

| Analyte | CAS Number | Project Action Limit (µg/L) | Project Quantitation Limit Goal (µg/L) | Analytical Method[1] | | Achievable Laboratory Limits[2] | |
|---|---|---|---|---|---|---|---|
| | | | | MDLs (µg/L) | Method QLs (µg/L) | MDLs (µg/L) | QLs (µg/L) |
| Chlordane | 57-74-9 | 30 | 0.800 | NA | NA | NA | 0.800 |
| Endrin | 72-20-8 | 20 | 0.040 | NA | NA | NA | 0.040 |
| Heptachlor | 76-44-8 | 8 | 0.040 | NA | NA | NA | 0.040 |
| Lindane (gamma-BHC) | 58-89-9 | 400 | 0.040 | NA | NA | NA | 0.040 |
| Methoxychlor | 72-43-5 | 10,000 | 0.040 | NA | NA | NA | 0.040 |
| Toxaphene | 8001-35-2 | 500 | 1.00 | NA | NA | NA | 1.00 |

[1]Analytical MDLs and QLs are those documented in validated methods.

[2]Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method.

## QAPP Worksheet #15-5
## Reference Limits and Evaluation Table

**Matrix:** Solid (e.g., concrete, debris) and Aqueous
**Analytical Group:** TCLP Herbicides
**Concentration Level:** Unknown

| Analyte | CAS Number | Project Action Limit (µg/L) | Project Quantitation Limit Goal (µg/L)) | Analytical Method[1] | | Achievable Laboratory Limits[2] | |
|---|---|---|---|---|---|---|---|
| | | | | MDLs (µg/L) | Method QLs (µg/L) | MDLs (µg/L) | QLs (µg/L) |
| 2,4-D | 94-75-7 | 10,000 | 20 | NA | NA | NA | 20 |
| 2,4,5-TP | 93-72-1 | 1,000 | 20 | NA | NA | NA | 20 |

[1]Analytical MDLs and QLs are those documented in validated methods.

[2]Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method.

## QAPP Worksheet #15-6
## Reference Limits and Evaluation Table

**Matrix:** Solid (waste characterization)
**Analytical Group:** PCBs
**Concentration Level:** Unknown

| Analyte | CAS Number | Project Action Limit (mg/Kg) | Project Quantitation Limit Goal (mg/Kg) | Analytical Method[1] | | Achievable Laboratory Limits[2] | |
|---|---|---|---|---|---|---|---|
| | | | | MDLs (mg/Kg) | Method QLs (mg/Kg)[3] | MDLs (mg/Kg) | QLs (mg/Kg) |
| Aroclor 1016 | 12674-11-2 | 50 | 0.0033 | 0.057 – 0 .070 | 38 – 47 | 0.00167 | 0.0033 |
| Aroclor 1221 | 11104-28-2 | | 0.0033 | 0.057 – 0 .070 | 38 – 47 | 0.00203 | 0.0033 |
| Aroclor 1232 | 11141-16-5 | | 0.0033 | 0.057 – 0 .070 | 38 – 47 | 0.00060 | 0.0033 |
| Aroclor 1242 | 53469-1-9 | | 0.0033 | 0.057 – 0 .070 | 38 – 47 | 0.000818 | 0.0033 |
| Aroclor 1248 | 12672-29-6 | | 0.0033 | 0.057 – 0 .070 | 38 – 47 | 0.000527 | 0.0033 |
| Aroclor 1254 | 11097-69-1 | | 0.0033 | 0.057 – 0 .070 | 38 – 47 | 0.000330 | 0.0033 |
| Aroclor 1260 | 11096-82-5 | | 0.0033 | 0.057 – 0 .070 | 38 - 47 | 0.000630 | 0.0033 |

[1]Analytical MDLs and QLs are those documented in validated methods.

[2]Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method.

[3] Per SW-846 Method 8082, the Estimated Quantitation Limit is the MDL (0.057mg/Kg to 0.070mg/Kg) times a factor (use 670 for low-concentration soil)

## QAPP Worksheet #15-7
## Reference Limits and Evaluation Table

**Matrix:** Offsite Source Material (i.e., soil)
**Analytical Group:** VOCs
**Concentration Level:** Unknown

| Analyte | CAS Number | Project Action Limit (µg/Kg) | Project Quantitation Limit Goal (µg/Kg) | Analytical Method[1] | | Achievable Laboratory Limits[2] | |
|---|---|---|---|---|---|---|---|
| | | | | MDLs (µg/Kg) | Method QLs (µg/Kg) | MDLs (µg/Kg) | QLs (µg/Kg) |
| Acetone | 67-64-1 | 1,000,000 | 10.0 | NA | NA | 3.55 | 10.0 |
| Acrylonitrile | 107-13-1 | 1,000 | 10.0 | NA | NA | 0.98 | 10.0 |
| Benzene | 71-43-2 | 3,000 | 2.0 | NA | NA | 0.18 | 2.0 |
| Bromodichloromethane | 75-27-4 | 11,000 | 2.0 | NA | NA | 0.26 | 2.0 |
| Bromoform | 75-25-2 | 86,000 | 2.0 | NA | NA | 0.43 | 2.0 |
| Bromomethane | 74-83-9 | 79,000 | 10.0 | NA | NA | 2.14 | 10.0 |
| 2-Butanone | 78-93-3 | 1,000,000 | 10.0 | NA | NA | 2.85 | 10.0 |
| Carbon Tetrachloride | 56-23-5 | 2,000 | 2.0 | NA | NA | 0.26 | 2.0 |
| Chlorobenzene | 108-90-7 | 37,000 | 2.0 | NA | NA | 0.38 | 2.0 |
| Chloroform | 67-66-3 | 19,000 | 2.0 | NA | NA | 0.43 | 2.0 |
| Chloromethane | 74-87-3 | 520,000 | 10.0 | NA | NA | 0.95 | 10.0 |
| Dibromochloromethane | 124-48-1 | 110,000 | 2.0 | NA | NA | 0.43 | 2.0 |
| 1,1-Dichloroethane | 75-34-3 | 570,000 | 2.0 | NA | NA | 0.34 | 2.0 |
| 1,2-Dichloroethane | 107-06-2 | 6,000 | 2.0 | NA | NA | 0.42 | 2.0 |
| 1,1-Dichloroethene | 75-35-4 | 8,000 | 2.0 | NA | NA | 0.55 | 2.0 |
| cis-1,2-Dichloroethene | 156-59-2 | 79,000 | 2.0 | NA | NA | 0.30 | 2.0 |
| trans-1,2-Dichloroethene | 156-60-5 | 1,000,000 | 2.0 | NA | NA | 0.34 | 2.0 |

| Analyte | CAS Number | Project Action Limit (µg/Kg) | Project Quantitation Limit Goal (µg/Kg) | Analytical Method[1] | | Achievable Laboratory Limits[2] | |
|---|---|---|---|---|---|---|---|
| | | | | MDLs (µg/Kg) | Method QLs (µg/Kg) | MDLs (µg/Kg) | QLs (µg/Kg) |
| 1,2-dichloropropane | 78-87-5 | 10,000 | 2.0 | NA | NA | 0.32 | 2.0 |
| 1,3-dichloropropene (cis and trans) | 10061-01-5 (cis) 10061-02-6 (trans) | 4,000 | 2.0 | NA | NA | 0.42 (cis) 0.20 (trans) | 2.0 |
| Ethylbenzene | 100-41-4 | 1,000,000 | 2.0 | NA | NA | 0.12 | 2.0 |
| Methylene Chloride | 75-09-2 | 49,000 | 2.0 | NA | NA | 2.39 | 2.0 |
| 4-Methyl-2-Pentanone | 108-10-1 | 1,000,000 | 10.0 | NA | NA | 1.10 | 10.0 |
| Styrene | 100-42-5 | 23,000 | 2.0 | NA | NA | 0.20 | 2.0 |
| 1,1,1,2-Tetrachloroethane | 630-20-6 | 170,000 | 2.0 | NA | NA | 0.44 | 2.0 |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 34,000 | 2.0 | NA | NA | 0.30 | 2.0 |
| Tetrachloroethene | 127-18-4 | 4,000 | 2.0 | NA | NA | 0.23 | 2.0 |
| Toluene | 108-88-3 | 1,000,000 | 2.0 | NA | NA | 0.36 | 2.0 |
| 1,1,1-Trichloroethane | 71-55-6 | 210,000 | 2.0 | NA | NA | 0.16 | 2.0 |
| 1,1,2-Trichloroethane | 79-00-5 | 22,000 | 2.0 | NA | NA | 0.33 | 2.0 |
| Trichloroethene | 79-01-6 | 23,000 | 2.0 | NA | NA | 0.45 | 2.0 |
| Vinyl Chloride | 75-01-4 | 2,000 | 10.0 | NA | NA | 0.86 | 10.0 |
| Xylenes (total) | 1330-20-7 | 410,000 | 4.0 | NA | NA | 0.33 (m,p) 0.15 (o) | 4.0 |

[1]Analytical MDLs and QLs are those documented in validated methods.

[2]Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method.

## QAPP Worksheet #15-8
## Reference Limits and Evaluation Table

**Matrix:** Offsite Source Material (i.e., soil)
**Analytical Group:** SVOCs
**Concentration Level:** Unknown

| Analyte | CAS Number | Project Action Limit (µg/Kg) | Project Quantitation Limit Goal (µg/Kg) | Analytical Method[1] | | Achievable Laboratory Limits[2] | |
|---|---|---|---|---|---|---|---|
| | | | | MDLs (µg/Kg) | Method QLs (µg/Kg)[3] | MDLs (µg/Kg) | QLs (µg/Kg) |
| Acenaphthene | 83-32-9 | 3,400,000 | 67 | NA | 660 | NA | 67 |
| Anthracene | 120-12-7 | 10,000,000 | 67 | NA | 660 | NA | 67 |
| Benzo(a)anthracene | 56-55-3 | 900 | 67 | NA | 660 | NA | 67 |
| Benzo(a)pyrene | 50-32-8 | 660 | 67 | NA | 660 | NA | 67 |
| Benzo(b)fluoranthene | 205-99-2 | 900 | 67 | NA | 660 | NA | 67 |
| Benzo(k)fluoranthene | 207-08-9 | 900 | 67 | NA | 660 | NA | 67 |
| Benzyl Alcohol | 100-51-6 | 10,000,00 | 67 | NA | 1300 | NA | 67 |
| Butyl benzyl phthalate | 85-68-7 | 1,100,000 | 67 | NA | 660 | NA | 67 |
| di-n-Butyl phthalate | 84-74-2 | 5,700,000 | 67 | NA | ND | NA | 67 |
| 4-Chloroaniline | 106-47-8 | 230,000 | 67 | NA | 1300 | NA | 67 |
| Bis(2-chloroethyl)ether | 111-44-4 | 660 | 67 | NA | 660 | NA | 67 |
| Bis(2-chloroisoproyl)ether | 108-60-1 | 2,300,000 | 67 | NA | 660 | NA | 67 |
| 4-Chloro-3-methylphenol | 59-50-7 | 10,000,000 | 133 | NA | 1300 | NA | 133 |
| 2-Chlorophenol | 95-57-8 | 280,000 | 130 | NA | 660 | NA | 130 |
| Chrysene | 218-01-9 | 9,000 | 67 | NA | 660 | NA | 67 |
| Dibenzo(a,h)anthracene | 53-70-3 | 660 | 67 | NA | 660 | NA | 67 |
| 1,2-Dichlorobenzene | 95-50-1 | 5,100,000 | 67 | NA | 660 | NA | 67 |

| Analyte | CAS Number | Project Action Limit (µg/Kg) | Project Quantitation Limit Goal (µg/Kg) | Analytical Method[1] | | Achievable Laboratory Limits[2] | |
|---|---|---|---|---|---|---|---|
| | | | | MDLs (µg/Kg) | Method QLs (µg/Kg) | MDLs (µg/Kg) | QLs (µg/Kg) |
| 1,3-Dichlorobenzene | 541-73-1 | 5,100,000 | 67 | NA | 660 | NA | 67 |
| 1,4-Dichlorobenzene | 106-46-7 | 570,000 | 67 | NA | 660 | NA | 67 |
| 3,3'-Dichlorobenzidine | 91-94-1 | 2,000 | 67 | NA | 1300 | NA | 67 |
| 2,4-Dichlorophenol | 120-83-2 | 170,000 | 130 | NA | 660 | NA | 130 |
| Diethyl phthalate | 84-66-2 | 10,000,000 | 67 | NA | 660 | NA | 67 |
| 2,4-Dimethylphenol | 105-67-9 | 1,100,000 | 130 | NA | 660 | NA | 130 |
| Dimethyl phthalate | 131-11-3 | 10,000,000 | 67 | NA | 660 | NA | 67 |
| 2,4-Dinitrophenol | 51-28-5 | 110,000 | 130 | NA | 3300 | NA | 130 |
| Dinitrotoluene (2,4-/2,6-mixture) | 121-14-2 (2,4-) 606-20-2 (2,6-) | 1,000 | 67 | NA | 660 (2,4-) 660 (2,6-) | NA | 67 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 49,000 | 67 | NA | 660 | NA | 67 |
| Fluoranthene | 206-44-0 | 2,300,000 | 67 | NA | 660 | NA | 67 |
| Fluorene | 86-73-7 | 2,300,000 | 67 | NA | 660 | NA | 67 |
| Hexachlorobenzene | 118-74-1 | 660 | 67 | NA | 660 | NA | 67 |
| Hexachlorobutadiene | 87-68-3 | 1,000 | 67 | NA | 660 | NA | 67 |
| Hexachlorocyclopentadiene | 77-47-4 | 400,000 | 130 | NA | 660 | NA | 130 |
| Hexachloroethane | 67-72-1 | 6,000 | 67 | NA | 660 | NA | 67 |
| Indeno(1,2,3-cd)pyrene | 193-39-5 | 900 | 67 | NA | 660 | NA | 67 |
| Isophorone | 78-59-1 | 1,100,000 | 67 | NA | 660 | NA | 67 |
| 2-Methylphenol | 95-48-7 | 2,800,000 | 67 | NA | 660 | NA | 67 |
| 4-Methylphenol | 106-44-5 | 2,800,000 | 67 | NA | 660 | NA | 67 |

| Analyte | CAS Number | Project Action Limit (µg/Kg) | Project Quantitation Limit Goal (µg/Kg) | Analytical Method[1] | | Achievable Laboratory Limits[2] | |
|---|---|---|---|---|---|---|---|
| | | | | MDLs (µg/Kg) | Method QLs (µg/Kg) | MDLs (µg/Kg) | QLs (µg/Kg) |
| Naphthalene | 91-20-3 | 230,000 | 67 | NA | 660 | NA | 67 |
| Nitrobenzene | 98-95-3 | 28,000 | 67 | NA | 660 | NA | 67 |
| N-Nitrosodiphenylamine | 86-30-6 | 140,000 | 67 | NA | 660 | NA | 67 |
| N-Nitroso-di-n-propylamine | 621-64-7 | 660 | 67 | NA | 660 | NA | 67 |
| di-n-Octylphthalate | 117-84-0 | 1,100,000 | 67 | NA | ND | NA | 67 |
| Pentachlorophenol | 87-86-5 | 6,000 | 130 | NA | 3300 | NA | 130 |
| Phenol | 108-95-2 | 10,000,000 | 130 | NA | 660 | NA | 130 |
| Pyrene | 129-00-0 | 1,700,000 | 67 | NA | 660 | NA | 67 |
| 1,2,4-Trichlorobenzene | 120-82-1 | 68,000 | 67 | NA | 660 | NA | 67 |
| 2,4,5-Trichlorophenol | 95-95-4 | 5,600,000 | 67 | NA | 660 | NA | 67 |
| 2,4,6-Trichlorophenol | 88-06-2 | 62,000 | 130 | NA | 660 | NA | 130 |

[1]Analytical MDLs and QLs are those documented in validated methods.

[2]Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method.

[3] ND = Not Determined

## QAPP Worksheet #15-9
## Reference Limits and Evaluation Table

**Matrix:** Offsite Source Material (i.e., soil)
**Analytical Group:** Pesticides
**Concentration Level:** Unknown

| Analyte | CAS Number | Project Action Limit (µg/Kg) | Project Quantitation Limit Goal (µg/Kg) | Analytical Method[1] | | Achievable Laboratory Limits[2] | |
|---|---|---|---|---|---|---|---|
| | | | | MDLs (µg/Kg) | Method QLs (µg/Kg) | MDLs (µg/Kg) | QLs (µg/Kg) |
| Aldrin | 309-00-2 | 40 | 0.400 | NA | NA | 0.0256 | 0.400 |
| 4,4'-DDD | 72-54-8 | 3,000 | 0.400 | NA | NA | 0.0414 | 0.400 |
| 4,4'-DDE | 72-55-9 | 2,000 | 0.400 | NA | NA | 0.0323 | 0.400 |
| 4,4'-DDT | 50-29-3 | 2,000 | 0.400 | NA | NA | 0.0413 | 0.400 |
| Dieldrin | 60-57-1 | 42 | 0.400 | NA | NA | 0.1700 | 0.400 |
| Endosulfan | | 340,000 | 0.400 | NA | NA | 0.0696 | 0.400 |
| Endrin | 72-20-8 | 17,000 | 0.400 | NA | NA | 0.1195 | 0.400 |
| Gamma-BHC | 58-89-9 | 520 | 0.400 | NA | NA | 0.0256 | 0.400 |
| Heptachlor | 76-44-8 | 150 | 0.400 | NA | NA | 0.0360 | 0.400 |
| Methoxychlor | 72-43-5 | 280,000 | 0.400 | NA | NA | 0.2878 | 0.400 |
| Toxaphene | 8001-35-2 | 100 | 8.30 | NA | NA | NA | 8.30 |

[1]Analytical MDLs and QLs are those documented in validated methods.

[2]Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method.

## QAPP Worksheet #15-10
## Reference Limits and Evaluation Table

**Matrix:** Offsite Source Material (i.e., soil)
**Analytical Group:** PCBs
**Concentration Level:** Unknown

| Analyte | CAS Number | Project Action Limit (µg/Kg) | Project Quantitation Limit Goal (µg/Kg) | Analytical Method[1] | | Achievable Laboratory Limits[2] | |
|---|---|---|---|---|---|---|---|
| | | | | MDLs (µg/Kg) | Method QLs (µg/Kg)[3] | MDLs (µg/Kg) | QLs (µg/Kg) |
| Aroclor 1016 | 12674-11-2 | 490 | 3.30 | 0.057 – 0 .070 | 38 – 47 | 1.67 | 3.30 |
| Aroclor 1221 | 11104-28-2 | | 3.30 | 0.057 – 0 .070 | 38 – 47 | 2.03 | 3.30 |
| Aroclor 1232 | 11141-16-5 | | 3.30 | 0.057 – 0 .070 | 38 – 47 | 0.600 | 3.30 |
| Aroclor 1242 | 53469-21-9 | | 3.30 | 0.057 – 0 .070 | 38 – 47 | 0.818 | 3.30 |
| Aroclor 1248 | 12672-29-6 | | 3.30 | 0.057 – 0 .070 | 38 – 47 | 0.527 | 3.30 |
| Aroclor 1254 | 11097-69-1 | | 3.30 | 0.057 – 0 .070 | 38 – 47 | 0.330 | 3.30 |
| Aroclor 1260 | 11096-82-5 | | 3.30 | 0.057 – 0 .070 | 38 - 47 | 0.630 | 3.30 |

[1]Analytical MDLs and QLs are those documented in validated methods.

[2]Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method.

[3] Per SW-846 Method 8082, the Estimated Quantitation Limit is the MDL (0.057mg/Kg to 0.070mg/Kg) times a factor (use 670 for low-concentration soil)

## QAPP Worksheet #15-11
## Reference Limits and Evaluation Table

**Matrix:** Offsite Source Material (i.e., soil)
**Analytical Group:** Metals
**Concentration Level:** Unknown

| Analyte | CAS Number | Project Action Limit (mg/Kg) | Project Quantitation Limit Goal (mg/Kg) | Analytical Method[1] | | Achievable Laboratory Limits[2] | |
|---|---|---|---|---|---|---|---|
| | | | | MDLs (mg/Kg) | Method QLs (mg/Kg) | MDLs (mg/Kg) | QLs (mg/Kg) |
| Antimony | 7440-36-0 | 14 | 1.40 | NA | NA | NA | 1.40 |
| Arsenic | 7440-38-2 | 20 | 1.70 | NA | NA | NA | 1.70 |
| Barium | 7440-39-3 | 700 | 1.00 | NA | NA | NA | 1.00 |
| Beryllium | 7440-41-7 | 2 | 0.50 | NA | NA | NA | 0.50 |
| Cadmium | 7440-43-9 | 39 | 1.00 | NA | NA | NA | 1.00 |
| Chromium | 7440-47-3 | 120,000 | 1.00 | NA | NA | NA | 1.00 |
| Copper | 7440-50-8 | 600 | 1.00 | NA | NA | NA | 1.00 |
| Cyanide | 57-12-5 | 1,100 | 0.50 | NA | NA | NA | 0.50 |
| Lead | 7439-92-1 | 400 | 4.10 | NA | NA | NA | 4.10 |
| Mercury | 7439-97-6 | 14 | 0.014 | NA | NA | NA | 0.014 |
| Nickel | 7440-02-0 | 250 | 1.00 | NA | NA | NA | 1.00 |
| Selenium | 7782-49-2 | 63 | 1.40 | NA | NA | NA | 1.40 |
| Silver | 7440-22-4 | 110 | 0.50 | NA | NA | NA | 0.50 |
| Thallium | 7440-28-0 | 2 | 1.30 | NA | NA | NA | 1.30 |
| Vanadium | 7440-62-2 | 370 | 1.00 | NA | NA | NA | 1.00 |
| Zinc | 7440-66-6 | 1,500 | 4.00 | NA | NA | NA | 4.00 |

[1]Analytical MDLs and QLs are those documented in validated methods.

[2]Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method.

## QAPP Worksheet #15-12
## Reference Limits and Evaluation Table

**Matrix:** Wipes
**Analytical Group:** PCBs
**Concentration Level:** Unknown

| Analyte | CAS Number | Project Action Limit (µg/100cm²) | Project Quantitation Limit Goal (µg/100cm²) | Analytical Method[1] | | Achievable Laboratory Limits[2] | |
|---|---|---|---|---|---|---|---|
| | | | | MDLs (µg/100cm²) | Method QLs (µg/100cm²) | MDLs (µg/100cm²) | QLs (µg/100cm²) |
| Aroclor 1016 | 12674-11-2 | 10 | 0.10 | NA | NA | NA | 0.10 |
| Aroclor 1221 | 11104-28-2 | | 0.10 | NA | NA | NA | 0.10 |
| Aroclor 1232 | 11141-16-5 | | 0.10 | NA | NA | NA | 0.10 |
| Aroclor 1242 | 53469-21-9 | | 0.10 | NA | NA | NA | 0.10 |
| Aroclor 1248 | 12672-29-6 | | 0.10 | NA | NA | NA | 0.10 |
| Aroclor 1254 | 11097-69-1 | | 0.10 | NA | NA | NA | 0.10 |
| Aroclor 1260 | 11096-82-5 | | 0.10 | NA | NA | NA | 0.10 |

[1]Analytical MDLs and QLs are those documented in validated methods.

[2]Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method.

## QAPP Worksheet #16
## Project Schedule / Timeline Table

| Activities | Organization | Dates (MM/DD/YY) | | Deliverable | Deliverable Due Date |
|---|---|---|---|---|---|
| | | Anticipated Date(s) of Initiation | Anticipated Date of Completion | | |
| SAMPLES WILL BE COLLECTED OVER THE DURATION OF THE PROJECT. | | | | | |

## QAPP Worksheet #17
## Sampling Design and Rationale

**Describe the sampling design and rationale in terms of what matrices will be sampled, what analytical groups will and at what concentration levels, the sampling locations (including QC, critical, and background samples), the number of samples to be taken, and the sampling frequency (including seasonal considerations) [May refer to map or Worksheet #18 for details]:**

Refer to Worksheet #10 for sampling and analysis rationale. Also refer to Section 4 of the FSP.

## QAPP Worksheet #18
## Sampling Locations and Methods/SOP Requirements Table

| Sampling Location/AOC | Matrix | Depth | Analytical Group | Concentration Level | Number of Samples (identify field duplicates) | Sampling SOP Reference | Rationale for Sampling Location |
|---|---|---|---|---|---|---|---|
| Building walls and floors per construction drawings; concrete pads; foundation walls; containers for waste disposal; wastewater storage tank | Solid (e.g., concrete, debris) and aqueous | NA | TCLP Metals<br>TCLP VOCs<br>TCLP SVOCs<br>TCLP Pesticides<br>TCLP Herbicides<br>PCBs | Unknown | Determined in the field based on the offsite disposal facility requirements (typically one sample per 500yd$^3$). | FSP Section 4.1, 4.2, 4.3, 4.4 | Waste characterization and disposal facility approval |
| Offsite source materials (i.e., backfill and topsoil) | Soil | NA | VOCs<br>SVOCs<br>Pesticides<br>PCBs<br>Metals | Unknown | Determined in the field based on the amount of offsite source material required (one sample per 5000yd$^3$). | FSP Section 4.6 | Verify topsoil and backfill from offsite sources do not contain contaminant levels that are hazardous to human health or the environment |
| Non-porous surfaces | Wipes | NA | PCBs | Unknown | Determined in the field based on the offsite disposal facility requirements. | FSP Section 4.5 | Waste characterization and disposal facility approval |

## QAPP Worksheet #19
## Analytical SOP Requirements Table

| Matrix | Analytical Group | Concentration Level | Analytical and Preparation Method/SOP Reference[1] | Sample Volume | Containers[2] (number, size, and type) | Preservation Requirements (chemical, temperature, light protected) | Maximum Holding Time (preparation/analysis) |
|---|---|---|---|---|---|---|---|
| Solids and Containerized Waste Characterization | Ignitability | Unknown | SW-846 1010 | NA | 1, 32oz. G | Cool 4°C | 7 days |
| | Corrosivity (i.e., pH) | Unknown | SW-846 9045C | NA | | | 14 days |
| | Reactive Cyanide | Unknown | SW-846 Section 7.4.3.2/Method 9014 | NA | | | 7 days |
| | Reactive Sulfide | Unknown | SW-846 Section 7.4.4.3/Method 9034 | NA | | | 7 days |
| | TCLP Metals | Unknown | SW-846 1311/3015/6010B | 60g | | | 180 days |
| | TCLP Mercury | Unknown | SW-846 1311/3015/7470A | | | | 28 days |
| | TCLP SVOCs | Unknown | SW-846 1311/3510C/8270C | 60 g | | | 14/7/40 days |
| | TCLP Pesticides | Unknown | SW-846 1311/3510C/8081A | | | | 14/7/40 days |
| | TCLP Herbicides | Unknown | SW-846 1311/3510C/8151A | | | | 14/7/40 days |
| | PCBs | Unknown | SW-846 3550C/8082 | 60g | 1, 8oz. G | | 14/40 days |
| | TCLP VOCs | Unknown | SW-846 1311/5030B/8260B | 5g | 2, 4oz. GT | | 14/14 days |
| Concrete | PCBs | Unknown | SW-846 3550C/8082 | 60g | 1, 8oz. G | Cool 4°C | 14/40 days |

| Matrix | Analytical Group | Concentration Level | Analytical and Preparation Method/SOP Reference[1] | Sample Volume | Containers[2] (number, size, and type) | Preservation Requirements (chemical, temperature, light protected) | Maximum Holding Time (preparation/analysis) |
|---|---|---|---|---|---|---|---|
| | TCLP Metals | Unknown | SW-846 1311/3015/6010B | 60g | 1, 16oz. P,G | | 180 days |
| | TCLP Mercury | Unknown | SW-846 1311/3015/7470A | | | | 28 days |
| Subsurface Soil and Concrete | PCBs | Unknown | SW-846 3550C/8082 | 60g | 1, 8oz. G | Cool 4°C | 14/40 days |
| Wastewater | Ignitability | Unknown | SW-846 1010 | NA | 1, 1L AG | Cool 4°C | 7 days |
| | Corrosivity (i.e., pH) | Unknown | SW-846 9045C | NA | | | Immediately |
| | Reactive Cyanide | Unknown | SW-846 Section 7.4.3.2/Method 9014 | NA | | | 7 days |
| | Reactive Sulfide | Unknown | SW-846 Section 7.4.4.3/Method 9034 | NA | | | 7 days |
| | TCLP Metals | Unknown | SW-846 1311/3015/6010B | 60g | | | 180 days |
| | TCLP Mercury | Unknown | SW-846 1311/3015/7470A | | | | 28 days |
| | TCLP SVOCs | Unknown | SW-846 1311/3510C/8270C | 60 g | | | 14/7/40 days |
| | TCLP Pesticides | Unknown | SW-846 1311/3510C/8081A | | | | 14/7/40 days |
| | TCLP Herbicides | Unknown | SW-846 1311/3510C/8151A | | | | 14/7/40 days |
| | PCBs | Unknown | SW-846 3550C/8082 | 60g | 1, 1L AG | | 7/40 days |
| | TCLP VOCs | Unknown | SW-846 1311/5030B/8260B | 5g | 2, 40mL GT | | 14/14 days |

| Matrix | Analytical Group | Concentration Level | Analytical and Preparation Method/SOP Reference[1] | Sample Volume | Containers[2] (number, size, and type) | Preservation Requirements (chemical, temperature, light protected) | Maximum Holding Time (preparation/analysis) |
|---|---|---|---|---|---|---|---|
| Backfill/Topsoil | VOCs | Unknown | SW-846 5035/8260B | 5g | 2, 5g Encore samplers 2, 2oz. GT | Cool 4°C | 48 hours to Encore transfer 14 days to analysis |
| | SVOCs | Unknown | SW-846 3550C/8270C | 60g | 2, 32oz. G | | 14/40 days |
| | Pesticides | Unknown | SW-846 3550C/8081A | 60g | | | 14/40 days |
| | PCBs | Unknown | SW-846 3550C/8082 | | | | 14/40 days |
| | Cyanide | Unknown | SW-846 Section 7.4.3.2/Method 9014 | 60g | | | 14 days |
| | Metals | Unknown | SW-846 3050/6010B | 60g | | | 180 days |
| | Mercury | Unknown | SW-846 3050/7471A | | | | 28 days |
| Wipe | PCBs | Unknown | SW-846 8082 | NA | 1, 3"x3" gauze soaked with 1:4 acetone/hexane | None | 14/40 days |

[1]Specify the appropriate reference letter or number from the Analytical SOP References table (Worksheet #23).
[2] G = clear glass; T = Teflon lined lid; P = plastic; AG = amber glass

## QAPP Worksheet #20
## Field Quality Control Sample Summary Table

| Matrix | Analytical Group | Conc. Level | Analytical and Preparation SOP Reference | No. of Sampling Locations | No. of Field Duplicate Pairs | No. of MS | No. of Field Blanks | No. of Equip. Blanks | No. of PT Samples | Total No. of Samples to Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Solid (e.g., concrete, debris) and aqueous | TCLP Metals | Unknown | M-1311-03-XX<br>M-ICP-06-XX<br>M-MERC-05-XX | Determined in the field based on the offsite disposal facility requirements (typically one sample per 500yd$^3$). | 0 | 0 | 0 | 0 | 0 | Determined in the field based on the offsite disposal facility requirements (typically one sample per 500yd$^3$). |
| | TCLP VOCs | Unknown | M-1311-03-XX<br>M-8260-07-XX | | 0 | 0 | 0 | 0 | 0 | |
| | TCLP SVOCs | Unknown | M-1311-03-XX<br>M-8270-05-XX | | 0 | 0 | 0 | 0 | 0 | |
| | TCLP Pesticides | Unknown | M-1311-03-XX<br>M-8081A-07-XX | | 0 | 0 | 0 | 0 | 0 | |
| | TCLP Herbicides | Unknown | M-1311-03-XX<br>M-8151A-05-XX | | 0 | 0 | 0 | 0 | 0 | |
| | PCBs | Unknown | M-8082-03-XX | | 0 | 0 | 0 | 0 | 0 | |
| Offsite Source Materials | VOCs | Unknown | M-8260-07-XX | Determined in the field based on the amount of offsite source material required (one sample per 5000yd$^3$). | 0 | 0 | 0 | 0 | 0 | Determined in the field based on the amount of offsite source material required (one sample per 5000yd$^3$). |
| | SVOCs | Unknown | M-8270-05-XX | | 0 | 0 | 0 | 0 | 0 | |
| | Pesticides | Unknown | M-8081A-07-XX | | 0 | 0 | 0 | 0 | 0 | |
| | PCBs | Unknown | M-8082-03-XX | | 0 | 0 | 0 | 0 | 0 | |
| | Metals | Unknown | M-ICP-06-XX<br>M-MERC-05-XX | | 0 | 0 | 0 | 0 | 0 | |
| Wipes | PCBs | Unknown | M-8082-03-XX | Determined in the field based on the offsite disposal facility requirements. | 0 | 0 | 0 | 0 | 0 | Determined in the field based on the offsite disposal facility requirements. |

## QAPP Worksheet #21
## Project Sampling SOP References Table

| Reference Number | Title, Revision Date, and/or Number | Originating Organization | Equipment Type | Modified for Project Work? (Y/N) | Comments |
|---|---|---|---|---|---|
| SAMPLES WILL BE COLLECTED IN ACCORDANCE WITH SECTIONS 4.1, 4.2, 4.3, 4.4, 4.5, AND 4.6 OF THE FSP. | | | | | |

## QAPP Worksheet #22
## 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[1] |
|---|---|---|---|---|---|---|---|---|---|
| NOT APPLICABLE – NO FIELD ANALYSIS WILL BE CONDUCTED | | | | | | | | | |

[1]Specify the appropriate reference letter or number from the Project Sampling SOP References table (Worksheet #21).

## QAPP Worksheet #23
## 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? (Y/N) |
|---|---|---|---|---|---|---|
| M-8081A-07-XX | Organochlorine Pesticides by Gas Chromatography Based on Methods 608 and 8081A, Revision Number 7 | Definitive | Pesticides | GC | Waste Stream Technology, Inc. | N |
| M-8082-03-XX | Polychlorinated Biphenyls (PCBs) for Gas Chromatography Based on Methods 608 and 8082, Revision Number 3 | Definitive | PCBs | GC | Waste Stream Technology, Inc. | N |
| M-8260-07-XX | Volatile Organics by Purge-and-Trap GC/MS Based on Methods 624 and 8260B, Revision Number 7 | Definitive | VOCs | GC/MS | Waste Stream Technology, Inc. | N |
| M-8270-05-XX | Determination of Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS) by Capillary Column Technique Based on Methods 625 and 8270C, Revision Number 5 | Definitive | SVOCs | GC/MS | Waste Stream Technology, Inc. | N |
| M-ICP-06-XX | Inductively Coupled Plasma Emission Spectrometric Method Based on Methods 6010B and 200.7, Revision Number 6 | Definitive | Metals | ICP | Waste Stream Technology, Inc. | N |
| M-MERC-05-XX | Mercury in Water and Soil/Sediment by Cold Vapor Technique Based on Methods 245.1, 7470A, and 7471A, Revision Number 5 | Definitive | Mercury | CVAA | Waste Stream Technology, Inc. | N |
| M-8151A-05-XX | Chlorinated Herbicides by Gas Chromatography Based on Method 8151A, Revision Number 5 | Definitive | Herbicides | GC | Waste Stream Technology, Inc. | N |
| M-1311-03-XX | Toxicity Characteristic Leaching Procedure (TCLP) Based on Method 1311, Revision Number 3 | Definitive | TCLP Extraction | NA | Waste Stream Technology, Inc. | N |

| Reference Number | Title, Revision Date, and/or Number | Definitive or Screening Data | Analytical Group | Instrument | Organization Performing Analysis | Modified for Project Work? (Y/N) |
|---|---|---|---|---|---|---|
| M-1010-02-XX | Determining Ignitability Based on SW-846 Method 1010 and ASTM Method 93-85, Revision Number 2 | Definitive | Ignitability | Pensky Martens | Waste Stream Technology, Inc. | N |
| M-9045-04-XX | Soil and Waste pH Based on EPA Method 9045C, Revision Number 4 | Definitive | pH | pH Meter | Waste Stream Technology, Inc. | N |
| M-RSULF-04-XX | Reactive Sulfide Based on Section 7.3.4.2 of SW-846, Revision Number 4 | Definitive | Reactive Sulfide | Distillation, Redox | Waste Stream Technology, Inc. | N |
| M-REACY-03-XX | Determination of Reactive Cyanide Based on Section 7.3.3.2 of SW-846, Revision Number 3 | Definitive | Reactive Cyanide | Distillation, Colorimetric | Waste Stream Technology, Inc. | N |
| M-3510-04-XX | Separatory Funnel Liquid/Liquid Extraction Procedure Based on Method 3510C, Revision Number 4 | NA | Extraction Procedure | NA | Waste Stream Technology, Inc. | N |
| M-3550-06-XX | Ultrasonic Extraction Procedure Based on Methods 3550B | NA | Extraction Procedure | NA | Waste Stream Technology, Inc. | N |
| M-5035-02-XX | Closed System Purge-and-Trap and Extraction for Volatile Organics in Soil and Waste Samples Based on Method 5035, Revision Number 2 | NA | Extraction Procedure | NA | Waste Stream Technology, Inc. | N |
| M-MICRO-04-XX | Microwave Assisted Acid Digestion of Sediments, Sludges, Soils, Oil, Ash, Aqueous Samples and Extracts by Methods SW-846 3015, 3051, 3015A, and 3051A, Revision Number 4 | NA | Digestion Procedure | NA | Waste Stream Technology, Inc. | N |

## QAPP Worksheet #24
## Analytical Instrument Calibration Table

| Instrument | Calibration Procedure | Frequency of Calibration | Acceptance Criteria | Corrective Action (CA) | Person Responsible for CA | SOP Reference[1] |
|---|---|---|---|---|---|---|
| GC/MS | Minimum 5-point initial calibration for all analytes. | Initial calibration prior to sample analysis. | Average response factor (RF):<br>VOCs: ≥0.30<br>SVOCs: ≥0.050<br><br>Relative standard deviation (RSD): VOCs and SVOCs ≤30% and one option below:<br>(1) RSD for each analyte ≤15%<br>(2) Linear least squares regression r≥0.995<br>(3) Non-linear regression – coefficient of determination $r^2 \geq 0.99$ | Problem must be corrected. No samples may be run until initial calibration has passed. Correct problem then repeat initial calibration. | Laboratory analyst | M-8260-07-XX<br><br>M-8270-05-XX |

| Instrument | Calibration Procedure | Frequency of Calibration | Acceptance Criteria | Corrective Action (CA) | Person Responsible for CA | SOP Reference[1] |
|---|---|---|---|---|---|---|
| | Second source calibration verification | Once after each initial calibration | Value of second source for all analytes within ±25% of expected value | Problem must be corrected. No samples may be run until calibration has been verified. Correct problem and verify second source standard. Rerun second source verification. If that fails, correct problem and repeat initial calibration. | Laboratory analyst | |
| | Calibration verification | Daily, before sample analysis, and every 12 hours of analysis time | Average RF:<br>VOCs: ≥0.30<br>SVOCs: ≥0.050<br><br>% Difference/Drift:<br>VOCs and SVOCs: ≤20% difference | Correct problem then rerun calibration verification. If that fails, repeat initial calibration. | Laboratory analyst | |
| GC | Minimum 5-point initial calibration for all analytes | Initial calibration prior to sample analysis | One of the options below (Method 8082 may only use Option 1 or 2):<br>(1) RSD for each analyte ≤20%<br>(2) Linear least squares regression r≥0.995<br>(3) Non-linear regression – coefficient of determination $r^2$≥0.99 | Problem must be corrected. No samples may be run until initial calibration has passed. Correct problem than repeat initial calibration. | Laboratory analyst | M-8081A-07-XX<br><br>M-8082-03-XX<br><br>M-8151A-05-XX |

| Instrument | Calibration Procedure | Frequency of Calibration | Acceptance Criteria | Corrective Action (CA) | Person Responsible for CA | SOP Reference[1] |
|---|---|---|---|---|---|---|
| | Second source calibration verification | Once after each initial calibration | Value of second source for all analytes within ±20% of expected value | Problem must be corrected. No samples may be run until calibration has been verified. Correct problem and verify second source standard. Rerun second source verification. If that fails, correct problem and repeat initial calibration. | Laboratory analyst | |
| | Initial calibration verification (ICV) and continuing calibration verification (CCV) | ICV: Daily before sample analysis<br>CCV: After every 10 field samples and at the end of the analysis sequence | All analytes within ±20% of expected value | If %D for an individual analyte is >20%, no samples may be analyzed until the problem has been corrected.<br>ICV: Correct problem then rerun ICV. If that fails, repeat initial calibration.<br>CCV: Correct problem then repeat CCV and reanalyze all samples since last successful calibration verification. | Laboratory analyst | |
| ICP and AA | Initial calibration for all analytes | Daily initial calibration prior to sample analysis | ICP: No acceptance criteria unless more than one standard is used, in which case $r \geq 0.995$<br>AA: $r \geq 0.995$ | Problem must be corrected. No samples may be run until initial calibration has passed. Correct problem and repeat initial calibration. | Laboratory analyst | M-ICP-06-XX<br>M-MERC-05-XX |

| Instrument | Calibration Procedure | Frequency of Calibration | Acceptance Criteria | Corrective Action (CA) | Person Responsible for CA | SOP Reference[1] |
|---|---|---|---|---|---|---|
| | Second source calibration verification | Once after each initial calibration, prior to sample analysis | Value of second source for all analytes within ±10% of expected value. | Problem must be corrected. No samples may be run until calibration has been verified. Correct problem and verify second source standard. Rerun calibration verification. If that fails, correct problem and repeat initial calibration. | Laboratory analyst | |
| | Continuing calibration verification | After every 10 samples and at the end of the analysis sequence | ICP: within ±10% of the expected value<br>AA: within ±20% of expected value | Problem must be corrected. Results may not be reported without valid continuing calibration verification. Correct problem, rerun calibration verification. If that fails, repeat initial calibration. Reanalyze all samples since last successful calibration verification. | Laboratory analyst | |
| | Low-level calibration check standard (ICP only) | Daily, after one-point initial calibration | Within ±20% of expected value | No samples may be analyzed without a valid low-level calibration check standard. Correct problem, then reanalyze. | | |

[1]Specify the appropriate reference letter or number from the Analytical SOP References table (Worksheet #23).

## QAPP Worksheet #25
## 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[1] |
|---|---|---|---|---|---|---|---|---|
| INFORMATION TO BE PROVIDED BY WASTE STREAM TECHNOLOGY, INC. WILL BE PROVIDED IN REVISION TO QAPP WHEN AVAILABLE | | | | | | | | |

[1]Specify the appropriate reference letter or number from the Analytical SOP References table (Worksheet #23).

## QAPP Worksheet #26
## Sample Handling System

| |
|---|
| **SAMPLE COLLECTION, PACKAGING, AND SHIPMENT** |
| **Sample Collection (Personnel/Organization):** All samples will be collected by Sevenson personnel |
| **Sample Packaging (Personnel/Organization):** Sample packaging will be the responsibility of Sevenson personnel |
| **Coordination of Shipment (Personnel/Organization):** The field team leader will coordinate sample shipment with the laboratory |
| **Type of Shipment/Carrier:** Priority Overnight/FedEx or UPS |
| **SAMPLE RECEIPT AND ANALYSIS** |
| **Sample Receipt (Personnel/Organization):** WST personnel |
| **Sample Custody and Storage (Personnel/Organization):** WST personnel |
| **Sample Preparation (Personnel/Organization):** WST personnel |
| **Sample Determinative Analysis (Personnel/Organization):** WST personnel |
| **SAMPLE ARCHIVING** |
| **Field Sample Storage (No. of days from sample collection):** All samples will be shipped to WST on the day of collection via Priority Overnight (FedEx or UPS) |
| **Sample Extract/Digestate Storage (No. of days from extraction/digestion):** Refer to Worksheet #19 for holding times |
| **Biological Sample Storage (No. of days from sample collection):** Not applicable |
| **SAMPLE DISPOSAL** |
| **Personnel/Organization:** WST personnel |
| **Number of Days from Analysis:** 30 days after issuance of final report, unless otherwise requested |

## QAPP Worksheet #27
## Sample Custody Requirements Table

### Sample Custody Procedures

Sample custody, or chain of custody, protocols are in three parts: (1) sample collection, (2) laboratory analysis, and (3) final evidence files.

A sample or evidence file is considered under custody if:

- Sample or file is in possession,
- Sample or file is in view, and
- Sample or file is placed in a designated secure area after being properly sealed to prevent tampering.

### Field Chain of Custody Procedures

The sample packaging and shipment procedures summarized below ensure that the samples will arrive at the laboratory with the chain of custody intact. The protocols for specific sample numbering and other designations are included in Section 5.2 of the Field Sampling Plan.

### Field Procedures

The field sampler will be personally responsible for the care and custody of the samples until the samples are transferred or properly dispatched. As few people as possible will handle the samples.

All sample containers will be tagged or labeled with sample identification numbers and locations, including time and date of sample collection. Sample tags or labels will be completed for each sample using permanent, waterproof ink either prior to or immediately after sample collection.

The Contractor Quality Control Systems Manager will review all field activities to determine whether proper custody procedures were followed during the fieldwork and decide if additional samples are required.

### Field Logbooks/Documentation

The sequentially numbered field logbook will provide the means of recording data collection activities performed. As such, logbook entries will be described in as much detail as possible so that particular site activities could be reconstructed without reliance on memory.

Field logbooks will be bound logbooks, field survey books, or notebooks. Logbooks will be assigned to field personnel, but will be stored in the document control center when not in use.

A project-specific document number will be used to identify each logbook. The title page of each logbook will contain the following information:

- Person to whom the logbook is assigned.
- Logbook number.
- Project name.
- Project start date.
- Project end date.

Entries into the logbook will contain a variety of information. The beginning of each entry will include: the date, start time, weather conditions, names of all sampling team members present, level of personal protection being used, and the signature of the person making the entry. The names of visitors to the site (including additional field sampling or investigative team personnel), and the purpose of their visit will also be recorded in the field logbook.

Measurements made and samples collected will be recorded in the field logbook. All entries will be made in ink and no erasures will be made. If an incorrect entry is made, the incorrect information will be crossed out with a single strike mark and initialed. Whenever a sample is collected or a measurement is made, a detailed description of the location of the station will be recorded in the logbook. The number of photographs taken at the station, if any, will also be noted. The logbook will identify all equipment used to make measurements.

Samples will be collected in accordance with the sampling procedures documented in the Field Sampling Plan. The equipment used to collect samples will be noted, along with the time of sampling, sample description, depth of sample collection, volume, and the number of sample containers. The corresponding sample identification number will be prominently listed.

**Transfer of Custody and Shipment Procedures**

The following procedures will be incorporated for the transfer of sample custody and sample shipment:

A properly completed chain of custody form accompanies samples. The sample identification numbers and locations will be listed on the chain of custody record. The sampler will sign the custody record. The chain of custody form will document the transfer of guardianship of samples from the sampler to another person, to the offsite laboratory, or to/from a secure storage area. Upon transferring the possession of samples, the individuals relinquishing and receiving the samples will sign, date, and note the time on the custody form.

Samples will be properly packaged for shipment and dispatched to the appropriate laboratory for analysis, with a separate signed custody record enclosed in each sample cooler. Shipping coolers will be secured with strapping tape and tamper-proof custody seals for shipment to the laboratory. The tamper-evident custody seal will be attached to the front and back left of the cooler. The custody seals are covered with clear plastic tape. The cooler will be strapped shut with strapping tape in at least two locations.

The chain of custody record will accompany all shipments. The original record should accompany the shipment, and the sampler will retain a copy.

If the samples are sent by common carrier, a bill of lading will be used. Receipts of bills of lading will be retained as part of the permanent documentation. Commercial carriers are not required to sign off on the custody form as long as the custody forms are sealed inside the sample cooler and the custody seals remain intact.

**Laboratory Chain of Custody Procedures**

Laboratory custody procedures or sample receiving and log-in; sample storage; tracking during sample preparation and analysis; and storage of analytical data are described below:

A chain of custody form will accompany samples submitted to the laboratory. The chain of custody forms will be completed and sealed within the sample transport container, which will be opened and examined by the Laboratory Sample Custodian. The Laboratory Sample Custodian will ensure that all entries on the chain of custody form correspond with the sample label. If the Laboratory Sample Custodian notes discrepancies, project staff will be contacted to resolve any conflicting information.

The laboratory will implement evidentiary documentation procedures. The designated Laboratory Sample Custodian will receive and document all samples submitted to the laboratory. The Laboratory Custodian will examine the condition, preservation, and accompanying documentation of all submitted samples prior to approval and formal acceptance by the laboratory. Any sample, preservation, or documentation discrepancies (e.g., broken sample container, improper preservation, inadequate sample volume, poor documentation, etc.) will be resolved before the sample is approved and formally accepted for analyses. All required acceptance data will be recorded and documented in the Laboratory Sample

Log and Laboratory Information Management System. The sample will be labeled with the laboratory identification information and placed in the secure storage area prior to distribution to the appropriate analysts.

Once the sample has been officially entered in the laboratory computer system, the computer generates individual sample sheets. These sample sheets contain all pertinent information relevant to the sample. The sample record will be put into the Sample Control Logbook, which is located in the Sample Receiving Area. The analysts will sign out samples from the Sample Receiving Area by entering their initials, date, and time of sample removal into the logbook. The sample will be taken to the appropriate laboratory section and logged into the analyst's Sample Control Record. Any time the sample or extract is removed from or returned to the refrigerator, the pertinent information (analyst initials, date, and time) will be recorded into the logbook. The sample or extract will remain in the freezer until it is time to dispose of it. At that time, disposal information will also be recorded on the Sample Control Record.

**Final Evidence Filed Custody Procedures**

The evidence files for the project are maintained at the Sevenson office. The content of the evidence file will include all relevant records, reports, correspondence, logs, field logbooks, laboratory sample preparation and analysis logbooks, data packages, pictures, subcontractor reports, chain of custody records, data review reports, etc. The evidence file will be under custody of the contractor project manager in a locked, secure area. The selected contract laboratory will also retain evidence files of analytical data for a minimum of seven years.

## QAPP Worksheet #28-1
## QC Samples Table

| | |
|---|---|
| **Matrix** | Solid and Aqueous |
| **Analytical Group** | TCLP Metals |
| **Concentration Level** | Unknown |
| **Sampling SOP** | FSP Sections 4.1, 4.2, 4.3, 4.4 |
| **Analytical Method/ SOP Reference** | M-1311-03-XX<br>M-ICP-06-XX<br>M-MERC-05-XX |
| **Sampler's Name** | TBD |
| **Field Sampling Organization** | Sevenson |
| **Analytical Organization** | WST |
| **No. of Sample Locations** | See Worksheet #18 |

| QC Sample | Frequency/Number | Method/SOP QC Acceptance Limits | Corrective Action | Person(s) Responsible for Corrective Action | Data Quality Indicator (DQI) | Measurement Performance Criteria |
|---|---|---|---|---|---|---|
| Method Blank | One per preparatory batch | No analytes detected >1/2 reporting limit. For common laboratory contaminants, no analytes > reporting limit. | Correct problem. If required, reprep and reanalyze method blank and all samples processed with the contaminated blank. | Laboratory Personnel | Accuracy/Sensitivity | ≤PQL |

| QC Sample | Frequency/Number | Method/SOP QC Acceptance Limits | Corrective Action | Person(s) Responsible for Corrective Action | Data Quality Indicator (DQI) | Measurement Performance Criteria |
|---|---|---|---|---|---|---|
| Matrix Spike/Matrix Spike Duplicate | One per preparatory batch | QAPP specified Measurement Performance Criteria. | Examine the project-specific data quality objectives. Contact the client as to additional measures to be taken. | Laboratory Personnel | Precision Accuracy | RPD≤25% 75-125% recovery |
| LCS | One per preparatory batch | QAPP specified Measurement Performance Criteria. | Correct problem, then reprep and reanalyze the LCS and all samples in the associated preparatory batch for failed analytes if sufficient sample material is available. | Laboratory Personnel | Accuracy | 80-120% recovery |
| Temperature Blank | Per Cooler | ±4°C | Use more ice | William Zambrana, Sevenson | Accuracy | ±4°C |

## QAPP Worksheet #28-2
## QC Samples Table

| | |
|---|---|
| **Matrix** | Solid and Aqueous |
| **Analytical Group** | TCLP VOCs, SVOCs, Pesticides, Herbicides |
| **Concentration Level** | Unknown |
| **Sampling SOP** | FSP Sections 4.1, 4.2, 4.3, 4.4 |
| **Analytical Method/ SOP Reference** | M-1311-03-XX<br>M-8260-07-XX<br>M-8270-05-XX<br>M-8081A-07-XX<br>M-8151A-05-XX |
| **Sampler's Name** | TBD |
| **Field Sampling Organization** | Sevenson |
| **Analytical Organization** | WST |
| **No. of Sample Locations** | See Worksheet #18 |

| QC Sample | Frequency/Number | Method/SOP QC Acceptance Limits | Corrective Action | Person(s) Responsible for Corrective Action | Data Quality Indicator (DQI) | Measurement Performance Criteria |
|---|---|---|---|---|---|---|
| Trip Blank | One per sample cooler containing aqueous samples for VOC analysis only | ≤PQL | Field problem – determine cause of contamination if possible | William Zambrana, Jennifer Singer, Sevenson | Accuracy | ≤PQL |

| QC Sample | Frequency/Number | Method/SOP QC Acceptance Limits | Corrective Action | Person(s) Responsible for Corrective Action | Data Quality Indicator (DQI) | Measurement Performance Criteria |
|---|---|---|---|---|---|---|
| Method Blank | One per preparatory batch | No analytes detected >1/2 reporting limit. For common laboratory contaminants, no analytes > reporting limit. | Correct problem. If required, reprep and reanalyze method blank and all samples processed with the contaminated blank. | Laboratory personnel | Accuacy/Sensitivity | ≤PQL |
| Matrix Spike | One per preparatory batch | QAPP specified Measurement Performance Criteria. | Examine the project-specific data quality objectives. Contact the client as to additional measures to be taken. | Laboratory personnel | Accuracy | See Appendix C |
| Surrogate Spike | All field and QA samples | QAPP specified Measurement Performance Criteria. | For QC and field samples, correct problem, then reprep and reanalyze all failed samples for failed surrogates in the associated preparatory batch if sufficient sample material is available. | Laboratory personnel | Accuracy | See Appendix C |
| LCS/LCSD | One per preparatory batch | QAPP specified Measurement Performance Criteria. | Correct problem, then reprep and reanalyze the LCS and all samples in the associated preparatory batch for failed analytes if sufficient sample material is available. | Laboratory personnel | Accuracy Precision | See Appendix C |
| Temperature Blank | Per Cooler | ±4°C | Use more ice | William Zambrana, Sevenson | Accuracy | ±4°C |

## QAPP Worksheet #28-3
## QC Samples Table

| | |
|---|---|
| **Matrix** | Solid (waste characterization and offsite source material) |
| **Analytical Group** | PCBs |
| **Concentration Level** | Unknown |
| **Sampling SOP** | FSP Sections 4.1, 4.2, 4.3, 4.4, 4.6 |
| **Analytical Method/ SOP Reference** | M-8082-03-XX |
| **Sampler's Name** | TBD |
| **Field Sampling Organization** | Sevenson |
| **Analytical Organization** | WST |
| **No. of Sample Locations** | See Worksheet #18 |

| QC Sample | Frequency/Number | Method/SOP QC Acceptance Limits | Corrective Action | Person(s) Responsible for Corrective Action | Data Quality Indicator (DQI) | Measurement Performance Criteria |
|---|---|---|---|---|---|---|
| Temperature Blank | Per Cooler | ±4°C | Use more ice | William Zambrana, Sevenson | Accuracy | ±4°C |

| QC Sample | Frequency/Number | Method/SOP QC Acceptance Limits | Corrective Action | Person(s) Responsible for Corrective Action | Data Quality Indicator (DQI) | Measurement Performance Criteria |
|---|---|---|---|---|---|---|
| Method Blank | One per preparatory batch | No analytes detected >1/2 reporting limit. For common laboratory contaminants, no analytes > reporting limit. | Correct problem. If required, reprep and reanalyze method blank and all samples processed with the contaminated blank. | Laboratory personnel | Accuacy/Sensitivity | ≤PQL |
| MS/MSD | One per preparatory batch | QAPP specified Measurement Performance Criteria. | Examine the project-specific data quality objectives. Contact the client as to additional measures to be taken. | Laboratory Personnel | Precision Accuracy | See Appendix C |
| Surrogate Spike | All field and QA samples | QAPP specified Measurement Performance Criteria. | For QC and field samples, correct problem, then reprep and reanalyze all failed samples for failed surrogates in the associated preparatory batch if sufficient sample material is available. | Laboratory personnel | Accuracy | See Appendix C |
| LCS/LCSD | One per preparatory batch | QAPP specified Measurement Performance Criteria. | Correct problem, then reprep and reanalyze the LCS and all samples in the associated preparatory batch for failed analytes if sufficient sample material is available. | Laboratory personnel | Accuracy Precision | See Appendix C |

## QAPP Worksheet #28-4
## QC Samples Table

| | |
|---|---|
| **Matrix** | Offsite source materials |
| **Analytical Group** | VOCs, SVOCs, Pesticides |
| **Concentration Level** | Unknown |
| **Sampling SOP** | FSP Section 4.6 |
| **Analytical Method/ SOP Reference** | M-8260-07-XX<br>M-8270-05-XX<br>M-0881A-07-XX |
| **Sampler's Name** | TBD |
| **Field Sampling Organization** | Sevenson |
| **Analytical Organization** | WST |
| **No. of Sample Locations** | See Worksheet #18 |

| QC Sample | Frequency/Number | Method/SOP QC Acceptance Limits | Corrective Action | Person(s) Responsible for Corrective Action | Data Quality Indicator (DQI) | Measurement Performance Criteria |
|---|---|---|---|---|---|---|
| Method Blank | One per preparatory batch | No analytes detected >1/2 reporting limit. For common laboratory contaminants, no analytes > reporting limit. | Correct problem. If required, reprep and reanalyze method blank and all samples processed with the contaminated blank. | Laboratory personnel | Accuacy/Sensitivity | ≤PQL |

| QC Sample | Frequency/Number | Method/SOP QC Acceptance Limits | Corrective Action | Person(s) Responsible for Corrective Action | Data Quality Indicator (DQI) | Measurement Performance Criteria |
|---|---|---|---|---|---|---|
| MS/MSD | One per preparatory batch | QAPP specified Measurement Performance Criteria. | Examine the project-specific data quality objectives. Contact the client as to additional measures to be taken. | Laboratory Personnel | Precision Accuracy | See Appendix C |
| Surrogate Spike | All field and QA samples | QAPP specified Measurement Performance Criteria. | For QC and field samples, correct problem, then reprep and reanalyze all failed samples for failed surrogates in the associated preparatory batch if sufficient sample material is available. | Laboratory personnel | Accuracy | See Appendix C |
| LCS/LCSD | One per preparatory batch | QAPP specified Measurement Performance Criteria. | Correct problem, then reprep and reanalyze the LCS and all samples in the associated preparatory batch for failed analytes if sufficient sample material is available. | Laboratory personnel | Accuracy Precision | See Appendix C |
| Temperature Blank | Per Cooler | ±4°C | Use more ice | William Zambrana, Sevenson | Accuracy | ±4°C |

## QAPP Worksheet #28-5
## *QC Samples Table*

| | |
|---|---|
| **Matrix** | Offsite source materials |
| **Analytical Group** | Metals |
| **Concentration Level** | Unknown |
| **Sampling SOP** | FSP Section 4.6 |
| **Analytical Method/ SOP Reference** | M-ICP-06-XX<br>M-MERC-05-XX |
| **Sampler's Name** | TBD |
| **Field Sampling Organization** | Sevenson |
| **Analytical Organization** | WST |
| **No. of Sample Locations** | See Worksheet #18 |

| QC Sample | Frequency/Number | Method/SOP QC Acceptance Limits | Corrective Action | Person(s) Responsible for Corrective Action | Data Quality Indicator (DQI) | Measurement Performance Criteria |
|---|---|---|---|---|---|---|
| Method Blank | One per preparatory batch | No analytes detected >1/2 reporting limit. For common laboratory contaminants, no analytes > reporting limit. | Correct problem. If required, reprep and reanalyze method blank and all samples processed with the contaminated blank. | Laboratory personnel | Accuacy/Sensitivity | ≤PQL |

| QC Sample | Frequency/Number | Method/SOP QC Acceptance Limits | Corrective Action | Person(s) Responsible for Corrective Action | Data Quality Indicator (DQI) | Measurement Performance Criteria |
|---|---|---|---|---|---|---|
| MS/MSD | One per preparatory batch | QAPP specified Measurement Performance Criteria. | Examine the project-specific data quality objectives. Contact the client as to additional measures to be taken. | Laboratory Personnel | Precision Accuracy | RPD≤25% 75-125% recovery |
| LCS | One per preparatory batch | QAPP specified Measurement Performance Criteria. | Correct problem, then reprep and reanalyze the LCS and all samples in the associated preparatory batch for failed analytes if sufficient sample material is available. | Laboratory personnel | Accuracy | 80-120% recovery |
| Temperature Blank | Per Cooler | ±4°C | Use more ice | William Zambrana, Sevenson | Accuracy | ±4°C |

## QAPP Worksheet #28-6
## *QC Samples Table*

| | |
|---|---|
| **Matrix** | Wipes |
| **Analytical Group** | PCBs |
| **Concentration Level** | Unknown |
| **Sampling SOP** | FSP Section 4.5 |
| **Analytical Method/ SOP Reference** | M-8082-03-XX |
| **Sampler's Name** | TBD |
| **Field Sampling Organization** | Sevenson |
| **Analytical Organization** | WST |
| **No. of Sample Locations** | See Worksheet #18 |

| QC Sample | Frequency/Number | Method/SOP QC Acceptance Limits | Corrective Action | Person(s) Responsible for Corrective Action | Data Quality Indicator (DQI) | Measurement Performance Criteria |
|---|---|---|---|---|---|---|
| Method Blank | One per preparatory batch | No analytes detected >1/2 reporting limit. For common laboratory contaminants, no analytes > reporting limit. | Correct problem. If required, reprep and reanalyze method blank and all samples processed with the contaminated blank. | Laboratory personnel | Accuacy/Sensitivity | ≤PQL |

| QC Sample | Frequency/Number | Method/SOP QC Acceptance Limits | Corrective Action | Person(s) Responsible for Corrective Action | Data Quality Indicator (DQI) | Measurement Performance Criteria |
|---|---|---|---|---|---|---|
| Surrogate Spike | All field and QA samples | QAPP specified Measurement Performance Criteria. | For QC and field samples, correct problem, then reprep and reanalyze all failed samples for failed surrogates in the associated preparatory batch if sufficient sample material is available. | Laboratory personnel | Accuracy | See Appendix C |
| LCS/LCSD | One per preparatory batch | QAPP specified Measurement Performance Criteria. | Correct problem, then reprep and reanalyze the LCS and all samples in the associated preparatory batch for failed analytes if sufficient sample material is available. | Laboratory personnel | Accuracy Precision | See Appendix C |
| Temperature Blank | Per Cooler | ±4°C | Use more ice | William Zambrana, Sevenson | Accuracy | ±4°C |

## QAPP Worksheet #29
## 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 logbooks<br>▪ Chain of custody records<br>▪ Air bills<br>▪ Custody seals<br>▪ Field Change Request forms<br>▪ Corrective Action forms<br>▪ Daily Chemical Quality Control Reports<br>▪ Photo logs | ▪ Not applicable – no onsite analysis will be performed. | ▪ Sample receipt, chain of custody forms, and sample tracking records<br>▪ Equipment calibration logs<br>▪ Sample preparation logs<br>▪ Case narrative, data packages<br>▪ Definition of laboratory qualifiers<br>▪ Equipment maintenance, testing, and inspection logs<br>▪ Corrective action forms<br>▪ Reported field sample results<br>▪ Electronic data deliverables<br>▪ Reported results with standards, QC checks, and QC samples<br>▪ Instrument printouts for field samples, standards, and QC samples<br>▪ Data package completeness checklists<br>▪ Technical/QA forms<br>▪ Data assessment reports<br>▪ Extraction/cleanup records<br>▪ Sample disposal records | ▪ Field sampling audit checklists<br>▪ Offsite laboratory audit checklists<br>▪ Data review reports<br>▪ Corrective action forms<br>▪ Telephone logs | ▪ Disposal facility waste approval forms<br>▪ Waste shipping manifests and/or bill-of-lading |

## QAPP Worksheet #30
## Analytical Services Table

| Matrix | Analytical Group | Concentration Level | Sample Locations/ID Number | 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) |
|---|---|---|---|---|---|---|---|
| Waste Characterization (solid and aqueous) | Full TCLP, RCRA characteristics, PCBs | Unknown | Building walls and floors per construction drawings; wastewater storage tank | M-1311-03-XX<br>M-8081A-07-XX<br>M-8082-03-XX<br>M-8260-07-XX<br>M-8270-05-XX<br>M-ICP-06-XX<br>M-MERC-05-XX<br>M-8151A-05-XX<br>M-1010-02-XX<br>M-9045-04-XX<br>M-RSULF-04-XX<br>M-REACY-03-XX | 30 days | WST<br>302 Grote Street<br>Buffalo, NY 14207<br>Dan Vollmer<br>716-876-5290 | N/A |
| Concrete | PCBs, TCLP metals | Unknown | Concrete pads | M-1311-03-XX<br>M-ICP-06-XX<br>M-MERC-05-XX<br>M-8082-03-XX | 30 days | WST<br>302 Grote Street<br>Buffalo, NY 14207<br>Dan Vollmer<br>716-876-5290 | N/A |
| Subsurface soil and concrete | PCBs | Unknown | Foundation walls | M-8082-03-XX | 30 days | WST<br>302 Grote Street<br>Buffalo, NY 14207<br>Dan Vollmer<br>716-876-5290 | N/A |

| Matrix | Analytical Group | Concentration Level | Sample Locations/ID Number | 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) |
|---|---|---|---|---|---|---|---|
| Backfill/Topsoil | VOCs, SVOCs, pesticides, PCBs, cyanide, metals | Unknown | Offsite source materials | M-8081A-07-XX<br>M-8082-03-XX<br>M-8260-07-XX<br>M-8270-05-XX<br>M-ICP-06-XX<br>M-MERC-05-XX | 30 days | WST<br>302 Grote Street<br>Buffalo, NY 14207<br>Dan Vollmer<br>716-876-5290 | N/A |
| Wipe | PCBs | Unknown | Non-porous surfaces | M-8082-03-XX | 30 days | WST<br>302 Grote Street<br>Buffalo, NY 14207<br>Dan Vollmer<br>716-876-5290 | N/A |

## QAPP Worksheet #31
## 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) |
|---|---|---|---|---|---|---|---|
| Sample collection and documentation | Once | External | USACE | TBD | Kim Lickfield, Sevenson Project Manager | Kim Lickfield, Sevenson Project Manager | William Zambrana. Sevenson CQCSM |
| Health and Safety | Once | External | USACE | TBD | Kim Lickfield, Sevenson Project Manager | Kim Lickfield, Sevenson Project Manager | TBD, Sevenson SSHO |
| Field audit | Once | Internal | Sevenson | Sevenson QC staff | Kim Lickfield, Sevenson Project Manager | Kim Lickfield, Sevenson Project Manager | William Zambrana, Sevenson CQCSM |

## QAPP Worksheet #32
## 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, organization) | Timeframe for Response |
|---|---|---|---|---|---|---|
| Sample collection and documentation | Written audit report | Kim Lickfield, Sevenson Project Manager | Notify project manager by phone immediately and written report to follow 48 hours after audit | To be determined by CQCSM | USACE Project Manager | Within 48 hours. Immediately depending on nature of deficiency. |
| Health and Safety | Written audit report | Kim Lickfield, Sevenson Project Manager | Notify project manager by phone immediately and written report to follow 48 hours after audit | To be determined by SSHO | USACE Project Manager | Within 48 hours. Immediately depending on nature of deficiency. |

## QAPP Worksheet #33
## QA Management Reports Table

| Type of Report | Frequency | Projected Delivery Date(s) | Person(s) Responsible for Report Preparation (Title and Organizational Affiliation) | Report Recipient(s) (Title and Organizational Affiliation) |
|---|---|---|---|---|
| Daily Chemical Quality Control Report | Daily during field work | Duration of field activities | William Zambrana, Sevenson | Kim Lickfield, Sevenson Project Manager, USACE |
| Field Audit Report | Once | Beginning of field activities | William Zambrana or other field auditor, Sevenson | Kim Lickfield, Sevenson |
| Field Assessment Report | Once | Beginning of field activities | USACE | Kim Lickfield, Sevenson Project Manager, USACE RPM, USEPA |
| Quality Control Summary Report | Once | End of field activities | Jennifer Singer, Sevenson | USACE, USEPA |

## QAPP Worksheet #34
## Verification (Step I) Process Table

| Verification Input | Description | Internal/ External | Responsible for Verification (Name, Organization) |
|---|---|---|---|
| Chain of custody and shipping forms | Chain of custody forms and shipping documentation will be reviewed internally upon their completion and verified against the packed sample coolers they represent. Refer to Section 5.3.2 of the FSP for additional details. | Internal | William Zambrana, Sevenson |
| Audit reports | Upon report completion, a copy of all audit reports will be placed in the site file. If corrective actions are required, a copy of the documented corrective action will be attached to the appropriate audit report in the site file. | Internal | William Zambrana, Sevenson |
| Field notes | Field notes will be reviewed internally and placed in the site file. | Internal | William Zambrana, Sevenson |
| Laboratory data | All laboratory packages ill be verified internally by the laboratory performing the work for completeness and technical accuracy prior to submittal. All data packages will be verified externally according to the data review procedures specified in Worksheet #36. | External<br><br>Internal | Dan Vollmer, Waste Stream Technology, Inc.<br>Jennifer Singer, Sevenson |
| FSP and QAPP | All planning documents will be available to reviewers to allow reconciliation with planned activities and objectives. | Internal | William Zambrana, Sevenson<br>Jennifer Singer, Sevenson |

## QAPP Worksheet #35
## Validation (Steps IIa and IIb) Process Table

| Step IIa / IIb | Validation Input | Description | Responsible for Validation (Name, Organization) |
|---|---|---|---|
| IIa | Laboratory data packages | Ensure that all analytical procedures were followed. Corrective actions will be taken and documented when applicable per specific methods. Data will be qualified in accordance with specific methods. Any deviations will be documented. | Laboratory personnel, WST<br>Jennifer Singer, Sevenson |
| IIa | Documentation of method QC results | Establish that all method required QC samples were run and met required limits. | Laboratory personnel, WST<br>Jennifer Singer, Sevenson |
| IIb | Documentation of QAPP QC sample results | Establish that all QAPP required QC samples were run and met required limits. | Laboratory personnel, WST<br>Jennifer Singer, Sevenson |
| IIb | Project quantitation limits | All sample results met the project quantitation limit specified in the QAPP. | Laboratory personnel, WST<br>Jennifer Singer, Sevenson |
| IIb | Sampling procedures | Evaluate whether sampling procedures were followed with respect to equipment and proper sampling support. | William Zambrana, Sevenson<br>Jennifer Singer, Sevenson |
| IIb | Deviations (sampling and analysis) | Determine the impacts of any deviations from sampling or analytical methods and SOPs | William Zambrana, Sevenson<br>Jennifer Singer, Sevenson<br>USACE<br>USEPA |

## QAPP Worksheet #36
## Validation (Steps IIa and IIb) Summary Table

| Step IIa / IIb | Matrix | Analytical Group | Concentration Level | Validation Criteria | Data Validator (Title and Organizational Affiliation) |
|---|---|---|---|---|---|
| IIb | Solid, Aqueous, Wipe | Organics and Inorganics | Unknown | QAPP Worksheets 12 and 15 | Jennifer Singer, Sevenson |

## QAPP Worksheet #37
## Usability Assessment

The Data Usability Assessment will be performed by a team of personnel at Sevenson. Kim Lickfield, Project Manager, will be responsible for information in the Usability Assessment. He will also be responsible for assigning task work to the individual task members who will be supporting the Data Usability Assessment. Note that the Data Usability Assessment will be conducted on reviewed data. The results of the Data Usability Assessment will be presented in the Quality Control Summary Report. The following items will be assessed and conclusions drawn based on their results.

**Precision.** Results of laboratory duplicates will be assessed during data review and data will be qualified according to the data review procedures cited on Worksheet #36. Field duplicate samples will not be collected due to the limited nature of the sampling (i.e., waste characterization purposes). A discussion summarizing the results of laboratory precision and any limitations on the use of the data will be described in the Quality Control Summary Report.

**Accuracy/Bias Contamination.** Results of laboratory blanks will be assessed as part of data review. During the review process the reviewer will qualify the data following the procedures described on Worksheet #36. A discussion summarizing the results of laboratory accuracy and bias based on contamination will be presented and any limitation on the use of the data will be described in the Quality Control Summary Report.

**Overall Accuracy/Bias.** The results of matrix spike recoveries will be reviewed and data will be qualified according to the data review procedures cited on Worksheet #36. A discussion summarizing the results of laboratory accuracy and any limitations on the use of the data will be described in the Quality Control Summary Report.

**Sensitivity.** Data results will be compared to clean-up criteria provided on Worksheet #15. A discussion summarizing any conclusions about the sensitivity of the analyses will be presented and any limitations on the use of the data will be described in the Quality Control Summary Report.

**Representativeness.** A review of adherence to field procedures and of project quality control audits will be performed in order to assess the representativeness of the sampling program. Data review narratives will also be reviewed and any conclusions about the representativeness of the data set will be discussed.

**Comparability.** Data will be collected, analyzed, and reported in a manner that is comparable to the existing site data.

**Completeness.** A completeness check will be done on all data generated by the laboratory. Completeness will be calculated for each analyte as follows. For sampling, completeness will be calculated as the number of samples collected and analyzed by the laboratory divided by the number planned for collection. Also for each analyte, completeness will be calculated as the

number of data points for each analyte that meets measurement performance criteria divided by the total number of data points for that analyte. A discussion summarizing the results of project completeness and any limitations on the use of the data will be described in the Quality Control Summary Report.

**Reconciliation.** The project quality objectives presented in Worksheet #12 will be examined to determine if the objective was met. This examination will include a combined overall assessment of the results of each analysis pertinent to an objective. Each analysis will first be evaluated separately in terms of major impacts observed from data review, data quality indicators, and measurement performance criteria assessments. Based on the results of these assessments, the quality of the data will be determined. Based on the quality determined, the usability of the data for each analysis will be determined. Based on the combined usability of the data from all analyses for an objective, it will be determined if the project quality objective was met and whether project goals were achieved. As part of the reconciliation of each objective, conclusions will be drawn and any limitations on the usability of any of the data will be described.

# APPENDIX A

## STANDARD SAMPLE TRACKING AND DOCUMENTATION FORMS, REVIEW FORMS AND CHECKLISTS

# SAMPLE LABELS

WASTE STREAM TECHNOLOGY

Waste Stream Technology Inc.
302 Grote Street
Buffalo, NY 14207 (716) 876-5290

| | |
|---|---|
| | DATE: |
| | TIME: |
| CLIENT/SITE NAME | |
| SAMPLE LOCATION | COMP |
| SAMPLED BY | GRAB |

WASTE STREAM TECHNOLOGY

Waste Stream Technology Inc.
302 Grote Street
Buffalo, NY 14207 (716) 876-5290

| | | |
|---|---|---|
| | DATE: | LAB USE ONLY |
| | TIME: | LOG DATE: |
| CLIENT/SITE NAME | | ☐ TR ☐ PC |
| SAMPLE LOCATION | COMP | ☐ ST ☐ OG |
| SAMPLED BY | GRAB | ☐ PD ☐ AN |
| | | ☐ RETURN TO SITE |

# CUSTODY SEAL

SECURITY SEAL DATE _____

DO NOT TAMPER INITIALS _____

# CHAIN OF CUSTODY

WASTE STREAM TECHNOLOGY

Waste Stream Technology Inc.
302 Grote Street, Buffalo, NY 14207
(716) 876-5290 • FAX (716) 876-2412

OFFICE USE ONLY
GROUP # _____
DUE DATE _____

PAGE _____ OF _____

REPORT TO:

CONTACT

PH. # ( )

FAX # ( )

BILL TO:

PO#

PROJECT DESCRIPTION

SAMPLER SIGNATURE

DW DRINKING WATER
GW GROUND WATER
SW SURFACE WATER
WW WASTE WATER
O OIL
SL SLUDGE
SO SOIL
S SOLID
W WIPE
OTHER

TURN AROUND TIME: _____

QUOTATION NUMBER: _____

ARE SPECIAL DETECTION LIMITS REQUIRED:
YES NO
If yes please attach requirements.

Is a QC Package required:
YES NO
If yes please attach requirements

ANALYSES TO BE PERFORMED

| | SAMPLE I.D. | DATE SAMPLED | TIME OF SAMPLING | SAMPLE TYPE | TOTAL NO. OF CONTAINERS | | | | | | | | | | | TYPE OF CONTAINER/ COMMENTS: | OFFICE USE ONLY WST. I.D. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | |

REMARKS:

| RELINQUISHED BY: | DATE: / / | TIME: | RECEIVED BY: | DATE: / / | TIME: |
|---|---|---|---|---|---|
| RELINQUISHED BY: | DATE: / / | TIME: | RECEIVED BY: | DATE: / / | TIME: |

# Army Corp. of Engineers Sample Receipt Form

LIMS # _____ No. of Coolers _____

MRD Cooler # _____ Contract Cooler _____

PROJECT: _____ Date Received: _____

USE OTHER SIDE OF THIS FORM TO NOTE DETAILS CONCERNING CHECK-IN PROBLEMS.

A. PRELIMINARY EXAMINATION PHASE: Date cooler was opened:
by (sign): _____ (print): _____

1. Did cooler come with shipping slip (airbill ect): YES NO
   If yes enter carrier name & airbill number here: _____
2. Were custody seals on outside of cooler? YES NO
   How many, where, date, time: _____
3. Were custody seals unbroken and intact at the date and time of arrival? YES NO
4. Did you screen samples for radioactivity using a Geiger counter? YES NO
5. Were custody papers sealed in a plastic bag & taped inside to the lid? YES NO
6. Were custody papers filled out properly (ink, signed, ect)? YES NO
7. Did you sign the custody papers in the appropriate places? YES NO
8. Was project identifiable from the custody forms? YES NO
   If YES, enter project name at the top of this form.
9. If required, was enough ice used? Type: YES NO
10. Have designated person initial here to acknowledge receipt of cooler: _____ (date) _____

B. LOG-IN PHASE: Date samples were logged-in:
by (sign): _____ (print): _____

11. Describe type of packing in cooler: _____
12. Were all bottles sealed in seperate plastic bags? YES NO
13. Did all bottles arrive unbroken and were labels in good condition? YES NO
14. Were all labels complete(ID, date, time, signature, preservation)? YES NO
15. Did all bottle labels agree with custody papers? YES NO
16. Were correct containers used for the tests indicated? YES NO
17. Were correct preservatives added to samples? YES NO
18. Was a sufficient amount of sample sent for tests indicated? YES NO
19. Were bubbles absent in VOA samples? If NO, list by sample #: YES NO
20. Was the project manager called and status discussed? YES NO
    If YES, give details on the back of this form.
21. Who was called? _____ Date: _____

By whom? _____

WASTE STREAM TECHNOLOGY

# Preparatory Phase Checklist

| | |
|---|---|
| Contract: | Date Preparatory Held: |
| Spec. Section & Paragraph: | Definable Feature of Work: |
| Drawing Sheet Numbers: | Major Definable Feature: |

A. Personnel Present

| Name | Position | Company |
|---|---|---|
| | | |

B. Has each spec. paragraph, drawing, and shop drawing detail been studied? Yes ___ No ___

C. Transmittals Involved

| Number and Item | Code | Contractor/Government Approval |
|---|---|---|
| | | |

Have all items involved been approved? Yes _____ No_____

D. Are all materials on-hand? Yes ____ No_____

Are the materials on the job-site to be incorporated the same as those approved?
Yes _____ No _____

Have all materials been checked for contract compliance against approved shop drawings? Yes ____ No _____

Equipment to be used in executing the work:

Items not on-hand or not in compliance with transmittals:

E. Tests required in accordance with contract requirements:

| Test | Paragraph |
|---|---|

F. Accident Prevention Planning - Hazard Control Measures:

Activity Hazard Analysis

| Activity | Hazard(s) | Controls |
|---|---|---|
| | | |
| | | |
| | | |

Operational Equipment Checklist

Attached For:

On File For:

G. Have procedures for accomplishing work been reviewed with appropriate people?

Yes ___ No

Scope of Work/Method of Construction:

Safety Issues:

Spill Prevention Issues:

H. Has all preliminary work been accomplished in accord with contract requirements and is this segment of work ready to start? Yes ___ No

Explain any problems:

I. Remarks:

USACE Comments:

Sevenson Comments:

CQC Systems Manager

Project Engineer

## Initial/Follow-Up Phase Inspection Checklist

Inspection Type: ☐ Initial Phase ☐ Follow-Up Phase

Date: _____ Specifications Paragraph: _____

Description and location of work inspected: _____

_____

Reference contract drawings: _____

A. Personnel Present

| Name | Position | Company |
|---|---|---|
| | | |

B. Materials being used are in strict compliance with the Contract Plans and Specifications?
YES _____ NO _____
If not, explain: _____

_____

C. Procedures and/or work methods witnessed are in strict compliance with the requirements of the Contract Specifications? YES _____ NO _____
If not, explain: _____

_____

D. Workmanship is acceptable? YES _____ NO _____
State areas where improvement is needed: _____

_____

E. Safety violations and corrective actions taken: _____

_____

F. Remarks: _____

_____

_____

_____ _____

Quality Control Representative Project Engineer

# DAILY CHEMICAL QUALITY CONTROL REPORT



Date: _____

Job Identification and Site Numbers: _____

_____

Weather: _____

_____

Subcontractors Present Onsite: _____

_____

Health and Safety Measures Necessary for Planned Activities: _____

_____

Health and Safety Violations and Corrective Actions: _____

_____

_____

Planned Daily Activities: _____

_____

_____

Description of Chemical Data Acquisition Work Performed: _____

_____

_____

Sample Shipments and Problems Regarding Sampling and Sample Shipments: _____

_____

Chemical Parameter Measurement Problems: _____

_____

_____

Contingency Sampling: _____

_____

_____

Non-conformance Problems: _____

_____

_____

Corrective Actions (including approvals): _____

_____

_____

Initials of Personnel Performing Corrective Actions: _____

Implemented Chemical Quality Control Activities (including summary of feedback resulting from corrective actions taken): _____

_____

_____

CERTIFICATION: As Chemical Quality Control Manager, I certify that the above report is complete and correct and that I, or my authorized representative, have inspected all work performed this day by key staff and have determined that all materials, equipment and workmanship are in strict compliance with the plans and specifications, except as my be noted above.

_____ _____

Signature Date

# SITE QC INSPECTION REPORT

Project Name _____ Client/Generator _____

Sevenson Job # _____ Contract # _____

Project Location _____ Task Order # _____

Inspection Date _____ Inspection Time _____

Inspected By _____

Sevenson Project Manager _____ Client/Generator Project Manager _____

Site Telephone # _____ Contact Telephone # _____

Site Facsimile # _____ Contact Facsimile # _____

Site Email Address _____

## Site Plans/Activities

**Construction Management Plan/Work Plan**

Original Approval Date _____
Revision Approval Date (if applicable) _____

| YES | NO | |
|---|---|---|
| ☐ | ☐ | Current Plan Copy Available Onsite |
| ☐ | ☐ | Spill Response equipment/materials available? |
| ☐ | ☐ | Soil erosion/sediment controls in-place? |
| ☐ | ☐ | Work zones (EZ, CRZ, SZ) clearly delineated? |
| ☐ | ☐ | All equipment inspections being documents (in and out)? |

COMMENTS: _____

_____

_____

_____

_____

# Health and Safety

Original Plan Approval Date _____
Revision Approval Date (if applicable) _____

| YES | NO | |
|---|---|---|
| ☐ | ☐ | Current Plan Copy Available Onsite |
| ☐ | ☐ | Activity Hazard Analysis Complete and Updated |
| ☐ | ☐ | Daily Safety Meetings Conducted and Documented |
| ☐ | ☐ | Emergency Response Information Posted |
| ☐ | ☐ | Medical and Training Documentation Current |
| ☐ | ☐ | Daily Safety Logs Completed |
| ☐ | ☐ | Chemical Inventory Updated |
| ☐ | ☐ | Inspections Completed and Documented |
| ☐ | ☐ | Map to hospital prominently displayed? |
| ☐ | ☐ | Is work being conducted safely? |

COMMENTS: _____

_____

_____

# Sampling and Analysis

Original Plan Approval Date _____
Revision Approval Date (if applicable) _____

| YES | NO | |
|---|---|---|
| ☐ | ☐ | Is a current plan copy available onsite? |
| ☐ | ☐ | Has a review of the Plan and all relevant SOPs with all site sampling been conducted? |
| ☐ | ☐ | Are field logbooks and other site documentation maintained properly and in a secure area? |
| ☐ | ☐ | Are Preparatory Inspections being conducted prior to each sampling event? |
| ☐ | ☐ | Are Initial and Follow-up Inspections being conducted for each sampling event? |
| ☐ | ☐ | Is the site Sampling Manager performing periodic field audits of all sampling activities? |
| ☐ | ☐ | Is field documentation being reviewed by the site Sampling Manager prior to the completion of each days' sampling events? |
| ☐ | ☐ | Is the Sampling Manager performing field audits of sample labeling, chain-of-custody, packing and shipping activities? |
| ☐ | ☐ | Are Daily Chemical Quality Control Reports (DCQCR) being completed each day and properly? |
| ☐ | ☐ | Are DCQCR, instrument maintenance and calibration, nonconformance/corrective action reports and sampling logs current? |

COMMENTS: _____

_____

_____

| Project Work Tasks | Sevenson Checklist # |
|---|---|
| (Check all that apply and attach completed QC Report) | |
| ☐ Monitoring Well Installation, Development, and/or Abandonment | SES 001 |
| ☐ Groundwater Monitoring Well Sampling | SES 002 |
| ☐ Surface Water Sampling | SES 003 |
| ☐ Subsurface Soil Sampling | SES 004 |
| ☐ Drum/Tank Sampling | SES 005 |
| ☐ Mobile Laboratory | SES 006 |
| ☐ Packing, Storing, and Shipment of Samples | SES 007 |
| ☐ Field Documentation | SES 008 |
| ☐ Decontamination | SES 009 |
| ☐ Sample Cooler Shipment | SES 010 |
| ☐ Onsite Waste Storage | SES 011 |
| ☐ Offsite waste Transport/Disposal | SES 012 |

COMMENTS: _____

_____

_____

_____

Sevenson Project Manager _____

Name Signature Date

QC Reviewer _____

Name Signature Date

CQC Systems Manager _____

Name Signature Date

**TASK SPECIFIC QC CHECKLIST**
**Work Task: Packing, Storing, and Shipment of Samples**
**Sevenson Checklist #007**

Project Name/Job Number: _____
Inspection Date: _____

Complete this form for each cooler/shipment inspected. Answer each question by checking the appropriate column (yes, no, not observed (N/O), or not applicable (N/A)). If "no" is checked, provide an explanation of the non-compliance and associated corrective action(s).

| | Yes | No | N/O | N/A |
|---|---|---|---|---|
| Were the samples handled according to the FSP and QAPP? | | | | |
| Did the samples remain on ice or refrigerated (except for sample transfer from coolers or refrigerators) from collection until the cooler was taped for shipment? | | | | |
| Were sample containers prepared for shipment (bubble-wrap, Zip-Lock™ bags, etc) per SAP procedures? | | | | |
| Was a trip blank (for VOC samples only) and a temperature blank included in each cooler? | | | | |
| Was loose ice double Zip-Lock™- bagged prior to placement in cooler? | | | | |
| Was ice placed in equal proximity to all sample containers and the temperature blank to ensure samples arrive at lab at 4°C? | | | | |
| Were Chain-of-Custody forms filled out accurately and completely, including the project name and number, sampling date and time, analytical parameters, preservatives, size and number of containers for each analytical parameter, and media sampled? | | | | |
| Were Chain-of-Custody forms signed and dated by the preparer and the form taped to the inside of the cooler lid? | | | | |
| Were signed and dated custody seals properly placed on the cooler and the cooler sealed with strapping tape? | | | | |
| Was a shipping label attached to the cooler? | | | | |
| Were COCs and shipping tracking labels faxed to lab? | | | | |

**Notes/Comments**

_____
_____
_____

**QC Inspector Name and Signature**

_____

_____

**Date**

_____

**TASK SPECIFIC QC CHECKLIST**
**Work Task: Field Documentation**
**Sevenson Checklist #008**

Project Name/Job Number: _____
Inspection Date: _____

Complete this form for each day samples are taken. Answer each question by checking the appropriate column (yes, no, not observed (N/O), or not applicable (N/A)). If "no" is checked, provide an explanation of the non-compliance and associated corrective action(s).

| | Yes | No | N/A |
|---|---|---|---|
| Was all original field data recorded in black indelible ink? | | | |
| Were logbooks filled out properly, accurately recounting the day's events? | | | |
| Were all field forms completed and information accurately recorded? | | | |
| • Field Sampling Forms | | | |
| • Chain of Custody Forms | | | |
| • Field Log Books | | | |
| • Field Change Request Forms | | | |
| • Additional Forms (list below) | | | |
| Was field documentation forwarded to Sevenson office for peer/QC review? | | | |
| Were deficiencies reported to the Field Sampling Manager? | | | |

**Notes/Comments**

_____
_____
_____

**QC Inspector Name and Signature**

_____

_____

**Date**

_____

**TASK SPECIFIC QC CHECKLIST**
**Work Task: Decontamination**
**Sevenson Checklist #009**

Project Name/Job Number: _____
Inspection Date: _____

Complete this form for each day samples are taken. Answer each question by checking the appropriate column (yes, no, not observed (N/O), or not applicable (N/A)). If "no" is checked, provide an explanation of the non-compliance and associated corrective action(s).

| | Yes | No | N/O | N/A |
|---|---|---|---|---|
| Was all sampling equipment decontaminated properly prior to use and between sample intervals? | | | | |
| Was each decontamination event recorded in the logbook? | | | | |
| Was investigation derived waste (IDW) (e.g., decontamination water, personal protective equipment (PPE), etc.) handled properly? | | | | |
| Were the location, type, number and source of containers of IDW recorded in the logbook? | | | | |
| Was Sevenson Technical Services notified if IDW requires offsite disposal? | | | | |

**Notes/Comments**

_____
_____
_____

**QC Inspector Name and Signature**

_____

_____

**Date**

_____

# TASK SPECIFIC QC CHECKLIST
## Work Task: Sample Cooler Shipment
## Sevenson Checklist #010

Project Name/Job Number: _____

Inspection Date: _____

☐ **PREPARATORY PHASE**

| *Yes* | *No* | *N/A* | | *Comment* |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | Have sample shipment procedures in the SAP been reviewed by all field sampling personnel? | |
| ☐ | ☐ | ☐ | Are sufficient numbers of clean, hard plastic coolers available onsite to meet current sampling schedule? | |
| ☐ | ☐ | ☐ | Are sufficient packing supplies (i.e. Ziplock™ plastic bags, packing "peanuts", sealing tape, etc.) available onsite? | |
| ☐ | ☐ | ☐ | Are laboratory chain-of-custody forms, custody seals, and extra sample container labels available onsite? | |
| ☐ | ☐ | ☐ | Has a common carrier (Federal Express, UPS, etc.) been selected and have package pickup points and times been identified? | |
| ☐ | ☐ | ☐ | Will sample coolers be D.O.T. regulated for shipping purposes and are D.O.T. required shipping labels and logs available at the site? | |
| ☐ | ☐ | ☐ | Have the offsite primary and QA laboratories been contacted to verify anticipated sample collection and shipment schedules? | |
| ☐ | ☐ | ☐ | Does the primary and QA laboratory have a list of sample shipping site contacts should there be problems or questions? | |
| ☐ | ☐ | ☐ | Is an ice source available on or near the site? | |

☐ **INITIAL PHASE** **OR** ☐ **FOLLOW-UP PHASE**

| *Yes* | *No* | *N/A* | | *Comment* |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | Has a Preparatory Phase meeting been conducted? | |
| ☐ | ☐ | ☐ | Where sample containers received from the field properly labeled , prepared, and recorded in the field logbook and in the site sample summary log per the SAP? | |
| ☐ | ☐ | ☐ | Was the sample cooler inspected to verify that it was clean, undamaged, and had no external markings or shipping addresses unrelated to the project? | |

| | | | | |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | Was the cooler inspected to verify that the site name, address, telephone number and contact name was written in indelible ink on the interior of the cooler lid? | _____ |
| ☐ | ☐ | ☐ | Was the cooler drain plug (if present) securely taped shut on both the interior and exterior sides? | _____ |
| ☐ | ☐ | ☐ | Was a clean, new plastic garbage bag placed into the cooler as a secondary liner? | _____ |
| ☐ | ☐ | ☐ | Where all samples, field duplicates, QA splits, and rinse blanks verified by checking sample labels against field logbook entries as chain-of-custody forms were completed? | _____ |
| ☐ | ☐ | ☐ | Were chain-of-custody forms completed per SAP? | _____ |
| ☐ | ☐ | ☐ | Were sample containers placed into separate Ziplock™ bags before being placed in an upright position in the cooler? | _____ |
| ☐ | ☐ | ☐ | Was packing material placed between sample containers to prevent shifting or breakage during shipment? | _____ |
| ☐ | ☐ | ☐ | Was a temperature blank placed in close proximity to sample containers? | _____ |
| ☐ | ☐ | ☐ | If required, was double Ziplock™-bagged ice placed in the cooler in contact with all sample containers? | _____ |
| ☐ | ☐ | ☐ | Was the outer garbage bag sealed with a twist-tie or knot? | _____ |
| ☐ | ☐ | ☐ | Were chain-of-custody forms placed inside a Ziplock™ bag and taped to the inner lid of the cooler? | _____ |
| ☐ | ☐ | ☐ | Was the closed cooler lid checked to verify a proper closure and was fiber-reinforced strapping tape placed around both of its ends at least twice? | _____ |
| ☐ | ☐ | ☐ | Were handling labels and D.O.T. hazard labels (if required) placed on the outside of the cooler? | _____ |
| ☐ | ☐ | ☐ | Were a minimum of two (front and side) completed custody seals placed across the lid opening to verify cooler integrity? | _____ |
| ☐ | ☐ | ☐ | Was an address label with both the "shipped from" and "shipped to" addresses applied to the top of the cooler? | _____ |
| ☐ | ☐ | ☐ | Was the common carrier airbill (or other shipping form) properly completed and attached to the cooler? | _____ |
| ☐ | ☐ | ☐ | Was the "shipper's copy" of the airbill retained at the site and attached to the DCQCR? | _____ |
| ☐ | ☐ | ☐ | Were all destination laboratories notified of sample shipments? | _____ |

Comments: _____

_____

_____

_____

Sevenson Project Manager _____

Name Signature Date

QC Reviewer _____

Name Signature Date

CQC Systems Manager _____

Name Signature Date

# Field Change Request Form

PROJECT MANAGER:_____
PROJECT:_____
JOB NUMBER:_____
CONTRACT NUMBER:_____
DATE:_____
FIELD CHANGE REQUEST NUMBER:_____

## Weather

| | | | | | |
|---|---|---|---|---|---|
| | Bright Sun | Clear | Overcast | Rain | Snow |
| Temp | To 32 | 32-50 | 50-70 | 70-85 | 85 up |
| Wind | Calm | Moderate | High | | |
| Humidity | Dry | Moderate | Humid | | |

SUB-CONTRACTORS ON SITE:

EQUIPMENT ON SITE:

SAMPLING PERFORMED:

NON-CONFORMANCE/PROBLEM ITEM(S):

| | | | |
|---|---|---|---|
| PROJECT QA/QC OFFICER NOTIFIED: | TIME | DATE | INITIALS |
| PROJECT MANAGER NOTIFIED: | TIME | DATE | INITIALS |
| CONTRACTING OFFICER NOTIFIED: | TIME | DATE | INITIALS |
| PROJECT TECHNICAL DIRECTOR NOTIFIED: | TIME | DATE | INITIALS |

WORK STOPPED? _____ YES _____ NO

IF NOT, EXPLAIN

Sheet _____ of _____

PROJECT _____ REPORT NO. _____

JOB NO. _____ DATE _____

ACTION TO BE TAKEN:

HEALTH AND SAFETY LEVEL CHANGES: _____No _____ Yes (explain)

HSO NAME/DATE:

PROBLEM RESOLUTION:

SPECIAL NOTES:

FOLLOW-UP TO BE FILED? _____ No _____ Yes (explain/attach)

FIELD CHANGE APPROVED: _____ No _____ Yes Initials: _____

Sheet _____ of _____

BY: _____ TITLE:

# CORRECTIVE ACTION FORM

Corrective Action No. _____ Date _____

To: _____ cc: Task Manager

You are hereby requested to take corrective actions indicated below and as otherwise determined by you (A) to resolve the noted condition and (B) to prevent it from reoccurring. Your written response is to be returned to the Project Manager.

Condition: _____

_____

Reference Documents: _____

_____

Recommended Corrective Actions: _____

_____

Originator _____ Date _____ QAM Approval Date _____

PM Approval Date _____

Response: _____

_____

Corrective Action: _____

_____

A. Resolution: _____

B. Pretension: _____

C. Affected Documents: _____

Signature _____ Date _____

Follow Up _____

Corrective Action Verified:

By: _____ Date _____

# LABORATORY/ANALYTICAL DEFICIENCY NOTIFICATION

g # : _____ Date: _____ Client: _____

Site: _____ SDG: _____

Lab ID No.(s): _____

Client ID (s): _____

**Deficiency:** _____

**Explanation:** _____

**Corrective Action:** _____

**Comments:** _____

Client Contact: _____ Date Sent: _____

Telephone: _____

Reported By: _____ Date: _____

# DATA EVALUATION CHECKLIST

Project Name/Sevenson Job Number: _____
Laboratory: _____
Laboratory Report Number: _____
Laboratory Sample IDs: _____
Sample Collection Date(s): _____
Sample Type/Matrix: _____
Analyses Performed: _____
Reviewed By: _____ Date Initiated: _____ Date Completed: _____

ATTACHMENTS:
_____ Sample ID Table
_____ Laboratory/Analytical Deficiency Notification (DNF)
_____ RPD Summary Table

REPORT CONTENTS: The following items should be included in the complete laboratory analytical data report. If any of the items are missing, contact the laboratory to obtain the missing items.

| ITEM | PRESENT | MISSING | NOT APPLICABLE | COMMENTS |
|---|---|---|---|---|
| Field sample identifiers and corresponding laboratory ID numbers (also prepare a table that matches field sample IDs, laboratory IDs, rinsate blanks, trip blanks, duplicate samples, laboratory QC samples, and QA laboratory split samples) | | | | |
| Case narrative | | | | |
| Chain-of-custody form(s) | | | | |
| Laboratory Sample Receipt Checklist and USACE Cooler Receipt Form | | | | |
| Shipping papers and custody seals | | | | |
| Data Qualifier Sheet that defines the data qualifiers used by the laboratory to report the analytical results | | | | |
| Summary of methodologies, receipt dates, analysis dates, etc. | | | | |

DETAILED ASSESSMENT AND VALIDATION: Complete the assessment and validation for each laboratory data report by checking the appropriate column (yes "Y", no "N", or not applicable "NA"). If the answer to any of the questions is "no", an explanation of the non-compliance/deficiency and associated corrective action should be included in the case narrative and on a Laboratory/Analytical Deficiency Notification Form (DNF). If a DNF is available, attach to the Data Evaluation Checklist.

| | Y | N | NA | COMMENTS/QUALIFIERS |
|---|---|---|---|---|
| **CHAIN-OF-CUSTODY** | | | | |
| Was the chain-of-custody form properly completed and signed by the field personnel when relinquished and by the laboratory when received? | | | | |
| Was the chain-of-custody form free of errors and discrepancies? | | | | |
| **SAMPLE PRESERVATION** | | | | |
| Are the Laboratory Sample Receipt Checklist and USACE Cooler Receipt Forms present and properly signed? | | | | |
| Do the Laboratory Sample Receipt Checklist and USACE Cooler Receipt Forms indicate that the samples were received within proper temperature and in good condition? | | | | |
| Were samples that required preservation properly preserved? | | | | |

| | Y | N | NA | COMMENTS/QUALIFIERS |
|---|---|---|---|---|
| **REQUESTED ANALYSES** | | | | |
| Were all chain-of-custody-requested analyses performed? | | | | |
| Are analytical results reports present for all samples and for all analyses? | | | | |
| Do the result reports for each analytical parameter for each sample list all of the required site-specific compounds or metals as specified in the QAPP? | | | | |
| **HOLDING TIMES** | | | | |
| Were extraction (when applicable) and analysis holding times for sample met? | | | | |
| **METHOD BLANKS** | | | | |
| Does the report contain method blank results for each analytical parameter performed? | | | | |
| Were the method blanks free of target compounds? | | | | |
| Were the site samples free of compounds detected in the method blank? | | | | |
| If the site samples were not free of compounds detected in the method blank, did the laboratory flag the site samples with a "B" qualifier? | | | | |
| **FIELD BLANKS** | | | | |
| If the report contains results for aqueous volatile organic samples, does the report contain trip blank results? | | | | |
| If the report contains results for samples collected using non-dedicated equipment, does the report contain rinsate blank results? | | | | |
| Were the site samples free of compounds detected in the trip and/or rinsate blank? | | | | |
| **LCS RESULTS** | | | | |
| Does the report contain the results of LCS analyses with the corresponding control limits reported? | | | | |
| Are the recoveries from the LCS analyses within the corresponding control limits? | | | | |
| If NO, does the case narrative detail the reason and the corrective action taken? (Also, attach the applicable DNF, is available.) | | | | |
| **FIELD DUPLICATES** | | | | |
| Does the report contain a field replicate sample? | | | | |
| Calculate the relative percent differences between the replicate sample results and attach the RPD Summary Table. | | | | |
| Are the field duplicate sample results in agreement based on the acceptance criteria included in CENWK-EC-EF. | | | | |
| **SURROGATE RESULTS** | | | | |
| For the applicable organic compound analyses, are the surrogate compound recoveries and the corresponding control limits reported? | | | | |
| Are the surrogate compound recoveries within the control limits? | | | | |
| If NO, does the case narrative detail the reason and the corrective action taken? (Also, attach the applicable DNF, is available.) | | | | |
| **MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS** | | | | |
| Does the report contain, for each applicable analytical parameter, the results of matrix spike sample analyses including the recoveries and corresponding control limits? | | | | |
| Does the report contain, for each applicable analytical parameter, the results of matrix spike duplicate and/or laboratory duplicate pairs, including the relative percent differences and corresponding control limits? | | | | |
| Are the recoveries from the matrix spike, matrix spike duplicate, and/or laboratory duplicate pairs, including the relative percent differences, within the control limits? | | | | |
| If NO, does the case narrative detail the reason and the corrective action taken? (Also, attach the applicable DNF, is available.) | | | | |

| | Y | N | NA | COMMENTS/QUALIFIERS |
|---|---|---|---|---|
| **QUANTITATION LIMITS** | | | | |
| Do the analytical results reports list the sample quantitation limits for each compound? | | | | |
| Are the project-required quantitation limits included in the QAPP met? | | | | |
| If the quantitation limits are out of range, does the case narrative document the cause(s) as to why the limits are above criteria? | | | | |
| For the organic analysis parameters, are the results that are greater than the MDL but below the MQL properly flagged by the laboratory with the "J" qualifier? | | | | |
| For the organic parameter results that have compounds that are flagged with the "D" qualifiers, does the result report state the dilution factor that was used to obtain the result and the date on which the dilution was analyzed? | | | | |

Additional Notes/Comments: _____

Data Assessment/Validation by: _____

Name Signature Date

CQC Systems Review by: _____

Name Signature Date

# APPENDIX B

# ANALYTICAL LABORATORY QUALITY ASSURANCE/QUALITY CONTROL PLAN

# WASTE STREAM TECHNOLOGY INC.
# ANALYTICAL LABORATORY
# QUALITY ASSURANCE
# AND
# QUALITY CONTROL PLAN

Revision Number: 12
Effective Date: 08/01/04
Serial Number: QA-126

Prepared by:

Waste Stream Technology Inc.
302 Grote Street
Buffalo, NY 14207
(716)876-5290

Laboratory Director: Brian S. Schepart, Ph.,D. _____ Signature

QA/QC Director: Daniel W. Vollmer _____ Signature

Radiochemistry Manager: Brian S. Schepart, Ph.,D. _____ Signature

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# TABLE OF CONTENTS

ROR RECORD OF REVISION

POL POLICY STATEMENT

1.0 INTRODUCTION

- 1.1 General Description
- 1.2 Objectives
- 1.3 Implementation
- 1.4 Ethics and Integrity
- 1.5 Confidentiality Procedures
- 1.6 Amendments and Revisions

2.0 ORGANIZATION AND RESPONSIBILITIES

- 2.1 Organizational Chart
- 2.2 Responsibilities
- 2.3 Training of Laboratory Personnel

3.0 SAMPLE CUSTODY

- 3.1 Field Collection by Waste Stream Personnel
- 3.2 Collection from an Outside Agency
- 3.3 Sample Receipt
- 3.4 Custody in the Laboratory
- 3.5 Sample Disposal
- 3.6 Sample Security

4.0 ANALYTICAL PROCEDURES

- 4.1 Statement of Procedures
- 4.2 Quality Assurance Objectives
  - 4.2.1 Accuracy
  - 4.2.2 Precision
  - 4.2.3 Comparability
  - 4.2.4 Completeness
  - 4.2.5 Reagents, Solvents, Water, Glassware & Gases
- 4.3 Quality Assurance and Quality Control
  - 4.3.1 Standard Preparation
  - 4.3.2 Determination of Detection Limits
    - 4.3.2.1 Instrument Detection Limit
    - 4.3.2.2 Method Detection Limit
    - 4.3.2.3 Method Quantitation Limits
    - 4.3.2.4 Documentation of Detection Limits
    - 4.3.2.5 Minimum Detectable Activity (Radiochemistry Analyses)

4.3.3 Instrument Calibration
4.3.3.1 Initial Calibration
4.3.3.2 Continuing Calibration
4.3.4 Analysis of Quality Control Samples
4.3.4.1 Blanks
4.3.4.1.1 Reagent Blank
4.3.4.1.2 Method Blank
4.3.4.2 Spiked Blank
4.3.4.3 Spiked Sample
4.3.4.4 Duplicate Sample
4.3.4.5 Matrix Spike Duplicate Sample
4.3.4.6 Documentation of Quality Control Analyses
4.3.4.7 Normalized Absolute Difference (Radiochemistry Analyses)
4.3.5 Establishment of Acceptance Criteria
4.3.5.1 Method Blanks
4.3.5.2 Recovery of Spiked Blank Samples
4.3.5.3 Duplicate Analyses
4.3.5.4 Spiked Sample Analyses
4.3.5.5 Use of Surrogates
4.3.5.6 Retention Times in Gas Chromatography Methods
4.3.6 Standard Operating Procedures
4.4 QA/QC Schedules
4.4.1 Non-Instrumental Wet Chemistry Analyses
4.4.2 Instrumental Analyses
4.4.2.1 Non-GC Instrumental Analyses
4.4.2.2 GC and GC/MS Analyses
4.5 Instrumentation
4.6 Audits
4.6.1 External Audits
4.6.2 System Audits
4.6.3 Report Audit
4.6.4 Blind Sample Audit

5.0 DATA HANDLING

5.1 Record Keeping in the Laboratory
5.1.1 Sample Preparation Log Sheets
5.1.2 Wet Chemistry Logbooks
5.1.3 Radiochemistry Sample Preparation
5.1.4 Record Keeping in Instrumental Analysis
5.2 Data Reduction
5.3 Data Validation
5.4 Final reporting
5.5 Data and Report Storage and Retention

6.0 CORRECTIVE ACTIONS, PREVENTIVE MAINTENANCE, AND INSTRUMENT MAINTENANCE LOGS

6.1 Identification and Documentation of Problems
6.2 Problems and Actions
6.2.1 Continuing Calibration Outside Acceptance Limits
6.2.2 Calibration Standards Exceeding the Permitted Holding Time
6.2.3 Laboratory Method Blanks Exceed Method Detection Limit but Are Below Quantitation Limit
6.2.4 Laboratory Method Blank Exceeds Quantitation Limits
6.2.5 Laboratory Control Sample (Spiked Blank) Exhibits Recoveries Outside Acceptance Limits
6.2.6 Surrogate Compound Recoveries Outside Acceptance Limits
6.2.7 Matrix Spike Recoveries Outside Acceptance Limits
6.2.8 Relative Percent Differences (RPD) from MS/MSD or Duplicate Sample Analysis Outside Acceptance Limits
6.3 Flagging Requirements for Radiochemistry Data
6.4 Preventive Maintenance
6.5 Instrument Maintenance Logs
6.6 Handling of Complaints

7.0 BIOGRAPHIES OF KEY PERSONNEL

## LIST OF FIGURES

Ethics and Integrity Agreement.....Figure 1-1
Abbreviated Organization Chart.....Figure 2-1
Analytical Laboratory Organization Chart.....Figure 2-2
Demonstration of Capability Certification Statement..Figure 2-3
Chain of Custody Form.....Figure 3-1
Analytical Services Request Form.....Figure 3-2
Sample Container Request Form.....Figure 3-3
Work Order.....Figure 3-4
USACE Sample Shipment Check List.....Figure 3-5
Radioactive Material Shipment Inspection Form.....Figure 3-6
Accuracy Control Chart.....Figure 4-1
Precision Control Chart.....Figure 4-2
GC Retention Time Windows Data.....Figure 4-3
Organic Analysis Data Validation Checklist.....Figure 5-1
Metals Analysis Data Validation Checklist.....Figure 5-2
Radioisotope Data Review Checklist Gross Alpha/Beta..Figure 5-3
First and Second Tier Lab Data Review Check List-GFAAFigure 5-4
Radioisotope Data Review Checklist Gamma Spectrum....Figure 5-4
Radioisotope Data Review Checklist.....Figure 5-5
Fax Lead Sheet.....Figure 5-6
Sample Re-extraction/Re-analysis Form.....Figure 6-1
Data Review and Corrective Actions Flowchart.....Figure 6-2
Data Qualifier Sheet.....Figure 6-3
Complaint Form.....Figure 6-4
Radiochemistry Data Qualifiers.....Figure 6-5

## LIST OF TABLES

Sample Containers, Preservatives and Holding Times....Table 3-1
Standard and Solution Holding Times.....Table 4-1
Calibration Frequencies.....Table 4-2
Equipment List.....Table 4-3
Analytical Methods.....Table 4-4
Schedule of Analysis for Quality Control Samples.....Table 4-5
Quality Assurance Records.....Table 5-1

## LIST OF APPENDICES

Safety..... App-1
Waste Disposal..... App-2
Security..... App-3
Annual Executive Summary Report..... App-4
Laboratory Certifications..... App-5
Quality Control Sample Acceptance Criteria..... App-6

## RECORDS OF REVISION

| | | | | |
|---|---|---|---|---|
| Revision 1 | Section 2 | Figure 2-1 | Page 3 of 4 | March 30, 1992 |
| Revision 1 | Section 2 | Figure 2-2 | Page 4 of 4 | March 30, 1992 |
| Revision 1 | Section 7 | | Page 1 of 2 | March 30, 1992 |
| Revision 1 | Section 7 | | Page 2 of 2 | March 30, 1992 |
| Revision 2 | TOC | | Page 1 of 5 | June 4, 1992 |
| Revision 2 | Section 2 | Section 2.3 | Page 2 of 4 | June 4, 1992 |
| Revision 2 | Section 2 | Figure 2-1 | Page 3 of 4 | June 4, 1992 |
| Revision 2 | Section 2 | Figure 2-2 | Page 4 of 4 | June 4, 1992 |
| Revision 2 | Section 4 | Section 4.2 | Page 1 of 31 | June 4, 1992 |
| Revision 2 | Section 4 | Section 4.2.5 | Page 3 of 31 | June 4, 1992 |
| Revision 2 | Section 4 | Section 4.3.1 | Page 10 of 31 | June 4, 1992 |
| Revision 2 | Section 4 | Section 4.3.6 | Page 17 of 31 | June 4, 1992 |
| Revision 2 | Section 4 | Section 4.6.2.2 | Page 19 of 31 | June 4, 1992 |
| Revision 2 | Section 4 | Table 4-3 | Page 23 of 31 | June 4, 1992 |
| Revision 2 | Section 5 | Section 5.4 | Page 7 of 14 | June 4, 1992 |
| Revision 2 | Section 7 | | Page 1 of 2 | June 4, 1992 |
| Revision 2 | App-5 | | Page 1 of 2 | June 4, 1992 |
| Revision 2 | App-5 | | Page 2 of 2 | June 4, 1992 |
| Revision 3 | Section 2 | Figure 2-1 | Page 3 of 4 | September 17, 1992 |
| Revision 3 | Section 2 | Figure 2-2 | Page 4 of 4 | September 17, 1992 |
| Revision 3 | Section 7 | | Page 1 of 2 | September 17, 1992 |
| Revision 3 | Section 7 | | Page 2 of 2 | September 17, 1992 |
| Revision 4 | Section 2 | | Page 1 of 4 | March 1, 1993 |
| Revision 4 | Section 2 | | Page 2 of 4 | March 1, 1993 |
| Revision 4 | Section 2 | Figure 2-1 | Page 3 of 4 | March 1, 1993 |
| Revision 4 | Section 2 | Figure 2-2 | Page 4 of 4 | March 1, 1993 |
| Revision 4 | Section 3 | | Page 1 of 13 | March 1, 1993 |
| Revision 4 | Section 3 | | Page 2 of 13 | March 1, 1993 |
| Revision 4 | Section 3 | | Page 3 of 13 | March 1, 1993 |
| Revision 4 | Section 3 | | Page 4 of 13 | March 1, 1993 |
| Revision 4 | Section 3 | Table 3-1 | Page 5 of 13 | March 1, 1993 |
| Revision 4 | Section 3 | Figure 3-5 | Page 10 of 13 | March 1, 1993 |
| Revision 4 | Section 3 | Figure 3-6 | Page 11 of 13 | March 1, 1993 |

## RECORD OF REVISION

| | | | | |
|---|---|---|---|---|
| Revision 4 | Section 4 | | Page 5 of 31 | March 1, 1993 |
| Revision 4 | Section 4 | | Page 7 of 31 | March 1, 1993 |
| Revision 4 | Section 4 | | Page 8 of 31 | March 1, 1993 |
| Revision 4 | Section 4 | | Page 9 of 31 | March 1, 1993 |
| Revision 4 | Section 4 | | Page 10 of 31 | March 1, 1993 |
| Revision 4 | Section 4 | | Page 11 of 31 | March 1, 1993 |
| Revision 4 | Section 4 | | Page 12 of 31 | March 1, 1993 |
| Revision 4 | Section 4 | | Page 13 of 31 | March 1, 1993 |
| Revision 4 | Section 4 | | Page 14 of 31 | March 1, 1993 |
| Revision 4 | Section 4 | | Page 18 of 31 | March 1, 1993 |
| Revision 4 | Section 4 | Table 4-1 | Page 21 of 31 | March 1, 1993 |
| Revision 4 | Section 4 | Table 4-3 | Page 23 of 31 | March 1, 1993 |
| Revision 4 | Section 4 | Table 4-4 | Page 24 of 31 | March 1, 1993 |
| Revision 4 | Section 4 | Table 4-6 | Page 28 of 31 | March 1, 1993 |
| Revision 4 | Section 5 | | Page 1 of 9 | March 1, 1993 |
| Revision 4 | Section 5 | | Page 2 of 9 | March 1, 1993 |
| Revision 4 | Section 5 | | Page 3 of 9 | March 1, 1993 |
| Revision 4 | Section 5 | | Page 4 of 9 | March 1, 1993 |
| Revision 4 | Section 5 | | Page 5 of 9 | March 1, 1993 |
| Revision 4 | Section 5 | | Page 6 of 9 | March 1, 1993 |
| Revision 4 | Section 5 | | Page 7 of 9 | March 1, 1993 |
| Revision 4 | Section 5 | Table 4-1 | Page 8 of 9 | March 1, 1993 |
| Revision 4 | Section 5 | Figure 5-1 | Page 9 of 9 | March 1, 1993 |
| Revision 4 | Section 5 | Figures 5-2 through 5-4 deleted | | |
| Revision 4 | Section 7 | | Page 1 of 2 | March 1, 1993 |
| Revision 4 | Section 7 | | Page 2 of 2 | March 1, 1993 |
| Revision 5 | Section 2 | Figures 2-1 through 2-2 | | December 15, 1994 |
| Revision 5 | Section 4 | Table 4-4 pp 24-26 of 31 | | December 15, 1994 |
| Revision 5 | Section 7 | | Pages 1-2 of 2 | December 15, 1994 |
| Revision 5 | | APP-6 | Page 1 of 1 | December 15, 1994 |
| Revision 6 | Complete Re-issue of Manual | | | January 24, 1996 |
| Revision 7 | Section 3 | | Page 3 of 5 | September 3, 1998 |
| Revision 7 | Section 4 | | Page 1 of 32 | September 3, 1998 |
| Revision 7 | Section 4 | | Page 4 of 32 | September 3, 1998 |
| Revision 7 | Section 4 | | Page 5 of 32 | September 3, 1998 |
| Revision 7 | Section 4 | | Page 6 of 32 | September 3, 1998 |
| Revision 7 | Section 4 | | Page 8 of 32 | September 3, 1998 |
| Revision 7 | Section 4 | | Page 11 of 32 | September 3, 1998 |
| Revision 7 | Section 4 | | Page 13 of 32 | September 3, 1998 |
| Revision 7 | Section 4 | | Page 14 of 32 | September 3, 1998 |
| Revision 7 | Section 4 | | Page 15 of 32 | September 3, 1998 |
| Revision 7 | Section 4 | | Page 16 of 32 | September 3, 1998 |
| Revision 7 | Section 4 | | Page 17 of 32 | September 3, 1998 |
| Revision 7 | Section 4 | | Page 19 of 32 | September 3, 1998 |

RECORD OF REVISION

| | | | | |
|---|---|---|---|---|
| Revision 7 | Section 4 | | Page 21 of 32 | September 3, 1998 |
| Revision 7 | Section 4 | | Page 22 of 32 | September 3, 1998 |
| Revision 7 | Section 4 | | Page 24 of 32 | September 3, 1998 |
| Revision 7 | Section 4 | Table 4-2 | Page 25 of 32 | September 3, 1998 |
| Revision 7 | Section 4 | Table 4-3.2 | Page 27 of 32 | September 3, 1998 |
| Revision 7 | Section 4 | Table 4-3.3 | Page 28 of 32 | September 3, 1998 |
| Revision 7 | Section 4 | Table 4-3.5 | Page 30 of 32 | September 3, 1998 |
| Revision 7 | Section 4 | Table 4-4 | Page 31 of 32 | September 3, 1998 |
| Revision 7 | Section 5 | | Page 1 of 9 | September 3, 1998 |
| Revision 7 | Section 5 | | Page 4 of 9 | September 3, 1998 |
| Revision 7 | Section 5 | | Page 5 of 9 | September 3, 1998 |
| Revision 7 | Section 5 | | Page 6 of 9 | September 3, 1998 |
| Revision 7 | Section 5 | | Page 8 of 9 | September 3, 1998 |
| Revision 7 | Section 6 | | Page 3 of 10 | September 3, 1998 |
| Revision 7 | Section 6 | | Page 4 of 10 | September 3, 1998 |
| Revision 7 | Section 6 | | Page 5 of 10 | September 3, 1998 |
| Revision 7 | Section 7 | | Page 2 of 2 | September 3, 1998 |
| Revision 7 | App-2 | | Page 1 of 2 | September 3, 1998 |
| Revision 7 | App-2 | | Page 2 of 2 | September 3, 1998 |
| Revision 7 | App-5 | | Page 1 of 1 | September 3, 1998 |
| Revision 8 | Section 2 | | Page 1 of 5 | March 1, 1999 |
| Revision 8 | Section 2 | | Page 2 of 5 | March 1, 1999 |
| Revision 8 | Section 2 | | Page 3 of 5 | March 1, 1999 |
| Revision 8 | Section 2 | | Page 4 of 5 | March 1, 1999 |
| Revision 8 | Section 2 | Org. Chart | Page 5 of 5 | March 1, 1999 |
| Revision 8 | Section 3 | | Page 2 of 6 | March 1, 1999 |
| Revision 8 | Section 3 | | Page 3 of 6 | March 1, 1999 |
| Revision 8 | Section 3 | | Page 4 of 6 | March 1, 1999 |
| Revision 8 | Section 3 | | Page 5 of 6 | March 1, 1999 |
| Revision 8 | Section 3 | | Page 6 of 6 | March 1, 1999 |
| Revision 8 | Section 4 | | Page 1 of 32 | March 1, 1999 |
| Revision 8 | Section 4 | | Page 6 of 32 | March 1, 1999 |
| Revision 8 | Section 4 | | Page 7 of 32 | March 1, 1999 |
| Revision 8 | Section 4 | | Page 14 of 32 | March 1, 1999 |
| Revision 8 | Section 4 | | Page 15 of 32 | March 1, 1999 |
| Revision 8 | Section 4 | | Page 16 of 32 | March 1, 1999 |
| Revision 8 | Section 4 | | Page 21 of 32 | March 1, 1999 |
| Revision 8 | Section 4 | | Page 22 of 32 | March 1, 1999 |
| Revision 8 | Section 4 | Table 4-1 | Page 24 of 32 | March 1, 1999 |
| Revision 8 | Section 4 | Table 4-2 | Page 25 of 32 | March 1, 1999 |
| Revision 8 | Section 4 | Table 4-3.2 | Page 27 of 32 | March 1, 1999 |
| Revision 8 | Section 4 | Table 4-4 | Page 31 of 32 | March 1, 1999 |
| Revision 8 | Section 4 | Table 4-5 | Page 32 of 32 | March 1, 1999 |
| Revision 8 | Section 5 | | Page 2 of 12 | March 1, 1999 |
| Revision 8 | Section 5 | | Page 3 of 12 | March 1, 1999 |
| Revision 8 | Section 5 | | Page 5 of 12 | March 1, 1999 |
| Revision 8 | Section 5 | | Page 6 of 12 | March 1, 1999 |

## RECORD OF REVISION

| | | | |
|---|---|---|---|
| Revision 8 | Section 5 Figure 5-1 | Page 10 of 12 | March 1, 1999 |
| Revision 8 | Section 5 Figure 5-2 | Page 11 of 12 | March 1, 1999 |
| Revision 8 | Section 5 Figure 5-3 | Page 12 of 12 | March 1, 1999 |
| Revision 8 | Section 6 | Page 8 of 8 | March 1, 1999 |
| Revision 8 | Section 7 | Page 3 of 3 | March 1, 1999 |
| Revision 8 | Appendix 1 | Page 1 of 3 | March 1, 1999 |
| Revision 8 | Appendix 1 | Page 2 of 3 | March 1, 1999 |
| Revision 8 | Appendix 1 | Page 3 of 3 | March 1, 1999 |
| Revision 8 | Appendix 1 | Page 1 of 3 | March 1, 1999 |
| Revision 8 | Appendix 3 | Page 3 of 3 | March 1, 1999 |
| Revision 8 | Appendix 6 Floor Plan | Page 1 of 1 | March 1, 1999 |
| Revision 9 | Section 4 | Page 15 of 32 | June 23, 1999 |
| Revision 9 | Section 4 Table 4-5 | Page 32 of 32 | June 23, 1999 |
| Revision 9 | Appendix 7 | Pages ALL | June 23, 1999 |
| Revision 9 | Section 6 | Page 9 of 12 | Nov. 9, 1999 |
| Revision 9 | Section 6 Figure 6-3 | Page 12 of 12 | Nov. 9, 1999 |
| Revision 9 | Section 7 | Page 3 of 3 | Nov. 9, 1999 |
| Revision 10 | Complete Manual Revision | | March 27, 2001 |
| Revision 11 | TOC | Page No. 1 | August 5, 2002 |
| Revision 11 | TOC | Page No. 2 | August 5, 2002 |
| Revision 11 | TOC | Page No. 4 | August 5, 2002 |
| Revision 11 | ROR | Page No.4 | August 5, 2002 |
| Revision 11 | Section No. 1 | Page No. 2 | August 5, 2002 |
| Revision 11 | Section No. 2 | Figure 2-2 | August 5, 2002 |
| Revision 11 | Section No. 3 | Page Nos. 3-5 | August 5, 2002 |
| Revision 11 | Section No. 3 | Figure 3-4 | August 5, 2002 |
| Revision 11 | Section No. 3 | Figure 3-6 | August 5, 2002 |
| Revision 11 | Section No. 3 | Table 3-1.4 | August 5, 2002 |
| Revision 11 | Section No. 4 | Table 4-2 | August 5, 2002 |
| Revision 11 | Section No. 4 | Table 4-3(All) | August 5, 2002 |
| Revision 11 | Section No. 4 | Table 4-4.1 | August 5, 2002 |
| Revision 11 | Section No. 4 | Table 4-5 | August 5, 2002 |
| Revision 11 | Section No. 5 | Page Nos. 3-8 | August 5, 2002 |
| Revision 11 | Section No. 5 | Table 5-1 | August 5, 2002 |
| Revision 11 | Section No. 5 | Figure 5-1 | August 5, 2002 |
| Revision 11 | Section No. 5 | Figure 5-3 | August 5, 2002 |
| Revision 11 | Section No. 5 | Figure 5-4 | August 5, 2002 |
| Revision 11 | Section No. 5 | Figure 5-5 | August 5, 2002 |
| Revision 11 | Section No. 5 | Figure 5-6 | August 5, 2002 |
| Revision 11 | Section No. 6 | Page Nos. 8-11 | August 5, 2002 |
| Revision 11 | Section No. 7 | Page Nos. 1-3 | August 5, 2002 |
| Revision 11 | Appendix 4 | Page No. 1 | August 5, 2002 |
| Revision 11 | Appendix 5 | Pages - All | August 5, 2002 |
| Revision 11 | Appendix 6 | Pages - All | August 5, 2002 |
| Revision 12 | Complete Manual Revision | | August 1, 2004 |

**POLICY STATEMENT**

The goal of the analytical laboratory of Waste Stream Technology (WST) is to provide reliable data to our clients in a manner that will facilitate the problem solving and decision making processes. Because we are aware that this data must be of the highest quality, we are committed to an intensive and comprehensive program for quality assurance and quality control.

In order to provide reliable data of the highest quality on a continuing and consistent basis, WST has implemented an internal Quality Assurance and Quality Control Program. The quality assurance guidelines of WST incorporate the requirements of the National Environmental Laboratory Accreditation Conference (NELAC) standards, The U.S. Army Corps of Engineers Shell Document, U.S. EPA SW-846, "Test Methods for Evaluating Solid Wastes" and US EPA Manual, "Handbook for Analytical Quality Control for Water and Wastewater Laboratories."

This Quality Assurance and Quality Control establishes and documents the procedures and practices that are routinely implemented to ensure the integrity and validity of the data generated by WST. The main objectives of this program are to:

1. Establish protocols for measuring the quality of each system through the use of internal audits.
2. Recognize and define deficiencies that affect the quality of data.
3. Provide a system of checks and balances to correct and document out-of-control conditions in a timely manner.
4. Define and document the limitations on the quality of the data to further enhance its utility for problem solving, decision making and reporting.
5. Provide a rational, well-defined format with credible, traceable documentation to assist in the internal and external evaluation of the overall program.

The purpose of this Quality Assurance/Quality Control Plan is to establish internal protocols, procedures and guidelines to define and document the validity of the data produced. In this way we engender a system dedicated to excellence, in which we and our clients can have the utmost confidence.

James B. Hyzy, Ph.D.
Operations Manager
Waste Stream Technology Inc.

Brian S. Schepart, Ph.D.
Laboratory Director
Waste Stream Technology Inc.

# INTRODUCTION

## 1.1 General Description

Waste Stream Technology Inc. (WST) was founded in 1986 as a bioremediation company to address the need for alternative technologies to remediate water and soils contaminated with petroleum hydrocarbon products. In 1987, WST established its analytical laboratory to support its bioremediation processes and in July 1989, WST became a wholly owned subsidiary of Sevenson Environmental Services Inc. (SES) of Niagara Falls, New York. Since that time, the WST analytical laboratory has expanded and it soon became apparent that a certified public environmental laboratory could substantially benefit both WST's and SES's clients, as wells as the Western New York area.

## 1.2 Objectives

The objective of this manual is to present the Quality Assurance and Quality Control Plan used within WST's analytical laboratory to maintain the production of the highest quality data at all times. Specifically, this manual will address the areas of:

- Organization and responsibilities of WST's personnel
- Sample custody and tracking
- Analytical procedures and the associated quality assurance and quality control
- Data handling
- Corrective actions

## 1.3 Implementation

All WST laboratory employees, and those whose job functions relate to the laboratory, will have access to copies of this manual for reference. Copies of the referenced SOP's will also be available for reference and guidance. It is the joint responsibility of the Laboratory Director, Assistant Laboratory Director, and the QA/QC Department to see that the operating criteria set forth are carried out to their satisfaction. Employees who, either willfully or through negligence, attempt to circumvent the QA/QC procedures will be reprimanded. Persistent violations may result in termination. Upper management levels will be routinely advised of the status, accomplishments, and success of the program through executive summaries.

## 1.4 Ethics and Integrity

All WST employees that generate and report analytical data are instructed on the importance of data integrity and are required to sign an Ethics and Integrity Agreement (Figure 1-1). Employees are encouraged to discuss any questionable data with the laboratory management prior to reporting the result and to notify the laboratory management of any accidental reporting of non-authentic data in a timely manner.

## 1.5 Confidentiality Procedures

To ensure the protection of the clients' confidentiality information and proprietary rights, the results of analytical testing will be mailed and transmitted by facsimile only to the person who's name appears on the chain-of-custody form received with the samples. Copies of the analytical results will be faxed or mailed to other parties but only with the permission of the client. Analytical results that are transmitted via facsimile will include a cover sheet that contains the following confidentiality notice:

"This transmission is intended for the use of the individual or entity to which it is addressed and may contain confidential information that is privileged and exempt from disclosure under applicable law. Please call the number listed above if you have received this transmission in error. Destroy the original transmission without reading or saving in any manner."

## 1.6 Amendments and Revisions

Amendments and/or revisions to this manual will be made in a timely fashion dependent on the urgency and impact of any changes. Changes in procedures or protocols by regulatory agencies at the federal, state, or local level that affect the content of this manual will be made immediately. In addition, changes in methodology or instrumentation that affect Quality Control (QC) limits will be made as soon as the effects of these changes can be measured, documented, and verified. The incorporation of new or additional analytical capabilities into the laboratory program will also be dealt with immediately.

The QC limits will be reviewed at least annually and updated should the data indicate a change. Editorial revisions will be made annually.

Responsibility for changes will be shared by the QA/QC Department, Laboratory Director, Assistant Laboratory Director, and any other technical/professional employees as they deem necessary to the process.

Figure 1-1

Waste Stream Technology Inc.
(Laboratory)

## Ethics and Data Integrity Agreement

I. I, _____ (Name), state that I understand the high standards of integrity required of me with regard to the duties I perform and the data that I report in connection with my employment at Waste Stream Technology Inc. (Laboratory);

II. I agree that in the performance of my duties at Waste Stream Technology Inc. (Laboratory);

A. I shall not intentionally report data values that are not the actual values obtained;

B. I shall not intentionally report dates and times of data analyses that are not the actual dates and time of data analyses, and

C. I shall not intentionally represent another individual's work as my own.

III. I agree to inform Waste Stream Technology Inc. (Laboratory) of any accidental reporting of non-authentic data by myself in a timely manner.

IV. I agree to inform Waste Stream Technology Inc.(Laboratory) of any accidental or intentional reporting of non-authentic data by other employees.

_____
(Signature)

_____
(Date)

# ORGANIZATION AND RESPONSIBILITIES

## 2.1 Organizational Chart

The organizational chart of Waste Stream Technology's analytical laboratory is depicted in Figure 2-2. Although WST has a small staff, it is logically arranged and the high degree of quality assurance can be maintained due to the ability and experience of each staff member (See Section 7.0 for Biographies of Laboratory Personnel. Figure 2-1 shows the corporate organizational chart for WST.

## 2.2 Responsibilities

The responsibilities of each position within WST's analytical laboratory are clearly defined and understood by each individual staff member. Each person is constantly aware that each task is performed carefully and attentively during the work day so that the highest quality data can be generated.

The specific responsibilities of each staff member are as follows:

The Laboratory Director has the overall responsibility for the performance of the laboratory staff and the quality of the data generated. He/she must also be sure that all laboratory personnel meet the requisite qualifications for their position in the laboratory. The Laboratory Director, or a designee, must also review and approve all outgoing reports and serve as a link for communication and liaison with clients. The Assistant Lab Director (Sidney Tyrrell, refer to Section 7) acts as delegate for the Laboratory Director in his/her absence.

The Assistant Laboratory Director, in conjunction with the laboratory staff, is responsible for the day-to-day operation of the laboratory, including, but not limited to: the scheduling of sample extraction and analysis; reviewing analytic data; assuring that all staff members are familiar with the Quality Assurance and Quality Control Plan (QA/QC); training of new staff; reviewing and approving outgoing reports as a designee of the Laboratory Director; evaluation of analytic procedures, both current and new; the review of new incoming work to ensure that WST's facilities and resources are appropriate to perform the work prior to commencing with this work; the inventory and ordering of supplies, chemicals, and standards; and preventive maintenance contracts and the performance of scheduled preventive maintenance.

The QA/QC Officer coordinates all quality assurance responsibilities. The QA/QC Officer reports to the Laboratory Director for daily activities but is responsible to the Vice-President for reporting non-conformance with the QA/QC criteria if corrective actions are not undertaken in a timely manner. In order to maintain the integrity, independence and objectivity of the QA/QC program, the QA/QC Officer is independent of the analytical process. The primary responsibilities of the QA/QC Officer are to review data and reports submitted by the Analyst prior to release, to carry out system audits, initiate corrective actions, and ensure compliance with the QA/QC manual and Standard Operating Procedures (SOP). The QA/QC Officer has the authority to perform audits, submit blind control samples, access data files and notebooks, and reject data/reports for non-compliance with accepted standards. A QA Officer (Oliver Levi, refer to Section 7) acts as delegate for the QA/QC Director in his/her absence.

The Radiochemistry Lab Manager is responsible for the implementation of the Quality Control and Quality Assurance Plan at it applies to radiochemical analyses. The responsibilities include but are not limited to the following:

1. General surveillance over all activities involving radioactive material (RAM), including the monitoring, storage, control, and use of RAM.
2. Ensuring compliance with rules, regulations, license conditions, and industry standards as they relate to Radiochemistry lab procedures and operations.
3. Monitoring and maintaining the Radiochemistry lab as well as the balance of the facility free of radioactive contamination and radiation exposure levels below regulatory concern.
4. Furnishing consulting services on all aspects of radiochemistry and health physics to clients and personnel at all levels of responsibility.
5. Ensuring all RAM shipments are received and sent to Waste Stream in accordance with controlling regulations.
6. Ensuring all personnel who are assigned to work with RAM are properly trained and qualified as Radiation Workers, and are monitored accordingly for exposure to radiation and RAM.
7. Instructing and training of personnel, who perform radiochemistry or handle RAM.
8. Ensuring the quality control and quality assurance objectives of the radioanalytical analysis are clearly defined and recognized by those individuals performing analyses, calculating data, entering data, and reviewing data form the Radiochemistry lab.
9. The authority to terminate any activity involving RAM or radiochemistry, or any action in the lab that is deemed unsafe or can pose a health and safety concern.

The Analyst is responsible for the operation and maintenance of their instrument. Each of the analysts has a specific analytical area and is familiar with the full range of duties in his/her respective area. Therefore, each analyst serves as his/her own area supervisor. Under this particular circumstance, each analyst, in conjunction with the Assistant Lab Director and Lab Director, is able to organize his/her own time and schedule each analysis independently. As area supervisors, they are also responsible for: implementing data verification procedures, initially through method detection limit and initial demonstration of performance studies, and then daily through analysis and review of tuning standard criteria (for the GC/MS), continuing calibration check standards, method and, if necessary, reagent blanks, and other QC samples; preparing data packages for review by the QA/QC Officer; evaluation and documentation of instrument performance; and correcting problems which result in a decline in data quality.

The Data Coordinators are responsible for the generation of final result reports for review by the Lab Director or his/her designee; the filing and storage of chain-of-custody forms, hard copies of organic and inorganic analysis data, and hard copies of final result reports sent to the client; and distribution of signed off analytical reports to the client via facsimile, next day air or by mail.

The Extraction Supervisor is responsible for the supervision of the Extraction Technicians and, in conjunction with the Assistant Lab Director and Lab Director, scheduling of samples to be extracted, exclusive of radiological samples. Supervision of reagent preparation, cleaning of glassware, and monitoring of consumable supplies, as well as the maintenance of the QC plan for all sample extraction procedures, exclusive of radiological procedures, are also the responsibilities of the Extraction Supervisor.

The Wet Chemistry Supervisor is responsible for the supervision of the Wet Chemistry Technicians and, in conjunction with the Assistant Lab Director and Lab Director, the scheduling of sample analysis. Supervision of reagent preparation, cleaning of glassware, and monitoring of consumable supplies, as well as the maintenance of the QC plan for all wet chemistry procedures are also the responsibilities of the Wet Chemistry Supervisor.

The Samples Custodian is responsible for receiving the samples, excluding radiological samples, upon their arrival at the laboratory. Detailed responsibilities of the Sample Custodian are described in Section 3.0, Sample Custody.

## 2.3 Training of Laboratory Personnel

The training of personnel is covered in a separate SOP. This SOP includes guidelines that define the positions within the laboratory and the minimum required qualifications for each position. It also identifies the appropriate SOP's to be read and understood by the new employee as well as the hands-on procedures used in the laboratory during training. Certification of the trainee is provided through the analysis of laboratory quality control samples (Initial Demonstration of Performance studies). The SOP outlines the documentation required to prove the employee was properly trained and the documentation required to show that current laboratory personnel are qualified for the position they hold. Figure 2-3 shows the Demonstration of Capability Certification Statement used to document employee training.

Figure 2-1

# WASTE STREAM TECHNOLOGY INC.
# ABBREVIATED ORGANIZATION CHART

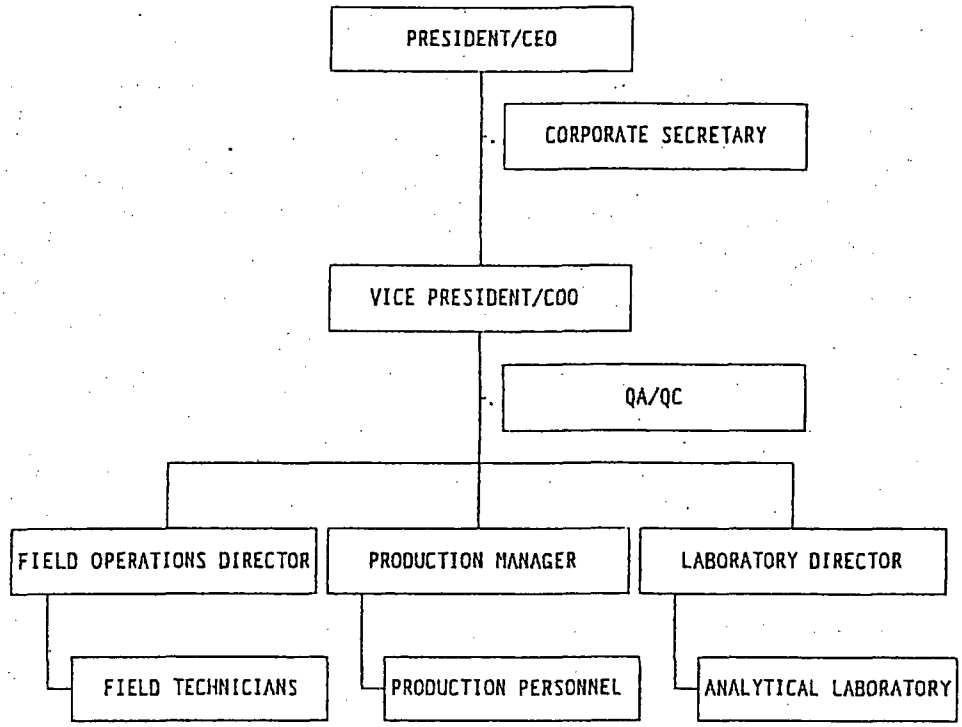
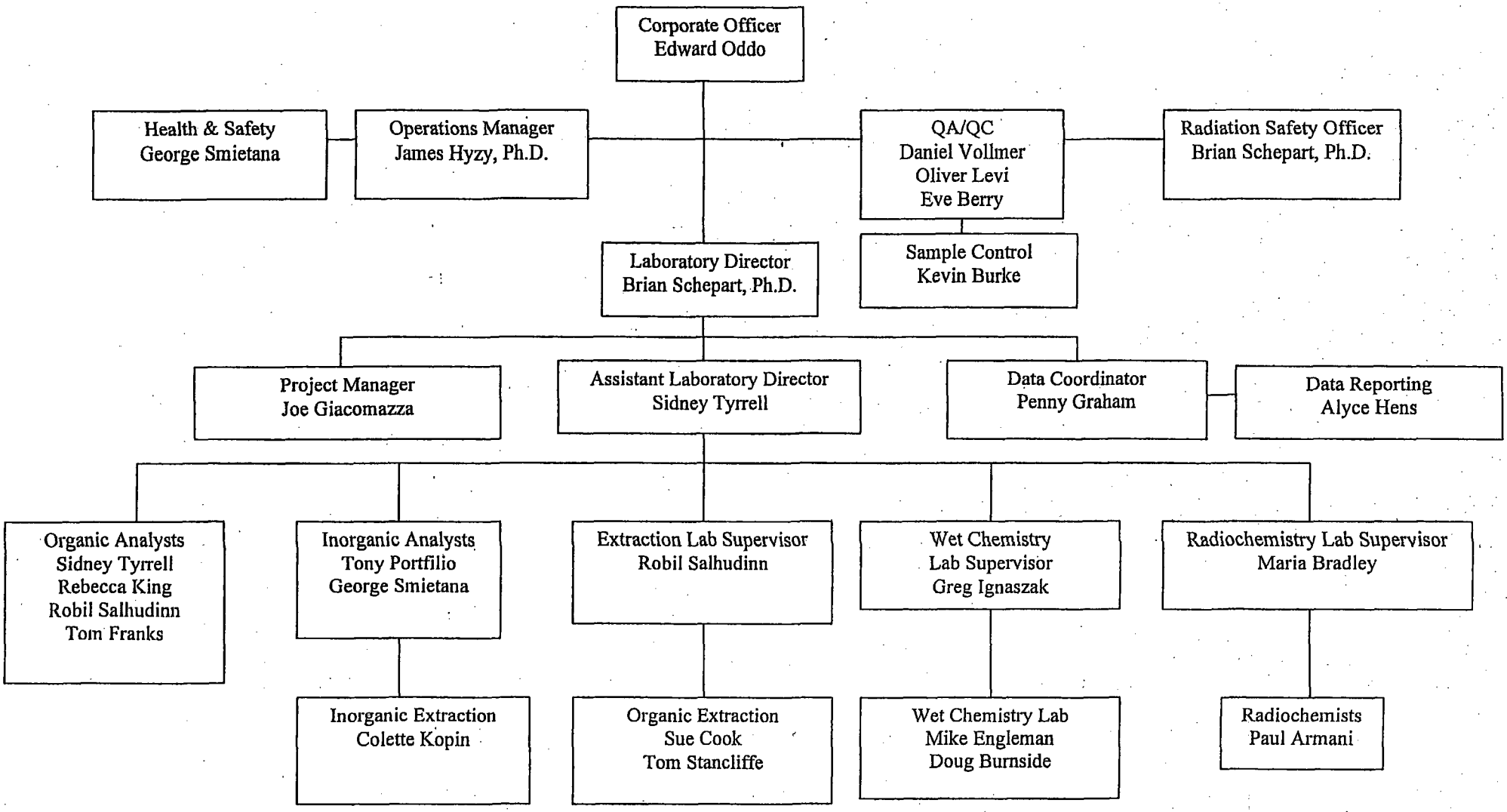


Figure 2-2
WASTE STREAM TECHNOLOGY INC.
ANALYTICAL LABORATORY
ORGANIZATIONAL CHART



## Figure 2-3

Demonstration of Capability
Certification Statement

Date: _____ Page__ of __

Analyst(s) Name(s): _____

Matrix: _____

Method/Analysis: _____

We, the undersigned, CERTIFY that:

1. The analysts identified above, using the cited test method, which is in use at this facility for the analyses of samples under the National Environmental Laboratory Accreditation Program, have met the Demonstration of Capability.

2. The test method was performed by the analyst(s) identified on this certification.

3. A copy of the test method and the laboratory-specific SOPs are available for all personnel on-site, and the person identified in this form had read the following pertinent SOP and method reference:

   Name of SOP:_____ Date Read:_____

   Method Reference:_____ Date Read:_____

4. The data associated with the demonstration capability are true, accurate, complete and self-explanatory (1).

5. All raw data (including a copy of his certification form) necessary to reconstruct and validate these analyses have been retained at the facility, and that the associated information is well organized and available for review by authorized assessors.

| _____ | _____ | _____ |
|---|---|---|
| Technical Director's Name & Title | Signature | Date |
| _____ | _____ | _____ |
| Quality Assurance Officer's Name | Signature | Date |

This certification form must be completed each time a demonstration of capability is completed.

(1) Definitions

| | |
|---|---|
| True: | Consistent with supporting data. |
| Accurate: | Based on good laboratory practices consistent with sound scientific principles/practices. |
| Complete: | Includes the results of all supporting performance testing. |
| Self-explanatory: | Data Properly labeled and stored so that the results are clear and require no additional explanation. |

# SAMPLE CUSTODY

It is essential that documentation is provided for all samples received at WST's laboratory which traces each sample, in a legally defensible manner, from sample collection, to the laboratory, and through the analytical procedures to disposal. Samples enter the WST analytical process in one of two ways; either from collection by WST Field Technicians or from collection by the client or agency other than WST. This section will address the chain of custody procedures used both outside and inside the laboratory. (Detailed procedures can be found in the Sample Custody SOP).

## 3.1 Field Collection by WST Field Personnel

When WST is contracted by a client to collect samples for analytic testing, and the types of analyses required are determined, the Sample Custodian will assemble the appropriate sample and shipping containers, and add the appropriate preservatives, if necessary. Table 3-1 lists the appropriate containers, preservatives, sample sizes, and holding times for the various analytical parameters tested by WST's laboratory. For all samples, the containers used will be new and pre-cleaned, from an approved vendor.

After the sample is collected, the Field Technician will label the sample containers with the following information:

1. Site name and Client name
2. Location from where the sample was taken
3. Date and time of sampling
4. Whether the sample is a composite or a grab
5. Preservatives added, if appropriate
6. Name of the sampler

When all the appropriate samples have been taken and the sample containers have been properly labeled, the Sample Technician will complete a Chain of Custody Form (See Figure 3-1) by filling in all of the information listed in 1 through 6 above as well as the types of analyses to be performed. The samples will then be packed securely to prevent breakage and with cold packs when required to keep samples cold during shipment or delivery to the WST laboratory. The sampler will then sign the Chain of Custody (COC) Form and retain the pink copy for his/her records. The white, yellow and blue copies will accompany the samples throughout transportation. Each person handling the samples will sign the COC Form and record the time and date of transfer, both when receiving and relinquishing custody of the samples.

## 3.2 Collection from an Outside Agency

When a client or agency contacts WST to perform analytical testing, and the types of analyses to be performed are decided, the Assistant Lab Director and/or Laboratory Project Manager will be the contact person at WST that will: 1) enter the information concerning the client into the Element DataSystem (DataElement), 2) enter information concerning the pricing and project analyses into DataElement, 3) review the project information for scheduling with the extraction manager and analysts, and 4) establish that the turn around time requested by the client can be met by the laboratory. In those situations in which there are additional analyses or changes in the established Work Order, the Project Manager will fill out an Analytical Services Request Form (See Figure 3-2) and submit it to the Assistant Lab Director for review and scheduling. The Assistant Lab Director will then submit the form to the Sample Custodian who will update the appropriate work order.

The Assistant Director or Project Manager will then inform the Sample Custodian of the samples' impending arrival. If WST is to provide the sample containers, the WST contact person will also complete a Sample Container Request Form (See Figure 3-3) and submit it to the Sample Custodian. After comparing the Sample Container Request Form with the Project information, the Sample Custodian will then collect the appropriate type and size containers, and, if required, add preservatives. The containers will then be securely packed into a cooler with a COC Form. The cooler will then be picked up by the client or shipped to the location requested by the client. If requested, a trip blank and/or temperature blank will also be added to the cooler.

## 3.3 Sample Receipt

When non-radiological samples arrive at WST, custody is transferred to the lab via the Lab Custodian. Sample coolers or packages are taken to the Sample Control Room for receipt processing. When radiological samples (as identified by the client, originating location, labeling, or prior notification of Sample Receipt) arrive at WST, custody is transferred to the Radiochemistry Lab for receipt processing. The receipt processing for these sample coolers or packages must be performed in the Radiochemistry Lab.

Non-radiological samples, arriving from a US Army Corps of Engineers remediation site, require a radiological survey of the package or cooler with a Geiger-Mueller radiation detector prior to opening and upon initial opening. The Sample Receipt Custodian will survey the package or cooler. If the level is 100 counts per minute above background as indicated by the meter or if the meter alarms a second time, the Custodian will do the following:

1. Notify the Radiochemistry Lab immediately
2. Proceed no further in handling the package or cooler.
3. Limit movement and contact with objects inside the Sample Control Room to limit the spread of contamination.
4. Secure access to Sample Control Room to minimize the spread of possible contamination.

Radiochemistry Lab supervisor is responsible for surveying the Sample Control Room, the cooler or package, and any personnel in the Sample Control Room for release. If the material indicates radioactivity above acceptable levels, it will be placed under the control of the Radiochemistry Lab. Evaluation of the radiological problem will be performed by the Radiochemistry Lab Manager (RLM). The client is to be immediately notified of the problem and the problem documented as prescribed by the RLM.

Radiological samples are surveyed in the Radiochemistry Lab within three hours of receipt to ensure that radiation and contamination levels are within acceptable limits of transport. The Radioactive Material Shipment Receipt Inspection Form (Figure 3-6) is completed to document the receipt of radiological samples.

Using the Work Order from DataElement (Figure 3-4) and US Army Corps of Engineers Sample Receipt Form (Figure 3-5), all sample shipments will be inspected and findings reported on the appropriate forms for the following items:

1. Check the cooler/package for integrity, dents, crush points, soaked material. A damaged package can indicate possible damage to the samples within.
2. Look for a custody seal or tamper indicators on the cooler/package, identifying, if present, if the seal has been tampered with.
3. Open the sample cooler/package, and verify the Chain of Custody (COC) is present and in a sealed plastic bag. (Applicable for shipments not delivered by the client. In those cases where the client personally delivers samples, the client generally will hand deliver the COC).
4. Review the Chain of Custody to determine the quantity and types of samples sent.
   a. Review the sample analysis requirements for possible sample holding time and/or preservation requirements.
   b. Review the sample matrix for required temperature ranges.

5. Check and record the temperature inside the cooler as required dependent on the samples sent. If thermal preservation requirements are not met, the project manager will be notified, and the client immediately informed (see 5a below).

   a. As determined by the client, new samples will be provided, or analyses will be allowed to occur. In the latter situation, the Case Narrative will include the following statement: *Data is considered as estimated, due to samples received outside thermal preservation requirement.*

Check each sample for the following:

a. The sample container is not cracked, broken, corroded, or leaking.
b. Check the pH of samples requiring preservation. If the pH did not meet the preservation requirement, the sample custodian is authorized to add preservative to a corrected pH value. The addition is to be recorded in the Work Order.
c. Observe samples sent for VOA analysis, checking for air bubbles or headspace.
d. Note if sufficient sample quantity was sent.
e. Confirm the label on each sample corresponds to the information listed on the COC.
f. For aqueous samples submitted for cyanide analysis, interference checks for residual chlorine and sulfides must be performed. If found, it must be noted in the work order.

Any discrepancies noted are documented in the Work Order by checking the appropriate condition box. For sample shipments that are received from US Army Corps of Engineers sites, the USACE Sample Receipt Form also needs to be completed. If an irregularity is noted during receipt inspection, the Sample Custodian is to immediately notify the QA/QC Manager for non-radiological samples, or the Radiochemistry Lab Manager for radiological samples. The QA/QC Manager, Laboratory Project Manager, or the Radiochemistry Lab Manager will contact the client and discuss the irregularity for resolution. The conversation time, date, and contacted person will be recorded on the Work Order printout or USACE Sample Receipt Form.

## 3.4 Custody in the Laboratory

After the samples are inventoried, the Work Order is finalized as each Work Order and its samples are individually logged into DataElement with the following information:

1. A unique sequenced WST sample Work Order number is assigned by DataElement to each Work Order, with each sample and each container having a specific label demarcated alphabetically (e.g. 4C03016-01-A; where, 4 = Year, C = 3rd Month, 03 = Day, 016 = Work Order Sequence, 01 = sample #1, A = Container A);
2. Name of client or name of agency representing the client;
3. Project Number or Site name;
4. Date and time received ;
5. Temperature of Cooler or samples and Turnaround time for the Work Order;
6. Analytical tests to be performed;
7. Shipping method and tracking number if applicable
8. Any comments/notes regarding the Work Order and any irregularities included in conditions are checked;
9. Each sample in the Work Order is assigned its own Work Order sample ID # by DataElement which is used to track the sample discretely;
10. Each individual sample will be assigned a sample ID number which is the Work Order number (see 1. above) followed by a consecutive number, separated by a hyphen (e.g. ---01, -02, etc.);
11. Sample description, matrix, date and time sampled, number and size of containers along with any preservation if applicable are noted; *Sampled by* and *analysis required* are entered along with any sample comments that are only applicable to that individual sample or container.

Labels are then printed for each container for each sample in the Work Order and the labels are affixed to the appropriate container associated with each of the samples. The sample containers are then placed into a sample storage refrigerator or room temperature storage area until the time of analysis. Radiochemistry samples not requiring cooling are stored in the Radiochemistry Lab Sample Storage Area. The Work Order number is then recorded onto the COC and the sample numbers are also recorded on the COC adjacent to the corresponding client or site sample location or description for tracking purposes. The COC is then scanned and incorporated into the Work Order. It can then be reviewed by all laboratory personnel in the COC field of DataElement. The Work Order is printed and the printout is then attached to the white copy of the COC.

NOTE: For radiochemistry samples, only personnel designated by the RSO are allowed to handle the samples. This includes sample inventory, labeling and storage. The Sample Custodian will only receive the COC for logging the samples into the LIMS database.

The COC and Work Order printout are then submitted to the Data Coordinator for reporting and filing.

The Element DataSystem LIMS system will be used to track the samples and all the data generated from the analytical tests performed on these samples throughout the analytical process. Each analytical section has access to the LIMS system and, on a daily basis, they generate a backlog report that shows them which samples require what analyses, when the results are due and when the sample holding time expires. The backlog report is then used by the technicians and/or analysts, in conjunction with the Extraction Lab Supervisor, Radiochemistry Analyst and/or RLM, and/or Assistant Lab Director to prioritize sample extraction and analysis.

When an analysis on a sample has been completed, the analyst will enter the results, either manually or by automatic computer file transfer using DataTool, into the LIMS system under the appropriate batch, sequence or Work Order number for that sample. The data is then submitted to the QA/QC Department for review.

## 3.5 Sample Disposal

Unless specifically requested by the client, samples are usually held for 30 days after the issuance of the final report. The prospect of additional analyses on a sample must be viewed in the context of the recommended holding times.

Sample disposal occurs in one of two ways. The samples will either be sent back to the point of origination (i.e.,client or site) or eliminated as waste. Samples that are returned to the point of origin will be packed securely in a cooler. A list of Work Order numbers contained within the cooler will be generated, signed and dated by the Sample Custodian or RLM. A photocopy of the signed and dated list will be placed in the cooler and the cooler shipped back to the site. The original copy will be placed into the Sample Custodian's or RLM's disposal file. The date of return will be noted for each sample in the Sample Disposal Logbook

Samples which are eliminated as waste will be disposed of in appropriate, clearly labeled waste containers, based on the samples' matrix and the characteristics and properties of the waste. These characteristics and properties will be determined by a review of the analytical data and history of the samples. Care must be exercised in sample disposal so chemically incompatible wastes are not mixed together. Each disposal container is labeled to identify, in general terms, the type of material that was placed in each container. When disposal is complete, the person disposing of the containers will sign and date the drum labels. Samples that were found to be innocuous will be disposed of as either non-hazardous waste, or if aqueous, by pouring down the

drain. When a sample is disposed the date of laboratory disposal will be recorded in the Sample Disposal Log Book.

3.6 Sample Security

In order to maintain the integrity and validity of the sample(s) within the laboratory, all samples are maintained under locked storage or in limited access areas under the jurisdiction of the Sample Custodian and/or Radiochemistry Lab Manager. Release of samples to laboratory personnel necessitates internal chain of custody procedures. Internal chain-of-custody is tracked by the Sample Custodian via a notebook. Entered into the notebook is WST sample ID number, the date and time the sample is relinquished, the name of the person to whom the sample was given(responsible party), the date and time the sample is returned, and the Sample Custodian's initials. The responsible party is required to maintain the sample(s) in their physical possession or view at all times. The Sample Custodian, Assistant Lab Director, or QA/QC Officer may confiscate unattended samples, return them to storage, notify the appropriate supervisor, and reprimand the responsible party. Since radiological samples are stored in the Radiochemistry Lab Storage Area, they do not need to be logged in and out, but are required to be stored in the same designated area when not being manipulated or used.

CHAIN OF CUSTODY

REPORT TO:

CONTACT

PH. # ( )

FAX # ( )

BILL TO:

PO#

PROJECT DESCRIPTION

SAMPLER SIGNATURE

TECHNOLOGY

**Waste Stream Technology Inc.**
302 Grote Street, Buffalo, NY 14207
(716) 876-5290 • FAX (716) 876-2412

GROUP # _____

DUE DATE _____

TURN AROUND TIME: _____

QUOTATION NUMBER: _____

ARE SPECIAL DETECTION LIMITS REQUIRED:
YES NO
If yes please attach requirements.

Is a QC Package required:
YES NO
If yes please attach requirements

DW DRINKING WATER
GW GROUND WATER
SW SURFACE WATER
WW WASTE WATER
O OIL
SL SLUDGE
SO SOIL
S SOLID
W WIPE
OTHER

ANALYSES TO BE PERFORMED

| SAMPLE I.D. | DATE SAMPLED | TIME OF SAMPLING | SAMPLE TYPE | TOTAL NO. OF CONTAINERS | | | | | | | | | | | | TYPE OF CONTAINER/ COMMENTS: | OFFICE USE ONLY WST. I.D. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | |

REMARKS:

| RELINQUISHED BY: | DATE: / / | TIME: | RECEIVED BY: | DATE: / / | TIME: |
|---|---|---|---|---|---|
| RELINQUISHED BY: | DATE: / / | TIME: | RECEIVED BY: | DATE: / / | TIME: |

Figure 3-1

Figure 3-2

WASTE STREAM TECHNOLOGY

Waste Stream Technology Inc.
302 Grote Street
Buffalo, NY 14207

# ANALYTICAL SERVICES REQUEST FORM

Request Taken By _____ Date Requested _____

Client _____ Telephone _____

Client Contact _____ Fax _____

Address _____

_____

Start Date _____ P.O. # _____

| Lab/P.O. # | Number of Samples | Matrix | Analytical Parameters | Turnaround Time (Days) | Quoted Price |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Sample Containers Required?

_____ NO _____ YES (Please Complete Sample Container Request Form)

Special Instructions _____

Laboratory Use Only: Sample Group # _____

Figure 3-3

# WASTE STREAM TECHNOLOGY INC.
## SAMPLE CONTAINER REQUEST FORM

Requested by: _____ Date requested: _____

Job number: _____

Shipping address: _____

_____

_____

Attention to: _____

Date needed by: _____

| Amount | Type | Size | Preservation | Analytic Test | Expected Sampling date |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
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| | | | | | |
| | | | | | |
| | | | | | |

Type: Glass or HDPE

WST received: _____

Date sent/initials: _____

Courier/Shipping No.: _____

WORK ORDER

Printed: 10/20/2004 8:45:48

**4J20001**

# Waste Stream Technology Inc.

C[redacted]nt: [redacted]
[redacted]ct: Daily Samples

Project Manager: Dan Vollmer
Project Number: [redacted]

**Report To:**
[redacted]
Phone: [redacted]
Fax: [redacted]

**Invoice To:**
[redacted]
Phone : [redacted]
Fax: [redacted]

| | | | |
|---|---|---|---|
| Date Due: | 10/25/04 17:00 (3 day TAT) | Date Received: | 10/20/04 07:50 |
| Received By: | Kevin Burke | Date Logged In: | 10/20/04 08:41 |
| Logged In By: | Kevin Burke | Tracking No.: | |
| Shipped By: | Lab Pick-up | Samples Received at: | 17°C |

| | | | |
|---|---|---|---|
| Temp > 6.0 | No | Sample container received broken | No |
| Preserved sample volume pH out of ran | No | Sample label incomplete/did not match COC | No |
| Number of containers did not match CC | No | Geiger counter detected radioactivity | No |
| Cyanide interference check positive | No | Insufficient volume received to run all analyse | No |
| Bubbles present in VOA container | No | COC not signed/filled out properly/sealed & t | No |
| Custody seals not present/intact/signed | No | | |

| Analysis | Due | TAT | Expires | Comments |
|---|---|---|---|---|
| **[redacted]J20001-01 UO 28462-5 [Oil] Sampled 10/19/04 00:00 Eastern** | | | | |
| PCBs by 8082 | 10/20/04 16:00 | 0 | 11/02/04 00:00 | |
| **[redacted]J20[redacted]02 UO 28462-8 [Oil] Sampled 10/19/04 00:00 Eastern** | | | | |
| PCBs by 8082 | 10/20/04 16:00 | 0 | 11/02/04 00:00 | |
| **[redacted]J20001-03 SE 28594 [Oil] Sampled 10/19/04 00:00 Eastern** | | | | |
| PCBs by 8082 | 10/20/04 16:00 | 0 | 11/02/04 00:00 | |
| **[redacted]J20001-04 SE 28595 [Oil] Sampled 10/19/04 00:00 Eastern** | | | | |
| PCBs by 8082 | 10/20/04 16:00 | 0 | 11/02/04 00:00 | |
| **[redacted]J20001-05 SE 28596 [Oil] Sampled 10/19/04 00:00 Eastern** | | | | |
| PCBs by 8082 | 10/20/04 16:00 | 0 | 11/02/04 00:00 | |
| **[redacted]J20001-06 CO 28587 [Oil] Sampled 10/19/04 00:00 Eastern** | | | | |
| PCBs by 8082 | 10/25/04 15:00 | 3 | 11/02/04 00:00 | |

**[redacted]H Check:**

K. Burke — Review 1 By
10/20/04 — Date
[illegible] — Review 2 By

# FIGURE 3-5

## Army Corp. of Engineers Sample Receipt Form

LIMS # _____ No. of Coolers _____

MRD Cooler # _____ Contract Cooler _____

PROJECT: _____ Date Received: _____

USE OTHER SIDE OF THIS FORM TO NOTE DETAILS CONCERNING CHECK-IN PROBLEMS.

A. PRELIMINARY EXAMINATION PHASE: Date cooler was opened:
by (sign): _____ (print): _____

1. Did cooler come with shipping slip (airbill ect): YES NO
   If yes enter carrier name & airbill number here: _____
2. Were custody seals on outside of cooler? YES NO
   How many, where, date, time: _____
3. Were custody seals unbroken and intact at the date and time of arrival? YES NO
4. Did you screen samples for radioactivity using a Geiger counter? YES NO
5. Were custody papers sealed in a plastic bag & taped inside to the lid? YES NO
6. Were custody papers filled out properly (ink, signed, ect)? YES NO
7. Did you sign the custody papers in the appropriate places? YES NO
8. Was project identifiable from the custody forms? YES NO
   If YES, enter project name at the top of this form.
9. If required, was enough ice used? Type: YES NO
10. Have designated person initial here to acknowledge receipt of cooler: _____ (date) _____

B. LOG-IN PHASE: Date samples were logged-in:
by (sign): _____ (print): _____

11. Describe type of packing in cooler: _____
12. Were all bottles sealed in separate plastic bags? YES NO
13. Did all bottles arrive unbroken and were labels in good condition? YES NO
14. Were all labels complete(ID, date, time, signature, preservation)? YES NO
15. Did all bottle labels agree with custody papers? YES NO
16. Were correct containers used for the tests indicated? YES NO
17. Were correct preservatives added to samples? YES NO
18. Was a sufficient amount of sample sent for tests indicated? YES NO
19. Were bubbles absent in VOA samples? If NO, list by sample #: YES NO
20. Was the project manager called and status discussed? YES NO
    If YES, give details on the back of this form.
21. Who was called? _____ Date: _____

By whom? _____

WASTE STREAM TECHNOLOGY

# Radioactive Material Shipment Receipt Inspection Form

| Receipt | Print Name | Initial | Date Time | Reviewed & Approved |
|---|---|---|---|---|
| Shipper Site and Sender Name | | | | |
| Shipping Papers Carrier, Method, and ID | Carrier | Method | ID | |
| Label on Package | | Isotope(s) and Activity | | |
| Inspection Outer | Acceptable | Yes | No | Damage Noted |
| Type of Package Identify type used | | Type of Packaging Identify materials used | | |
| Inspection Inner | Acceptable | Yes | No | Damage Noted |

| Contents (Number per Matrix) | SO | AF | BA | GW | DW | S | Other |
|---|---|---|---|---|---|---|---|

**Radiation Survey**
Survey to be done within 3 hrs of receipt

| Survey meter | E600 | E600 | ASP2 | | XLB5 | GA/GB- STF and Batch No. | |
|---|---|---|---|---|---|---|---|
| Serial No. | 1698 | 1699 | 0526 | | | | |
| Calibration √ OK | | | | | | | |
| Daily √ OK | | | | | | | |

**Shipment and Packing Materials Survey Results**
Attach Survey Map and/or Activity Report as needed

| Record Actual Reading OR α <220, βγ <1000, <0.05mR | Outer Shipping Package Survey Results Record the highest reading. ANY result above stated limits requires documentation with a survey map. | | | | | Inner Shipping Package Survey Results Record the highest reading. ANY result above stated limits requires documentation with a survey map. Highest Readings off ANY ONE inner Package | | | |
|---|---|---|---|---|---|---|---|---|---|
| Results | BKGD. | @ 1 m | TOP | SIDE | BOTTOM | Results | TOP | SIDE | BOTTOM |
| mR/hr | | | | | | mR/hr | | | |
| dpm α / 100cm² | | | | | | dpm α / 100cm² | | | |
| dpm βγ / 100cm² | | | | | | dpm βγ / 100cm² | | | |

| Material | mR/hr | dpm α / 100cm² | dpm βγ / 100cm² | Disposition |
|---|---|---|---|---|
| Package Container | | | | |
| Plastic Bag (COC bag) | | | | |
| Packing Material | | | | |
| | | | | |
| | | | | |

**Notifications**

| | |
|---|---|
| **CRITERIA:**<br>Radiation level @ 1 meter ≥10 mRem/hr<br>Radiation level on contact ≥ 200 mRem/hr<br>Removable Alpha/Uranium series contamination ≥ 220 dpm /100 cm²<br>Removable Beta/Gamma contamination ≥ 2200 dpm /100 cm² | IF Yes to ANY notification CRITERIA,<br>THEN Contact NYSDOL RHU – (518) 457-1202<br>and as directed US DOT (800) 424-8802<br>Contact appropriate Carrier<br>FedEx (800/ 463-3339) UPS (800/744-7877)] |
| **CRITERIA:**<br>Radiation or contamination levels exceed DOT labeling requirements. | IF Yes to ANY notification CRITERIA,<br>THEN Contact Site Shipping Coordinator |

| Notification Required | Y / N | Notification By | Contact Person /Organization / Date and Time |
|---|---|---|---|
| Remarks | | | |

Table 3-1.1

## RECOMMENDATION FOR SAMPLING AND PRESERVATION OF SAMPLES ACCORDING TO MEASUREMENT[1]

| Measurement | Vol. Req. (ml) | Container[2] | Preservative[3,4] | Holding Time[5] |
|---|---|---|---|---|
| 100 Physical Properties | | | | |
| Color | 50 | P,G | Cool, 4°C | 48 Hrs. |
| Conductance | 100 | P,G | Cool, 4°C | 28 Days |
| Hardness | 100 | P,G | $HNO_3$ to pH < 2 | 6 Mos. |
| Odor | 200 | G only | Cool, 4°C | 24 Hrs. |
| pH | 25 | P,G | None Req. | Analyze Immediately |
| Residue | | | | |
| Filterable | 100 | P,G | Cool, 4°C | 7 Days |
| Non-Filterable | 100 | P,G | Cool, 4°C | 7 Days |
| Total | 100 | P,G | Cool, 4°C | 7 Days |
| Volatile | 100 | P,G | Cool, 4°C | 7 Days |
| Settleable Matter | 1000 | P,G | Cool, 4°C | 48 Hrs. |
| Temperature | 1000 | P,G | None Req. | Analyze Immediately |
| Turbidity | 100 | P,G | Cool, 4°C | 48 Hrs. |
| 200 Metals | | | | |
| Dissolved | 200 | P,G | Filter on site $HNO_3$ to pH < 2 | 6 Mos. |
| Suspended | 200 | | Filter on site | 6 Mos.[8] |
| Total | 100 | P,G | $HNO_3$ to pH < 2 | 6 Mos. |

# Table 3-1.2

| Measurement | Vol. Req. (ml) | Container[2] | Preservative[3,4] | Holding Time[5] |
|---|---|---|---|---|
| Chromium$^{+6}$ | 200 | P,G | Cool, 4°C | 24 Hrs. |
| Mercury | | | | |
| Dissolved | 100 | P,G | Filter<br>$HNO_3$ to pH < 2 | 28 Days |
| Total | 100 | P,G | $HNO_3$ to pH < 2 | 28 Days |
| 300 Inorganics, Non-Metallics | | | | |
| Acidity | 100 | P,G | Cool, 4°C | 14 Days |
| Alkalinity | 100 | P,G | Cool, 4°C | 14 Days |
| Bromide | 100 | P,G | None Req. | 28 Days |
| Chloride | 50 | P,G | None Req. | 28 Days |
| Chlorine | 200 | P,G | None Req. | Analyze Immediately |
| Cyanides | 500 | P,G | Cool, 4°C<br>NaOH to pH >12<br>0.6g ascorbic acid[6] | 14 Days[7] |
| Fluoride | 300 | P,G | None Req. | 28 Days |
| Iodide | 100 | P,G | Cool, 4°C | 24 Hrs. |
| Nitrogen | | | | |
| Ammonia | 400 | P,G | Cool, 4°C<br>$H_2SO_4$ to pH < 2 | 28 Days |
| Kjeldahl, Total | 500 | P,G | Cool, 4°C<br>$H_2SO_4$ to pH < 2 | 28 Days |
| Nitrate plus Nitrite | 100 | P,G | Cool, 4°C<br>$H_2SO_4$ to pH < 2 | 28 Days |
| Nitrate[9] | 100 | P,G | Cool, 4°C | 48 Hrs. |
| Nitrite | 50 | P,G | Cool, 4°C | 48 Hrs. |

## Table 3-1.3

| Measurement | Vol. Req. (ml) | Container[2] | Preservative[3,4] | Holding Time[5] |
|---|---|---|---|---|
| Dissolved Oxygen | | | | |
| Probe | 300 | G bottle and top | None Req. | Analyze Immediately |
| Winkler | 300 | G bottle and top | Fix on site and store in dark | 8 Hours |
| Phosphorus | | | | |
| Ortho-phosphate, Dissolved | 50 | P,G | Filter on site Cool, 4°C | 48 Hrs. |
| Hydrolyzable | 50 | P,G | Cool, 4°C $H_2SO_4$ to pH < 2 | 28 Days |
| Total | 50 | P,G | Cool, 4°C $H_2SO_4$ to pH < 2 | 28 Days |
| Total, Dissolved | 50 | P,G | Filter on site Cool, 4°C $H_2SO_4$ to pH < 2 | 24 Hrs. |
| Silica | 50 | P only | Cool, 4°C | 28 Days |
| Sulfate | 50 | P,G | Cool, 4°C | 28 Days |
| Sulfide | 500 | P,G | Cool, 4°C add 2 ml zinc acetate plus NaOH to pH > 9 | 7 Days |
| Sulfite | 50 | P,G | None Req. | Analyze Immediately |
| 400 Organics | | | | |
| BOD | 1000 | P,G | Cool, 4°C | 48 Hrs. |
| COD | 50 | P,G | Cool, 4°C $H_2SO_4$ to pH < 2 | 28 Days |
| Oil & Grease | 1000 | G only | Cool, 4°C $H_2SO_4$ to pH < 2 | 28 Days |
| Organic carbon | 25 | P,G | Cool, 4°C $H_2SO_4$ or HCl to pH < 2 | 28 Days |
| Phenolics | 500 | G only | Cool, 4°C $H_2SO_4$ to pH < 2 | 28 Days |

Table 1

SAMPLE CONTAINERS / PRESERVATIVES / HOLDING TIMES FOR WATER & SOLID / WASTE SAMPLES

| ANALYSIS | SAMPLE VOLUME/CONTAINER | HOLDING TIME | PRESERVATIVE |
|---|---|---|---|
| VOCs | | | |
| water | 2, 40 mL GT | 14 days (d) to Analysis | Cool 4° C. Aqueous samples for Aromatic compounds, HCl to pH < 2. Aqueous samples for 524.2, 0.25mg ascorbic acid, then HCl to pH < 2. |
| soil | 2, 2 oz GT or 2, 5g Encore Sampler | 14 d, 48 hours for Encore transfers | |
| soil | 2, 5g in 40 mL w/Sodium Bisulfate* | 14 d to Analysis | |
| TCLP | 2, 4 oz GT | 14 d to TCLP Extraction; 14 d to Analysis | |
| SVOCs | | | |
| water | 1, 1 L AG | 7d Extraction; 40d to Analysis | Cool 4° C. (10% thiosulfate for water samples with residual cholrine) |
| soil | 1, 8 oz G | 14d Extaction; 40d to Analysis | |
| TCLP | 1, 16 oz G | 14d to TCLP; 7d to prep Extraction; 40d to Analysis | |
| Metals | | | |
| water | 1, 500 mL P | 180d to Extraction | Cool 4° C. ($HNO_3$ pH < 2 for Aqueous) |
| soil | 1, 16 oz P,G | 180d to Extraction | |
| TCLP | 1, 16 oz P,G | 180d to Extraction; 180d to Analysis | |
| Mercury - Water | 1, 500 mL P,G | 28d to Analysis | Cool 4° C. ($HNO_3$ pH < 2 for Aqueous) |
| Mercury - Soil | 1, 16 oz P,G | 28d to Analysis | |
| Mercury - TCLP | | 28d to Extraction; 28d to Analysis | |
| Chromium VI - Water | 500 mL P | 24 hours | Cool 4° C. |
| Chromium VI - Soil | 1, 16 oz P,G | 14d to Alkaline Digestion, 24 hours to Anal | |
| PCBs | | | |
| water | 1, 1 L AG | 7d to Extraction; 40d to Analysis | Cool 4° C (water & soil only) |
| soil; oil; wipes | 1, 8 oz G; 1, 1oz; 1, wipe | 14d to Extraction; 40d to Analysis | |
| Pesticides | | | |
| water | 1, 1 L AG | 7d Extraction; 40d Anal | Cool 4° C. pH 5-9, (0.008% $Na_2S_2O_3$ for Aqueous samples with residual chlorine) |
| soil | 1, 8 oz G | 14d Extraction; 40d Anal | |
| TCLP | 1, 16 oz G | 14d TCLP; 7d prep Extraction; 40d to Anal | |
| Herbicides | | | |
| water | 1, 1 L AG | 7d Extraction; 40d Anal | Cool 4° C. (0.008% $Na_2S_2O_3$ for Aqueous samples with residual chlorine) |
| soil | 1, 8 oz G | 14d Extraction; 40d Anal | |
| TCLP | 1, 16 oz G | 14 TCLP; 7d prep Extraction; 40d to Anal | |
| RCRA Char | | | |
| Ignitability | 1, 16 oz P,G | 7 d | |
| Corrosivity, pH | 1, 16 oz P,G | 14 d | Cool 4° C. |
| Reactivity | 1, 8 oz P,G | 7 d | |

G = Clear Glass; AG = Amber Glass; P = Plastic; T = Teflon Lined Lid/SEPTA

*For soil VOCs collected in Encore samplers or preserved vials, two additional 2 oz jars should be collected for dry weight determination and in case the sample requires methanol extraction.

# ANALYTICAL PROCEDURES

## 4.1 Statement of Procedures

All analyses performed at Waste Stream Technology Inc. are approved methods taken from the following sources: (A complete listing of reference methods is found in Table 4-4).

EPA-600/4-79-020, "Method for Chemical Analyses of Water and Wastes", Revised March 1983.

Federal Register, EPA 40 CFR Part 136, "Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act", Revised July, 1991.

Federal Register, EPA 40 CFR Part 268, Appendix I, Revised June 1990.

EPA SW-846, "Test Methods for Evaluating Solid Wastes", 3rd Edition, through Update III, December, 1996.

Standard Methods for the Examination of Water and Wastewater, 20th edition.

HASL-300, 28th Edition, Feb. 97, Environmental Measurements Laboratory, US Department of Energy

Radiochemical Analytical Procedures for Analysis of Environmental Samples, EMSL LV053917, Mar. 97, Environmental Monitoring and Support Laboratory, US Environmental Protection Agency

Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600 4-80-032, Aug. 80, Environmental Monitoring and Support Laboratory, US Environmental Protection Agency

Radiochemistry Procedures Manual, EPA 520/5-84-006, Jun. 84, Eastern Environmental Radiation Facility, US Environmental Protection Agency

Appendix 5 contains copies of the certifications currently held by the laboratory along with the list of methods under which the laboratory performs its accredited testing.

## 4.2 Quality Assurance Objectives

The objective of the Quality Assurance and Quality Control plan at the WST laboratory is to generate analytical data of known, documented quality that is in compliance with established regulatory guidelines and protocols. This is accomplished through

a system of statistical measurement and documentation of accuracy, precision, and comparability of each analytical assay performed. These three parameters are established through a Quality Control (QC) program, a system of operations undertaken in the laboratory to ensure that the data produced is generated within known probability limits of accuracy and precision, and a Quality Assurance (QA) program, a system whereby the laboratory can assure clients, government agencies, and accrediting bodies, that the laboratory is generating data of proven and known quality. The latter system is accomplished through the QC program, by the analysis of external quality control and proficiency test samples, through the use of accepted analytical testing procedures and through external laboratory audits.

### 4.2.1 Accuracy

By definition, accuracy measures the ability of an analytical procedure to determine the true concentration of one or more constituents in a sample matrix. Initially, accuracy is determined by the analysis of a minimum of four laboratory control samples, blank samples which have been spiked with a known concentration of a reference standard. This standard contains all the analytes appropriate to the analytical procedure and will be prepared from a source which is independent from the source used to prepare the calibration standards. The four laboratory control samples are taken through each step of the entire analytical procedure. The spiked analytes are then recovered during analysis and the mean and standard deviation of the four recoveries for each analyte are calculated and compared to the accuracy limits published in the associated U.S. Environmental Protection Agency (EPA) method.

When the accuracy of the recoveries of each constituent of the analytical procedure have met the EPA criteria, accuracy will continue to be assessed by the analysis of one laboratory control sample for every ten samples analyzed. When a total of twenty laboratory control samples have been analyzed, the mean (X) and standard deviation (SD) of the percent recoveries of each analyte will be calculated and the upper and lower warning and control limits determined by:

Upper Warning Limit = X + 2SD
Upper Control Limit = X + 3SD

Lower Warning Limit = X - 2SD
Lower Control Limit = X - 3SD

All subsequent laboratory control sample analyses of will then be compared to the upper and lower control limits to track the accuracy of the procedure (See Figure 4-1 for Accuracy Control Chart).

### 4.2.2 Precision

By definition, precision is a measure of the ability of an analytical procedure to reproduce data. Precision differs from accuracy in that an analytical procedure can generate reproducible data yet still be inaccurate. Therefore, both accuracy and precision need to be assessed as singular entities. The precision of a procedure is determined by comparison of results from duplicate sample analyses (or matrix spike and matrix spike duplicate sample analyses). One sample per every ten samples (or for MS and MSD samples one per twenty) will be analyzed in duplicate and the relative percent difference (RPD) from the duplicate analyses will be calculated for each analyte measured by the procedure. When twenty RPD's for each analyte have been calculated, the mean of the twenty RPD's will be used to develop the precision limits for each analyte. The precision warning and control limits are calculated using the average RPD times 2.456 and 3.270, respectively. Subsequent duplicate analyses will then be assessed for acceptability based on these precision warning and control limits. (Figure 4-2; Precision Control Chart).

It should be noted that accuracy and precision are determined using the entire analytical procedure including extraction of the analytes from the sample matrix. Many methods use the same mode of analysis but have multiple extraction procedures depending on the matrix and/or the concentration of the analytes expected to be found in the matrix. In these cases, accuracy and precision must be established for each type of extraction procedure.

### 4.2.3 Comparability

Analytical results of the tests on a given compound must be comparable to test results performed by a different laboratory on like compounds. To obtain this goal, precision and accuracy of each analytical procedure must be compared to and fall within the acceptable limits prescribed by the EPA in their methodologies and protocols.

Comparability is also accomplished through that analysis of external QC samples and proficiency test samples, since the results from the analyses of these samples are assessed through inter-laboratory comparison.

4.2.4 Completeness

Completeness is a measure of the amount of data obtained from an analytical system compared to the total amount expected to be obtained under normal conditions. A ninety-five percent completeness figure is usually required for a particular analysis and overall project objective.

4.2.5 Reagents, Solvents, Water Glassware, and Gases

All reagents used within the laboratory for sample and standard preparation meet the American Chemical Society (analytical reagent grade) standards or better, if the procedure requires a higher grade of purity. Solvents used for sample extraction and standard preparation are of gas chromatographic quality. All chemicals, when received by the laboratory, will be labeled with the date of receipt, the date the container was opened and the initials of who opened it. A chemical logbook is maintained which lists the reagent, source, lot number, and date in service.

Reagents, when prepared, will be logged into the Element DataSystem (DataElement) which will assign an ID number to the reagent. The reagent bottle will then be labeled as to the date of preparation and expiration, the composition and concentration of the reagent, the reagent ID number and the initials of the preparer. In addition to analyzing reagent and method blanks to check for reagent and solvent contamination, reagents and solvents are continuously observed for signs of degradation such as change of color, precipitation, or mold formation.

All water used in the laboratory for preparation of reagents and rinsing of glassware is ASTM Type II water. This is produced by passing tap water through two mixed bed deionization tanks and then passing the deionized water upward through a high capacity activated carbon filter. In addition, 18 megaohm water is produced through a Milli-Q high purity water system. The conductivity of this system is measured and recorded daily.

Disposable glassware will be used whenever possible within an analytical procedure to reduce the possibility of sample cross-contamination. When non-disposable glassware is used, it will be thoroughly cleaned and baked using a cleaning protocol established by WST (refer to WST Standard Operating Procedure M-CLEAN-01-XX).

Gases which are used in sample concentration and gas chromatography analyses are of high and ultrahigh purity and they are further purified by the use of in-line gas filtration units.

## 4.3 Quality Assurance and Quality Control

### 4.3.1 Standard Preparation

Every assay will require, at a minimum, a calibration standard or a quality control check standard. Other analyses will require initial calibration, continuing calibration and laboratory control sample standards, and still others will also require matrix spike, surrogate and internal standards.

A calibration standard is made by the appropriate dilution of a pure substance, the purity of which is traceable to a primary standard. Because of the high sensitivity of many analytical instruments, the calibration standard is an extremely dilute version of the pure compound. Because of the high dilution required, in order to be within the linear range of the instrument, the preparation of the calibration standard is frequently made by serial dilution rather than in a single step. In order to provide standard solutions at sufficiently low concentrations, a minuscule amount of the pure substance will be required, the measurement of which is subject to extreme error. Thus, it is preferable to deal with dilution errors, rather than with the large error associated with the measurement of a small amount of pure substance.

The initial pure standard is usually obtained as either a pure material or already in solution prepared as a certified solution of a given concentration of the pure compound or compounds. In preparing stock solutions and working solutions of the calibration standard, great care must be exercised in measuring weights and volumes as accurately as possible, since all analyses following the calibration will be based on the accuracy of the calibration, and the accuracy of any subsequent data ultimately cannot be any better than that of the calibration curve.

Each standard also has a definite lifetime in which it can be used. Standard holding times are listed in Table 4-1 and it is the responsibility of the analyst to assure that all standards used are within the standard solution holding time. It should be noted, however, that the holding times for stock standard solutions should only be used as a guide and that in preparing or using working standard solutions, the analyst must compare each standard run with the previous standard runs to assure that response factors fall within the historically accepted range.

For each standard solution that is received or prepared, accurate records will be kept in DataElement so that traceability can be maintained. DataElement will assign an ID number to each standard that is entered. For vendor prepared solutions the following information will be entered into DataElement:

1. Description of Standard
2. Date of preparation
3. Date of expiration (See holding time guide)
4. The name of each compound in the standard and the concentration of each compound in the standard
5. The solvent the standard is in
6. The volume of the standard received and, if multiple containers of the same lot are received, the number of containers (# of vials)
7. The concentration units of the standard
8. For vendor prepared standards, the lot number and catalog number of the standard should be entered into the comment section along with the name of the vendor.
9. Each container should then be labeled with the DataElement assigned ID number.

When preparing secondary stock or working solutions (e.g., calibration, continuing calibration, matrix spike, and surrogate standards) it will be the analyst's responsibility to make sure the Primary Stock solution is still viable (DataElement will automatically flag expired standards). The preparation of these standards will also be entered into DataElement. DataElement will assign an ID number to each standard that is entered. The following information will be recorded:

1. Description of the standard
2. Date of preparation
3. Date of expiration
4. Standard identification number of the primary or secondary stock standard used to prepare the working standard and the volume of standard used.
5. Final volume of the diluted standard
6. Name and lot number of the solvent used to prepare the diluted standard
7. Final concentration of each compound in the diluted standard (automatically calculated by DataElement)
8. Name of the analyst preparing the standard.

The standard container must then be labeled with the assigned ID number, the standard description, the preparation date, expiration date and the name of the preparation solvent.

All standards and standard solutions will be maintained in appropriate containers as stated in the method SOP.

Standards and standard solutions will typically be stored in the refrigerator at 4°C, or freezer at -10°C. However, specific storage details will be listed in the SOP for the analysis in which the standard is to be used (e.g. standards for metal analysis, including radioisotopes, are stored at room

temperature). Standards and standard solutions will also be stored in an area not used for storage of samples and sample extracts to prevent any possibility of cross-contamination.

### 4.3.2 Determination of Detection and Quantitation Limits

Most of the assays employed by WST require knowledge of detection limits in order to be able to bracket analytical results that are obtained. Several such limits exist, and since these limits can be defined in various ways, the definition and determination which we will use is given below.

#### 4.3.2.1 Instrument Detection Limit

In simple terms, the instrument detection limit (IDL) is the smallest quantity of material the instrument can reliably detect. The manner in which the IDL is determined is instrument dependent. For GC and GC/MS analyses, the IDL is determined by the analysis of seven replicate standards at a concentration of 3 times to 5 times a concentration that yields a definitive, measurable signal. The IDL is calculated by multiplying by 3, the standard deviation obtained from the seven replicate measurements.

For ICP analysis, the IDL is the concentration equivalent to the analyte signal which is equal to 3 times the standard deviation of a series of ten replicate measurements of the calibration blank signal at the same wavelength. The calculation for standard deviation is shown below:

$$SD = \text{Square Root of } \frac{\Sigma\,[\,x\,(i) - X\,(m)]^2}{(n-1)}$$

where, x (i) = The value of the i'th reading of the set of replicate measurements

X (m) = The mean value of the replicates

n = The number of replicate measurements

The mean, X (m), is determined as follows:

$$X\,(m) = \frac{\Sigma\,x\,(i)}{n}$$

For radiochemical parameters, detection limits will be determined according to EPA Method 600/4-80-032 (NIPDWR). Detection limits may also be conducted according to the Nuclear Regulatory Commission (NRC) Method 4.14 or American National Standard

Institute (ANSI) 13.30.

In order for the results to be useful, the standard chosen to obtain the detection limit should be such that the mean of its reading, X (m), is slightly greater than 3SD. This may require some trial and error initially when an IDL is determined for the first time on an instrument.

Although the determination of IDLs in not a requirement, IDL determinations may be desirable when the instrument is initially set up for analysis or if the instrument has undergone extensive maintenance. Records of performing the IDL will be maintained in the analysis notebook.

4.3.2.2 Method Detection Limit

The method detection limit is obtained in a manner very similar to that of the IDL. The principle difference is that in determining the method detection limit (MDL), the analyte(s) is subjected to the entire analytical protocol for the specific method that is being employed. This includes every step, from extraction to final analysis.

To determine the MDL, seven replicates of the appropriate volume of Type II water or, for soils, a clean solid matrix are spiked with a known amount of the analyte(s). The amount that is being added is the same for all seven replicates, and should be at least one to five times the estimated MDL for reagent water matrix and one to ten times the estimated MDL for clean solid sample matrices. The seven replicates are subject to the same extraction and analytical procedures as a sample would be, and the concentrations of the analytes of interest are measured. The MDL is defined as the standard deviation of seven readings multiplied by the student t-test at a 99%, single-sided confidence interval (t99) using n-1 degrees of freedom (df). The calculation of the MDL should be done using the same units as would be reported for a sample.

The equation that applies to the calculation of the MDL is:

MDL = SD (t99[1-sided];df=6); or SD x 3.143

where;

MDL = Method detection limit, in units of weight/ volume or weight/weight (i.e.,µg/L or µg/kg). Refer to 40 CFR, Part 136, Appendix B.

SD = The standard deviation of the seven readings from the mean, in units of weight or concentration

The validity of the MDL determination is verified per CFR

Requirements by comparing the analyte values to the calculated MDL. If the analyte values are below the calculated MDL or greater than ten (10) times the calculated MDL, an unacceptable bias may be introduced and the MDL cannot be reported.

The method detection limit will be determined for all analytes associated with the method prior to the analyses of samples by the method and again on an annual basis. Alternatively, the MDLs can then be verified on a quarterly basis through the analysis of a 2 time MDL check sample. This sample is taken through the same process as the initial MDL samples. If the analytes in the 2 times MDL check sample are detected, the MDLs are considered verified. The MDL study will need to be repeated if the analytes in the 2 times MDL check sample are not detected. A 2 times MDL check sample should also be analyzed immediately after an instrument undergoes a major repair or modification. If the analytes in the 2 times MDL check sample are detected, there is no need to perform a new MDL study.

However, if the sample preparation or extraction method is modified, the method detection limits must be determined through a complete MDL study.

#### 4.3.2.3 Method Reporting (Quantitation) Limits

The method reporting (quantitation) limit (MRL) is defined as the concentration of the lowest initial calibration standard. The low standard concentration should be three to five times the MDL for water matrices or five to ten times the MDL for solid matrices.

#### 4.3.2.4 Documentation of Detection Limits

Whenever IDLs, and MDLs are determined, the results will be maintained by the analyst based on the method used for determining the analytes of interest. The detection limit spreadsheet must include the analysis and preparation method references, the name of the associated laboratory SOP, preparation and analysis dates, the applicable matrix, the concentration used for the MDL study, the type of detection limit (IDL or MDL), the result obtained for each analyte in terms of

concentration units for each of the seven MDL samples, the average, standard deviation, and calculated MDL, the student t value used, and the name of the analyst who performed the determination.

A copy of all detection limit determinations will also be submitted to the QA/QC Department for review and approval.

4.3.2.5 Minimum Detectable Activity (Radiochemistry Analyses)

Minimum Detectable Activity (MDA) is the lowest amount of activity/specific activity within a given confidence level that can be assuredly measured by the counting system based on the parameters of background count rate, sample count rate, length of counting time, chemical yield, and mass of the sample. The applied MDA for each analysis is set at 10% of the action level of the analysis at a minimum. This is an internally applied level. Guidelines from the US DOE and US NRC set MDA at a range of 10% to 50% of determined measurement objectives. Essentially, the longer the counting time the lower the MDA, with diminishing returns. As deemed necessary the client, after discussion with the RLM, may set the MDA applied.

The operating programs of the counting systems employed perform the required calculation of the MDA. The technician/analyst enters the sample size (mass). Yield is applied as detected from the pre-identified Region of Interest for an internal tracer for Thorium and Uranium analyses. Yield is applied to the MDA by spreadsheet calculation for Ra226/228. The applied MDA conforms to the general guidelines set by the Nuclear Regulatory Commission (US NRC). In gamma spectrometry analyses, compensation is made for moisture content, soil density, and Z-number of soil samples.

4.3.3 Instrument Calibration

Instrument and equipment calibration must be rigorously and routinely performed in order to provide reasonable assurances that the data generated is valid and acceptable.

Three principle types of calibration are performed. The first is initial calibration, which determines the linear range of the instrument and its response factor. The second is initial calibration verification which verifies the initial calibration response factors through the analysis of a standard prepared from an independent source. The third is continuing calibration, which serves, during the course of running samples, to ascertain that the instrument calibration has not drifted unacceptably. The frequencies of performing the initial and continuing calibrations

are listed in Table 4-2. The calibration verification only needs to be performed after an initial calibration is performed. In addition, laboratory control samples, or reference samples, are run on a routine basis for additional verification as indicated in Table 4-5.

4.3.3.1 Initial Calibration

All instrumental methods of analysis are subjected to an initial calibration, consisting of the measurement a minimum of 5 different standard solutions of the analytes of interest. The standard solution of the lowest concentration should have a concentration of the analytes of interest at 3 to 5 times the concentration that corresponds to the MDL; and the standard solution of the highest concentration should have a concentration of the analytes of interest at or near the upper end of the linear range of the detector.

In performing the analyses of standards to determine the response factor and linear range, the standard solutions are prepared as mentioned in Section 4.3.1, and the surrogates and internal standards are added to them when appropriate. This information must be documented in the analysis records and placed in the method file for future reference. Listed should be working standard ID numbers used for calibration, the date the calibration was performed, and the name of the analyst performing the calibration.

When the standard analyses are completed, the calibration curve of each analyte is generated either one of two ways. For GC/MS analyses, the response factor (RF) for each calibration level is determined as follows;

$$RF = (A_x C_{is}) / (A_{is} C_x)$$

where:
$A_x$ = area of compound being measured
$A_{is}$ = area of specific internal standard
$C_x$ = concentration of compound being measured
$C_{is}$ = concentration of specific internal standard

The average response factor ($RF_{avg}$) and the standard deviation of the response factors is then calculated and the percent relative standard deviation (%RSD) is determined by:

$$\%RSD = \frac{SD}{RF_{avg}} \times 100$$

If the %RSD falls within the criteria specified in the method, then the curve is considered linear and the average response factor can be used to quantitate results.

All other instrument calibration curves are generated using a straight line linear regression equation in the form: $y = mx + b$ (or, for ICP of graphite furnace analyses, $y = ax$, and the line is forced through zero), where y = the measured response (area units, absorbance etc.); x = the known concentration of analyte; m = the slope of the curve, and b = the y intercept.

In addition to determining the values of m and b, the correlation coefficient is determined as a measure of how closely the five points are to a straight line. The correlation coefficient is determined by the equation:

$$r = \frac{n \Sigma (x\ y) - \Sigma (x)\ \Sigma (y)}{\textbf{Sq. Root}\ [n \Sigma x^2 - (\Sigma x)^2]\ [n \Sigma y^2 - (\Sigma y^2)]}$$

where, r = Correlation coefficient, x = The known amount of analyte, y = The measured response, and n = The number of standards run to obtain the calibration curve.

In order for the curve to be valid, r must be 0.995 or higher, and the absolute ratio b/m should be no greater than the method detection limit. If r is <0.995 it usually implies that either the lowest or highest concentration of standard is outside the linear range. To correct this, the analyst should rerun the highest standard and also another high standard which has a slightly lower concentration than the initially used high standard. Then r can be calculated again using the response from the lower of the two standards. Similarly, the effect of slightly increasing the concentration of the lowest standard should be examined. However, this concentration should still be within 3 to 5 times the determined MDL.

If the ratio b/m criterion is not met, the problem may be with contamination in the system, a change in linear range or a change in noise level of the instrument. The system should be checked for contamination through the analysis of reagent or method blanks. The linear range can be checked by dropping the highest calibration standard, performing the linear regression and re-calculating the b/m ratio. If noise level of the instrument has in fact changed, instrument maintenance may be required to correct the problem.

Certifiable standards are used in the preparation of solutions for calibration as much as possible. However, it is always possible that the manufacturer made a mistake. To circumvent this possibility of error due to a mistake in the manufactured primary standard, a calibration verification check standard or quality control (QC) check standard will be analyzed whenever an initial calibration curve is constructed. The QC

check standard will contain all of the analytes of interest, and at a known concentration, but will be prepared using a different source than the calibration standards. When the analyte concentrations in the check standard are calculated, they should meet the continuing calibration criteria set forth by the method(e.g. GC within 15%, GC/MS within 20%, and ICP within 10% of the known concentration). If the criteria is not met, a determination of the source of inaccuracy will be performed.

After the calibration curve has been validated, a dated and initialized hard copy of the calibration table listing the response factors for each calibration level, the average response factor, the SD, and the %RSD for each analyte is placed in the method file for future reference. If the curve was generated using linear regression then a hard copy of the curve listing the x values used, the corresponding y values generated, the slope and intercept of the curve and the correlation coefficient for each analyte will be placed in the analysis file for future reference.

4.3.3.2 Continuing Calibration

Continuing calibrations serve to ensure that the instrument, during the course of running samples, is remaining sufficiently stable so the response factor calculated in the initial calibration remains valid

In performing a continuing calibration, a midrange standard containing the all of the analytes of interest, and internal and surrogate compounds, if applicable, is analyzed. For GC/MS analysis, the response factor for each analyte is determined from the continuing calibration analysis (Some methods specify that the RFs be determined for specific continuing calibration check compounds). The percent difference (%D) of the continuing calibration response factor from the average response factor of the calibration curve is then calculated by:

$$\%D = \frac{(RF_{avg} - RF_{ccc}) \times 100}{RF_{avg}}$$

If the percent differences from the continuing calibration analysis are within the acceptable criteria, as specified in the method, the instrument is considered to be within calibration, and analysis may continue using the curve. If the response factor is determined to be outside the acceptance range, the instrument must be recalibrated by using the initial calibration process. Samples that have been analyzed since the last acceptable calibration will also need to be reanalyzed after the instrument has been recalibrated. Generally, the acceptable criteria for

GC/MS is between 20% to 30%.

For linear regression curves, the concentration of each analyte in the midrange standard analysis, which has been calculated from the current calibration curve, is compared with the expected value of each analyte in the standard and a percent true value (%TV) is determined by dividing the value found by the expected value times 100%. The %TV must be within the method criteria for the calibration curve to still be considered acceptable (e.g. GC 85-115%; ICP 90-110%).

Each time a continuing calibration analysis is performed, it must be documented and placed in the method files to track the validity of the calibration curve over time. Recorded will be the analytes, the average response factor, the response factor from the continuing calibration analysis, and the percent difference of the response. For the liner regression curves, the analytes, the concentration found, the expected concentration and the %TV will be recorded. Frequencies for continuing calibration can be found in Table 4-2.

In performing continuing daily calibrations for ICP, the high level standard is analyzed immediately after the initial calibration is performed and the results of the analyses must be within 5% of the true value. Also, a midrange continuing calibration verification standard (CCV) will be analyzed after every ten samples analyzed and at the end of the analysis sequence. The results must be within 10% or 20% of true value depending on the method being performed. Re-calibration must be performed if the CCV results do not met criteria.

### 4.3.4 Analysis of Quality Control Samples

Routine quality control samples are analyzed to assure that the operation is within control as established for the laboratory on the basis of historical data. The routine quality control consists of blanks, spiked blanks or laboratory control samples, spiked samples, duplicate samples, and in some cases, external check samples analyses. These are discussed in the following sections.

#### 4.3.4.1 Blanks

There are two types of blanks associated with internal quality control. They are the reagent blank and method blank.

##### 4.3.4.1.1 Reagent Blank

The reagent blank is the reagent(s) and/or solvent(s) that are normally used for sample preparation, but without going

through any of the preparation steps. The reagent blank is normally not analyzed unless the method blank (See section 4.3.4.1.2 below) shows the presence of contamination which may have arisen from the reagent(s) and/or solvent(s).

4.3.4.1.2 Method Blank

The method blank is a known amount of the reagent or solvent which is carried through the all of the preparatory steps of a method prior to its analysis, adding internal and surrogate standards if appropriate for the method. The method blank is prepared with every batch of samples that is being prepared at the same time, provided the batch is no greater than twenty samples. For batches which are greater than twenty samples, a method blank will be prepared for every sub-batch of twenty samples.

The instrument background count for radiological analyses, a count of a planchet or vial containing no sample, is another form of laboratory blank. The instrument blank confirms that the counting instrument is contamination-free. The instrument blank may be used as a background correction factor subtracted from the sample count in the calculation of radiological concentration. For most analyses, an instrument background count is collected for each day that radiological samples are counted. They are run at a frequency of 10% for radiochemical parameters, corresponding to analytic batches of 10 or less samples.

In addition, a method blank is prepared whenever the lot number of any reagent is changed. The preparation log will then indicate which samples are associated with the new lot number of reagent(s). The method blank is analyzed and the data is reviewed prior to the analysis of samples.

4.3.4.2 Spiked Blank (Laboratory Control Sample)

The spiked blank, or laboratory control sample (LCS), serves as a measure of accuracy of the analytical procedure independent of matrix effects. The spiked blank is prepared by adding known amounts of specific analytes to the appropriate volume of reagent grade water or clean solid matrix and subjecting the spiked sample to the entire extraction procedure. For radiologic analyses, NIST traceable standards or equivalent will be used.

One spiked blank is prepared for every ten samples of the same matrix that are subjected to sample preparation at the same time. The spike contains all the analytes which are specified in the method of analysis to be performed.

Preparation of the spiking mixture is done in the same manner as the preparation of standard solutions for calibration except that it will be prepared from a source independent of that used for the calibration standard preparation. The preparation of the mix will be recorded in the Standard Preparation Logbook and assigned a standard ID number (per Section 4.3.1).

The spiked blank is then carried throughout the entire extraction and analytical procedure, and the concentrations of the spiked analytes determined. These results will be compared to pre-established acceptance criteria (See Section 4.2) to determine the degree of accuracy of the data in the laboratory. If the spiked blank does not meet the established criteria, it is assumed that the sample preparation or analysis have been faulty, and the batch of samples associated with the spiked blank will be re-prepared and/or re-analyzed after the reason for failure has been determined.

4.3.4.3 Spiked Sample

Spiked samples, or matrix spike samples, serve to identify whether the sample matrix provides certain effects which preclude the ability to recover analytes through the prescribed method. Thus the spiked sample is used to determine the accuracy of a method based on the matrix being analyzed.

One sample per every twenty samples of the same matrix will be selected at random and two aliquots of this sample will be extracted and analyzed, one spiked with the appropriate spiking solution and one without. The recovery of the spiked analytes will then be determined. After the analysis of twenty spiked samples of each matrix and/or each extraction method has been performed, the upper and lower control limits of recovery for each of the spiked analytes will be calculated. All subsequent analyses of spiked samples will then be compared to the control limits appropriate for the matrix and/or extraction method.

4.3.4.4 Duplicate Sample

One sample for every twenty samples of the same matrix will be selected at random, and two aliquots of this sample will be extracted and analyzed to track the precision of the analytical procedure. The results of the two analyses will be compared and the relative percent difference (RPD) between each analyte detected in the duplicate analyses will be calculated and compared to the previously established acceptance criteria (See Section 4.2.2), or per the duplicate error ratio (DER) for low-level radiological results (Science Applications International Corporation (SAIC). December 1992. Laboratory Data Validation Guidelines for Evaluating Radionuclide Analyses. U.S. Department

of Energy. November 1990. Environmental Measurements Laboratory Procedures Manual, 27th ed. HASL-300). For some wet chemistry procedures, where spiking the sample matrix is not applicable, duplicate sample analyses will be performed for every 10 samples of the same matrix.

4.3.4.5 Matrix Spike Duplicate Sample

In some instances, a matrix spike duplicate sample (e.g. for GC and GC/MS analyses) is analyzed as opposed to a duplicate sample (e.g. for various wet chemistry analyses). Typically the matrix spike (MS) and matrix spike duplicate (MSD) are extracted and/or analyzed as a set, one set for every twenty samples of the same matrix. The recovery of the spiked analytes from both the MS and MSD are determined and used to assess the method accuracy as it relates to the specific matrix. Also, the RPDs between the concentration found for each spiked analyte in the MS and MSD analyses will be calculated to assess the precision of the method based on the matrix being tested. Control limits will be calculated after a minimum of 20 analyses for recovery and RPDs for the MS and MSD analyses.

It should be noted that in some instances, as in GC/MS methods, where there are a large number of compounds being analyzed, it is not always practical to produce recoveries and RPDs for every analyte. In these cases, the recoveries and RPDs of selected analytes, usually project or site-specific target compounds will be used to assess accuracy and precision.

4.3.4.6 Documentation of Quality Control Analyses

The analysis of quality control samples must be recorded and submitted with the sample data for review. The results are compared to the established acceptance criteria so as to document that the extraction and analysis scheme was in control when the site samples were analyzed. This is necessary for final approval and release of the analytic results of any site sample.

4.3.4.7 Normalized Absolute Difference

Normalized Absolute Difference (NAD) is the latest statistical tool applied to data to determine precision and bias. Formerly, the use of Relative Percent Difference (RPD) or Duplicate Error Ratio (DER) was applied to radiochemistry data. Currently, NAD is the applied measurement tool. This tool is also referred to as the t test. NAD is used to statistically determine the number of units of standard error of difference between means and the measure results differ from zero. This analytic tool accounts for a 95% confidence level or a 2$\sigma$ acceptance.

To ensure that contamination is not introduced, the NAD between the sample and blank is tracked. The difference should be higher than 2.58 or the equivalent of a 99% confidence level. This difference decreases, however, when the sample approaches background activity. Therefore, blank levels must be tracked to determine if contamination is the cause.

The NAD is also applied to the sample and sample duplicate for determination in variation of results. The NAD between the two samples should be less than 1.96. This indicates that the two data points along with their associates errors are within a 2σ confidence of acceptance.

4.3.5 Establishment of Acceptance Criteria

The establishment of acceptance criteria is necessary in order to be able to determine regularly whether or not quantitative data generated by the laboratory is within control limits. The following section discusses the parameters for which acceptance criteria must be established.

4.3.5.1 Method Blanks

Method blanks are used to establish a known baseline level of contamination which may be contributed from four principal sources, namely:

1. The environment the analysis is performed in;
2. The reagents used in the analysis;
3. The apparatus used;
4. The analyst performing the analysis.

The following criteria shall be used to evaluate the acceptability of the method blank data if project DQOs do not specify otherwise: The concentration of all target analytes shall be below approximately two times MDL concentration for each target analyte, or less than 5 percent of the regulatory limit associated with that analyte, or less than 5 percent of the sample result for the same analyte, whichever is greater for the MB to be acceptable. When this criterion is exceeded, corrective action should be taken to find/reduce/eliminate the source of this contamination in the method blank. However, sample corrective action may be limited to qualification for blank contamination (i.e., B-flag). When the concentrations of any target analytes within the MB are above the MDL check sample for the majority of target analytes or above the MQL for target analytes known to be common laboratory contaminants, assess the effect this may have had on the samples. If an analyte is found only in the method blank, but not in any batch samples, no further corrective action may be necessary. Steps shall be taken

to find/reduce/eliminate the source of this contamination in the method blank. The case narrative should also discuss the situation. If an analyte is found in the method blank and some, or all, of the other batch samples, additional corrective action is required to reanalyze the method blank, and any samples containing the same contaminant. If the contamination remains, the contaminated samples of the batch would be reprepared and re-analyzed with a new method blank and batch specific QC samples. Sporadic cases of contamination may be difficult to control, however, daily contamination would not be acceptable.

4.3.5.2 Recovery of Spiked Blank Samples

Spiked blank samples are used to establish the accuracy of the method as previously discussed in Section 4.2.1. Initially four replicate spiked blank samples are prepared. They are then extracted and analyzed following precisely the appropriate protocol, and the concentrations of the analytes are determined. From these values, the mean and standard deviation for the recovery of each analyte are determined. The deviation of the mean from the known spiked amount is a measure of accuracy of the method and is expressed as percent recovery of the analyte. The percent recovery is calculated as follows:

$$R = 100 \times \frac{C(m) - C(b)}{C(s)}$$

Where, R = Percent recovery of the analyte

C (m) = The measured concentration of the analyte

C (b) = The background concentration of the analyte in the sample (For spiked blank samples C (b) = 0)

C (s) = The actual concentration of analyte spiked into the sample

The mean and standard deviations of the recoveries of each analyte are then calculated and compared to the criteria found in the appropriate EPA method. Upon meeting EPA criteria, control limits for each analyte will be calculated from the recoveries of twenty spiked blank sample analyses.

For gas chromatography methods, the appropriate internal and surrogate spike standards should be added to all spiked reagent blanks and samples. Again, acceptable recovery limits should be compared to the recoveries listed in the QA/QC section of the appropriate EPA method.

4.3.5.3 Duplicate Analyses

Non-spiked samples or matrix spike samples will be extracted in duplicate and the resultant concentrations for each analyte will be used to establish the precision of the method. Once again, precision is defined as a measure of the differences from the mean of repetitive measurements. Thus the standard deviation will be used as a measure of precision. More frequently, the relative percent difference will be used because at best, measurements are performed in duplicate. The relative percent difference is determined by the equation:

$$\% \text{ RPD} = 100 \times \frac{x(1) - x(2)}{x(m)}$$

where, x (1) = High value for the analyte

x (2) = Low value for the analyte

$$x(m) = \text{Mean value for the analyte} = \frac{x(1) + x(2)}{2}$$

The results of the determinations of 20 relative percent differences will be used to calculate the upper warning (2.456 x Average RPD) and control limits (3.27 x Average RPD). Future data will be considered acceptable if the relative percent differences of duplicates fall within the acceptance criteria.

4.3.5.4 Spiked Sample Analyses

Samples will be spiked with a known amount of the appropriate analytes. The resultant recoveries of each analyte will be used to establish the accuracy of the method based on the matrix being analyzed. From these values the mean and standard deviation for the recovery of each analyte added to the sample matrix will be determined. The recoveries will be calculated using the same equation used for spiked blank samples (Section 4.3.5.2). When the recoveries of twenty spiked samples of the same matrix have been determined, the mean and standard deviation will be used to calculate control limits for each of the spiked analytes. Future data will be considered acceptable if the recoveries of the spiked analytes fall within the acceptance criteria.

4.3.5.5 Use of Surrogates

Surrogates are compounds that are expected to behave analytically in a manner similar to target analytes, but are not

naturally found in the environment. The surrogates are added into the sample prior to extraction and their recoveries are a measure of the efficiency of the extraction.

The use of surrogates in organic analysis serves as an additional measure of the acceptability of the results. The significant advantage of the use of surrogates is in measuring recovery against the historically established acceptance range in the performance of each analysis. Thus, data does not depend solely on the spiked blank sample to assess the quality of each analytical run.

The acceptable ranges of surrogate recoveries are established based on the recoveries of thirty sample analyses. The mean and standard deviations from these thirty surrogate recoveries are used to determine the upper and lower acceptable limits of surrogate recoveries as previously discussed (See Section 4.2.1). Surrogate recoveries also need to be established based on the type of matrix and the method of extraction. All subsequent surrogate recoveries will be considered acceptable if the recoveries fall within these established acceptance ranges (i.e. defined by method limits).

NOTE: Acceptance criteria must be established for each method of extraction and for each matrix type. Recoveries from soil are not expected to be within the acceptance limits as determined for water, and recoveries from sonication extraction may not show the same recovery as would a soxhlet extraction. Thus, acceptance criteria must be determined matrix by matrix and method by method.

4.3.5.6 Retention Times in Gas Chromatography Methods

While accuracy and precision form the backbone of quantitative data, qualitative identification in GC methods is more difficult to translate into quantitative measures. The principle criterion for chromatographic analysis is the retention time, or relative retention time. Relative retention time is used in those methods employing internal standards. It is a more reliable measure because it is less dependent on such physical parameters as the length of the column. In all cases, the relative retention time for each analyte will be based on the data obtained from the nearest standard.

To determine the acceptance window for retention times, the continuing calibration data will be employed. For each compound, the retention times obtained in performing the continuing calibrations over a 72 hour (minimum) period will be averaged and their standard deviations determined (See Figure 4-3). The acceptance window will consist of three standard deviations from

the mean retention time for each compound. The retention time acceptance windows will be redetermined whenever the chromatographic column is changed or the chromatographic conditions are altered. It is the responsibility of the analyst to maintain the records for retention time criteria. These records are kept in the method file for future reference. In mass spectrometric analysis, in addition to retention time, the mass spectral match of the compound to the standard will be used to verify its identity.

4.3.6 Standard Operating Procedures

All standard laboratory and analytical procedures will be written as Standard Operating Procedures (SOP's). SOPs will be available in the laboratory for the analysts and will serve as a comprehensive source of reference. General laboratory procedures covered by SOP's will include:

1. Writing, Control and Revision of SOPs
2. Laboratory Notebook Control, Use, Review and Approval
3. Standards Preparation, Traceability, and Storage
4. Nonconformances and Corrective Action
5. Sample Receipt, Login, Custody and Storage
6. Internal Quality Assurance (QA) Audits
7. Reagent Water Generation and Monitoring
8. Balance Calibration, Use and Maintenance
9. Data Reduction, Review and Validation
10. Storage Temperature Monitoring
11. Thermometer Calibration
12. Reagent Control
13. Technical Training
14. Significant Figures
15. Records Storage, Tracking and Disposal
16. MDLs, MQLs and Laboratory Reporting Limits
17. Trip Blank Preparation
18. Subsampling of Containers
19. Method Equivalency Demonstration
20. Data Reporting, Data Package Assembly and Shipment
21. Compressed Gas Quality and Traceability
22. Syringe, Pipet and Autosampler Vial Calibration Procedures

Analytical SOP's should include:

1. Scope and Application
2. Method Summary
3. Method Validation
4. Safety Precautions

5. Interferences
6. Apparatus and Materials
7. Reagents and Standards
8. Sample Preservation and Storage
9. Holding Times
10. Operating Conditions and Calibration
11. Sample Preparation
12. Sample Analysis
13. QA/QC Requirements
14. Reporting Limits
15. Qualitative Identification Information
16. Recovery Limits
17. Data Deliverables
18. Preventative Maintenance
19. Pollution Prevention
20. Waste Minimization
21. Method Flow Chart
22. References and Associated SOPs

QA/QC Schedules

As stated in Sections 4.3.3 and 4.3.4, most analyses will require calibration and the analysis of QC samples. Listed below are the QA/QC schedules of the various types of analyses performed in the WST laboratories. See Table 4-5.

4.4.1 Non-instrumental Wet Chemistry Analyses

Total Suspended Solids is an example of this type of analysis. The QA/QC required for these analyses are: a method blank, LCS and a duplicate analysis for every batch of twenty or fewer samples. For analyses which require an analytical balance, the balance will be checked daily for accuracy with two ASTM Type I weights near the weight range applicable to the method.

4.4.2 Instrumental Analyses

4.4.2.1 Non-GC Instrumental Analyses

Total petroleum hydrocarbon determination by infrared spectrophotometry is an example of this type of analysis. Requirements for this type of analysis are: initial calibration; daily continuing calibration; laboratory control samples, one for every ten samples analyzed; method blank and duplicate analyses, one per batch of twenty samples or less; and when available, external QC samples. For metals analysis, some wet chemistry analyses, and radiochemical analyses, matrix spike and, in some instances MSD, will also be performed.

4.4.2.2 GC and GC/MS Analyses

GC and GC/MS analyses require the following: initial calibration; daily continuing calibration (GC: one per ten samples and at the end of each batch; GC/MS one every 12 hours); reference samples, one per ten samples; method blanks, one per batch of twenty or fewer samples; matrix spike and matrix spike duplicate samples, one for twenty samples of the same matrix; surrogates and internal standards (when applicable), added to each standard and sample analysis; and external QC samples. Matrix spikes and matrix spike duplicates may also be analyzed according to project specific requirements.

The QA/QC requirements for each analysis are detailed in the corresponding analytical SOP.

Instrumentation

Table 4-3 lists the instrumentation and equipment available at Waste Stream Technology's Analytical Laboratory.

Audits

WST employs four types of audits to measure performance, define problem areas, and ensure conformance and compliance with formalized certification programs.

4.6.1 External Audits

External audits are performed by certifying agencies or clients through the use of performance evaluation samples and/or on-site inspections. Potential clients are welcome to audit the WST laboratory and submit evaluation samples as necessary.

4.6.2 System Audits

System audits are primary responsibility of the QA/QC Officer. System audits evaluate the procedures and documentation in the laboratory. A system audit checks for conformity to the QA plan and the SOP criteria for an analysis. Items covered include, but are not limited to, sample custody procedures, calibration frequency and checking, quality control, data reduction and validation, method validation (startup QC), and record keeping and retention. The entire range of analyses performed by the laboratory is reviewed as least annually by the QA/QC Officer. Quarterly audits are conducted by the QA/QC Officer in the company of the Laboratory Director and Assistant Lab Director.

### 4.6.3 Report Audit

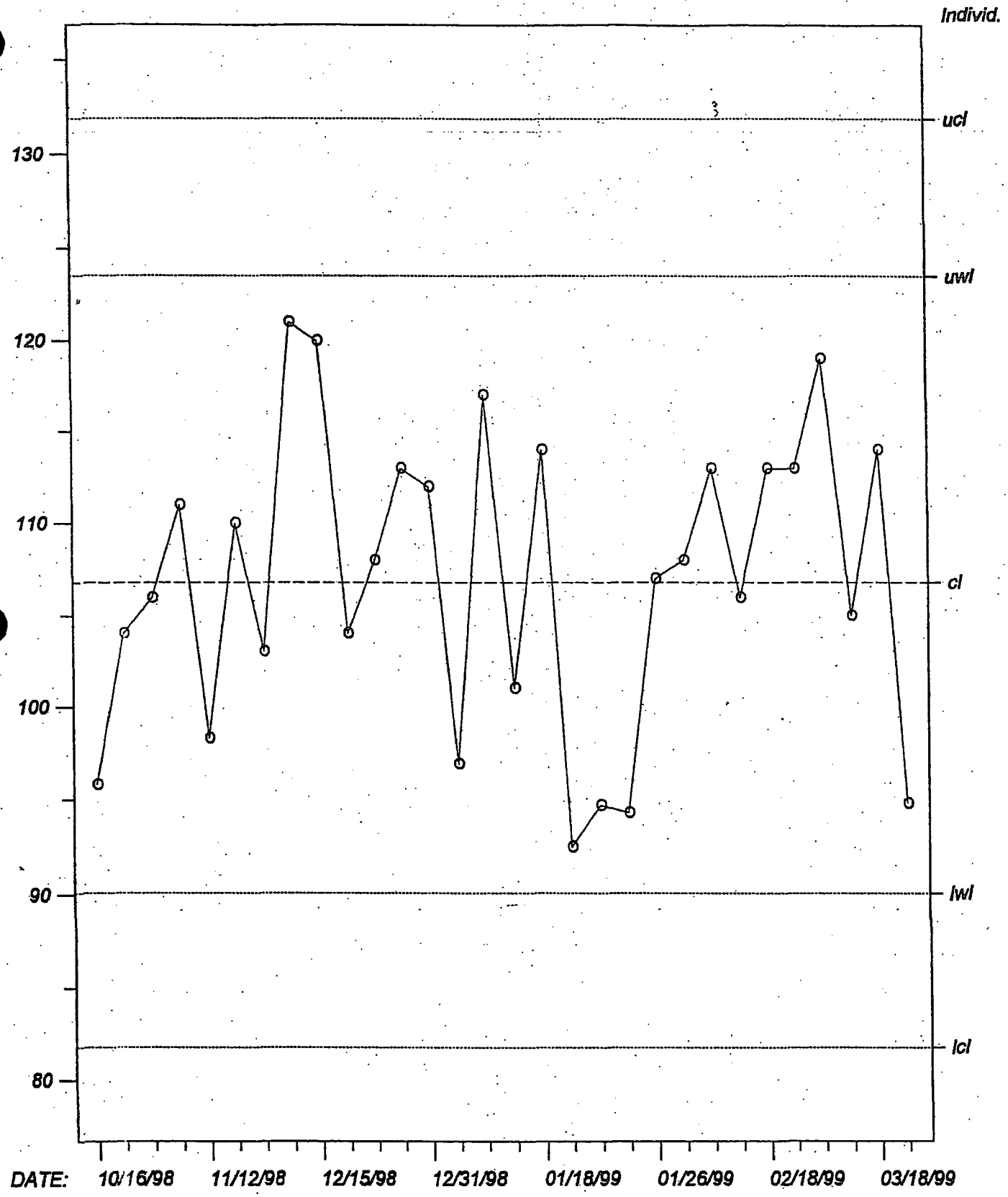
Report audits evaluate the correctness and appearance of the laboratory reports and are performed routinely by the QA/QC Officer. The report audit assures that the data reported is of consistent quality and content.

### 4.6.4 Blind Sample Audit

Blind sample audits are conducted by submitting samples of known concentrations through ordinary sample handling procedures and comparing the reported concentrations with the known values. Blind sample audits are carried out annually.

Figure 4-1

# 8260B Water TCL Matrix Spike %Rec Charts
## benzene




Individ.: cl: 106.81 ucl: 131.881 lcl: 81.7389

Subgrp Size 1

Waste Stream Technology Inc. - MS %R for BENZENE
8260 TCL IN Water Printed: 09/15/04 15:35 by BSS
All Clients/Projects [2/1/04 to 9/15/04]

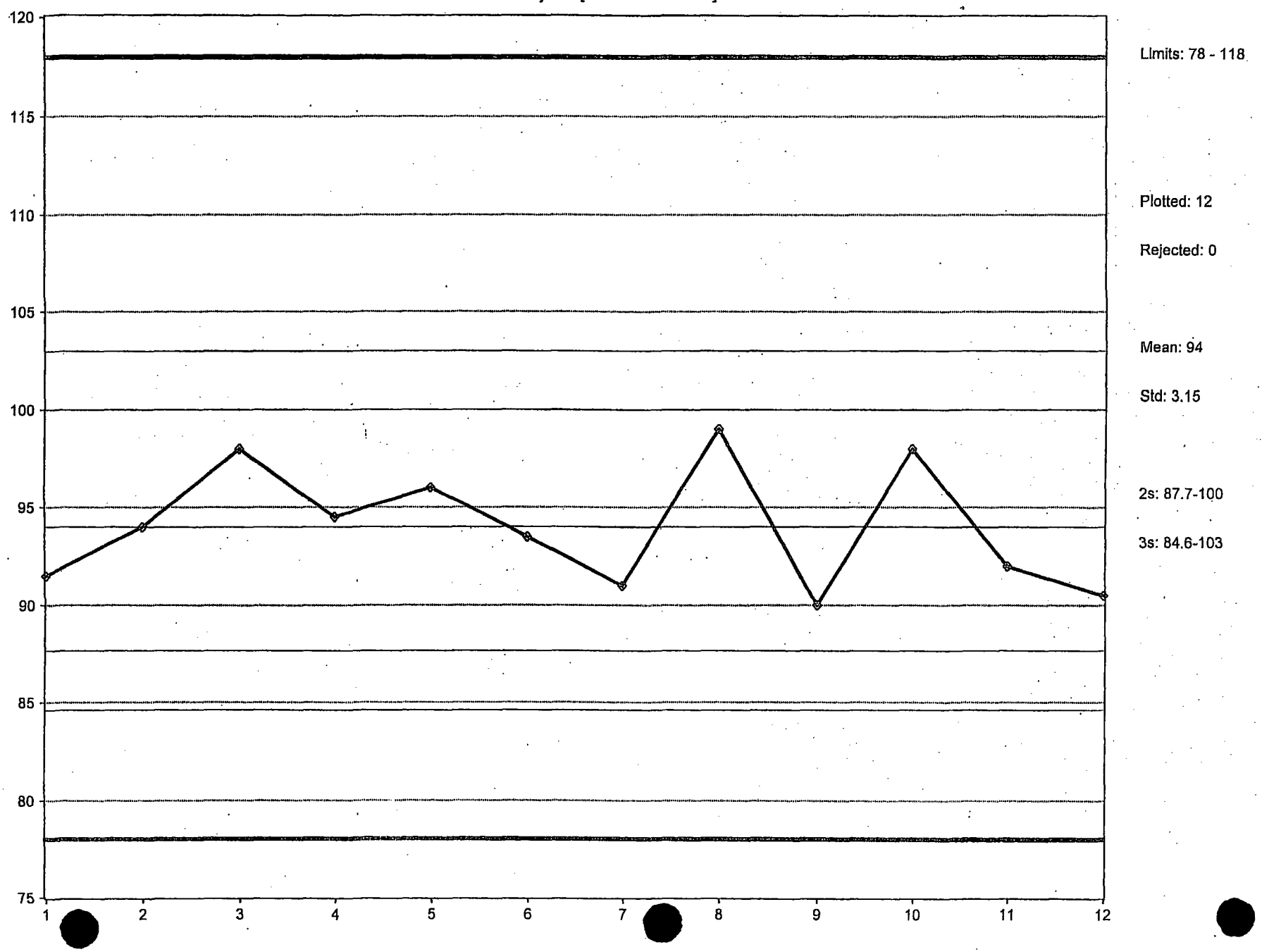
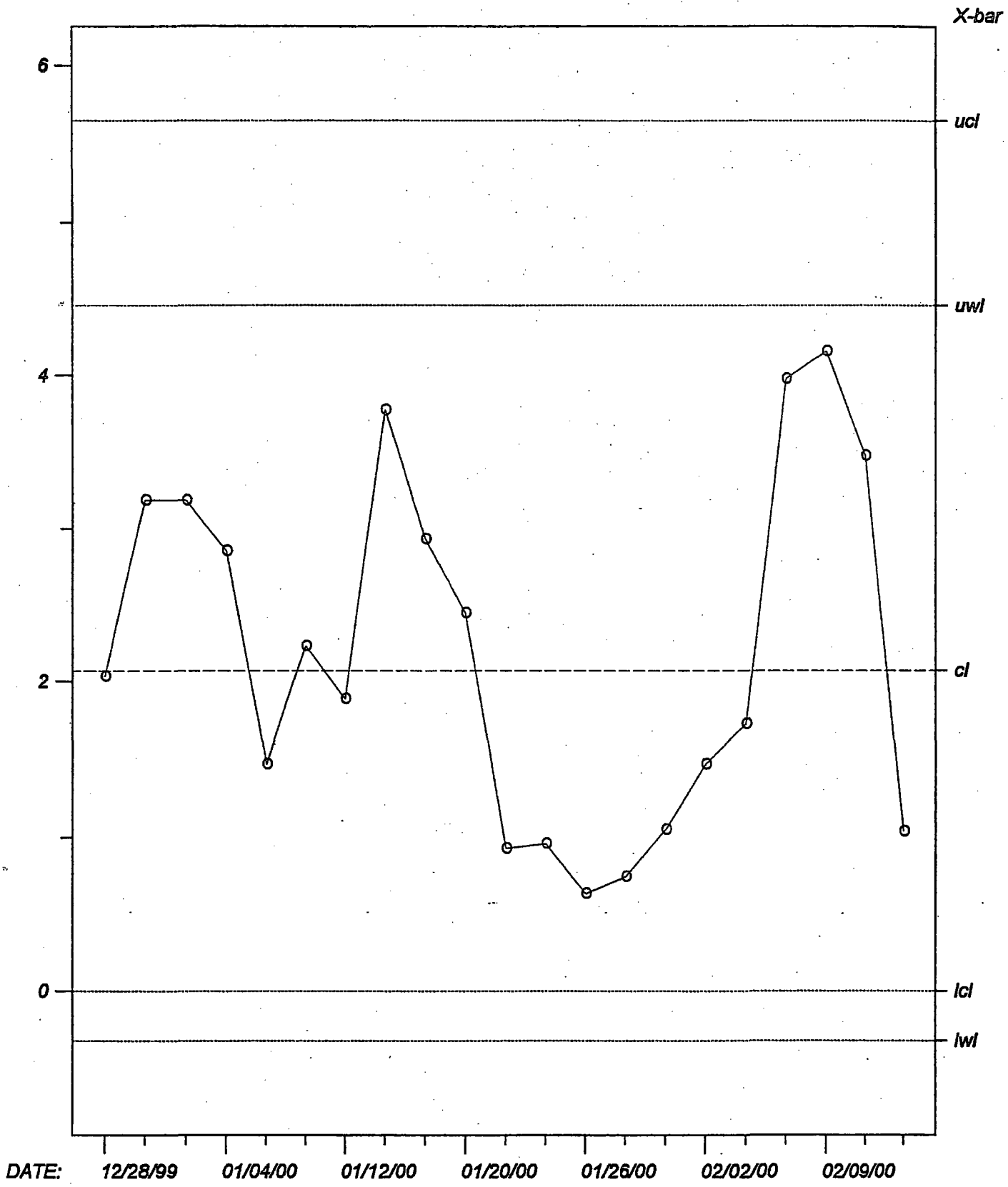


Figure 4-2

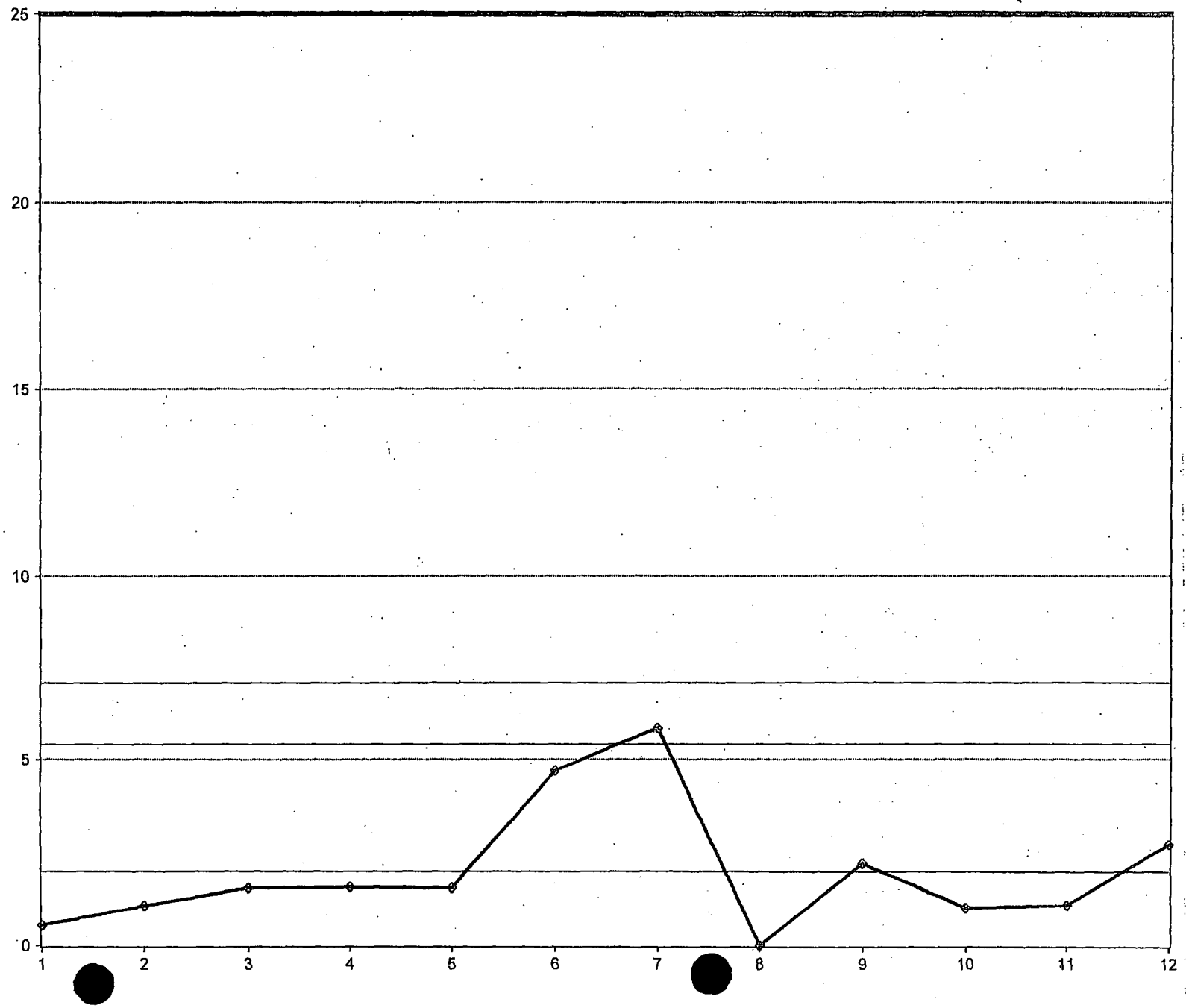
# 8260B Water MS/MSD RPD Charts
## benzene




X-bar: cl: 2.0695 ucl: 5.65453 lcl: 0

Mov Ave of 3

Waste Stream Technology Inc. - MS/MSD RPD for BENZENE
8260 TCL IN Water Printed: 09/15/04 15:36 by BSS
All Clients/Projects [2/1/04 to 9/15/04]




Limit: 25

Plotted: 12

Rejected: 0

Mean: 1.99

Std: 1.71

2s: 5.41

3s: 7.12

## Method 8021B Relative Retention Time Window Calculation Sheet

| Compound | R.T.-1 | RRT-1 | R.T.-2 | RRT-2 | R.T.-3 | RRT-3 | Avg. RRT | SD RRT | 3 X SD Window |
|---|---|---|---|---|---|---|---|---|---|
| fluorobenzene IS | 15.022 | | 15.013 | | 15.054 | | | | |
| MTBE | 8.008 | 7.014 | 7.991 | 7.022 | 8.041 | 7.013 | 7.016 | 0.004933 | 0.015 |
| benzene | 14.408 | 0.614 | 14.399 | 0.614 | 14.442 | 0.612 | 0.613 | 0.001155 | 0.003 |
| a,a,a-TFT SS | 16.345 | 1.323 | 16.337 | 1.324 | 16.374 | 1.320 | 1.322 | 0.002082 | 0.006 |
| toluene | 19.768 | 4.746 | 19.761 | 4.748 | 19.790 | 4.736 | 4.743 | 0.006429 | 0.019 |
| ethylbenzene | 23.868 | 8.846 | 23.864 | 8.851 | 23.890 | 8.836 | 8.844 | 0.007638 | 0.023 |
| m,p-xylene | 24.074 | 9.052 | 24.069 | 9.056 | 24.095 | 9.041 | 9.050 | 0.0078 | 0.023 |
| o-xylene | 25.220 | 10.198 | 25.216 | 10.203 | 25.242 | 10.188 | 10.196 | 0.007638 | 0.023 |
| isopropylbenzene | 26.164 | 11.142 | 26.162 | 11.149 | 26.187 | 11.133 | 11.141 | 0.008021 | 0.024 |
| n-propylbenzene | 27.212 | 12.190 | 27.209 | 12.196 | 27.234 | 12.180 | 12.189 | 0.008083 | 0.024 |
| 1,3,5-trimethylbenzene | 27.625 | 12.603 | 27.623 | 12.610 | 27.648 | 12.594 | 12.602 | 0.008021 | 0.024 |
| tert-butylbenzene | 28.556 | 13.534 | 28.581 | 13.568 | 28.577 | 13.523 | 13.542 | 0.023459 | 0.070 |
| 1,2,4-trimethylbenzene | 28.640 | 13.618 | 28.638 | 13.625 | 28.663 | 13.609 | 13.617 | 0.008021 | 0.024 |
| sec-butylbenzene | 29.099 | 14.077 | 29.097 | 14.084 | 29.122 | 14.068 | 14.076 | 0.008021 | 0.024 |
| p-isopropyltoluene | 29.454 | 14.432 | 29.452 | 14.439 | 29.476 | 14.422 | 14.431 | 0.008544 | 0.026 |
| n-butylbenzene | 30.512 | 15.490 | 30.509 | 15.496 | 30.534 | 15.480 | 15.489 | 0.008083 | 0.024 |
| naphthalene | 35.840 | 20.818 | 35.836 | 20.823 | 35.862 | 20.808 | 20.816 | 0.007638 | 0.023 |

Comments:

R.T. denotes Retention Time
R.R.T. denotes Relative Retention Time

Figure 4-3

Table 4-1
**STANDARD and SOLUTION HOLDING TIMES**

| MATERIAL | HOLDING TIME 1°Stock Sol'n | HOLDING TIME 2°Stock Sol'n | HOLDING TIME Working Sol'n[c] |
|---|---|---|---|
| Volatiles GC & GC/MS | month @-10°C[a] | 1 week @-10°C | 24 hr @-10°C |
| Semivolatiles GC & GC/MS | 1 year @-10°C | 6 months @4°C | 1 week @4°C |
| TPH for IR | 6 months @4°C | 3 months @4°C | 1 week @4°C |
| TPH for GC | 6 months@-10°C | 3 months @-10°C | 1 week @-10°C |
| Metals for ICP & GFAA | 1 year[b] | 3 months[b] | 2 weeks (ICP) Daily (GFAA)[b] |
| Radioisotopes | 1 year | 3 months | Daily |

a Pre-prepared standard in an unopened ampule: expiration date on ampule @ -10°C. Opened ampules: 1 mo @ -10°C. For gases: 1 week after opening.

b 10% $HNO_3$ for ICP; 2% $HNO_3$ for GFAA.

c Working continuing calibration solution.

Table 4-2
Calibration Frequencies

| Instrument | Application | Initial Cal. | Continuing |
|---|---|---|---|
| GC/MS | Volatiles | Once/Month* | Every twelve hours |
| GC/MS | Semivolatiles | Once/Month* | Every twelve hours |
| GC | Volatiles | Once/Month* | At the beginning and at the end of a sequence of runs, and after every 20 samples. |
| GC | Extracts | Once/Month* | At the beginning and at the end of a sequence of runs, and after every 10 samples. |
| ICP | Metals | Daily | At the beginning and |
| GFAA | Metals | Daily | at the end, and after |
| Mercury | Metals | Daily | 0 samples. |
| Alpha Spectrometry | Alpha Isotopes | Annually | Daily*** |
| Eberline Survey Meters | Alpha/Beta Gamma Isotopes | Annually | Daily |
| Gamma Spectrometry | Gamma Isotopes | Annually | Daily source check, Monthly background |
| Gas Proportional Counter | Alpha/Beta Isotopes | Annually | Daily **** |
| Gamma Spectrometry | Gamma Isotopes | Annually | Daily source check, Monthly background |
| pH Meter | All pHs | Daily | Every ten tests at the end of a test sequence |
| Spectro-photometer | Various Wet Chemistry | Annually | Every run of samples |
| **Balances:** | | | |
| Analytical | Weighing of samples & stds. | Weekly** | Daily |
| Top-loader | Weighing of samples & stds | Monthly** | Daily |

*After repair, column change, or failure on continuing calibration check and/or quality control check standard. As long as continuing calibration analyses and LCS recoveries pass criteria, initial calibration will remain acceptable.
**Performed by WST; performed annually by manufacturer representative.
***Daily Pulser Check; Monthly Background Check and Secondary Cal Check.
****Self-Absorption Annually; Daily Source Check & Monthly Background Check.

## Table 4-3
## INSTRUMENT AND EQUIPMENT LIST

GC/MS:

Hewlett-Packard Model 5890 Series II GC with capillary split/splitless injector, Model 5972 Mass Selective Detector (MSD), HP Windows NT Chemstation for complete operation of GC/MS, Tekmar Model LSC 3000 Purge and Trap Concentrator, and EST Model Archon Purge and Trap Autosampler.

Agilent Model 6890 Series II GC with capillary split/splitless injector, Model 5973 Mass Selective Detector (MSD), Agilent Windows 2000 Chemstation, Enviroquant Chemstation G1701DA Software, Tekmar Model 2016 Purge and Trap Autosampler with heater pockets.

Hewlett-Packard Model 5890 Series II GC with capillary split/splitless injector, Model 5971A Mass Selective Detector (MSD), HP Windows 95 Chemstation, Tekmar Model LSC 2000 Purge and Trap Concentrator, Tekmar Model 2016 Purge and Trap Autosampler with heater pockets.

Hewlett-Packard Model 5890 Series II GC with capillary split/splitless injector, Model 5972 Mass Selective Detector (MSD) with direct capillary interface, HP Windows NT Chemstation, Model 7376A Autosampler.

Hewlett-Packard Model 5890 Series II GC with capillary split/splitless Injector, Model 5972 Mass Selective Detector (MSD), HP Window NT Chemstation, Model 7376B Autosampler.

GC:

Perkin-Elmer Model Autosystem Gas Chromatograph with Autosampler, Capillary Columns, Dual PID Detectors and split/splitless injector ports, Tekmar Model LCS 2000 Purge and Trap Concentrator, Tekmar Model LCS 2016 16 Place Autosampler, PE Nelson Turbochrome Software.

Perkin-Elmer Model Autosystem Gas Chromatograph with Capillary injection port, Dual PID Detectors, Tekmar Model LCS 2000 Purge and Trap Concentrator, Tekmar Model LCS 2016 16 Place Autosampler, PE Nelson Turbochrome Software.

Hewlett-Packard Model 5890 Series II GC with Dual capillary split/splitless injectors, Model 7673B Autosampler, Dual ECD detectors, with PE Nelson Turbochrome Software.

Perkin-Elmer Model Autosystem Gas Chromatograph with Autosampler, Capillary Columns, Dual ECD Detectors, Dual split/splitless injector ports with PE Nelson Turbochrome Software.

Tracor Model 540 GC with packed column injection port and FID detector with PE Nelson Turbochrome Software.

Perkin-Elmer Model Autosystem Gas Chromatograph with Autosampler, Capillary Columns, FID and ECD Detectors, Dual packed column injector ports with PE Nelson Turbochrome Software. Tekmar Model LSC 2000 Purge and Trap Concentrator, Tekmar Model LCS 2016 16 Place Autosampler.

Hewlett-Packard Model 5890 Series II GC with capillary split/splitless injectors, Dual tandem PID/ELCD detectors, Tekmar Model LSC 2000 Purge and Trap Concentrator, Tekmar Model 2016 Purge and Trap Autosampler with heater pockets and PE Nelson Turbochrome Software.

IR:

Perkin-Elmer Model 1310 Dispersive Infrared Spectrophotometer with:

- scan range of 4000 to 600 cm - 1 wavenumbers
- fixed or variable wavelength

Metals Analysis:

Perkin-Elmer Model 4100ZL Atomic Absorption Spectrometer with Transversely Heated Graphite Atomizer (THGA).

Perkin-Elmer Optima 3300 XL Spectrometer with AS-90 Autosampler.

Leeman PS200 Automated Mercury Analyzer.

Buck Scientific Atomic Absorption/Emission Spectrophotometer(2).

Buck Scientific Model-420 Hydride Continuous Flow Analyzer.

CEM Model MDS-2100 Microwave Sample Preparation System(2).

CPI 24 position digester hot block (MOD Block).

Radiochemical Analysis:

Tennelec XLB Series 5 Automatic Low Background Computer Assisted Alpha/Beta Counting System.

Canberra 7200-12 Chamber System Alpha Analyst.

Eberline Smart Alpha/Beta Survey Meter: SHP380AB Smart Alpha/Beta Probe, CA-100-60 Smart Probe Cable, E600 Smart Portable, E600OPT & Windows Program for E-600(2).

Eberline Micro R Survey Meter: ASP-2/SPA-8 with NaI scintillator. Range: 0-10,000 uR/h.

EG&G ORTEC GEM Series High Purity Germanium (Photopeak Efficiency >45%) Coaxial Detector; DSPec DSP-Based Gamma-Ray Spectrometer with GammaVision-32 Gamma-Ray Analysis Software.

Model 19μR Meter (2)

TCLP Equipment:

Associated Design and Manufacturing Model 3740-6-BRE Six Place Rotary Agitator(3)
(2) 24 Place Rotary Agitators
(1) 18 Place Rotary Agitator

Spectrophotometers:

Beckman Model 25 UV/Vis Spectrophotometer and Chart Recorder
Milton Roy Spectronic Spec 20 Genesys
Milton Roy Spectronic 20-D Plus

Extractors/Concentrators:

Soxhlet Extraction Apparatus including:
- Neslab Model CFT-75 Refrigerated Recirculator
- Precision 6 unit Heater with K-D Concentrators(2)
- Electromantle Model EM 250/C Heating Mantle (12 units; 6 for soxhlet extractors and 6 for distillation).

Tecator Soxtec System HT Model 1046 Service Unit with:
- (2) Tecator Soxtec System HT2 Model 1045 Extraction Units

Organomix Nitrogen Concentration Apparatus

Heat Systems(2) Model W-385 & Model XL2020 Ultrasonic Processor

Zero Headspace Extractors(9).

Zymark Model ZW 640-3 TurboVap Automated Nitrogen Evaporator/Concentrator

Kuderna-Danish concentration glassware

Gel Permeation Chromatography Equipment:
Zymark BenchMate Workstation, Scientific Systems Model 300 LC Pump, Jordi Associates Stainless Steel Column, Foxy 200 Fraction Collector, Isco UA-6 UV/Vis Detector.

Anion Analyzer (300 series):

Dionex DX-120 Ion Chromatograph with Windows 95 Peaknet vs.5.2 software and Model AS40 Autosampler.

Total Organic Carbon Analyzer:

Dohrman DC-180 Total Organic Carbon Analyzer with Dohrman Autosampler.

Flashpoint Tester:

Koehler Instrument Co, Model K16200 Closed Cup Flashpoint Tester.

Balances:

Mettler Model AE240 Analytical Balance, 200g capacity at 0.0001g readability.

Mettler Model AE16 Analytical Balance, 160g capacity at 0.0001g readability.

Mettler Model PN323 Top Loading Balance, 400g capacity at 0.001g readability.

Ohaus Model TS4000 Top Loading Balance, 400g/100g capacity at 0.01g/0.001g readability (2)

Fisher Model XD800 Top Loading Balance, 800g capacity at 0.01 readability (2)

Fisher Model XD400D Top Loading Balance, 400g capacity at 0.01 readability

Mettler Model 3100 Top Loading Balance, 3.1 Kg capacity at 0.01 readability

Centrifuges:

Sharples ARE 15MV Super Centrifuge, Vaportite Design

Fisher Model MDL2810 Centrifuge

Sorvall RC2-B Super Speed Centrifuge, Refrigerated Floor Model

Eppendorf Model 5810 Centrifuge

Fisher Microcentrifuge

pH/ISE Meters:

Acumet Model AB15 pH meter, 0.00 to 12.00 range at 0.01 readability

Acumet Model AR50 pH/ISE Meter

Orion Model 710A pH/ISE Meters (2)

Ovens/Incubators:

Fisher Model 349 Isotemp Oven

Fisher Model 230F Isotemp Oven

Fisher Model 655F Isotemp Oven

AC-Lab 15 cu.ft. Incubator

Soiltest Isotemp Oven

SYBRO Model 1300 Furnace

VWR Scientific Model 2020 Incubator

Water Purification Equipment:

Deionized Pre-treatment System fed into a D8904 High Capacity Activated Carbon Filter or into a Milli-Q Water Purification System

Freezers, Freeze-Driers & Refrigerators:

So-Low Environmental Chest Freezer (to-150EC)

Labconco Freeze Dry-5 Lyophilizer

18 cu.ft. Refrigerator Freezers (5)

Fisher Isotemp Refrigerator Circulator

Scienceware Frigimat Dry Ice Maker

14 cu.ft. Freezers (3)

216 cu. ft. Walk-in Coldrooms (2)

Laminar Flow Hoods:

Flow Laboratories Gel Aire AIRONE Hoods (3)

Laminar Flow Hoods (9)

Autoclave - All American Electric Pressure Steam Sterilizer

Hach COD Block Reactors (2)

Laboratory Information Management System (LIMS):

Element DataSystem Laboratory Information Management System (LIMS), Promium Essential Information Management.

Table 4-4.1

**ANALYTICAL METHODS**

The procedures employed by WST for the analysis of samples are taken from a variety of references. These analytical methods are condensed in the SOP's used in the laboratory. Specific method reference materials are also included.

Analytical procedures employed are based on the following:

1. Methods for Chemical Analysis of Water and Wastes. EPA 600/4-79-020, March 1979, Revised 1983, U.S. Environmental Monitoring and Support Laboratory, Cincinnati, Ohio 45268.
2. Federal Register, 40 CFR Part 136: Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act. Revised July 1991.
3. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. Third Edition, Revised December, 1996 United States EPA SW-846.
4. Superfund Contract Laboratory Program. U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Las Vegas, Nevada. SOW for Inorganic and Organic Analysis #ILM03.0 and #OLM03.0.
5. Annual Book of ASTM Standards, Volume II. ASTM, 1916 Race Street, Philadelphia, Pennsylvania 19103.
6. Standard Methods for the Examination of Water and Wastewater. (20th Edition). American Public Health Association, 1105 18th Street, NW, Washington, D.C. 20036.
7. Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater. EPA 600/4-82-057, July 1982, U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio 45268.
8. Verification of PCB Spill Cleanup by Sampling and Analysis. EPA 560/5-85-026, August, 1985, U.S. Environmental Protection Agency, Office of Toxic Substances, Washington, D.C.

1. HASL-300, 28th Edition, Feb. 97, Environmental Measurements Laboratory, US Department of Energy
2. Radiochemical Analytical Procedures for Analysis of Environmental Samples, EMSL LV053917, Mar. 97, Environmental Monitoring and Support Laboratory, US Environmental Protection Agency
3. Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600 4-80-032, Aug. 80, Environmental Monitoring and Support Laboratory, US Environmental Protection Agency
4. Radiochemistry Procedures Manual, EPA 520/5-84-006, Jun. 84, Eastern Environmental Radiation Facility, US Environmental Protection Agency

## Table 4-5
## Schedule of Analysis for Quality Control Samples

| Analysis | Method | Method Blanks | Dupli-cate | Matrix Spike | Surro-gates | Ref. (LCS) |
|---|---|---|---|---|---|---|
| GC-Purge | 601-602 | Daily | 5%* | 10% | 100% | Daily |
| GCMS-Purge | 624 | Daily | 5%* | 5% | 100% | Daily |
| GC-Pest/PCB | 608 | PB | 5%* | 5% | 100% | 10%** |
| GCMS Semivols. | 625 | PB | 5%* | 5% | 100% | 10%** |
| Oil&Grease | 1664 | PB | 5%* | 5% | N/A | 10% |
| Pet. Hydro | 418.1 | PB | 5% | 5% | N/A | 10% |
| GC-Purge | 8021B | Daily | PB/5%* | PB/5% | 100% | PB/10% |
| GCMS-Purge | 8260B | Daily | PB/5%* | PB/5% | 100% | PB/10% |
| GC-Pest<br>GC-PCBs | 8081A<br>8082 | PB | PB/5%* | PB/5% | 100% | PB/10% |
| GCMS-Semivols | 8270C | PB | PB/5%* | PB/5% | 100% | PB/10% |
| Pet.Hydro. | 3550<br>418.1<br>8015B | PB | PB/5% | PB/5% | N/A;<br>100%# | PB5% |
| Radium 226/228 | Ra-05<br>SM 7500 | PB | PB/10% | PB/5% | N/A | PB/5% |
| Isotopic Thorium | HASL-300<br>Se-02 | PB | PB/10% | PB/5% | N/A | PB/5% |
| Total Uranium | HASL-300<br>Se-03 | PB | PB/10% | PB/5% | N/A | PB/5% |
| Gross Alpha/Beta | 900,9310<br>SM 7110 | PB | PB/10% | PB/5% | N/A | PB/5% |
| Metals | 200 Series | PB | PB/5%* | PB/5% | NA | PB/10% |
| Metals | 6010B<br>7000 | PB | PB/5%* | PB5% | NA | PB/10% |

PB - per batch
PB/5% - one QC sample per analytical batch or 5%, whichever is greater
PB/10% - one QC sample per analytical batch or 10%, whichever is greater
* Duplicate matrix spikes may replace duplicate samples
**Reference Samples (Laboratory Control Samples) will also be analyzed after every matrix spike outside control limits.
# 8015 (modified)
N/A - Not Applicable

# DATA HANDLING

Since the objective of Waste Stream Technology's Analytical Laboratory is the production of data of known, documented quality, it is of the utmost importance that all the data regarding each sample is recorded and reduced in an accurate and precise manner. The greatest responsibilities to the production of this data are with the individual extraction technicians and analysts. They are, after all, the producers of the data. This section will address the procedures of handling the data. This section will also deal with the procedures used by the extraction technicians and the analysts for record keeping and ultimately, the traceability of the data within the laboratory. This section will then be followed by a brief discussion of data reduction, validation, review, and final reporting.

## 5.1 Record Keeping in the Laboratory

As mentioned in Section 3.4, Sample Custody in the Laboratory, the samples are logged into the Element DataSystem LIMS database which is then used to track the progress of the samples throughout the analytical process. The traceability of a sample or group of samples that require any laboratory analysis begins with the sample Batch form and Bench sheet. Some preparations and analysis also use a logbook in conjunction with the batch/bench sheet.

### 5.1.1 Batch Form

The Batch form is used to choose the preparation method, analyses, matrix and, for organic preparations, the surrogate standard that will apply to the batch. When a new batch form is created, the database automatically assigns a unique ID number to the batch for tracking purposes. The program uses the calculation parameters, reporting and control limits associated with that Batch Matrix based on the analyses designated in the batch. The ID numbers of any reagents used to prepare and/or analyze of the samples is also designated in the batch form. This form is the prerequisite for completing the Bench Sheet.

### 5.1.2 Bench Sheet

The Bench sheet involves the addition of Client Samples and QC Samples to the batch. Once samples are added to the bench sheet, the sample properties can be changed to record the following pertinent information: The Date Prepared, Initial Amount (sample weight or volume used), the Final Amount (final volume of the extract, digestate, scrubber, etc.), Initials of the Preparation Technician, Volume of Surrogate Standard (organic preparations), Comments, QC Sample Source (matrix spikes and duplicates), QC Spike Standard ID and Spike Amount. The date prepared will default to current date and time. Additional, unlimited numbers of samples can be added at any time. Default

QC samples will automatically be added based on the number of samples on the bench sheet and can be edited at any time. Additional parameters can be added to the Bench Sheet by modifying the print out format using Crystal Reports software (e.g. pH recorded for Method 8270 aqueous extractions). The Bench Sheet is intended to be filled-in by the persons preparing the samples. The Bench Sheet may also require the initials (and date) of the technician witnessing the addition of spike standards to QC samples. The Bench Sheet must be reviewed for accuracy by supervising personnel whom then signs and dates the sheet. Depending on the type of Bench Sheet (organic preparation, metals digestion, wet chemistry etc.) an Analyst or Data Reviewer may also be required to sign and date the Bench Sheets for review purposes.

5.1.3 Sample Preparation Logbooks

Some sample preparations use a logbook in conjunction with the batch/bench sheet. The logbooks are hard covered and bound notebooks with pre-numbered pages. The following information must be recorded into these logbooks:

a. The date of extraction and the initials of the technician performing the extraction.
b. The identification numbers of any standards used in the extraction.
c. The method of extraction used.
d. The QA/QC Batch Number assigned by Element.
e. The WST sample ID number (Work Order number) of each sample extracted and the weight or volume of sample extracted.
f. The final volume of extract.
g. The volume of laboratory control sample standard added to the spiked blank sample.
h. The WST sample ID number of the sample selected for matrix spike analysis, the volume of matrix spike added, and ID number of the matrix spike standard used.
i. Any comments or observations on occurrences during the extraction procedure, especially if they may effect the results of the data generated.
j. The lot number and manufacturer of the solvents used to extract the samples and the ID number of each reagent used.

Upon completion of the extraction, a photocopy of the sample preparation logbook will be given to the appropriate analyst along with the extracts and the bench sheet. The analyst will then submit the copy of the preparation logbook and the bench sheet as part of the data package for review.

5.1.4 Wet Chemistry Logbooks

Since the preparation of samples for wet chemistry analyses is typically not as involved as the extraction of samples for

organic, radiochemical, or metals analyses, the preparation and analysis data for wet chemistry analyses will be recorded in the same logbook. Each wet chemistry analysis will have its own individual logbook designed to record all the data pertinent to that analysis. This would including, the date of analysis, the initials of the technician performing the analysis, the WST sample ID numbers being analyzed, the final results obtained for each sample analyzed, the results of all QC sample analyses, and the lot number or ID number of the reagents and standards used for the analysis. Some of the other records kept in association with the wet chemistry analyses, such as reagent preparation, may be maintained in separate notebooks.

All notebooks used to record wet chemistry data are bound with hard covers and have pre-numbered pages. They are issued to the analysts by the QA/QC Officer. The QA/QC Officer assigns each notebook a number and records the date of issuance, the notebook title and the name of the analyst to whom the notebook was issued alongside of this number on a Notebook Distribution Sheet which he/she maintains.

Users of the notebook will maintain good laboratory practices in their use. All entries will be made with indelible ink. No pages will be torn out of the notebook. Corrections will be made by marking a single horizontal line through the mistake, followed by initializing and dating the correction. Tape or liquid paper will not be permitted when making corrections.

The use of notebooks, however, does not preclude the need to prepare the Bench Sheet for each analysis batch. Batches need to be created and sample IDs need to be added to Bench Sheets in order to enter sample results into the Element DataSystem. The appropriate QC samples will also be assigned in the Bench Sheet. Bench Sheets for wet chemistry analyses need to be peer reviewed for accuracy and signed and dated. After the analysis results are entered into the Element DataSystem, the signed Bench Sheet is then submitted for data review along with a copy of the completed notebook. The data reviewer will check the entered results for accuracy and completeness and then sign and date the Bench Sheet.

### 5.1.5 Radiochemistry Sample Preparation

Since the preparation of samples for radiochemistry analyses involves numerous steps, it is recorded using three documents, the Bench Sheet, an index tracking form and the preparation logbook. Each batch of samples is assigned a Work Order from Element DataSystem that is used to track the preparation. Also recorded are the date assigned, technicians initials, Work Order sample ID numbers of the samples being prepared, the number of samples in the batch, the analysis being performed, the client name and any applicable comments. The Bench Sheet is used to record the weight or volume of sample and the QC samples

associated with the batch while the sample preparation logbook is used to record each step of the digestion performed on the batch. The Work Order number, the date the step is performed and the name of the technician performing the step are recorded at the beginning of each day's entry. The Bench Sheet is peer reviewed, signed and dated and submitted with the data package for review.

5.1.6 Record Keeping in Instrumental Analysis

The analysis of samples by GC, GC/MS, ICP, graphite furnace AA, TOC Analyzer, Ion Chromatography, Gamma Counter, Alpha Analyst, and Gas Proportional Counter will be documented using an analysis sequence log. The sequence log may be in the form of a notebook or a computer generated log sheet that is filed in an analysis sequence binder. For GC/MS, ICP and GC analyses, an Analysis Sequence Sheet is created in the Element DataSystem and is used in conjunction with the analysis log. The analysis log or analysis log/Analysis Sequence Sheet combination must document, at a minimum, the following information:

1. The date of the analysis.
2. The WST sample ID numbers analyzed.
3. The ID of the instrument used for the analysis. Each instrument will have its own analysis sequence log.
4. The ID numbers of the initial, continuing or QC check standards used through out the analysis sequence. In the case of GC/MS analyses, the tune standard ID number must also be recorded.
5. The ID numbers of the QC samples analyzed in the sequence.
6. The dilution factor, if the sample required dilution prior to analysis.
7. The name of the data file associated with each analysis of the sequence (For ICP and graphite furnace AA there is only one date file name for the entire analysis sequence).

The analysis log must show the sequence in which the samples standards and QC samples were analyzed. The log may also contain data used in the reduction of data to obtain final results such as sample weights or volumes and final extraction volumes, however, this information is typically documented in the Element DataSystem Bench Sheet.

Upon completion of the analysis, the analyst will enter the sample results into the Element DataSystem. Data entry is performed either manually or by computer file transfer via Element DataSystem DataTool. The analyst will also enter the results of method blank, laboratory control sample, continuing calibration verification, matrix spike, and duplicate or matrix

spike duplicate sample analyses into Element DataSystem for review.

A copy of the analysis log or notebook will be submitted as part of the data package for review along with the Analysis Sequence Sheet, if applicable. The Analysis Sequence Sheet should be signed and dated by the analyst(s). The data package will also include the Element DataSystem Bench Sheet, the hard copy print outs of all continuing calibration standard, QC sample and site sample analyses.

5.2 Data Reduction

Reducing the data to a reportable form is the responsibility of the analyst performing the analysis. It is of utmost importance that the analyst pay close attention to the data being reduced by him or her since the data is only spot checked beyond analysis. In reducing the data generated by an analysis, the analyst must review the following:

a. The continuing calibration analysis to assess the validity of the current calibration.
b. The method blank analysis to assure that no analyte concentration is above the method detection limit.
c. The recoveries of each of the analytes from the laboratory control sample analysis to assure that they meet acceptable criteria.
d. The concentration of each integrated analyte to assess if the concentration has exceeded the upper linear range, making further dilution of the sample or sample extract necessary, or if the concentrations are below the detection limit.

For GC and GC/MS analyses the following must also be reviewed:

a. The retention times of each of the integrated analytes to assure that they are within the acceptable windows and that the analyte peaks were correctly identified.
b. The integration of each analyte peak.
c. For GC/MS analyses, the tuning standard must be reviewed to assure that it meets acceptable criteria.
d. For GC/MS analyses, the spectrum of each identified peak must be verified to assure that it meets acceptable criteria.

For Radiochemical analyses the following must also be reviewed:

a. For Alpha Spectrometry, daily Pulser check, monthly background and secondary calibration checks.
b. For Gas Proportional Counting, daily source and monthly background checks, and annual Self-Absorption check.
c. For gamma spectrometry, daily source and monthly background checks.

When the above reviews are completed and satisfactory, the concentration of each analyte in the sample can be determined using the following calculation:

$$C = \frac{I}{RF} \times \frac{1}{Vi} \times \frac{Ve}{As} \times DF$$

Where,
C = Concentration of the analyte in the sample, in appropriate units [µg/L (ppb), mg/L (ppm), or µg/Kg (ppb), mg/Kg (ppm)]

I = Signal size, in units appropriate to the method

RF = The response factor, in units of signal size per unit weight of the analyte. This response factor is essentially a mean response factor determined through regression of the initial calibration curve.

Vi = The aliquot size of the prepared sample taken for analysis, in units of ml. For some analyses this value is 1 since the same volume is used for initial calibration and for sample analyses.

Ve = The total volume of the prepared sample in ml.

As = The amount of sample taken for preparation. For liquid samples, the volume in liters is used; for solid samples, use the weight in Kg. If the results are to be determined on the basis of dry weight, use the following to determine sample size:

$$As\ (dry) = As\ (wet) \times \frac{\%\ Solids}{100}$$

DF = Dilution factor. The dilution factor is 1 for samples that are prepared exactly as prescribed in the protocol. If the soil or water extract required dilution, then the dilution factor differs from unity. For example, if an extract is diluted from 1 ml to 10 ml, the dilution factor becomes 10.

In most instrumental analyses, a computer is used that will automatically calculate the ratio I/RF for each analyte from the current calibration table or linear regression curve based on the initial calibration. The I/RF ratio is given in units of weight per volume for each of the analytes found in sample analyzed. These values are then either entered manually or by DataTool into DataElement. The values for Vi, Ve, As (usually dry weight for soils) are contained in the preparation bench sheet and DataElement then uses all of the data to calculate C for each analyte found in the sample.

Although computerized data reduction alleviates the need for extensive manual data reduction, manual calculation of some of the results from each analysis batch will checked by the analyst and a second tier reviewer. The QA/QC Department and Laboratory Director will also perform spot checks of the data reduction during data review to verify that the data was correctly reduced. These calculations will be signed and dated as proof of the review.

## 5.3 Data Validation

Before data from an analytic batch can be incorporated into reports, it must be validated by a Second Tier Reviewer and by the QA/QC Officer through the review of the overall data package associated with the analytic batch. The Second Tier Reviewer will check the items listed below, using a checklist to document the review. Figures 5-1 through 5-8 show the forms that are used for the review of data.

1. Is the batch complete?
2. Have all the analyses been performed within the holding times of the samples?
3. Is there a valid continuing calibration for each analyte associated with the analyses of the individual samples within the batch?
4. For metals analyses, is there a valid initial calibration curve for each analyte and were initial calibration verification, interference check and quality control check standards analyzed where appropriate?
5. For GC/MS analyses, is there a valid tune analysis associated with the sample batch?
6. Is the sequence of runs in which the samples were analyzed proper for the method? Were method blanks, continuing calibrations, duplicates, matrix spikes, and spiked blanks run within the frequency listed in the method?
7. For GC and GC/MS analyses, are the surrogate recoveries from the samples within established control limits for the sample matrix analyzed? If not, has the sample preparation and analysis been repeated, and have recoveries been acceptable in the repeated analysis?
8. Is the recovery of spiked compounds in the laboratory control sample acceptable?
9. Is the recovery of the spiked compounds in the matrix spike sample acceptable? If not, has there been an acceptable explanation or a repeat of the analysis?
10. Do duplicate analyses in the run sequence exhibit precision within the control limits?

11. Is the documentation in order? Are dates, QA/QC Batch Numbers, standard ID numbers, and reagent information complete?

If the answer to all of the above questions is "yes", the Second Tier Reviewer can submit the data to the QA/QC Department for third tier review. The Second Tier Reviewer will also check the results for each sample in the Element DataSystem database to assure that it is correct since the results from Element DataSystem will be used to generate the finalized result report.

If the answer to any of the above questions is "no", corrective actions will be initiated by the Second Tier Reviewer, in conjunction with the QA/QC Officer and the analyst. If, after implementation of corrective actions, all criteria are met, the data can then be released for third tier review. If some criteria are not met, the batch can be released, depending on what is not met and if there is sufficient explanation. However, regardless of the rationale, data will not be released if the following conditions exist:

1. GC/MS did not meet tuning criteria
2. Continuing calibration was not performed or did not meet the review criteria.
3. Laboratory control sample analysis (spiked blanks) did not meet review criteria.
4. The data set was not complete.

Corrective actions for these situations will be addressed in Section 6.0, Corrective Actions.

Once the Second Tier Reviewer approves the data, he or she will sign off on the checklist, attach it to the data package and will then lock the data in the Element DataSystem. The data package will then be submitted to the QA/QC Officer. The QA/QC Officer will also review the data package but not to the same extent as the second tier review. The QA/QC Officer will check the package for completeness, ensure the first and second tier reviews have been properly completed and spot check the results in the Element DataSystem. The QA/QC Officer will also ensure that all non-conformances have been properly addressed and that the appropriate corrective actions have been taken. This will also include, if necessary, ensuring that the data has been properly flagged. At the completion of review, the QA/QC Officer will change the status of the sample from Analyzed to Reviewed in the Element DataSystem LIMS, then sign and date the review form.

## 5.4 Final Reporting

After all of the analyses on a sample or group of samples is completed and reviewed for accuracy, a final analytical result report is generated by the Data Coordinator. The data from the Element DataSystem database is exported into

the appropriate Crystal Report form used to produce a final result report.

The final reports generated by the Data Coordinator are then submitted to the Laboratory Director or a designee for final review. The reviewer will sign off on the report and return it to the Data Coordinator. A copy of the report is made and filed according to the work order number and the original copy is sent to the client or the client's agent. As part of WST's confidentiality policy, a lead sheet that includes a confidentiality notice (Figure 5-9) must be used when results are transmitted via facsimile.

A report may also be produced as electronic data deliverable (EDD) using various formats (e.g., PDF, Excel, ERPIMS, ADR Adapt etc.). Typically, the hardcopy report is generated and reviewed first prior to the EDD. The EDD is then e-mailed to the client.

## 5.5 Data and Report Storage and Retention

Hard copies of generated data packages and final result reports will be archived in a locked storage area. Tapes containing electronically stored data will be stored in a locked, fireproof filing cabinet while archived laboratory notebooks will be stored in a locked, fireproof room. Any items retrieved from these rooms need to be recorded on an Archive Room Access Log Sheet. Recorded will be the person retrieving the item, the date and time taken, a description of the item retrieved and the date and time the item was returned.

Records for QA documentation are retained according to the schedule shown in Table 5-1. In the unlikely event that Waste Stream Technology Inc.'s laboratory transfers ownership or goes out of business, our clients will be contacted immediately and given the opportunity to obtain any available records associated with the analysis of their samples. Records older than the retention times listed in Table 5-1 may not be available.

Table 5-1

**QUALITY ASSURANCE RECORDS**

| Records | Location | Retention |
|---|---|---|
| Analysis Report Hardcopy | Client File | 5 years |
| Audit Reports | QA File | 7 years |
| Certification Records | QA File | 5 years |
| Correspondence | | |
| Project-related | Project File | Project Specific |
| Non-project-related | QA File | 5 years |
| Instrument/Equipment Calibration and Maintenance Records | QA File | 5 years |
| Methods Manual, Revisions, Transmittal Records | QA File | 7 years |
| Quality Assurance Manual, Revisions, Transmittal Records | QA File | 7 years |
| Non-conformance/Corrective Action Reports | QA File | 5 years |
| Procurement Documents | Procurement Log | 1 year |
| Quality Control Acceptance Criteria, Control Charts, and Current Data | QA File | 5 years |
| Quality Control Reports | QA File | 5 years |
| Raw Data Notebooks, Discs, Printouts, Recorder Tracings | Laboratory Files | 5 years |
| QA Project Plans | Project File | Project Specific |
| Standard Curves | Laboratory Files | 5 years |
| Training Records | QA Files | 5 years |

FIGURE 5-1

Waste Stream Technology Inc.

First and Second Tier Lab Data Review Check List - GC

| |
|---|
| Work Order Number(s): |
| |
| Batch Number(s)/Sequence Numbers(s) |
| Client(s): |
| Analysis Method(s)/Analysis Date(s): |
| Instrument ID: |
| Last Calibration Date: |

| Review Item | Yes (X) | No (X) | N/A (X) | 2nd Level Review(X) |
|---|---|---|---|---|
| **A. Initial Calibration** | | | | |
| 1. Is Initial Calibration Included in Data Package | | | | |
| 1a. If yes, review 2 through 6 below. | | | | |
| 1b. If no, was initial calibration data previously reviewed and acceptable? | | | | |
| 2. Does the curve consist of at least five calibration levels? | | | | |
| 3. Is the low standard near, but above the MDL? | | | | |
| 3. Are the correlation coefficients within method criteria (>0.995)? Did the intercept/slope (b/m) ratio meet criteria? | | | | |
| 4. Was the initial calibration curve verified using an independent second source standard and did the analysis meet criteria? | | | | |
| **B. Sample Analysis** | | | | |
| 1. For pesticide analysis, was an injection port primer standard analyzed? Was an endrin/DDT degradation standard analyzed and did it meet criteria? | | | | |
| 2. Was a continuing calibration analysis performed for every 10 sample analyses and at the end of the run sequence? | | | | |
| 3. Are the % recoveries of the compounds from the continuing calibration analyses within QC limits (85% to 115% of expected value)? | | | | |
| 4. Were dilutions performed on samples that contained analyte concentrations > the upper calibration range? | | | | |
| 5. Are reported compounds within retention time windows? | | | | |
| 6. Have reported compounds been confirmed on a second column (for pesticides, herbicides and GC VOCs)? | | | | |
| 7. Are internal standard areas within QC limits (for GC VOCs)? | | | | |
| 8. Are surrogate recoveries within QC limits? | | | | |
| 9. Was the sample re-analyzed to confirm sample matrix effects? | | | | |
| 10. Were the samples extracted and/or analyzed within holding time? | | | | |
| 11. For PCB analyses, were clean up methods used as appropriate? | | | | |
| | | | | |

| Review Item | Yes (X) | No (X) | N/A (X) | 2nd Level Review (X) |
|---|---|---|---|---|
| | | | | |
| **C. QC Samples** | | | | |
| 1. Is the concentration of the target analytes in the method blank analysis less than MRLs (or less than MDL for the appropriate projects)? | | | | |
| 2. Are the recoveries for the target analytes from the laboratory control sample (BS) within QC limits (or within sporadic margin of failures for USACE projects; except: Higgins Farm, no SMF's allowed)? | | | | |
| 3. Are the recoveries for the target analytes from the MS and MSD within QC limits (or within sporadic margin failures for USACE projects) and are the RPDs between the MS and MSD within QC limits? | | | | |
| 4. If the MS and MSD recoveries are not within QC limits have they been re-analyzed to confirm sample matrix effects? | | | | |
| **D. LIMS** | | | | |
| 1. After the data has been imported into Element and saved, has the data been queried to identify any non-conformances (i.e., red flags)? | | | | |
| 2. Have all of the non-conformances been addressed? | | | | |
| 3. Has the compound list for each sample been reviewed and does an X appear for those compounds in the Rpt box? | | | | |
| 4. Has the data been reviewed for false positives and have all the false positive results been removed? | | | | |
| 5. Have the bench sheet(s) been reviewed for accuracy and are they appropriately reviewed? | | | | |
| 6. Are all bench sheets (extraction, TCLP) and sequences included in the data package? Have they been signed and dated appropriately? | | | | |

| Comments on any "No" Response: | | |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| Analyst: | Date: | |
| Second Tier Reviewer: | Date: | |
| QA/QC Officer: | Date: | |

FIGURE 5-2

Waste Stream Technology Inc.
First and Second Tier Lab Data Review Check List-GC/MS

| |
|---|
| Work Order Number(s): |
| Batch Number(s)/Sequence Numbers(s) |
| Client(s): |
| SVOC Analysis Method(s): 8270C 625 |
| VOC Analysis Method(s): 8260B 624 524 |
| Instrument ID(circle one): SVOC 5972A 5972C |
| VOC: 5971 5972B 5973 |
| Last Calibration Date: |
| Analysis Date(s): |

| Review Item | Yes (X) | No (X) | N/A (X) | 2nd Level Review (X) |
|---|---|---|---|---|
| **A. Initial Calibration** | | | | |
| 1. Is Initial Calibration Included in Data Package | | | | |
| 1a. If yes, review 2 through 6 below. | | | | |
| 1b. If no, was initial calibration data previously reviewed and acceptable? | | | | |
| 2. Does the curve consist of at least five calibration levels? | | | | |
| 3. Did the DFTPP/BFB tune analysis associated with the initial calibration meet criteria? | | | | |
| 4. Is the low standard near, but above the MDL? | | | | |
| 5. Are the RRFs and %RSDs within method criteria appropriate to the method? | | | | |
| 6. Was the initial calibration curve verified using an independent second source standard and did the analysis meet criteria? | | | | |
| **B. Sample Analysis** | | | | |
| 1. Did the 12-hour BFB/DFTPP analysis meet tuning criteria and were all analyses performed within the 12 hour tune period? | | | | |
| 2. Was a continuing calibration analysis performed for every 12-hour period? | | | | |
| 3. Are the RRFs and % differences within QC limits for the appropriate SPCC and CCC compounds? | | | | |
| 4. Were dilutions performed on samples that contained analyte concentrations > the upper calibration range? | | | | |
| 5. RRT of identified compounds within 0.06 RRT units of RRT of CCC standard component? | | | | |
| 6. Was the mass spectra visually reviewed (ion ratios and abundances) and compared to the reference spectrum for all hits? | | | | |
| 7. Are internal standard areas within QC limits? | | | | |
| 8. Are surrogate recoveries within QC limits (not more than one BN and one AP surrogate for SVOCs)? | | | | |
| 9. Was the sample re-analyzed to confirm sample matrix effects? | | | | |

| | | | | |
|---|---|---|---|---|
| 10. Were the samples extracted and/or analyzed within holding time? | | | | |
| Review Item | Yes (X) | No (X) | N/A (X) | 2nd Level Review (X) |
| **C. QC Samples** | | | | |
| 1. Is the concentration of the target analytes in the method blank analysis less than MRLs (or less than MDL for the appropriate projects)? | | | | |
| 2. Are the recoveries for the target analytes from the laboratory control sample (BS) within QC limits (or within sporadic margin of failures for USACE projects; except: Higgins Farm, no SMF's allowed)? | | | | |
| 3. Are the recoveries for the target analytes from the MS and MSD within QC limits (or within sporadic margin failures for USACE projects) and are the RPDs between the MS and MSD within QC limits? | | | | |
| 4. If the MS and MSD recoveries are not within QC limits have they been re-analyzed to confirm sample matrix effects? | | | | |
| **D. LIMS** | | | | |
| 1. After the data has been imported into Element and saved, has the data been queried to identify any non-conformances (i.e., red flags)? | | | | |
| 2. Have all of the non-conformances been addressed? | | | | |
| 3. Has the compound list for each sample been reviewed and does an X appear for those compounds in the Rpt box? | | | | |
| 4. Has the data been reviewed for false positives and have all the false positive results been removed for the compounds of interest ? | | | | |
| 5. Have the bench sheet(s) been reviewed for accuracy and are they appropriately reviewed? | | | | |
| 6. Are all bench sheets (extraction, TCLP) and sequences included in the data package? Have they been signed and dated appropriately? | | | | |

| | | |
|---|---|---|
| Comments on any "No" Response: | | |
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| | | |
| Analyst: | Date: | |
| Second Tier Reviewer: | Date: | |
| QA/QC Officer: | Date: | |

FIGURE 5-3

Check List - ICP

| Waste Stream Technology Inc.<br>First and Second Tier Lab Data Review Check List - ICP | | | | |
|---|---|---|---|---|
| Work Order Number(s): | | | | |
| Batch Number(s)/Sequence Numbers(s) | | | | |
| Client(s): | | | | |
| Analysis Method(s): | | | | |
| Instrument ID: | | | | |
| Last Calibration Date: | | | | |
| | | | | |
| Review Item | Yes (X) | No (X) | N/A (X) | 2nd Level Review (X) |
| **A. Initial Calibration** | | | | |
| 1. Does the daily standard curve consist of a Calibration Blank and the required minimum number of calibration Standards? | | | | |
| 2. Is the low standard near, but above, the MDL? | | | | |
| 3. Are the highest calibration standards, HCV (10mg/L) and LCV (1mg/L), reanalyzed immediately after calibration and results within QC limits? | | | | |
| 4. Are the CCV standards analyzed at required frequency and at the end of the analytical sequence and all parameters within QC limits? | | | | |
| 5. Is a calibration blank (CCB) analyzed after initial calibration, at required frequency and at the end of the analytical sequence and all parameters within acceptance criteria? | | | | |
| 6. Was the initial calibration curve verified using an independent second source standard, SCV, and did the analysis meet criteria? | | | | |
| 7. Are the Interference Check Standards, IFA,B analyzed at at the beginning of the analytical sequence and all parameters within QC limits? | | | | |
| **B. Sample Analysis** | | | | |
| 1. Are all sample holding times met? | | | | |
| 2. Are all samples with concentrations > the highest standard used for initial calibration diluted and reanalyzed? In the case of some analytes (e.g. Calcium) was the result reported within the linear range of the curve? | | | | |
| 3. Is the correct methodology used for sample prep and analysis? | | | | |
| **C. QC Samples** | | | | |
| 1. Is the concentration of the target analytes in the method blank analysis less than MRLs (or less than MDL for the appropriate projects)? | | | | |
| 2. Are the recoveries for the target analytes from the laboratory control sample (BS) within QC limits (or within sporadic margin of failures for USACE projects; except: Higgins Farm, no SMF's allowed)? | | | | |

| | | | | |
|---|---|---|---|---|
| 3. Are the recoveries for the target analytes from the MS and MSD within QC limits (or within sporadic margin failures for USACE projects) and are the RPDs between the MS and MSD within QC limits? | | | | |
| Review Item | Yes (X) | No (X) | N/A (X) | 2nd Level Review (X) |
| 4. If the MS and MSD recoveries are not within QC limits have they been re-analyzed to confirm sample matrix effects? | | | | |
| 5. Are the recoveries for the target analytes from the post-digestion spike analyses within QC limits? | | | | |
| 6: Were 5X dilution interference checks analyzed and are the results within acceptance criteria? | | | | |
| **D. LIMS** | | | | |
| 1. After the data has been imported into Element and saved, has the data been queried to identify any non-conformances (i.e., red flags)? | | | | |
| 2. Have all of the non-conformances been addressed? | | | | |
| 3. Has the compound list for each sample been reviewed and does an X appear for those compounds in the Rpt box? | | | | |
| 4. Has the data been reviewed for false positives and have all the false positive results been removed? | | | | |
| 5. Have the bench sheet(s) been reviewed for accuracy and are they appropriately reviewed? | | | | |
| 6. Are all bench sheets (extraction, TCLP) and sequences included in the data package? Have they been signed and dated appropriately? | | | | |
| | | | | |
| Comments on any "No" Response: | | | | |
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| Analyst: | | Date: | | |
| Second Tier Reviewer: | | Date: | | |
| QA/QC Officer: | | Date: | | |

FIGURE 5-4

Check List -GFAA

| | | | | |
|---|---|---|---|---|
| Waste Stream Technology Inc.<br>First and Second Tier Lab Data Review Check List -GFAA | | | | |
| Work Order Number(s): | | | | |
| | | | | |
| | | | | |
| Batch Number(s)/Sequence Numbers(s) | | | | |
| Client(s): | | | | |
| Analysis Method(s)/Analysis Date(s): | | | | |
| Instrument ID: | | | | |
| Last Calibration Date: | | | | |
| | | | | |
| Review Item | Yes (X) | No (X) | N/A (X) | 2nd Level Review (X) |
| **A. Initial Calibration** | | | | |
| 1. Does the daily standard curve consist of a Calibration Blank and the required minimum number of calibration Standards? Does the curve meet acceptable criteria (r>0.995) | | | | |
| 2. Is the low standard near, but above, the MDL? | | | | |
| 3. Is a mid-level calibration standard (ICV) reanalyzed immediately after calibration and results within QC limits? | | | | |
| 4. Was the initial calibration curve verified using an independent second source standard, QC Check Standard or SCV, and did the analysis meet criteria? | | | | |
| 5. Was a CCB analyzed immediately after calibration, at the required frequency and at the end of the analytical sequence and did the analyses meet criteria? | | | | |
| 6. Are the CCV standards analyzed at the required frequency and at the end of the analytical sequence and were the analyses within QC limits? | | | | |
| **B. Sample Analysis** | | | | |
| 1. Are all sample holding times met? | | | | |
| 2. Are all samples with concentrations > the highest-standard used for initial calibration diluted and reanalyzed? | | | | |
| 3. Is the correct methodology used for sample prep and analysis? | | | | |
| 4. Are post-digestion spikes analyzed and are the results within QC limits? If not, was the method of standard additions performed? | | | | |
| **C. QC Samples** | | | | |
| 1. Is the concentration of the target analytes in the method blank analysis less than MRLs (or less than MDL for the appropriate projects)? | | | | |
| 2. Are the recoveries for the target analytes from the laboratory control sample (BS) within QC limits (or within sporadic margin of failures for USACE projects; except: Higgins Farm, no SMF's allowed)? | | | | |

| | | | | |
|---|---|---|---|---|
| 3. Are the recoveries for the target analytes from the MS and MSD within QC limits (or within sporadic margin failures for USACE projects) and are the RPDs between the MS and MSD within QC limits? | | | | |
| Review Item | Yes (X) | No (X) | N/A (X) | 2nd Level Review (X) |
| 4. If the MS and MSD recoveries are not within QC limits have they been re-analyzed to confirm sample matrix effects or was an MSA analysis performed on the sample digestate? | | | | |
| **D. LIMS** | | | | |
| 1. After the data has been imported into Element and saved, has the data been queried to identify any non-conformances (i.e., red flags)? | | | | |
| 2. Have all of the non-conformances been addressed? | | | | |
| 3. If Data Tool was used, has the data been reviewed for false positives and have all the false positive results been removed? | | | | |
| 4. Have the bench sheet(s) been reviewed for accuracy and are they appropriately reviewed? | | | | |
| 5. Are all bench sheets (extraction, TCLP) and sequences included in the data package? Have they been signed and dated appropriately? | | | | |
| | | | | |
| Comments on any "No" Response: | | | | |
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| | | | | |
| | | | | |
| Analyst: | | Date: | | |
| Second Tier Reviewer: | | Date: | | |
| QA/QC Officer: | | Date: | | |

# FIGURE 5-5

## DATA VALIDATION CHECKLIST-RADIOISOTOPE ANALYSIS

| | | | | | |
|---|---|---|---|---|---|
| | | | Complete for each batch of 26 samples | | |
| | ANALYSIS: | STF# | | SG# | |
| | ISO/MAT | 00- | | | |
| Date Reviewed: | / / | Reviewed By | Int: | | Sample Location |
| | Duplicate Sample No(s): | | | | |
| Spike Sample No(s): | 0 | 0 | | | |
| | | | | | |
| Requirement | Criteria | | Sample(s) Reviewed | ata Acceptable (Y/N) | Comment |
| | Sample Tracking Form | | | | |
| Sample Data | le Tracking Form in all applicable areas for analysis performed | | Sample Tracking Form | | |
| Method Blank (MB) | One MB per each group of 20 samples | | MB | | |
| thod Blank Spike (MBS) | One MBS per each group of 20 samples | | MBS | | |
| ample Duplicate (DUP) | One DUP per 10 samples | | DUP (s) | | |
| Spike (S) | One S per 10 samples | | S (s) | | |
| | Sample Results | | | | |
| et data correctly entered | touts to spreadsheet without error. IF 25% of these points in error, THEN ALL data is reviewed. | | MB | | |
| | | | MBS | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | WS | | | |
| | | WS | | | |
| \ MBS Recovery | 40% min. | | MB / MBS | | |
| ample \ Spike Recovery | 40% min Soil ONLY. | | | | |
| | | | | | |
| e DUP \ Spike Recovery | 40% min. Soil ONLY | | | | |
| | | | | | |
| Tracer Recovery | 40% min. Soil ONLY | WS | | | |
| | | WS | | | |
| | Review by Rad Lab Mgr | | | | |
| Sample Spectrum | r MBS, sample (2), DUP (2), and S (2) in every batch of 26 | | | | |
| | | WS | | | |
| | | WS | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| Duplicate Error Ratio | Each DUP performed < = 1 | | DUP | | |
| | | | DUP | | |
| ative Percent Difference | Each DUP performed < 10% | | DUP | | |
| | | | DUP | | |
| Control Charts Updated | Sample Batch | Date Entered | | / / | |
| | page 1 of 1 | | | | Rad Lab 11/30/99 |

FIGURE 5-6
DATA VALIDATION CHECKLIST
Ion Chromatography

Waste Stream Technology Inc.
First and Second Tier Lab Data Review Check List - Ion Chromatography

| Work Order Number(s): |
|---|
| |
| |
| |
| Batch Number(s)/Sequence Numbers(s) |
| Client(s): |
| Analysis Method: EPA 300.1 |
| Analysis Date(s): |
| Instrument ID: Dionex DX 120 SE |
| Last Calibration Date: |

| Review Item | Yes (X) | No (X) | N/A (X) | 2nd Level Review (X) |
|---|---|---|---|---|
| **A. Initial Calibration** | | | | |
| 1. Is Initial Calibration Included in Data Package | | | | |
| 1a. If yes, review 2 through 5 below. | | | | |
| 1b. If no, was initial calibration data previously reviewed and acceptable? | | | | |
| 2. Does the curve consist of at least five calibration levels? | | | | |
| 3. Is the low standard near, but above the MDL? | | | | |
| 4. Are the correlation coefficients within method criteria (>0.995)? Did the intercept/slope (b/m) ratio meet criteria? | | | | |
| 5. Was the initial calibration curve verified using an independent second source standard and did the analysis meet criteria? | | | | |
| **B. Sample Analysis** | | | | |
| 1. Was a continuing calibration analysis performed at the beginning, for every 10 sample analyses and at the end of the run sequence? | | | | |
| 2. Are the % recoveries of the anions from the continuing calibration analyses within QC limits (90% to 110% of expected value)? | | | | |
| 3. Were dilutions performed on samples that contained analyte concentrations > the upper calibration range? | | | | |
| 4. Are the reported anions within retention time windows? | | | | |
| 5. Were the samples analyzed within holding time? | | | | |

| Review Item | Yes (X) | No (X) | N/A (X) | 2nd Level Review (X) |
|---|---|---|---|---|
| **C. QC Samples** | | | | |
| 1. Is the concentration of the target analytes in the method blank analysis less than MRLs? | | | | |
| 2. Are the recoveries for the target analytes from the laboratory control sample (BS) within QC limits? | Yes (X) | No (X) | N/A (X) | 2nd Level Review (X) |
| 3. Are the recoveries for the target analytes from the MS and MSD within QC limits and are the RPDs between the MS and MSD within QC limits? | | | | |
| 4. If the MS and MSD recoveries are not within QC limits have they been re-analyzed to confirm sample matrix effects? | | | | |
| Review Item | Yes (X) | No (X) | N/A (X) | 2nd Level Review (X) |
| **D. LIMS** | | | | |
| 1. After the data has been imported into Element and saved, has the data been queried to identify any non-conformances (i.e., red flags)? | | | | |
| 2. Have all of the non-conformances been addressed? | | | | |
| 3. Has the compound list for each sample been reviewed and does an X appear for those compounds in the Rpt box? | | | | |
| 4. Has the data been reviewed for false positives and have all the false positive results been removed? | | | | |
| 5. Have the bench sheet(s) been reviewed for accuracy and are they appropriately reviewed? | | | | |
| 6. Are all bench sheets and sequences included in the data package? Have they been signed and dated appropriately? | | | | |
| Comments on any "No" Response: | | | | |
| | | | | |
| | | | | |
| | | | | |
| Analyst: | | Date: | | |
| Second Tier Reviewer: | | Date: | | |
| QA/QC Officer: | | Date: | | |

FIGURE 5-7
CHECKLIST-TOC

Waste Stream Technology Inc.
First and Second Tier Lab Data Review Check List - Total Organic Carbon

| | | | | |
|---|---|---|---|---|
| Work Order Number(s): | | | | |
| | | | | |
| Batch Number(s): | | | | |
| Client(s): | | | | |
| Analysis Method: EPA 415.1 | | | | |
| Analysis Date(s): | | | | |
| Instrument ID: Dohrmann DC-180 | | | | |
| Last Date of Single Point Calibration: | | | | |
| Review Item | Yes (X) | No (X) | N/A (X) | 2nd Level Review (X) |
| **A. Sample Analysis** | | | | |
| 1. Was a 0.2 mg/L continuing calibration analysis performed at the beginning of the run sequence? | | | | |
| 2. Was a laboratory control sample analyzed at the beginning and end of the run sequence and for every 10 samples analyzed? | | | | |
| 3. Were dilutions performed on samples that contained analyte concentrations > the upper calibration range? | | | | |
| 4. Were the samples analyzed within holding time? | | | | |
| 5. Were replicate analyses performed for each sample? | | | | |
| 6. Was the TOC spreadsheet reviewed against the instrument printout to ensure there were no transcription errors? | | | | |
| **C. QC Samples** | | | | |
| 1. Is the concentration of TOC in the method blank analysis less than MRLs? | | | | |
| 2. Is the recovery of TOC from the laboratory control sample (BS) within QC limits (80% to 120% of expected value)? | | | | |
| 3. Are the TOC recoveries from the MS and MSD within QC limits and are the RPDs between the MS and MSD within QC limits? | | | | |
| 4. If the MS and MSD recoveries are not within QC limits have they been re-analyzed to confirm sample matrix effects? | | | | |
| **D. LIMS** | | | | |
| 1. After the data has been entered into Element and saved, has the data been queried to identify any non-conformances (i.e., red flags)? | | | | |

| Review Item | Yes (X) | No (X) | N/A (X) | 2nd Level Review (X) |
|---|---|---|---|---|
| 2. Have all of the non-conformances been addressed? | | | | |
| 3. Have the bench sheet(s) been reviewed for accuracy and are they appropriately reviewed? | | | | |
| 4. Is the bench sheet(s) included in the data package? Has it been signed and dated appropriately? | | | | |
| 5. Is a completed run log included in the data package? | | | | |

| Comments on any "No" Response: | | |
|---|---|---|
| | | |
| | | |
| | | |
| Analyst: | Date: | |
| Second Tier Reviewer: | Date: | |
| QA/QC Officer: | Date: | |

FIGURE 5-8
VALIDATION CHECKLIST-CYANIDE

Waste Stream Technology Inc.
First and Second Tier Lab Data Review Check List - Cyanide

| |
|---|
| Work Order Number(s): |
| |
| Batch Number(s) |
| Client(s): |
| Analysis Method: EPA 335.2 9010B/9014 |
| Analysis Date(s): |
| Instrument ID: Spectronic 20 Plus |
| Last Calibration Date: |

| Review Item | Yes (X) | No (X) | N/A (X) | 2nd Level Review (X) |
|---|---|---|---|---|
| **A. Initial Calibration** | | | | |
| 1. Is Initial Calibration Included with the Data | | | | |
| 1a. If yes, review 2 through 5 below. | | | | |
| 1b. If no, was initial calibration data previously reviewed and acceptable? | | | | |
| 2. Does the curve consist of at least five calibration levels? | | | | |
| 3. Is the low standard near, but above the MDL? | | | | |
| 4. Are the correlation coefficients within method criteria (>0.995)? Did the intercept/slope (b/m) ratio meet criteria? | | | | |
| 5. Was the initial calibration curve verified using an independent second source standard and did the analysis meet criteria? | | | | |
| 6. Were the high and low curve standards distilled and analyzed and did the analysis results meet criteria? | | | | |
| **B. Sample Analysis** | | | | |
| 1. Was a continuing calibration analysis performed at the beginning, for every 10 sample analyses and at the end of the run sequence? | | | | |
| 2. Was the % recovery of cyanide from the continuing calibration analyses within QC limits (85% to 115% of expected value)? | | | | |
| 3. Were dilutions performed on samples that contained analyte concentrations > the upper calibration range? | | | | |
| 4. For 9010B/9014 analyses, were the high and low curve standards distilled and analyzed and did the analysis results meet criteria? | | | | |

| Review Item | Yes (X) | No (X) | N/A (X) | 2nd Level Review (X) |
|---|---|---|---|---|
| 5. Were the samples analyzed within holding time? | | | | |
| 6. Were samples containing interferences pre-treated prior to distillation? | | | | |
| 7. For amenable cyanide analysis, was a second portion of the sample chlorinated and distilled? | | | | |
| **C. QC Samples** | | | | |
| 1. Is the concentration of cyanide in the method blank analysis less than MRLs? | | | | |
| 2. Is the recovery for cyanide from the laboratory control sample (BS) within QC limits? | | | | |
| 3. Are the recoveries for cyanide from the MS and MSD within QC limits and are the RPDs between the MS and MSD within QC limits? | | | | |
| 4. If the MS and MSD recoveries are not within QC limits have they been re-analyzed to confirm sample matrix effects? | | | | |
| **D. LIMS** | | | | |
| 1. After the data has been entered into Element and saved, has the data been queried to identify any non-conformances (i.e., red flags)? | | | | |
| 2. Have all of the non-conformances been addressed? | | | | |
| 3. Have the bench sheet(s) been reviewed for accuracy and are they appropriately reviewed? | | | | |
| 4. Is the bench sheet(s) included in the data package? Have they been signed and dated appropriately? | | | | |
| | | | | |

| Comments on any "No" Response: | | |
|---|---|---|
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| | | |
| | | |
| | | |
| | | |
| Analyst: | Date: | |
| Second Tier Reviewer: | Date: | |
| QA/QC Officer: | Date: | |

FIGURE 5-9

# FAX LEAD SHEET

## WASTE STREAM TECHNOLOGY

302 GROTE STREET
BUFFALO, NY 14207
Phone (716)876-5290

**Environmental Laboratory Services, Radiological Laboratory Services, and Bioremediation Supplies and Services**

If this fax is incomplete or illegible, please call the number listed above.

DATE: NUMBER OF PAGES (including cover):

TO:

FROM: FAX NUMBER:

MESSAGE:

**Confidentiality Notice:**

This transmission is intended for the use of the individual or entity to which it is addressed and may contain confidential information that is privileged and exempt from disclosure under applicable law.

*Please call the number listed above if you have received this transmission in error. Destroy the original transmission without reading or saving in any manner. Thank you.*

# CORRECTIVE ACTIONS, PREVENTIVE MAINTENANCE, AND INSTRUMENT MAINTENANCE LOGS

## 6.1 Identification and Documentation of Problems

There are many areas throughout an analysis where corrective actions may be required. The decision to undertake corrective actions and ensuing actions must be documented so that traceability can be maintained. The analyst, Second Tier Reviewer and/or the QA/QC Officer can initiate corrective actions. However, the Second Tier Reviewer and/or QA/QC Officer is more likely to initiate corrective actions since he/she is the most exposed to malfunctions of the laboratory as they reflect upon the data produced. Any actions taken that affect the quality of the data must be documented and become part of the laboratory's permanent record.

During the course of data review, the Second Tier Reviewer or QA/QC Officer may make an observation that will prompt a decision to pursue corrective actions. The Second Tier Reviewer or QA/QC Officer is responsible for informing the analyst that a problem appears to exist. The types of problems that are observed usually fall into three categories; procedural problems, sample matrix effects, and equipment or instrument problems. All three categories may prompt the Second Tier Reviewer or QA/QC Officer to request that a sample or group of samples be re-extracted and/or re-analyzed. When this situation arises, the Second Tier Reviewer and/or QA/QC Officer will initiate the corrective action by filling out a Sample Re-extraction/Re-Analysis Form (Figure 6-1). The following information will be entered on the form;

1. The date of the request.
2. The Request Number. This number (initials of person making request, followed by date and number of request for that date) is assigned by the Second Tier Reviewer or QA/QC Officer for purposes of tracking the distribution of request forms.
3. The ID number(s) of the sample(s) to be re-analyzed.
4. The analysis method to be performed and whether the sample(s) requires re-extraction and re-analysis or just re-analysis.
5. The reason for the request. This entry will detail the problem encountered and the corrective actions required prior to re-extraction or re-analysis of the sample(s).
6. The person to whom the request was submitted and the corresponding laboratory department.
7. The date by which the corrective actions and sample re-analysis must be completed.

Upon completion of the re-analysis, the analyst will return the Request Form to the Second Tier Reviewer or QA/QC Officer along with all of the data pertinent to the required corrective action and subsequent sample re-analysis. The Second Tier Reviewer or QA/QC Officer will review the data and record any comments regarding the review. When the review is completed, he/she will sign and date the form. The form will then be filed with the data package. Depending on the results of the re-analysis the Second Tier Reviewer or QA/QC Officer may need to record the review comments into the Memo field of the work order of the affected samples. The comments can then be incorporated into the case narrative of the work order if necessary.

Other corrective actions may be required that do not involve sample re-analysis. In these cases, the QA/QC Officer will notify the analyst or technician of a problem through a QC Memo. The memo will list the date of distribution, the name of the QA/QC Officer writing the memo, the person(s) to whom the memo was given, the memo reference number used by the QA/QC Officer for tracking memos that have been distributed, a detailed description of the problem and the corrective action(s) to be taken, and the date by which the actions need to be completed. If the problem identified by the QA/QC Officer is sufficient enough to significantly impact the quality of the data, the QA/QC Officer may stop the analysis of any additional samples until the problem is resolved. The analyst or technician must then record onto the memo a description of the corrective action(s) taken and the date it was performed. The analyst will then return the memo to the QA/QC Officer for review. If the QA/QC Officer is satisfied that the corrective action has mitigated the problem, analysis of samples can be resumed. If not, he/she may issue another memo detailing the additional actions that need to be taken in order to resolve the problem.

If, upon repeated attempts, the QA/QC Officer feels that the actions taken have not satisfactorily corrected the problem, he/she will inform the appropriate corporate officer of the problem. The problem will then be resolved through a joint effort between the laboratory management, the QA/QC Officer, and the corporate officers.

In some situations, the need to correct an operation is apparent to the analyst and does not originate from the data validation process. For example, instrumental failures are determined by the analyst and corrective action is taken by repairing the instrument, either through a service call or through laboratory personnel. In this case, the corrective action must be recorded in the Instrument Maintenance Log (See Section 6.5) of the effected instrument.

# CORRECTIVE ACTIONS, PREVENTIVE MAINTENANCE, AND INSTRUMENT MAINTENANCE LOGS

## 6.1 Identification and Documentation of Problems

There are many areas throughout an analysis where corrective actions may be required. The decision to undertake corrective actions and ensuing actions must be documented so that traceability can be maintained. The analyst, Second Tier Reviewer and/or the QA/QC Officer can initiate corrective actions. However, the Second Tier Reviewer and/or QA/QC Officer is more likely to initiate corrective actions since he/she is the most exposed to malfunctions of the laboratory as they reflect upon the data produced. Any actions taken that affect the quality of the data must be documented and become part of the laboratory's permanent record.

During the course of data review, the Second Tier Reviewer or QA/QC Officer may make an observation that will prompt a decision to pursue corrective actions. The Second Tier Reviewer or QA/QC Officer is responsible for informing the analyst that a problem appears to exist. The types of problems that are observed usually fall into three categories; procedural problems, sample matrix effects, and equipment or instrument problems. All three categories may prompt the Second Tier Reviewer or QA/QC Officer to request that a sample or group of samples be re-extracted and/or re-analyzed. When this situation arises, the Second Tier Reviewer and/or QA/QC Officer will initiate the corrective action by filling out a Sample Re-extraction/Re-Analysis Form (Figure 6-1). The following information will be entered on the form;

1. The date of the request.
2. The Request Number. This number (initials of person making request, followed by date and number of request for that date) is assigned by the Second Tier Reviewer or QA/QC Officer for purposes of tracking the distribution of request forms.
3. The ID number(s) of the sample(s) to be re-analyzed.
4. The analysis method to be performed and whether the sample(s) requires re-extraction and re-analysis or just re-analysis.
5. The reason for the request. This entry will detail the problem encountered and the corrective actions required prior to re-extraction or re-analysis of the sample(s).
6. The person to whom the request was submitted and the corresponding laboratory department.
7. The date by which the corrective actions and sample re-analysis must be completed.

6.2.4. Laboratory Method Blank Exceeds Quantitation Limits

When the laboratory method blank exceeds the quantitation limit, the analyst or 2nd Tier Reviewer will immediately notify the QA/QC Officer. The analyst will check the reagents and apparatus for potential contamination. If reagents are contaminated, the existing batch will be rejected and a fresh batch from a new container will be prepared. If the problem arose from the apparatus, whether glassware or instrumental, the problem will be corrected by the analyst and/or extraction technician. The corrective action will be documented before any further analyses can be undertaken. The analyst will then notify the QA/QC Officer of the corrective action.

The samples will be re-extracted and re-analyzed to produce acceptable data. However, in instances where the analyte found in the blank is not detected or detected below the quantitation limit in the samples associated with the blank, the data may be accepted. The data may also be accepted if the analyte is found in the sample at a level that is greater than ten times that found in the blank. If re-extraction or re-analysis of a sample is not an option (e.g. sample holding is exceeded or not enough sample available) the sample data will be flagged using the B data qualifier.

6.2.5 Laboratory Control Sample (Spiked Blank) Exhibits Recoveries Outside the Acceptance Limits

When the laboratory control (LC) sample recoveries do not meet the acceptance criteria, the samples in the batch associated with the failed LC sample will be re-analyzed with a new LC sample and the original data will be rejected only for those analytes that did not meet acceptance criteria. However, if the analyte is not detected in the associated sample and the analyte recovery is greater than the upper quality control recovery limit, re-preparation and re-analysis will not be required. For multi-component analyses, data will be accepted when analyte recoveries do not meet acceptance criteria with the following provisions: that the number of analytes not meeting criteria fall within the allowable number of sporadic marginal exceedences (based on the number of compounds in the analysis); and the analytes not meeting criteria are not detected in the associated samples.

Before repeating the re-preparations of samples, the calibration of the instrument shall be checked by analyzing a continuing calibration check standard. If the instrument is within calibration, the samples will be re-prepared and re-analyzed. The source used to prepare the LCS should also be checked and a new one should be obtained if required.

If the instrument calibration has drifted, re-calibration will be performed and the samples will be re-analyzed.

If re-extraction or re-analysis of a sample is not an option (e.g. sample holding is exceeded or not enough sample available) the sample data will be flagged using the appropriate J data qualifier (See Figure 6-3) as follows:

1. If the analyte was detected in the sample above the method quantitation limit, the result will be flagged the J data qualifier to indicate that the result is estimated due to a non-compliant LCS recovery.

2. If the analyte was not detected in sample and the analyte recovery from the LCS was less than the lower quality control recovery limit, then the not detected result will be flagged with both the U and J data qualifers. This indicates that the reported detection limit(s) is estimated since the low recovery may indicate that the reported detection limit is not achievable.

3. If the analyte was not detected in sample and the analyte recovery from the LCS was greater than the upper quality control recovery limit, then the J data qualifier does not need to be assigned.

6.2.6 Surrogate Compound Recoveries Outside the Acceptance Limits

If surrogate compound recoveries are outside the acceptance limits, but the laboratory control sample is within acceptance limits, the sample exhibiting the unacceptable recovery will be re-prepared and re-analyzed.

If surrogate recovery is out-of-control upon re-analysis and the deviation is in the same direction as the original analysis (i.e., the surrogate recovery was either high or low for both analyses) the original data will be reported. The unacceptable surrogate recovery will be flagged using the appropriate surrogate recovery qualifier (See Figure 6-3). The results for any detected compounds associated with the out-of-control surrogate recovery will be flagged as estimated using the appropriate J qualifier. The detection limit for non-detected compounds associated with a *low* out-of-control surrogate recovery will be flagged using the U and J qualifiers, since the low recovery may indicate that the reported detection limit is not achievable. The possibility of matrix effect will be discussed in the report to the client

If, upon re-analysis, the recovery of the surrogates fall within acceptable limits, the results of the re-analysis will be reported and the original analysis results rejected due to a potential procedural problem.

If the surrogate recovery is out-of-control upon re-analysis and the deviation is in the opposite direction as the original analysis (i.e., the surrogate recovery was high in one analysis

and low in the other) the results of both analyses will be reported. The unacceptable surrogate recovery will be flagged using appropriate surrogate recovery qualifier. The results for any detected compounds associated with the out-of-control surrogate recovery will be flagged as estimated using a J qualifier. The detection limit for non-detected compounds associated with a *low* out-of-control surrogate recovery will be flagged using the U and J qualifiers. The possibility of matrix effect will be discussed in the report to the client.

In some instances it may be obvious from the data produced, or, from the observations made during the preparation process that the sample matrix is causing the unacceptable recoveries. In these cases, the sample may not be re-prepared or re-analyzed. The observations made will be included in the report to the client, and the data will be flagged.

If the surrogate recovery in a method blank or reference sample is outside the acceptance limits (but the analytes in the reference sample are within acceptance limits), the analyst may need to analyze the surrogate standard solution to check for degradation or contamination. If the standard solution is determined to be the problem the analyst will immediately prepare a new standard and the affected samples will be re-extracted and re-analyzed. It is also possible that the calibration of the surrogate compound has drifted, in which case the analyst should re-calibrate the system, and re-analyze the affected samples.

6.2.7 Matrix Spikes Exhibit Recoveries Outside the Acceptance Limits

If recoveries of spiked analytes are outside the acceptance limits, but the laboratory spiked blank is within acceptance limits, the apparent poor or enhanced recovery may be due to matrix effect. The matrix spike sample should be re-prepared and re-analyzed to assess this possibility.

If the matrix spike recoveries are out-of-control upon re-analysis, both analyses will be reported. The unacceptable matrix spike recoveries will be flagged with the G qualifier if the recovery is greater than the upper QC limit, or an L qualifier if the recovery is less than the lower QC limit. The G and L qualifiers will only be used with respect to the actual matrix spike sample results.

Positive detections in the associated field sample of compounds that were out-of-control in the matrix spikes will be flagged as estimated using the appropriate J qualifier. The detection limit for non-detected compounds associated with low out-of-control matrix spike recoveries will be flagged using the U and J qualifiers since low recovery may indicate that the reported detection limit may not be achievable. The possibility of matrix effect will be discussed in the report to the client.

If, upon re-analysis, the recovery of the spiked analytes fall within acceptable limits, the results of the re-analysis will be reported and the original analysis results rejected due to a potential procedural problem.

In cases where the concentration of the analyte in un-spiked sample approaches a level that is 5 times higher than the amount of the spike added to the MS and MSD analyses, the recovery of the analyte will be flagged with the NC qualifier. The NC qualifier denotes that the calculated recovery may not be accurate due to the level of the analyte found in the sample that was spiked.

In some instances it may be obvious from the data produced or from the observations made during the preparation process that the sample matrix is causing the unacceptable recoveries. In these cases, the sample will not be re-prepared or re-analyzed. The observations made will be included in the report to the client, and the data will be flagged using a J qualifier as stated previously.

6.2.8 Relative Percent Differences from MS/MSD or Duplicate Sample Analysis Outside the Acceptance Limits

When the relative percent difference (RPD) of an analyte from MS/MSD sample or duplicate sample analyses is outside acceptance limits, the MS/MSD or duplicate samples may require re-preparation and/or re-analysis. If both recoveries of the analyte from the MS and MSD are within QC limits and the analyte is not detected in the associated sample, re-preparation will not be required. For duplicate analyses, if the sample and duplicate results are less than 5 times the reporting limit, re-preparation will not be required since a statistically valid RPD cannot be determined.

If the RPD is out of control upon re-analysis, the results of both analyses will be reported. The unacceptable RPD will be flagged with the # qualifier. The possibility of matrix effect will be discussed in the report to the client.

If, upon re-analysis, the RPD falls within acceptable limits, the results of the re-analysis will be reported and the original analysis results rejected due to a potential procedural problem. Figure 6-3 shows the Data Qualifier Sheet which is incorporated into the final result reports when applicable.

## 6.3 Flagging Requirements for Radiochemistry Data

Samples can be identified by quality control objectives as one of four possible results. The results are either estimated (J / NJ), unacceptable (R / NR), less than Minimum Detectable Activity (<MDA), or an outlier to normal data (O). J and NJ flags denote data that is estimated based on the results of tracer , spike, or LCS recovery (J flag), or the results of the Normalized Absolute Difference (NAD) to a 2 σ confidence level (NJ flag). R and NR flags denote data that is unusable based on the results of tracer, spike, or LCS recovery (R flag), or the results of the Normalized Absolute Difference (NAD) to a 2 σ confidence level (NR flag). The flags <MDA and O can be applied to either J or R data, or they may stand separately or together.

The Radiochemistry Lab at Waste Stream, will review ALL data pertinent to sample analysis prior to final assignment of qualifying flags. As a rule R flagged data will not be reported. Rather, the data problem is first reviewed for a root cause of the result error and secondly, if necessary, discussed with the client. Once a root cause is determined, it is possible to determine if a corrective action can be applied. If applicable, the corrective action will be applied and the analysis re-performed. In the case of lack of sample for re-analysis, or in the case of non-correctable root cause, the sample is flagged R and the case narrative of the report will discuss the problem for the client's determined resolution. Data flagged J, O, or <MDA may be re-analyzed as requested by the client. Figure 6-5 shows the Radiochemistry Data Qualifier Sheet that is included in all radiochemistry analysis reports.

## 6.4 Preventive Maintenance

Preventive maintenance is necessary in order to keep the system operating properly. Not all preventive maintenance measures need to be documented, except those that are considered a repair or a replacement. These types of preventive maintenance will be documented in the Instrument Maintenance Log of the affected instrument. Each instrument will have a preventive maintenance schedule which can be found in the analytical SOP. The schedule may also include preventive maintenance performed by the manufacturer as per the terms of the service contract, which is purchased for laboratory instruments.

Routinely scheduled preventive maintenance consists of the following:

1. General
   a. Maintenance logs are maintained for each major instrument (See Section 6.4).
   b. Room temperature and humidity are maintained according to the manufacturers' specifications.

2. Gas Chromatograph and Gas Chromatograph/ Mass Spectrometer (GC and GC/MS)

Daily Procedures
   a. Purge traps are baked out. Changes of the traps are logged.
   b. Columns are baked out.
   c. Volume of gas cylinders is checked.

As Required Procedures
   a. Teflon ferrules are replaced.
   b. Injection port liners are cleaned or replaced.
   c. GC septa are changed after 50 injections.
   d. Detectors are baked out.

Quarterly Procedures
   a. Instrument electronics are visually inspected and cleaned.
   b. Detectors are cleaned on a schedule recommended by the manufacturer or more frequently as needed.

Annual Procedures
   a. Electron capture detectors are wipe tested.
   b. Preventive maintenance performed by manufacturer as per service contract terms

Spare Parts

a. Septa
b. Purge and trap sparger
c. Purge and trap traps
d. Tubing and fittings
e. Thermal conductivity leak detector
f. Column ferrules
g. U.V. lamp for PID detectors
h. Nickel catalyst tubes for ELCD detectors
i. Syringes for spiking
j. Mass spectrometer source filaments
k. Jet separator
l. Pump oil
m. Analytical columns
n. Flow meter bubble solution
o. Flow meters
p. Spare guard columns
q. Injection port liners

3. Infrared Spectrometer

Daily Procedures or After Each Use

a. Clean IR cells, store in desiccator

Weekly Procedures

a. Run spectrum of polystyrene.

Spare Parts - IR cells, chart paper & pens

4. Inductively Coupled Plasma Spectrometer (ICP)

Daily Procedures

a. Check gases before operation
b. Monitor detector response and instrument performance through calibration and verification.

Procedures as Needed

a. Clean nebulizer and spray chamber
b. Replace peristaltic pump tubing
c. Clean plasma torch assembly when discoloration is evident or after analyzing high dissolved solids.

Spare Parts - Spare plasma torch, argon chamber and pump tubing

5. AA/Graphite Furnace

Daily Procedures

a. Warm up AA lamp for 15 minutes prior to analysis
b. Check and align source lamp
c. Check autosampler alignment and deposition

Procedure as Needed

a. Change graphite contact rings
b. Change background correction lamp

c. Clean furnace housing and injector tip
d. Replace pyrollytic graphite furnace tubes as indicated by instrument performance

Spare parts- Contact rings, furnace tube assemblies, lamps

6. Gas Proportional Counter
   Daily Procedures
      a. Check gas flow

   Weekly Procedures
      a. Clean sample tray

   Monthly Procedures
      a. Check bubbler oil level

7. Alpha Spectroscopy
   Every 6 months
      a. Change vacuum pump oil

   Procedure as needed
      a. Clean sample holder

5 Instrument Maintenance Logs

All instrument repair and maintenance which will effect the steady state of the analytical system must be documented in the Instrument Maintenance Log. A description of the problem and the corrective actions taken to remedy the problem will be recorded.

If a service representative is called in to make the repair, a copy of the Field Service Report, if available, is filed into the Instrument Maintenance Log. The corrective actions explanation will reference the number of the Field Service Report.

When a major repair is performed or when the column is replaced, a 2 times method detection limit sample should be analyzed to see if it has changed significantly. If it has, new method detection limits need to be established and documented. If the MDL check sample passes, a new MDL study need not be performed.

6.6 Handling Complaints

Procedures for receiving, reviewing, and evaluation of complaints are necessary. This ensures that all complaints are processed in a uniform and timely manner. They must be documented so that traceability can be maintained.

Customer complaints can be received by the Project Manager, QA/QC

Officer, or Laboratory Director. These designated personnel initiate corrective actions since they are the client's contact, are the most exposed when it comes to the functions of the laboratory, and have the ability to prioritize laboratory activities to respond to the needs of the complainant. Any actions taken must be documented and become part of the laboratory's permanent record.

Upon verbal or written receipt of a complaint, the complainant's information is recorded on a Complaint Form Figure 6-4) and complaintive actions taken. The person who receives the complaint is responsible for investigating the nature and details of the complaint, identifying personnel that will be involved in its resolution, and following through with its corrective actions.

Figure 6-1

Sample Re-Extraction/Re-Analysis Request Form

Date _____ Request Number _____

Requested By _____

Sample ID # _____

Analysis Method Requested _____

_____ Re-extract and re-analyze

_____ Re-analyze only

Reason for Request _____

_____

_____

_____

Request Submitted To : _____

Department : _____

Submit Results By (Date) _____

==========

Return this form along with a copy of the re-analysis results to the person listed at the top of this form. If re-extraction was required, and if the sample extract is to be analyzed by a different person or department, submit this form along with the extract to the appropriate analyst. The analyst must then submit this form along with the results of the re-analysis.

==========

Re-analysis Results Reviewed By :

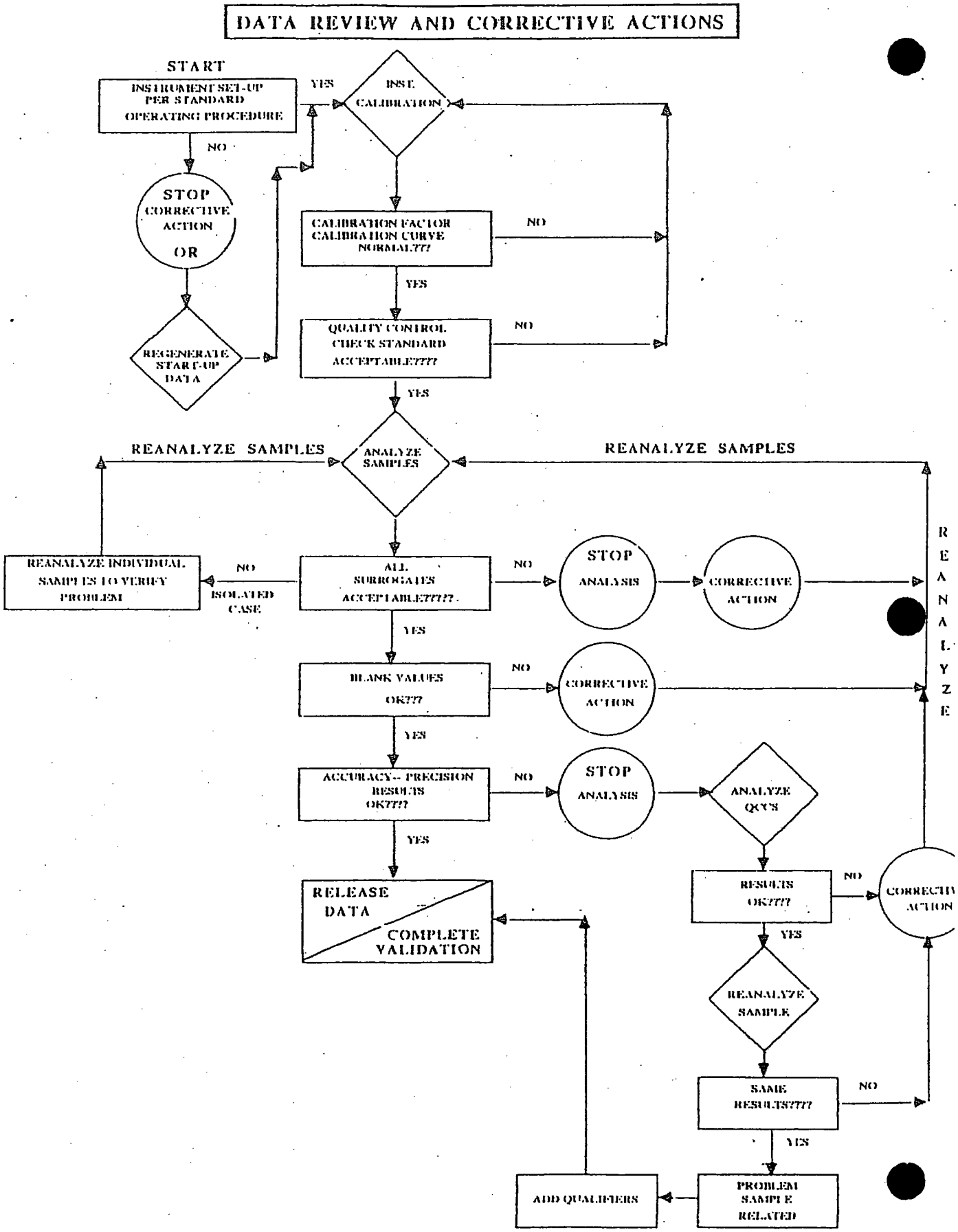
_____ Date _____

Comments: _____

_____

_____

Figure 6-2


DATA REVIEW AND CORRECTIVE ACTIONS
START
INSTRUMENT SET-UP PER STANDARD OPERATING PROCEDURE
YES
INST. CALIBRATION
NO
STOP CORRECTIVE ACTION
OR
REGENERATE START-UP DATA
CALIBRATION FACTOR CALIBRATION CURVE NORMAL???
NO
YES
QUALITY CONTROL CHECK STANDARD ACCEPTABLE????
NO
YES
REANALYZE SAMPLES
ANALYZE SAMPLES
REANALYZE SAMPLES
REANALYZE INDIVIDUAL SAMPLES TO VERIFY PROBLEM
NO
ISOLATED CASE
ALL SURROGATES ACCEPTABLE?????
NO
STOP ANALYSIS
CORRECTIVE ACTION
REANALYZE
YES
BLANK VALUES OK???
NO
CORRECTIVE ACTION
YES
ACCURACY-- PRECISION RESULTS OK????
NO
STOP ANALYSIS
ANALYZE QC'S
YES
RELEASE DATA
COMPLETE VALIDATION
RESULTS OK????
NO
CORRECTIV ACTION
YES
REANALYZE SAMPLE
SAME RESULTS????
NO
YES
ADD QUALIFIERS
PROBLEM SAMPLE RELATED

# Waste Stream Technology Inc.

## Qualifiers

| Qualifier | TextBody | isRetain |
|---|---|---|
| # | Denotes RPD is outside QC limits. | |
| #-01 | Both the sample and duplicate results are less than five times the reporting limit yielding an RPD that is outside QC limits. | |
| <MDA | Analyte determined to be below Minimum Detectable Activity. | |
| >149 | >149 | X |
| >200 | >200 | X |
| A-01 | [Custom Value] | |
| B | Analyte is found in the associated blank as well as in the sample (CLP B-flag). | |
| B-01 | The sample dilutions set-up for the BOD analysis did not meet the oxygen depletion criteria of at least 2 mg/l dissolved oxygen depletion. Therefore the reported result i | |
| B-02 | The sample dilutions set up for the BOD analysis failed to met the criteria of a residual dissolved oxygen of at least 1 mg/l. Therefore the reported result is an estimated | |
| B-03 | Contamination in blank is carryover from previous analyses. Value was subtracted from associated samples. | |
| B-05 | Contamination in blank is carryover from previous sample analyzed in same purge vessel. This contamination is not present in purge vessels that associated samples w | |
| C-01 | To reduce matrix interference, the sample extract has undergone sulfuric acid clean-up, method 3665, which is specific to hydrocarbon contamination. | |
| C-03 | To reduce matrix interference, the sample extract has undergone silica-gel clean-up, method 3630, which is specific to polar compound contamination. | |
| C-04 | To reduce matrix interference, the sample extract has undergone florisil clean-up, method 3620, which is specific to non-polar compound contamination. | |
| C-05 | To reduce matrix interference, the sample extract has undergone GPC clean-up, method 3640, which is specific to contamination from high molecular weight material. | |
| D | This flag assigned to compounds identified in an analysis at a secondary dilution factor. | |
| D-01 | This sample appears to contain volatile range organics. | |
| D-02 | Hydrocarbon pattern present in the requested fuel quantitation range but does not resemble the pattern of the requested fuel. | |
| D-03 | The result for this hydrocarbon is elevated due to the presence of single analyte peak(s) in the quantitation range. | |
| D-04 | The hydrocarbons present are a complex mixture of diesel range and heavy oil range organics. | |
| D-06 | The sample chromatographic pattern does not resemble the fuel standard used for quantitation. | |
| D-08 | Results in the diesel organics range are primarily due to overlap from a gasoline range product. | |
| D-09 | Results in the diesel organics range are primarily due to overlap from a heavy oil range product. | |
| D-10 | The heavy oil range organics present are due to hydrocarbons eluting primarily in the diesel range. | |
| D-12 | Results in the Gasoline Range are primarily due to overlap from a heavier fuel hydrocarbon product. | |
| D-13 | Low boiling point fuel hydrocarbons are present below the requested fuel quantitation range. | |
| D-14 | Unidentified Hydrocarbons < C17. | |
| D-15 | Diesel | |
| D-16 | Gasoline | |
| D-17 | Diesel + unidentified hydrocarbons. | |
| D-20 | Unidentified Hydrocarbons > C9. | |
| D-25 | The hydrocarbon resembles weathered diesel. | |
| D-30 | Unidentified hydrocarbons C9-C16. | |
| D-35 | Sample does not display a fuel pattern. Sample contains several discreet peaks. | |
| E | The concentration indicated for this analyte is an estimated [illegible] above the calibration range of the instrument. This value is considered an estimat[illegible] [illegible]P E-flag). | |



Figure 6-3

# Waste Stream Technology Inc.

## Qualifiers

| Qualifier | TextBody | isRetain |
|---|---|---|
| E-01 | Reported is the time of count activity, however, the error is based on the time corrected activity. Therefore, the error is greater than the reported activity. | |
| F | Fail | X |
| F-01 | No flash detected up to 60 °C (140 °F). | |
| F-02 | No flash detected up to [Custom Value] °C | |
| FILT | The sample was filtered prior to analysis. | |
| FRE-P | Free product was observed in the sample container. | |
| G | G denotes analyte recovery is greater than the upper quality control limit. | |
| G-04 | This sample contains compounds not identified as Benzene, Toluene, Ethylbenzene or Xylene. | |
| GC-05 | Results confirmed by GCMS. | |
| GC-10 | A unknown compound is coeluting with MTBE. This is Probably causing an artificially high MTBE value. | |
| GC-15 | Unidentified Hydrocarbons C6 - C12. | |
| GC-20 | An unknown compound is coeluting with naphthalene. Probably causing an artificially high naphthalene value. | |
| GC-25 | Weathered gasoline. | |
| GC-30 | MTBE did not confirm via GCMS on a sample from this site. Thus, MTBE for this sample was reported as non-detect. | |
| GC-35 | | |
| GC-40 | Naphthalene analyzed by GCMS - method 8260B. | |
| GC-NC | 8260 confirmation analysis was performed; initial GC results were not supported by GC/MS analysis and are reported as ND. | |
| HDSP | Sample aliquot taken from VOA vial with headspace (air bubble greater than 6 mm diameter). | |
| I-01 | Due to matrix interference, the sample cannot be accurately quantified. The reported result is qualitative. | |
| I-02 | This result was analyzed outside of the EPA recommended holding time. | |
| J | Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). | |
| J-01 | Indicates an estimated value based on the sample tracer, the associated matrix spike or the Lab Control Sample. | |
| J-02 | The detection limit or result reported for the analyte is considered an estimated value due to a low analyte recovery in the associated LCS. | |
| J-03 | The detection limit or result reported for the analyte is considered an estimated value due to a low analyte recovery in the associated MS and/or MSD. | |
| J-04 | The detection limit or result reported for the analyte is considered an estimated value due to a low recovery of the associated surrogate compound. The low recovery wa | |
| J-05 | The detection limit and/or result reported for the analyte is considered an estimated value due to analysis performed outside holding time. | |
| J-06 | The result reported for the analyte is considered an estimated value due to a high analyte recovery in the associated MS and/or MSD. | |
| J-07 | The nuclide peak has a high uncertanitity or a poor FWHM. | |
| J-08 | The nuclide has a low peak area count. | |
| J-09 | The detection limit or result reported for the analyte is considered an estimated value. Refer to case narrative for explanation. | |
| L | L denotes analyte recovery is less than the lower quality control limit. | |
| MSA | This result was determined by method of standard addition. | |
| NC | NC denotes Not Calculated. Concentration of the analyte in the unspiked sample was to high to obtain accurate recoveries from the MS and MSD samples. | |
| NJ | Indicates an esimated value based on the Normalized Absolute Difference between the sample and sample duplicate or the sample and the blank | |
| NN | NN denotes result is obtained through methodology that is not certified by NELAP. | |

# Waste Stream Technology Inc.

Qualifiers

| Qualifier | TextBody | isRetain |
|---|---|---|
| NR | Indicates an unacceptable value based on the Normalized Absolute Difference between the sample and sample duplicate or the sample and the blank | |
| O-01 | This compound is a common laboratory contaminant. | |
| O-02 | Due to matrix interference, the sample cannot be accurately quantitated. The reported result is qualitative. | |
| O-03 | The concentration reported is an estimated value above the linear quantitation range. Dilution and reanalysis is being performed and an amended report will follow. | |
| O-04 | This sample was analyzed outside the EPA recommended holding time. | |
| O-05 | This sample was extracted outside of the EPA recommended holding time. | |
| O-06 | Reanalysis by an alternate column or method has confirmed the identification and/or concentration of this result. | |
| O-08 | The original extraction of this sample yielded QC recoveries outside acceptance criteria. It was re-extracted after the recommended maximum hold time. | |
| P | Pass | X |
| P-5 | Due to the nature of the sample matrix a 1:10 dilution was necessary to perform a corrosivity measurement. | |
| PH | Insufficient preservative to reduce the sample pH to less than 2. Sample was analyzed within 14 days of sampling, but beyond the 7 days recommended for Benzene, T | |
| PRELM | Preliminary result. Revised report to follow. | |
| QB-01 | The method blank contains analyte at a concentration above the MRL; however, concentration is less than 10% of the sample result, which is negligible according to me | |
| QC-5 | Sample was originally analyzed within hold time. However, it was determined that positive interference was contributing to the sample result. So the sample was reanaly | |
| QI-01 | Internal standards for this sample were out of control during the initial analysis performed within hold time. Immediate re-analysis (outside of recommended hold time) h | |
| QL-01 | Sample results for the QC batch were accepted based on LCS/LCSD percent recoveries and RPD values. | |
| QM-01 | The spike recovery for this QC sample is outside of established control limits due to sample matrix interference. | |
| QM-02 | The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte inherent in the sample. | |
| QM-03 | Multiple analyses indicate the percent recovery exceeds the Quality Control acceptance criteria due to a matrix effect. | |
| QM-04 | Visual evaluation of the sample indicates the RPD is above the control limit due to a non-homogeneous sample matrix. | |
| QM-05 | The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that t | |
| QM-06 | Due to noted non-homogeneity of the QC sample matrix, the MS/MSD did not provide reliable results for accuracy and precision. Sample results for the QC batch were | |
| QM-07 | The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery. | |
| QM-10 | LCS/LCSD were analyzed in place of MS/MSD. | |
| QM-4X | The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batc | |
| QR-01 | Analyses are not controlled on RPD values from sample concentrations less than 10 times the reporting limit. QC batch accepted based on LCS and/or LCSD QC result | |
| QR-02 | The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent re | |
| QR-03 | The RPD value for the sample duplicate or MS/MSD was outside if QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD rec | |
| R-01 | The Reporting Limit for this analyte has been raised to account for matrix interference. | |
| R-02 | Elevated Reporting Limits due to limited sample volume. | |
| R-03 | The Reporting Limit for this analyte has been raised to account for interference from coeluting organic compounds present in the sample. | |
| R-04 | The Reporting Limits for this analysis are elevated due to sample foaming. | |
| R-05 | The sample was diluted due to the presence of high levels of non-target analytes resulting in elevated reporting limits. | |
| R-06 | Indicates data is unacceptable based on the sample tracer. | |
| RxCN | This sample does not contain levels of reactive cyanide that are characteristic of a reactive waste as defined by 40CFR 261.23. Concentration is below 250 ppm. | |

# Waste Stream Technology Inc.

## Qualifiers

| Qualifier | TextBody | isRetain |
|---|---|---|
| RxS | This sample does not contain levels of reactive sulfide that are characteristic of a reactive waste as defined by 40CFR 261.23. Concentration is below 500 ppm. | |
| S-01 | The surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interference's. | |
| S-02 | The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract. | |
| S-04 | The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect. | |
| S-06 | The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's. | |
| S-AC | Acid surrogate recovery outside of control limits. The data was accepted based on valid recovery of remaining two acid surrogates. | |
| S-BN | Base/Neutral surrogate recovery outside of control limits. The data was accepted based on valid recovery of remaining two base/neutral surrogates. | |
| S-DUP | Duplicate analysis confirmed surrogate failure due to matrix effects. | |
| S-GC | Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate. | |
| S-HI | High surrogate recovery was confirmed as a matrix effect by a second analysis. | |
| S-LIM | Surrogate recoveries outside method QC limits. Site matrix effects verified by 10% duplicate analysis (including sample duplicate and MS/MSD analysis). | |
| S-LOW | Low surrogate recovery confirmed as a matrix effect by a second analysis. | |
| S-MS | Surrogate recovery outside of acceptance window confirmed as matrix effect by analysis of MS/MSD on this sample. | |
| S-ND | Compound was not present in spikie mix. | |
| UNC | Uncertainty | |
| W-01 | No determinable quantities of cyanide amenable to chlorination. | |
| W-04 | Free liquid was visually observed in the sample container but the sample did not exhibit free liquid as defined by 40CFR 264.314 or 265.314. | |
| Z-01 | [Custom Value] | X |

Figure 6-4

## Complaint Form

Date ______________ Request Number ______________

Requested By ________________________

Sample ID #(s) ________________________________________

Name of Complainant __________________________________

Address ________________________________________________________

Phone __________________ FAX ___________ E-mail ______________

Nature & Details of Complaint

________________________________________________________________

________________________________________________________________

Date & Results of Investigation

________________________________________________________________

________________________________________________________________

________________________________________________________________

Corrective Actions

________________________________________________________________

________________________________________________________________

Reply to Complainant

________________________________________________________________

________________________________________________________________

Name ___________________ Signature _________________ Date _________

= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =

Return this form along with a copy to the QA/QC Officer

Figure 6-5

Radiochemistry Data Qualifiers

| | |
|---|---|
| <MDA | Indicates analyte was determined to be below Minimum Detectable Activity |
| J-01 | Indicates an estimated value based on the sample tracer, the associated matrix spike or the Laboratory Control Sample |
| R-06 | Indicates data that is unacceptable based on the sample tracer, the associated matrix spike or the Laboratory Control Sample |
| NJ | Indicates an estimated value based on the Normalized Absolute Difference between the sample and sample duplicate or the sample and the blank |
| NR | Indicates an unacceptable value based on the Normalized Absolute Difference between the sample and sample duplicate or the sample and the blank |

## BIOGRAPHIES OF KEY PERSONNEL

Dr. Brian S. Schepart Laboratory Director

Dr. Schepart received his B.A. in Biology from Clark University in 1977, and his Ph.D. in Experimental Pathology from the State University of New York at Buffalo in February of 1983, and his B.S. Pharmacy from the State University of New York at Buffalo in 1994. He was a Damon Runyon - Walter Winchell Fellow at the University of North Carolina at Chapel Hill and an Instructor of Microbiology at Duke University. Since 1986, Dr. Schepart has been an Assistant Professor of Microbiology and Immunology at Allegheny University of the Health Sciences, where he presently retains an adjunct position. While at Allegheny, he directed and managed a team of seven researchers whose work was supported by extramural funds. To his credit, Dr. Schepart has authored over thirty peer-reviewed publications and has received numerous awards and grants, from both public and private agencies. He is the Chairman of ASTM F20.24, a subcommittee within Spill Response F20 since 1991. He joined Waste Stream Technology in 1989.

Daniel W. Vollmer QA/QC Director

Mr. Vollmer graduated from the State University of New York at Buffalo with a B.A. in Biology. Since his graduation, he has gained extensive experience in analytical chemistry as a laboratory technician, a GC, GC/MS, and HPLC analyst, and a laboratory supervisor. Since 1989, in conjunction with Dr. Schepart, he has been responsible for setting up WST's analytical laboratory and establishing the current laboratory protocol. In doing so, he has obtained extensive experience in US EPA methodologies, including the requirements necessary for maintaining good Quality Assurance and Quality Control.

Sidney Tyrrell Assistant Laboratory Director

Mr. Tyrrell received his A.S. in Chemistry from Erie Community College in 1983. He joined WST in February, 1994 after 10 years of experience as a GC and GC/MS Analyst. Since joining WST, he has established analyses for drinking water and continues to provide expertise in GC and GC/MS volatile organics and semi-volatile organics. He is currently responsible for assisting the Laboratory Director and directly supervises the analysts.

Rebecca King Organics Analyst

Ms. King received her B.S. in Chemistry from Baldwin-Wallace College in 1993. She joined WST in 1996 after working for three years as an industrial chemist, responsible for formulation of precious metal anode coatings, product inspection, instrument maintenance and calibration, environmental wastewater monitoring, and technical support. She is currently a Volatiles GC/MS Analyst.

Anthony Portfilio Senior Metals Analyst and Metals Laboratory Supervisor

Mr. Portfilio received his B.S. in Recombinant DNA Technology at the State University of New York at Fredonia. He joined WST in 1993 with 4 years experience in operation and interpretation of metals analysis by Inductively Coupled Plasma Spectrophotometry, Flame Atomic Absorption Spectrophotometry and Graphite Furnace Atomic Absorption Spectrophotometry. In addition, he operates a Hydride Continuous Flow Analyzer for low level analysis of metals. He is also responsible for supervising the metals analysis laboratory.

Gregory Ignaszak Wet Chemistry Lab Supervisor

Mr. Ignaszak received his B.S. in Chemistry from Rosary Hill College in 1973. He joined WST in 1995 He has over 25 years of experience in analytical chemistry, over 13 of which is in the evironmental testing field. He is responsible for supervising the Wet Chemistry laboratory, as well as Sample Disposal. He supervises the Wet Chemistry laboratory in procedures according to USEPA, ASTM, and Standard Methodologies.

Thomas Franks Organics Analyst

Mr. Franks received his B.A. in Chemistry from Buffalo State College in 1993. He then joined WST first as an extraction chemist then as a GC Analyst. He is responsible for the analysis of environmental samples for the determination of PCBs/Pesticides and Herbicides using standard and innovative techniques.

Oliver Levi QA/QC Officer

Mr. Levi graduated from the State University of New York College at Buffalo with a B.A. in Chemistry. Since his graduation in 2001, he joined Waste Stream Technology where he has obtained extensive experience in US EPA methodologies, including the requirements necessary for maintaining good Quality Assurance and Quality Control.

Maria Bradley Radiochemistry Laboratory Manager

Ms. Bradley graduated from Canisius College with a B.S. in Environmental Science. She joined Waste Stream Technology as an intern, and has been an employee since her graduation in 1999. Her expertise include the operation of alpha, beta, and gamma radiological testing equipment, radiological and chemical data interpretation and validation, technical preparation of environmental monitoring reports, and radiological health and safety.

Joe Giacomazza Project Manager

Mr. Giacomazza received his B.S. in Earth Science from the Buffalo State College. He interned at Waste Stream in 1997, and was subsequently hired as a Data Manager, responsible for accurate and timely delivery of analytic data. Thereafter, Mr. Giacomazza became the sample control manager for 3 years, and subsequently a project manager and client liaison.

Kevin Burke Sample Control Manager

Mr. Burke received his B.A. in Education (1991) and M.A. (1994) from Buffalo State College. He joined Waste Stream in 2001 as an organic extraction technician. Subsequently, he became a data reporter, and now serves as the Sample Control Manager.

# APPENDICES

# SAFETY

Safety requires an open attitude and a knowledgeable awareness of potential hazards. Safety is a collective effort and requires the full cooperation of management, supervisors, and employees. This cooperation means that everyone should adhere to the established procedures of the company which are incorporated into the laboratory's "Chemical Hygiene Plan," "Hazard Communication Standard," and the "Waste Stream Technology Safety Manual@, and ""Waste Stream Radiation Control Standard Operating Procedure (SOP).@

Briefly, these manuals include guidelines, procedures, and suggestions for the following areas:

1. Personal protective equipment
2. Training
3. Emergency action
4. Chemical and Radiation hazards
5. Chemical storage
6. Fume hood monitoring program
7. Accident reporting
8. Established work rules

## Personal Protective Equipment

Eye protection is required at all times in the laboratory and where chemicals are stored and handled. Appropriate clothing must be worn, including a protective lab coat. Open-toed shoes or sandals are not permitted. Gloves of the proper material should be selected to provide sufficient protection to minimize the chance of skin contact. Respirators should be worn as needed.

## Training

Adequate training will be provided by management and the Health and Safety Department. Employees are expected to adhere to all safety rules as well as to seek advice and guidance whenever they have doubts about safety procedures or potential hazards. The training incorporates chemical and radiation hazards, evacuation, use of fire extinguishers, and use of the eye wash and other protective equipment. The employees are also instructed on signs and symptoms of over-exposure, OSHA permissible exposure limits (PEL's), location of Material Safety Data Sheets (MSDS), and how to read MSDS and reagent labeling. Employees are also instructed in proper respirator selection and use including fit testing.

Emergency Action

Employees are instructed on emergency action procedures which include spills/release, evacuation, and reporting. Routine drills are conducted throughout the entire company. An emergency action plan is provided and used in the training of all laboratory personnel. Escape routes are mapped out throughout the building. Fire alarms, fire extinguishers, and a sprinkler system are in place and inspected every other month. The Buffalo Fire Department is located approximately 300 feet from the facility at the intersection of Grote Street, Great Arrow Drive, and Elmwood Avenue.

Chemical and Radiological Hazards

All employees who may be exposed to chemicals and radioisotopes which may present a hazard, are fully informed of potential hazards and proper handling that is required to avoid exposure. This is accomplished through reagent labeling and MSDS's. Each employee is instructed on how to decipher a MSDS Sheet, providing the employee with special instructions on personal protective equipment, storage requirements, and associated health hazards. Special precautions and labeling are required for toxic, carcinogenic, or mutagenic compounds.When there has been a spill of radioactive material which may have produced contamination of the person or clothing, both the person and the clothing shall be monitored. Personnel contamination shall be removed as soon as possible.

Personnel External Exposure Monitoring Program

Personnel monitoring devices shall be provided for individuals in accordance the following criteria:

1) Personnel who handle millicurie quantities of photon or energetic beta emitting radionuclides on a regular basis* shall be supplies with a film or TLD finger monitor.
2) Personnel who handle millicuries quantities of energetic photon emitting radioactive materials on a regular basis* shall be supplied with film or TLD whole body monitors.
3) Personnel who are occupationally exposed to radiation on an occasional basis, need not be monitored if the requirements of 38.24 do not apply.

*This refers to personnel such as laboratory workers who handle millicurie quantities either routinely or as stock quantities.

Storage

Chemicals are arranged so only compatible chemical families are stored together. Flammable liquids are stored in minimum quantities within the laboratory,

while additional storage is provided on the first level of the facility in a non-flammable, fire resistant cabinet. Radiological samples and sources are stored in a containment area and a locked safe in the containment area, respectively, accessible to Radiological Laboratory personnel only.

Medical Surveillance

Employees have the option to receive medical attention whenever any of the following occur:

1. Employees develop signs or symptoms associated with hazardous chemicals.
2. Exposure levels routinely exceed the action levels.
3. There is a spill, leak, or release into the working environment.

Reporting of Injury or Illness

Employees must report all work-related injuries or illnesses. This will ensure that the appropriate medical treatment or follow-up is obtained. This will also alert management to unsafe work practices or conditions so corrective actions can be taken.

Established Work Rules

The following is a list of established safety rules which everyone must abide by:

1. Consumption, preparation, and storage of food and beverages, and application of cosmetics, are prohibited in the laboratory.
2. Laboratory glassware will not be used to contain food or beverages.
3. Smoking is prohibited in the laboratory and in the facility.
4. Safety glasses or goggles are required in the laboratory.
5. All visitors to the laboratory must follow the safety regulations.
6. Chemicals are not allowed in offices.
7. Horseplay and other acts of mischief are prohibited.
8. Unauthorized experiments are prohibited.
9. Work surfaces and personnel should be monitored after working with radioactive materials, and decontaminated if necessary.
10. Pipetting of radioactive solutions by mouth is prohibited.
11. Do not store food, drink, or personal effects with radioactive material.
12. Always transport radioactive materials in appropriately shielded containers, and other laboratory reagents in appropriate containers.

## WASTE DISPOSAL

Procedures for the disposal of waste and virgin chemicals are outlined in the Waste Disposal SOP. Workers should follow this program with care to avoid any safety hazards or damage to the environment.

In general, WST has incorporated four routes of disposal into the Waste Disposal SOP. They are:

1. If possible, samples received for laboratory analyses are returned to the client or site upon completion.

2. Solvents are recovered/recycled through distillation.

3. Certain highly diluted, water soluble chemicals may be disposed of in small quantities in the sanitary sewer system.

4. The remaining waste will be separated and drummed for incineration or landfill by an appropriately licensed vendor.

Waste is segregated based upon its chemical properties. Liquids are packaged separately from solids. Reactive waste is isolated from non-reactive waste. Radioactive waste is isolated form non-radioactive waste. In general, the Waste Coordinator will assist in the segregation of waste.

Laboratory wastes will be stored in 5 gallon poly-buckets in the laboratory until full when they will be dumped into appropriate drums. Samples containing PCB material will be held separately. Samples that are sent back to the client are recorded on a type

All waste is stored in the posted waste storage area until disposal. Lab pack Disposal drums require DOT approved containers. All inside lab pack containers must be compatible for that waste. The maximum internal lab pack size is one gallon for metal, plastic, and glass containers. The chemical name and type/size of container should be recorded onto the side of the drum/written sheet and relinquished to a transporter or directly to a client. These completed forms are maintained by Sample Control and are filed in a three ring bound notebook. The forms are maintained for seven years after disposal.

The small containers that are packed in drums are separated based upon DOT hazard classes. In decreasing hazard order, they are:

- Radioactive
- Poison A
- Flammable gas
- Non-flammable gas
- Flammable liquid
- Oxidizer
- Flammable solid
- Corrosive (liquid)
- Poison B
- Corrosive (solid)
- Irritating agent
- ORM-B
- ORM-A
- Combustible liquid
- ORM-E

The Waste Coordinator prepares the waste manifest, shipping inventory and drum labels. The drums are labeled according to DOT requirements. Records of the disposal are maintained and filed with the Waste Coordinator for seven years.

## RADIOACTIVE WASTE DISPOSAL

Currently material that enters the Radiochemistry lab are of relatively low specific activity. However, the lab operates in the same manner as if the material was of a higher activity. All wastes produced in Radiochemistry lab operations are to be handled in the proper manner. All wastes generated in the Rad Lab, until verified otherwise, are to be considered potentially radioactively contaminated. Care is used to ensure that the production of waste is kept to as minimum an amount as practical. Wastes shall be disposed of in the proper receptacles. Separate receptacles will be in-place for contaminated wastes. Unused samples and potentially contaminated wastes are to be collected and stored in assigned containers and locations. Waste material should be surveyed to verify activity levels. Material that is determined as non-radioactive is disposed of as Anormal@ trash. Acid wastes are documented as to the quantity generated and then neutralized prior to being disposed.

All radioactive wastes are returned as negotiated to the client along with unused sample material. Radioactive solid wastes and samples are documented as to their Specific Activities prior to return. All samples returned are accompanied by appropriate shipping papers and survey results. Under NO circumstance shall the requirements of Waste Stream Technology, Inc=s. Radioactive Material License OR the regulations of 12NYCRR38, 10CFR, or 40CFR be violated in the discharge of wastes to the environment.

**SECURITY**

There are three main areas to be considered when dealing with security. They are:

1. Laboratories
2. Offices
3. Sample storage areas

Security for the facility is provided by restricted admission through a main entrance during standard working hours. Key personnel are allowed access to the facility during non-standard hours using a computer-linked individualized numeric access code.

The integrity of the facility is monitored at key points using motion and audio sensors in addition to strategically placed door switches. Twenty-four hour monitoring of the system includes:

1. Computer link-up
2. Audio monitoring
3. 911 and hold-up protection
4. Perimeter security
5. Secure check-in/check-out
6. Monthly reports on check-in/check-out

In addition to the electronic security system, the samples are stored in a secured area. All cabinets and refrigerators are kept locked at all times. The Sample Custodian is in charge of access and all samples removed or returned must be logged out.

## ANNUAL EXECUTIVE SUMMARY REPORT

The laboratory management will prepare an annual executive summary report. The report will be a review of the laboratory's quality system and its testing and calibration activities to ensure its continuing suitability and effectiveness and to introduce any necessary changes or improvements in the quality system and laboratory operations. The summary shall take into account reports from managerial and supervisory personnel, the outcome of recent internal audits, assessments by external bodies, the results of interlaboratory comparisons or proficiency tests, any changes in the volume of work undertaken, feedback from clients, corrective actions and other relevant factors.

The annual summary report will be reviewed by the Laboratory Director and Quality Control/Quality Assurance Officer who will also sign and date the cover of the report. Copies of the report will be distributed to the laboratory managerial and supervisory staff while the original report will then be placed into the QA/QC Officer's files.

Section No.: App-5
Issue Date: 08/01/04

Updated ~~1/11/06~~ ~~4/13/06~~ 11/16/06 JAS

# Laboratory Certifications

1. New York State Department of Health
2. State of New Jersey Department of Environmental Protection
3. U.S. Army Corps of Engineers
4. Florida Department of Health
5. State of Connecticut, Department of Public Health
6. ~~South Carolina Department of Health and Environmental Control~~ JAS
6 ~~7~~. Commonwealth of Pennsylvania Department of Environmental Protection
7. Utah Department of Health

New York State Department of Health

STATE OF NEW YORK
DEPARTMENT OF HEALTH

Wadsworth Center The Governor Nelson A. Rockefeller Empire State Plaza P.O. BOX 509 Albany, New York 12201-0509

Antonia C. Novello, M.D., M.P.H., Dr.P.H.
*Commissioner*

Dennis P. Whalen
*Executive Deputy Commissioner*

LAB ID: 11179

April 03, 2006

DR. BRIAN S. SCHEPART
WASTE STREAM TECHNOLOGY
302 GROTE STREET
BUFFALO, NY 14207

Certificate Expiration Date: April 01, 2007

Dear Dr. Schepart,

Enclosed are the ELAP and/or NELAP Certificate(s) of Approval issued to your environmental laboratory for the current permit year. The Certificate(s) supersede any previously issued and is(are) in effect through the expiration date listed above. Please carefully examine the Certificate(s) to insure that the categories, subcategories, analytes and methods for which your laboratory is approved are listed correctly, as well as verifying your laboratory's name, address, lead technical director and identification number.

Pursuant to regulation (Part 55-2 NYCRR), original certificates must be posted conspicuously in the laboratory and shall, upon request, be made available to any client of the laboratory. Certificates remain the property of the New York State Department of Health and must be surrendered promptly on demand.

Please note, pursuant to Section 55-2.5(a) NYCRR, any misrepresentation of the Fields of Accreditation (Matrix - Method - Analyte) for which your laboratory is approved may result in denial, suspension, or revocation of your certification. Any use of the ELAP or NELAP name, reference to the laboratory's approval status and/or using the NELAC/NELAP logo in any catalogs, advertising, business solicitations, proposals, quotations, laboratory analytical reports or other materials must include the laboratory's ELAP identification number, and must distinguish between proposed testing for which the laboratory is approved and the proposed testing for which the laboratory is not approved.

Please notify the ELAP office of any changes you feel need to be made to your Certificate(s). We may be reached via email to elap@health.state.ny.us or by calling (518) 485-5570.

Sincerely,

Joyce Reilly

Joyce Reilly

Program Administrator
Environmental Laboratory
Approval Program

**NEW YORK STATE DEPARTMENT OF HEALTH**
**WADSWORTH CENTER**
*Antonia C. Novello, M.D., M.P.H., Dr.P.H.*

Expires 12:01 AM April 01, 2007
Issued April 1, 2006

## CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

*Issued in accordance with and pursuant to section 502 Public Health Law of New York State*

*DR. BRIAN S. SCHEPART*
*WASTE STREAM TECHNOLOGY*
*302 GROTE STREET*
*BUFFALO, NY 14207*

*NY Lab Id No: 11179*
*EPA Lab Code: NY00068*

*is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards for the category ENVIRONMENTAL ANALYSES POTABLE WATER*
*All approved analytes are listed below:*

| | |
|---|---|
| **Drinking Water Metals I** | |
| Arsenic, Total | EPA 200.7 |
| | EPA 200.9 |
| Barium, Total | EPA 200.7 |
| Cadmium, Total | EPA 200.7 |
| Chromium, Total | EPA 200.7 |
| ıpper, Total | EPA 200.7 |
| ..on, Total | EPA 200.7 |
| Lead, Total | EPA 200.9 |
| Manganese, Total | EPA 200.7 |
| Mercury, Total | EPA 245.1 |
| Selenium, Total | EPA 200.9 |
| Silver, Total | EPA 200.7 |
| Zinc, Total | EPA 200.7 |
| **Drinking Water Metals II** | |
| Antimony, Total | EPA 200.9 |
| Beryllium, Total | EPA 200.7 |
| Nickel, Total | EPA 200.7 |
| Thallium, Total | EPA 200.9 |
| **Drinking Water Metals III** | |
| Sodium, Total | EPA 200.7 |
| **Drinking Water Non-Metals** | |
| Cyanide, Free | SM 18-20 4500-CN E |
| **Drinking Water Non-Metals** | |
| Nitrate (as N) | EPA 300.0 |
| Nitrite (as N) | EPA 300.0 |
| **Drinking Water Trihalomethanes** | |
| Bromodichloromethane | EPA 524.2 |
| Bromoform | EPA 524.2 |
| Chloroform | EPA 524.2 |
| Dibromochloromethane | EPA 524.2 |
| Total Trihalomethanes | EPA 524.2 |
| **Radiological Analytes** | |
| Gross Alpha | EPA 900.0 |
| Gross Beta | EPA 900.0 |
| Radium-226 | EPA 1984 Ra-03 |
| Radium-228 | EPA 1984 Ra-05 |
| Uranium | DOE 1990 U-02 |
| **Volatile Aromatics** | |
| 1,2,3-Trichlorobenzene | EPA 524.2 |
| 1,2,4-Trichlorobenzene | EPA 524.2 |
| 1,2,4-Trimethylbenzene | EPA 524.2 |
| 1,2-Dichlorobenzene | EPA 524.2 |
| 1,3,5-Trimethylbenzene | EPA 524.2 |
| 1,3-Dichlorobenzene | EPA 524.2 |
| 1,4-Dichlorobenzene | EPA 524.2 |

Serial No.: 29332

ɟerty of the New York State Department of Health. Valid only at the address shown. Must be conspicuously posted. Valid certificates have a raised seal. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify laboratory's accreditation status.

**NEW YORK STATE DEPARTMENT OF HEALTH**
**WADSWORTH CENTER**
*Antonia C. Novello, M.D., M.P.H., Dr.P.H.*

Expires 12:01 AM April 01, 2007
Issued April 1, 2006

## CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

*Issued in accordance with and pursuant to section 502 Public Health Law of New York State*

*DR. BRIAN S. SCHEPART*
*WASTE STREAM TECHNOLOGY*
*302 GROTE STREET*
*BUFFALO, NY 14207*

*NY Lab Id No: 11179*
*EPA Lab Code: NY00068*

*is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards for the category ENVIRONMENTAL ANALYSES POTABLE WATER*
*All approved analytes are listed below:*

**Volatile Aromatics**

| | |
|---|---|
| 2-Chlorotoluene | EPA 524.2 |
| 4-Chlorotoluene | EPA 524.2 |
| Benzene | EPA 524.2 |
| Bromobenzene | EPA 524.2 |
| Chlorobenzene | EPA 524.2 |
| Ethyl benzene | EPA 524.2 |
| Hexachlorobutadiene | EPA 524.2 |
| Isopropylbenzene | EPA 524.2 |
| n-Butylbenzene | EPA 524.2 |
| n-Propylbenzene | EPA 524.2 |
| p-Isopropyltoluene (P-Cymene) | EPA 524.2 |
| sec-Butylbenzene | EPA 524.2 |
| Styrene | EPA 524.2 |
| tert-Butylbenzene | EPA 524.2 |
| Toluene | EPA 524.2 |
| Total Xylenes | EPA 524.2 |

**Volatile Halocarbons**

| | |
|---|---|
| 1,1,1,2-Tetrachloroethane | EPA 524.2 |
| 1,1,1-Trichloroethane | EPA 524.2 |
| 1,1,2,2-Tetrachloroethane | EPA 524.2 |
| 1,1,2-Trichloroethane | EPA 524.2 |
| 1,1-Dichloroethane | EPA 524.2 |
| 1,1-Dichloroethene | EPA 524.2 |

**Volatile Halocarbons**

| | |
|---|---|
| 1,1-Dichloropropene | EPA 524.2 |
| 1,2,3-Trichloropropane | EPA 524.2 |
| 1,2-Dichloroethane | EPA 524.2 |
| 1,2-Dichloropropane | EPA 524.2 |
| 1,3-Dichloropropane | EPA 524.2 |
| 2,2-Dichloropropane | EPA 524.2 |
| Bromochloromethane | EPA 524.2 |
| Bromomethane | EPA 524.2 |
| Carbon tetrachloride | EPA 524.2 |
| Chloroethane | EPA 524.2 |
| Chloromethane | EPA 524.2 |
| cis-1,2-Dichloroethene | EPA 524.2 |
| cis-1,3-Dichloropropene | EPA 524.2 |
| Dibromomethane | EPA 524.2 |
| Dichlorodifluoromethane | EPA 524.2 |
| Methylene chloride | EPA 524.2 |
| Tetrachloroethene | EPA 524.2 |
| trans-1,2-Dichloroethene | EPA 524.2 |
| trans-1,3-Dichloropropene | EPA 524.2 |
| Trichloroethene | EPA 524.2 |
| Trichlorofluoromethane | EPA 524.2 |
| Vinyl chloride | EPA 524.2 |

Serial No.: 29332

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**NEW YORK STATE DEPARTMENT OF HEALTH**
**WADSWORTH CENTER**
*Antonia C. Novello, M.D., M.P.H., Dr.P.H.*

Expires 12:01 AM April 01, 2007
Issued April 1, 2006

## CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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*WASTE STREAM TECHNOLOGY*
*302 GROTE STREET*
*BUFFALO, NY 14207*

*NY Lab Id No: 11179*
*EPA Lab Code: NY00068*

*is hereby APPROVED as an Environmental Laboratory for the category*
*ENVIRONMENTAL ANALYSES POTABLE WATER*
*All approved subcategories and/or analytes are listed below:*

**Radiological Analytes**

| | |
|---|---|
| Photon Emitters | EPA 901.1 |

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**WADSWORTH CENTER**
*Antonia C. Novello, M.D., M.P.H., Dr.P.H.*

Expires 12:01 AM April 01, 2007
Issued April 1, 2006

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*All approved analytes are listed below:*

**Amines**

| | |
|---|---|
| 2-Nitroaniline | EPA 8270C |
| 3-Nitroaniline | EPA 8270C |
| 4-Chloroaniline | EPA 8270C |
| 4-Nitroaniline | EPA 8270C |
| Aniline | EPA 8270C |
| [illegible]rbazole | EPA 8270C |
| [illegible]idine | EPA 8270C |

**Benzidines**

| | |
|---|---|
| 3,3' -Dichlorobenzidine | EPA 625 |
| | EPA 8270C |
| Benzidine | EPA 625 |
| | EPA 8270C |

**Chlorinated Hydrocarbon Pesticides**

| | |
|---|---|
| 4,4'-DDD | EPA 608 |
| | EPA 8081A |
| 4,4'-DDE | EPA 608 |
| | EPA 8081A |
| 4,4'-DDT | EPA 608 |
| | EPA 8081A |
| Aldrin | EPA 608 |
| | EPA 8081A |
| alpha-BHC | EPA 608 |

**Chlorinated Hydrocarbon Pesticides**

| | |
|---|---|
| alpha-BHC | EPA 8081A |
| beta-BHC | EPA 608 |
| | EPA 8081A |
| Chlordane Total | EPA 608 |
| | EPA 8081A |
| delta-BHC | EPA 608 |
| | EPA 8081A |
| Dieldrin | EPA 608 |
| | EPA 8081A |
| Endosulfan I | EPA 608 |
| | EPA 8081A |
| Endosulfan II | EPA 608 |
| | EPA 8081A |
| Endosulfan sulfate | EPA 608 |
| | EPA 8081A |
| Endrin | EPA 608 |
| | EPA 8081A |
| Endrin aldehyde | EPA 608 |
| | EPA 8081A |
| Heptachlor | EPA 608 |
| | EPA 8081A |
| Heptachlor epoxide | EPA 608 |
| | EPA 8081A |

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| | |
|---|---|
| **Chlorinated Hydrocarbon Pesticides** | |
| Lindane | EPA 608 |
| | EPA 8081A |
| Methoxychlor | EPA 608 |
| | EPA 8081A |
| **Chlorinated Hydrocarbons** | |
| 1,4-Trichlorobenzene | EPA 625 |
| | EPA 8270C |
| 2-Chloronaphthalene | EPA 625 |
| | EPA 8270C |
| Hexachlorobenzene | EPA 625 |
| | EPA 8270C |
| Hexachlorobutadiene | EPA 625 |
| | EPA 8270C |
| Hexachlorocyclopentadiene | EPA 625 |
| | EPA 8270C |
| Hexachloroethane | EPA 625 |
| | EPA 8270C |
| **Chlorophenoxy Acid Pesticides** | |
| 2,4,5-T | EPA 1978, p.115 |
| | EPA 8151A |
| 2,4,5-TP (Silvex) | EPA 1978, p.115 |
| | EPA 8151A |
| **Chlorophenoxy Acid Pesticides** | |
| 2,4-D | EPA 1978, p.115 |
| | EPA 8151A |
| Dalapon | EPA 8151A |
| Dicamba | EPA 1978, p.115 |
| | EPA 8151A |
| Dinoseb | EPA 8151A |
| **Demand** | |
| Biochemical Oxygen Demand | EPA 405.1 |
| | SM 18-20 5210B |
| Chemical Oxygen Demand | EPA 410.4 |
| | SM 18-20 5220D |
| **Fuel Oxygenates** | |
| Methyl tert-butyl ether | EPA 8021B |
| | EPA 8260B |
| t-Butyl alcohol | EPA 8260B |
| **Haloethers** | |
| 4-Bromophenylphenyl ether | EPA 625 |
| | EPA 8270C |
| 4-Chlorophenylphenyl ether | EPA 625 |
| | EPA 8270C |
| Bis (2-chloroisopropyl) ether | EPA 625 |
| | EPA 8270C |

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| | |
|---|---|
| **Haloethers** | |
| Bis(2-chloroethoxy)methane | EPA 625 |
| | EPA 8270C |
| Bis(2-chloroethyl)ether | EPA 625 |
| | EPA 8270C |
| **Microextractables** | |
| -Dibromo-3-chloropropane | EPA 8260B |
| 2-Dibromoethane | EPA 8260B |
| **Mineral** | |
| Alkalinity | EPA 310.1 |
| Chloride | ASTM D512-89A |
| | EPA 300.0 |
| | SM 18-20 4500-Cl B |
| Hardness, Total | EPA 130.2 |
| Sulfate (as SO4) | EPA 300.0 |
| | EPA 375.4 |
| **Nitroaromatics and Isophorone** | |
| 2,4-Dinitrotoluene | EPA 625 |
| 2,6-Dinitrotoluene | EPA 625 |
| Isophorone | EPA 625 |
| Nitrobenzene | EPA 625 |
| **Nitrosoamines** | |
| N-Nitrosodimethylamine | EPA 625 |
| | EPA 8270C |
| N-Nitrosodi-n-propylamine | EPA 625 |
| | EPA 8270C |
| N-Nitrosodiphenylamine | EPA 625 |
| | EPA 8270C |
| **Nutrient** | |
| Ammonia (as N) | EPA 350.3 |
| Kjeldahl Nitrogen, Total | EPA 351.4 |
| Nitrate (as N) | EPA 300.0 |
| Nitrite (as N) | EPA 300.0 |
| Orthophosphate (as P) | EPA 365.3 |
| Phosphorus, Total | EPA 365.2 |
| **Phthalate Esters** | |
| Benzyl butyl phthalate | EPA 625 |
| | EPA 8270C |
| Bis(2-ethylhexyl) phthalate | EPA 625 |
| | EPA 8270C |
| Diethyl phthalate | EPA 625 |
| | EPA 8270C |
| Dimethyl phthalate | EPA 625 |
| | EPA 8270C |

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**Phthalate Esters**

| | |
|---|---|
| Di-n-butyl phthalate | EPA 625 |
| | EPA 8270C |
| Di-n-octyl phthalate | EPA 625 |
| | EPA 8270C |

**Polychlorinated Biphenyls**

| | |
|---|---|
| PCB-1016 | EPA 608 |
| | EPA 8082 |
| PCB-1221 | EPA 608 |
| | EPA 8082 |
| PCB-1232 | EPA 608 |
| | EPA 8082 |
| PCB-1242 | EPA 608 |
| | EPA 8082 |
| PCB-1248 | EPA 608 |
| | EPA 8082 |
| PCB-1254 | EPA 608 |
| | EPA 8082 |
| PCB-1260 | EPA 608 |
| | EPA 8082 |

**Polynuclear Aromatics**

| | |
|---|---|
| Acenaphthene | EPA 625 |
| | EPA 8270C |

**Polynuclear Aromatics**

| | |
|---|---|
| Acenaphthylene | EPA 625 |
| | EPA 8270C |
| Anthracene | EPA 625 |
| | EPA 8270C |
| Benzo(a)anthracene | EPA 625 |
| | EPA 8270C |
| Benzo(a)pyrene | EPA 625 |
| | EPA 8270C |
| Benzo(b)fluoranthene | EPA 625 |
| | EPA 8270C |
| Benzo(ghi)perylene | EPA 625 |
| | EPA 8270C |
| Benzo(k)fluoranthene | EPA 625 |
| | EPA 8270C |
| Chrysene | EPA 625 |
| | EPA 8270C |
| Dibenzo(a,h)anthracene | EPA 625 |
| | EPA 8270C |
| Fluoranthene | EPA 625 |
| | EPA 8270C |
| Fluorene | EPA 625 |
| | EPA 8270C |
| Indeno(1,2,3-cd)pyrene | EPA 625 |

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**Polynuclear Aromatics**

| | |
|---|---|
| Indeno(1,2,3-cd)pyrene | EPA 8270C |
| Naphthalene | EPA 625 |
| | EPA 8270C |
| Phenanthrene | EPA 625 |
| | EPA 8270C |
| rene | EPA 625 |
| | EPA 8270C |

**Priority Pollutant Phenols**

| | |
|---|---|
| 2,4,5-Trichlorophenol | EPA 625 |
| | EPA 8270C |
| 2,4,6-Trichlorophenol | EPA 625 |
| | EPA 8270C |
| 2,4-Dichlorophenol | EPA 625 |
| | EPA 8270C |
| 2,4-Dimethylphenol | EPA 625 |
| | EPA 8270C |
| 2,4-Dinitrophenol | EPA 625 |
| | EPA 8270C |
| 2,6-Dichlorophenol | EPA 8270C |
| 2-Chlorophenol | EPA 625 |
| | EPA 8270C |
| 2-Methyl-4,6-dinitrophenol | EPA 625 |
| | EPA 8270C |

**Priority Pollutant Phenols**

| | |
|---|---|
| 2-Methylphenol | EPA 8270C |
| 2-Nitrophenol | EPA 625 |
| | EPA 8270C |
| 3-Methylphenol | EPA 8270C |
| 4-Chloro-3-methylphenol | EPA 625 |
| | EPA 8270C |
| 4-Methylphenol | EPA 8270C |
| 4-Nitrophenol | EPA 625 |
| | EPA 8270C |
| Cresols, Total | EPA 8270C |
| Pentachlorophenol | EPA 625 |
| | EPA 8270C |
| Phenol | EPA 625 |
| | EPA 8270C |

**Purgeable Aromatics**

| | |
|---|---|
| 1,2-Dichlorobenzene | EPA 602 |
| | EPA 624 |
| | EPA 625 |
| | EPA 8021B |
| | EPA 8260B |
| | EPA 8270C |
| 1,3-Dichlorobenzene | EPA 602 |
| | EPA 624 |

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| | |
|---|---|
| **Purgeable Aromatics** | |
| 1,3-Dichlorobenzene | EPA 625 |
| | EPA 8021B |
| | EPA 8260B |
| | EPA 8270C |
| 1,4-Dichlorobenzene | EPA 602 |
| | EPA 624 |
| | EPA 625 |
| | EPA 8021B |
| | EPA 8260B |
| | EPA 8270C |
| Benzene | EPA 602 |
| | EPA 624 |
| | EPA 8021B |
| | EPA 8260B |
| Chlorobenzene | EPA 602 |
| | EPA 624 |
| | EPA 8260B |
| Ethyl benzene | EPA 602 |
| | EPA 624 |
| | EPA 8021B |
| | EPA 8260B |
| Styrene | EPA 624 |
| | EPA 8260B |
| **Purgeable Aromatics** | |
| Toluene | EPA 602 |
| | EPA 624 |
| | EPA 8021B |
| | EPA 8260B |
| Total Xylenes | EPA 602 |
| | EPA 624 |
| | EPA 8021B |
| | EPA 8260B |
| **Purgeable Halocarbons** | |
| 1,1,1,2-Tetrachloroethane | EPA 8260B |
| 1,1,1-Trichloroethane | EPA 624 |
| | EPA 8260B |
| 1,1,2,2-Tetrachloroethane | EPA 624 |
| | EPA 8260B |
| 1,1,2-Trichloroethane | EPA 624 |
| | EPA 8260B |
| 1,1-Dichloroethane | EPA 624 |
| | EPA 8260B |
| 1,1-Dichloroethene | EPA 624 |
| | EPA 8260B |
| 1,1-Dichloropropene | EPA 8260B |
| 1,2,3-Trichloropropane | EPA 8260B |
| 1,2-Dichloroethane | EPA 624 |

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**Purgeable Halocarbons**

| | |
|---|---|
| 1,2-Dichloroethane | EPA 8260B |
| 1,2-Dichloropropane | EPA 624 |
| | EPA 8260B |
| 2,2-Dichloropropane | EPA 8260B |
| 2-Chloroethylvinyl ether | EPA 624 |
| | EPA 8260B |
| Bromodichloromethane | EPA 624 |
| | EPA 8260B |
| Bromoform | EPA 624 |
| | EPA 8260B |
| Bromomethane | EPA 624 |
| Carbon tetrachloride | EPA 624 |
| | EPA 8260B |
| Chloroethane | EPA 624 |
| | EPA 8260B |
| Chloroform | EPA 624 |
| | EPA 8260B |
| Chloromethane | EPA 624 |
| | EPA 8260B |
| cis-1,2-Dichloroethene | EPA 8260B |
| cis-1,3-Dichloropropene | EPA 624 |
| | EPA 8260B |
| Dibromochloromethane | EPA 624 |

**Purgeable Halocarbons**

| | |
|---|---|
| Dibromochloromethane | EPA 8260B |
| Dichlorodifluoromethane | EPA 624 |
| | EPA 8260B |
| Methylene chloride | EPA 624 |
| | EPA 8260B |
| Tetrachloroethene | EPA 624 |
| | EPA 8260B |
| trans-1,2-Dichloroethene | EPA 624 |
| | EPA 8260B |
| trans-1,3-Dichloropropene | EPA 624 |
| | EPA 8260B |
| Trichloroethene | EPA 624 |
| | EPA 8260B |
| Trichlorofluoromethane | EPA 624 |
| | EPA 8260B |
| Vinyl chloride | EPA 624 |
| | EPA 8260B |

**Purgeable Organics**

| | |
|---|---|
| 2-Butanone (Methylethyl ketone) | EPA 8260B |
| 2-Hexanone | EPA 8260B |
| 4-Methyl-2-Pentanone | EPA 8260B |
| Acetone | EPA 8260B |
| Carbon Disulfide | EPA 8260B |

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| | |
|---|---|
| **Purgeable Organics** | |
| Vinyl acetate | EPA 8260B |
| **Residue** | |
| Solids, Total | EPA 160.3 |
| | SM 18-20 2540B |
| Solids, Total Dissolved | EPA 160.1 |
| | SM 18-20 2540C |
| Solids, Total Suspended | EPA 160.2 |
| | SM 18-20 2540D |
| **Semi-Volatile Organics** | |
| Acetophenone | EPA 8270C |
| Benzoic Acid | EPA 8270C |
| Benzyl alcohol | EPA 8270C |
| Dibenzofuran | EPA 8270C |
| **Wastewater Metals I** | |
| Barium, Total | EPA 200.7 |
| | EPA 3010A |
| | EPA 6010B |
| Cadmium, Total | EPA 200.7 |
| | EPA 3010A |
| | EPA 6010B |
| Calcium, Total | EPA 200.7 |
| | EPA 3010A |
| **Wastewater Metals I** | |
| Calcium, Total | EPA 6010B |
| Chromium, Total | EPA 200.7 |
| | EPA 3010A |
| | EPA 6010B |
| Copper, Total | EPA 200.7 |
| | EPA 3010A |
| | EPA 6010B |
| Iron, Total | EPA 200.7 |
| | EPA 3010A |
| | EPA 6010B |
| Lead, Total | EPA 200.7 |
| | EPA 200.9 |
| | EPA 239.2 |
| | EPA 3010A |
| | EPA 3020A |
| | EPA 6010B |
| | EPA 7421 |
| Magnesium, Total | EPA 200.7 |
| | EPA 3010A |
| | EPA 6010B |
| Manganese, Total | EPA 200.7 |
| | EPA 3010A |
| | EPA 6010B |

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| | |
|---|---|
| **Wastewater Metals I** | |
| Nickel, Total | EPA 200.7 |
| | EPA 3010A |
| | EPA 6010B |
| Potassium, Total | EPA 200.7 |
| | EPA 3010A |
| | EPA 6010B |
| [illegible]r, Total | EPA 200.7 |
| | EPA 6010B |
| Sodium, Total | EPA 200.7 |
| | EPA 3010A |
| | EPA 6010B |
| **Wastewater Metals II** | |
| Aluminum, Total | EPA 200.7 |
| | EPA 3010A |
| | EPA 6010B |
| Antimony, Total | EPA 200.7 |
| | EPA 200.9 |
| | EPA 204.2 |
| | EPA 6010B |
| | EPA 7041 |
| Arsenic, Total | EPA 200.7 |
| | EPA 200.9 |
| | EPA 3010A |
| **Wastewater Metals II** | |
| Arsenic, Total | EPA 6010B |
| | EPA 7060A |
| Beryllium, Total | EPA 200.7 |
| | EPA 3010A |
| | EPA 6010B |
| Chromium VI | EPA 7196A |
| | SM 18-19 3500-Cr D |
| Mercury, Total | EPA 245.1 |
| | EPA 7470A |
| Selenium, Total | EPA 200.7 |
| | EPA 270.2 |
| | EPA 3010A |
| | EPA 6010B |
| Vanadium, Total | EPA 200.7 |
| | EPA 3010A |
| | EPA 6010B |
| Zinc, Total | EPA 200.7 |
| | EPA 3010A |
| | EPA 6010B |
| **Wastewater Metals III** | |
| Cobalt, Total | EPA 200.7 |
| | EPA 3010A |
| | EPA 6010B |

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*Issued in accordance with and pursuant to section 502 Public Health Law of New York State*

*DR. BRIAN S. SCHEPART*
*WASTE STREAM TECHNOLOGY*
*302 GROTE STREET*
*BUFFALO, NY 14207*

*NY Lab Id No: 11179*
*EPA Lab Code: NY00068*

*is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards for the category ENVIRONMENTAL ANALYSES NON POTABLE WATER*
*All approved analytes are listed below:*

**Wastewater Metals III**

| | |
|---|---|
| Gold, Total | AES 0029 |
| Molybdenum, Total | EPA 200.7 |
| | EPA 6010B |
| Palladium, Total | AES 0029 |
| Platinum, Total | AES 0029 |
| ·llium, Total | EPA 200.7 |
| | EPA 200.9 |
| | EPA 279.2 |
| | EPA 3010A |
| | EPA 6010B |
| Tin, Total | EPA 200.7 |

**Wastewater Miscellaneous**

| | |
|---|---|
| Boron, Total | EPA 200.7 |
| | EPA 6010B |
| Bromide | EPA 300.0 |
| Cyanide, Total | EPA 335.2 |
| | EPA 9010B |
| Hydrogen Ion (pH) | EPA 150.1 |
| | EPA 9040B |
| Oil & Grease Total Recoverable | EPA 1664A |
| | EPA 413.1 |
| Organic Carbon, Total | EPA 415.1 |
| Phenols | EPA 420.1 |

**Wastewater Miscellaneous**

| | |
|---|---|
| Specific Conductance | EPA 120.1 |
| Sulfide (as S) | EPA 376.1 |
| | EPA 9030B |
| | EPA 9034 |
| Surfactant (MBAS) | SM 18-20 5540C |

Serial No.: 29334

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**NEW YORK STATE DEPARTMENT OF HEALTH**
**WADSWORTH CENTER**
*Antonia C. Novello, M.D., M.P.H., Dr.P.H.*

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*ENVIRONMENTAL ANALYSES NON POTABLE WATER*
*All approved subcategories and/or analytes are listed below:*

| | |
|---|---|
| **Chlorinated Hydrocarbon Pesticides** | |
| Toxaphene | EPA 608 |
| | EPA 8081A |
| **Wastewater Metals I** | |
| Strontium, Total | EPA 200.7 |
| | EPA 6010B |
| **Wastewater Metals II** | |
| Selenium, Total | EPA 7740 |

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| | |
|---|---|
| **Amines** | |
| 2-Nitroaniline | EPA 8270C |
| 3-Nitroaniline | EPA 8270C |
| 4-Chloroaniline | EPA 8270C |
| 4-Nitroaniline | EPA 8270C |
| Aniline | EPA 8270C |
| [illegible]-bazole | EPA 8270C |
| **Benzidines** | |
| 3,3'-Dichlorobenzidine | EPA 8270C |
| Benzidine | EPA 8270C |
| **Characteristic Testing** | |
| E.P. Toxicity | EPA 1310 |
| Ignitability | EPA 1010 |
| Reactivity | SW-846 Ch7, Sec. 7.3 |
| TCLP | EPA 1311 |
| **Chlorinated Hydrocarbon Pesticides** | |
| 4,4'-DDD | EPA 8081A |
| 4,4'-DDE | EPA 8081A |
| 4,4'-DDT | EPA 8081A |
| Aldrin | EPA 8081A |
| alpha-BHC | EPA 8081A |
| beta-BHC | EPA 8081A |
| Chlordane Total | EPA 8081A |
| **Chlorinated Hydrocarbon Pesticides** | |
| delta-BHC | EPA 8081A |
| Dieldrin | EPA 8081A |
| Endosulfan I | EPA 8081A |
| Endosulfan II | EPA 8081A |
| Endosulfan sulfate | EPA 8081A |
| Endrin | EPA 8081A |
| Endrin aldehyde | EPA 8081A |
| Endrin Ketone | EPA 8081A |
| Heptachlor | EPA 8081A |
| Heptachlor epoxide | EPA 8081A |
| Lindane | EPA 8081A |
| Methoxychlor | EPA 8081A |
| **Chlorinated Hydrocarbons** | |
| 1,2,4-Trichlorobenzene | EPA 8270C |
| 2-Chloronaphthalene | EPA 8270C |
| Hexachlorobenzene | EPA 8270C |
| Hexachlorobutadiene | EPA 8270C |
| Hexachlorocyclopentadiene | EPA 8270C |
| Hexachloroethane | EPA 8270C |
| **Chlorophenoxy Acid Pesticides** | |
| 2,4,5-T | EPA 8151A |
| 2,4,5-TP (Silvex) | EPA 8151A |

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*All approved analytes are listed below:*

| | |
|---|---|
| **Chlorophenoxy Acid Pesticides** | |
| 2,4-D | EPA 8151A |
| 2,4-DB | EPA 8151A |
| Dalapon | EPA 8151A |
| Dicamba | EPA 8151A |
| Dinoseb | EPA 8151A |
| [illegible]PA | EPA 8151A |
| [illegible]CP | EPA 8151A |
| **Haloethers** | |
| Bis (2-chloroisopropyl) ether | EPA 8270C |
| Bis(2-chloroethoxy)methane | EPA 8270C |
| Bis(2-chloroethyl)ether | EPA 8270C |
| **Metals I** | |
| Barium, Total | EPA 6010B |
| Cadmium, Total | EPA 6010B |
| Chromium, Total | EPA 6010B |
| Lead, Total | EPA 6010B |
| Nickel, Total | EPA 6010B |
| Silver, Total | EPA 6010B |
| **Metals II** | |
| Antimony, Total | EPA 6010B |
| Arsenic, Total | EPA 6010B |
| | EPA 7060A |
| **Metals II** | |
| Selenium, Total | EPA 6010B |
| **Minerals** | |
| Bromide | EPA 9056 |
| Chloride | EPA 9056 |
| Sulfate (as SO4) | EPA 9056 |
| **Miscellaneous** | |
| Boron, Total | EPA 6010B |
| Hydrogen Ion (pH) | EPA 9040B |
| | EPA 9045C |
| Lead in Dust Wipes | APP. 14.2, HUD JUNE 1995 |
| Oil & Grease Total Recoverable | EPA 9071 |
| Phenols | EPA 9065 |
| Sulfide (as S) | EPA 9030B |
| | EPA 9034 |
| **Nitroaromatics and Isophorone** | |
| 2,4-Dinitrotoluene | EPA 8270C |
| 2,6-Dinitrotoluene | EPA 8270C |
| Isophorone | EPA 8270C |
| Nitrobenzene | EPA 8270C |
| Pyridine | EPA 8270C |

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| | |
|---|---|
| **Nitrosoamines** | |
| N-Nitrosodimethylamine | EPA 8270C |
| N-Nitrosodiphenylamine | EPA 8270C |
| **Nutrients** | |
| Nitrate (as N) | EPA 9056 |
| Orthophosphate (as P) | EPA 9056 |
| **[illegible]alate Esters** | |
| Benzyl butyl phthalate | EPA 8270C |
| Bis(2-ethylhexyl) phthalate | EPA 8270C |
| Diethyl phthalate | EPA 8270C |
| Dimethyl phthalate | EPA 8270C |
| Di-n-butyl phthalate | EPA 8270C |
| Di-n-octyl phthalate | EPA 8270C |
| **Polychlorinated Biphenyls** | |
| PCB-1016 | EPA 8082 |
| PCB-1221 | EPA 8082 |
| PCB-1232 | EPA 8082 |
| PCB-1242 | EPA 8082 |
| PCB-1248 | EPA 8082 |
| PCB-1254 | EPA 8082 |
| PCB-1260 | EPA 8082 |

| | |
|---|---|
| **Polynuclear Aromatic Hydrocarbons** | |
| Acenaphthene | EPA 8270C |
| Acenaphthylene | EPA 8270C |
| Anthracene | EPA 8270C |
| Benzo(a)anthracene | EPA 8270C |
| Benzo(a)pyrene | EPA 8270C |
| Benzo(b)fluoranthene | EPA 8270C |
| Benzo(ghi)perylene | EPA 8270C |
| Chrysene | EPA 8270C |
| Dibenzo(a,h)anthracene | EPA 8270C |
| Fluoranthene | EPA 8270C |
| Fluorene | EPA 8270C |
| Indeno(1,2,3-cd)pyrene | EPA 8270C |
| Naphthalene | EPA 8270C |
| Phenanthrene | EPA 8270C |
| Pyrene | EPA 8270C |
| **Priority Pollutant Phenols** | |
| 2,4,5-Trichlorophenol | EPA 8270C |
| 2,4,6-Trichlorophenol | EPA 8270C |
| 2,4-Dichlorophenol | EPA 8270C |
| 2,4-Dimethylphenol | EPA 8270C |
| 2,4-Dinitrophenol | EPA 8270C |
| 2-Chlorophenol | EPA 8270C |
| 2-Methyl-4,6-dinitrophenol | EPA 8270C |

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**Priority Pollutant Phenols**

| | |
|---|---|
| 2-Nitrophenol | EPA 8270C |
| 3-Methylphenol | EPA 8270C |
| 4-Chloro-3-methylphenol | EPA 8270C |
| 4-Methylphenol | EPA 8270C |
| 4-Nitrophenol | EPA 8270C |
| ntachlorophenol | EPA 8270C |
| nol | EPA 8270C |

**Purgeable Aromatics**

| | |
|---|---|
| 1,2,4-Trimethylbenzene | EPA 8021B |
| | EPA 8260B |
| 1,2-Dichlorobenzene | EPA 8021B |
| | EPA 8260B |
| 1,3,5-Trimethylbenzene | EPA 8021B |
| | EPA 8260B |
| 1,3-Dichlorobenzene | EPA 8021B |
| | EPA 8260B |
| 1,4-Dichlorobenzene | EPA 8021B |
| | EPA 8260B |
| 2-Chlorotoluene | EPA 8260B |
| 4-Chlorotoluene | EPA 8260B |
| Benzene | EPA 8021B |
| | EPA 8260B |
| Bromobenzene | EPA 8260B |

**Purgeable Aromatics**

| | |
|---|---|
| Chlorobenzene | EPA 8021B |
| | EPA 8260B |
| Ethyl benzene | EPA 8021B |
| | EPA 8260B |
| Isopropylbenzene | EPA 8021B |
| | EPA 8260B |
| n-Butylbenzene | EPA 8021B |
| | EPA 8260B |
| sec-Butylbenzene | EPA 8021B |
| | EPA 8260B |
| Styrene | EPA 8260B |
| tert-Butylbenzene | EPA 8021B |
| | EPA 8260B |
| Toluene | EPA 8021B |
| | EPA 8260B |
| Total Xylenes | EPA 8021B |
| | EPA 8260B |

**Purgeable Halocarbons**

| | |
|---|---|
| 1,1,1,2-Tetrachloroethane | EPA 8260B |
| 1,1,1-Trichloroethane | EPA 8260B |
| 1,1,2,2-Tetrachloroethane | EPA 8260B |
| 1,1,2-Trichloroethane | EPA 8260B |
| 1,1-Dichloroethane | EPA 8260B |

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| | |
|---|---|
| **Purgeable Halocarbons** | |
| 1,1-Dichloroethene | EPA 8260B |
| 1,1-Dichloropropene | EPA 8260B |
| 1,2,3-Trichloropropane | EPA 8260B |
| 1,2-Dibromo-3-chloropropane | EPA 8260B |
| 1,2-Dichloroethane | EPA 8260B |
| [illegible]-Dichloropropane | EPA 8260B |
| [illegible],3-Dichloropropane | EPA 8260B |
| 2,2-Dichloropropane | EPA 8260B |
| 2-Chloroethylvinyl ether | EPA 8260B |
| Bromochloromethane | EPA 8260B |
| Bromodichloromethane | EPA 8260B |
| Bromoform | EPA 8260B |
| Bromomethane | EPA 8260B |
| Carbon tetrachloride | EPA 8260B |
| Chloroethane | EPA 8260B |
| Chloroform | EPA 8260B |
| Chloromethane | EPA 8260B |
| cis-1,2-Dichloroethene | EPA 8260B |
| cis-1,3-Dichloropropene | EPA 8260B |
| Dibromochloromethane | EPA 8260B |
| Dichlorodifluoromethane | EPA 8260B |
| Methylene chloride | EPA 8260B |
| Tetrachloroethene | EPA 8260B |
| **Purgeable Halocarbons** | |
| trans-1,2-Dichloroethene | EPA 8260B |
| trans-1,3-Dichloropropene | EPA 8260B |
| Trichloroethene | EPA 8260B |
| Trichlorofluoromethane | EPA 8260B |
| Vinyl chloride | EPA 8260B |
| **Purgeable Organics** | |
| 1,4-Dioxane | EPA 8260B |
| 2-Butanone (Methylethyl ketone) | EPA 8260B |
| 2-Hexanone | EPA 8260B |
| Acetone | EPA 8260B |
| Carbon Disulfide | EPA 8260B |
| Vinyl acetate | EPA 8260B |
| **Semi-Volatile Organics** | |
| 2-Methylnaphthalene | EPA 8270C |
| Benzoic Acid | EPA 8270C |
| Benzyl alcohol | EPA 8270C |
| Dibenzofuran | EPA 8270C |

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| | |
|---|---|
| **Chlorinated Hydrocarbon Pesticides** | |
| Toxaphene | EPA 8081A |
| **Haloethers** | |
| 4-Bromophenylphenyl ether | EPA 8270C |
| 4-Chlorophenylphenyl ether | EPA 8270C |
| **Metals I** | |
| Calcium, Total | EPA 6010B |
| Copper, Total | EPA 6010B |
| Iron, Total | EPA 6010B |
| Magnesium, Total | EPA 6010B |
| Manganese, Total | EPA 6010B |
| Potassium, Total | EPA 6010B |
| Sodium, Total | EPA 6010B |
| **Metals II** | |
| Aluminum, Total | EPA 6010B |
| Beryllium, Total | EPA 6010B |
| Chromium VI | EPA 7196A |
| Mercury, Total | EPA 7471A |
| Vanadium, Total | EPA 6010B |
| Zinc, Total | EPA 6010B |
| **Metals III** | |
| Cobalt, Total | EPA 6010B |
| **Metals III** | |
| Molybdenum, Total | EPA 6010B |
| Thallium, Total | EPA 6010B |
| **Miscellaneous** | |
| Cyanide, Total | EPA 9010B |
| | EPA 9014 |
| Lead in Paint | EPA 6010B |
| **Nitrosoamines** | |
| N-Nitrosodi-n-propylamine | EPA 8270C |
| **Polynuclear Aromatic Hydrocarbons** | |
| Benzo(k)fluoranthene | EPA 8270C |
| **Priority Pollutant Phenols** | |
| 2-Methylphenol | EPA 8270C |
| **Purgeable Organics** | |
| 4-Methyl-2-Pentanone | EPA 8260B |

Serial No.: 29337

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State of New Jersey
Department of Environmental Protection

New Jersey Department of Environmental Protection

National Environmental Laboratory Accreditation Program

# ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

Effective as of 07/01/2006 until 06/30/2007

**Laboratory Name: WASTE STREAM TECHNOLOGY INC Laboratory Number: NY977 Activity ID: NLC060001**
**302 GROTE ST**
**BUFFALO, NY 14207**

**Category: SDW02 – Inorganic Parameters Including Na + Ca**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Applied | No | NY | SDW02.15000 | DW | Spectrophotometric, Distill, Amenable | [SM 4500-CN C,G] | Cyanide |
| Certified | Yes | NY | SDW02.15100 | DW | Spectrophotometric, Distill, Manual | [SM 4500-CN C,E] | Cyanide |
| Certified | No | NY | SDW02.20000 | DW | ICP | [EPA 200.7] | Sodium |

**Category: SDW04 – Inorganic Parameters, Metals**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NY | SDW04.06000 | DW | AA, Platform Furnace | [EPA 200.9] | Antimony |
| Certified | Yes | NY | SDW04.10000 | DW | AA, Platform Furnace | [EPA 200.9] | Arsenic |
| Certified | Yes | NY | SDW04.16000 | DW | ICP | [EPA 200.7] | Barium |
| Certified | Yes | NY | SDW04.20000 | DW | ICP | [EPA 200.7] | Beryllium |
| Applied | No | NY | SDW04.23000 | DW | AA, Platform Furnace | [EPA 200.9] | Cadmium |
| Certified | Yes | NY | SDW04.24000 | DW | ICP | [EPA 200.7] | Cadmium |
| Certified | Yes | NY | SDW04.28000 | DW | ICP | [EPA 200.7] | Chromium |
| Certified | Yes | NY | SDW04.33000 | DW | ICP | [EPA 200.7] | Copper |
| Certified | Yes | NY | SDW04.37000 | DW | ICP | [EPA 200.7] | Iron |
| Certified | Yes | NY | SDW04.39000 | DW | AA, Platform Furnace | [EPA 200.9] | Lead |
| Certified | Yes | NY | SDW04.44000 | DW | ICP | [EPA 200.7] | Manganese |
| Certified | Yes | NY | SDW04.46000 | DW | Manual Cold Vapor | [EPA 245.1] | Mercury |
| Certified | Yes | NY | SDW04.52000 | DW | ICP | [EPA 200.7] | Nickel |
| Certified | Yes | NY | SDW04.56000 | DW | AA, Platform Furnace | [EPA 200.9] | Selenium |
| Applied | No | NY | SDW04.61000 | DW | AA, Platform Furnace | [EPA 200.9] | Silver |
| Certified | Yes | NY | SDW04.62000 | DW | ICP | [EPA 200.7] | Silver |
| Certified | Yes | NY | SDW04.64000 | DW | AA, Platform Furnace | [EPA 200.9] | Thallium |
| Certified | Yes | NY | SDW04.67000 | DW | ICP | [EPA 200.7] | Zinc |

KEY: AE = Air and Emissions, BT = Biological Tissues, DW = Drinking Water, NPW = Non-Potable Water, SCM = Solid and Chemical Materials

New Jersey Department of Environmental Protection

National Environmental Laboratory Accreditation Program

# ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

Effective as of 07/01/2006 until 06/30/2007

**Laboratory Name: WASTE STREAM TECHNOLOGY INC Laboratory Number: NY977 Activity ID: NLC060001**
**302 GROTE ST**
**BUFFALO, NY 14207**

**Category: SDW06 – Organic Parameters, Chromatography/MS**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NY | SDW06.01010 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Bromoform |
| Certified | Yes | NY | SDW06.01020 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Chloroform |
| Certified | Yes | NY | SDW06.01030 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Dibromochloromethane |
| Certified | Yes | NY | SDW06.01040 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Bromodichloromethane |
| Certified | Yes | NY | SDW06.02010 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Benzene |
| Certified | Yes | NY | SDW06.02020 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Carbon tetrachloride |
| Certified | Yes | NY | SDW06.02030 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Chlorobenzene |
| Certified | Yes | NY | SDW06.02040 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Dichlorobenzene (1,2-) |
| Certified | Yes | NY | SDW06.02050 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Dichlorobenzene (1,3-) |
| Certified | Yes | NY | SDW06.02060 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Dichlorobenzene (1,4-) |
| Certified | Yes | NY | SDW06.02070 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Dichloroethane (1,1-) |
| Certified | Yes | NY | SDW06.02080 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Dichloroethane (1,2-) |
| Certified | Yes | NY | SDW06.02090 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Dichloroethene (cis-1,2-) |
| Certified | Yes | NY | SDW06.02100 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Dichloroethene (trans-1,2-) |
| Certified | Yes | NY | SDW06.02110 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Methylene chloride (Dichloromethane) |
| Certified | Yes | NY | SDW06.02120 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Dichloropropane (1,2-) |
| Certified | Yes | NY | SDW06.02130 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Ethylbenzene |
| Certified | Yes | NY | SDW06.02160 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Styrene |
| Certified | Yes | NY | SDW06.02170 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Tetrachloroethane (1,1,2,2-) |
| Certified | Yes | NY | SDW06.02180 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Tetrachloroethene |
| Certified | Yes | NY | SDW06.02190 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Trichloroethane (1,1,1-) |
| Certified | Yes | NY | SDW06.02200 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Trichloroethene |
| Certified | Yes | NY | SDW06.02210 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Toluene |
| Certified | Yes | NY | SDW06.02220 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Trichlorobenzene (1,2,4-) |
| Certified | Yes | NY | SDW06.02230 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Dichloroethene (1,1-) |
| Certified | Yes | NY | SDW06.02240 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Trichloroethane (1,1,2-) |
| Certified | Yes | NY | SDW06.02250 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Vinyl chloride |
| Certified | Yes | NY | SDW06.02260 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Xylenes (total) |
| Certified | Yes | NY | SDW06.03010 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Bromobenzene |
| Certified | Yes | NY | SDW06.03020 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Bromochloromethane |
| Certified | Yes | NY | SDW06.03030 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Bromomethane |
| Certified | Yes | NY | SDW06.03040 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Butyl benzene (n-) |

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New Jersey Department of Environmental Protection

National Environmental Laboratory Accreditation Program

# ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

Effective as of 07/01/2006 until 06/30/2007

**Laboratory Name: WASTE STREAM TECHNOLOGY INC Laboratory Number: NY977 Activity ID: NLC060001**
**302 GROTE ST**
**BUFFALO, NY 14207**

**Category: SDW06 -- Organic Parameters, Chromatography/MS**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NY | SDW06.03050 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Sec-butylbenzene |
| Certified | Yes | NY | SDW06.03060 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Tert-butylbenzene |
| Certified | Yes | NY | SDW06.03070 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Chloroethane |
| Certified | Yes | NY | SDW06.03080 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Chloromethane |
| Certified | Yes | NY | SDW06.03090 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Chlorotoluene (2-) |
| Certified | Yes | NY | SDW06.03100 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Chlorotoluene (4-) |
| Certified | Yes | NY | SDW06.03130 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Dibromomethane |
| Certified | Yes | NY | SDW06.03140 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Dichlorodifluoromethane |
| Certified | Yes | NY | SDW06.03150 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Dichloropropane (1,3-) |
| Certified | Yes | NY | SDW06.03160 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Dichloropropane (2,2-) |
| Certified | Yes | NY | SDW06.03170 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Dichloropropene (1,1-) |
| Certified | Yes | NY | SDW06.03180 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Dichloropropene (cis-1,3-) |
| Certified | Yes | NY | SDW06.03190 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Dichloropropene (trans-1,3-) |
| Certified | Yes | NY | SDW06.03200 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Hexachlorobutadiene (1,3-) |
| Certified | Yes | NY | SDW06.03210 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Isopropylbenzene |
| Certified | Yes | NY | SDW06.03220 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Isopropyltoluene (4-) |
| Certified | Yes | NY | SDW06.03230 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Propylbenzene (n-) |
| Certified | Yes | NY | SDW06.03240 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Tetrachloroethane (1,1,1,2-) |
| Certified | Yes | NY | SDW06.03250 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Trichlorobenzene (1,2,3-) |
| Certified | Yes | NY | SDW06.03260 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Trichlorofluoromethane |
| Certified | Yes | NY | SDW06.03270 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Trichloropropane (1,2,3-) |
| Certified | Yes | NY | SDW06.03280 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Trimethylbenzene (1,2,4-) |
| Certified | Yes | NY | SDW06.03300 | DW | GC/MS, P & T or Direct Injection, Capillary | [EPA 524.2] | Trimethylbenzene (1,3,5-) |

**Category: SDW07 -- Radiochem.: Radioactivity / Radionuclide**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NY | SDW07.01000 | DW | Proportional or Scintillation | [EPA 900.0] | Gross - alpha-beta |
| Certified | Yes | NJ | SDW07.01001 | DW | 48-Hour Rapid Gross Alpha Test | [OTHER N. J. A. C. 7:18-6] | Gross - alpha (incl. radium & U excl. radon) |
| Certified | Yes | NY | SDW07.02030 | DW | Gamma Spectrometry | [EPA 901.1] | Radioactive iodine |

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New Jersey Department of Environmental Protection

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# ANNUAL CERTIFIED PARAME R LIST AND CURRENT STATUS

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**Laboratory Name: WASTE STREAM TECHNOLOGY INC Laboratory Number: NY977 Activity ID: NLC060001**
**302 GROTE ST**
**BUFFALO, NY 14207**

**Category: SDW07 – Radiochem.: Radioactivity / Radionuclide**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NY | SDW07.03000 | DW | Gamma Spectrometry | [EPA 901.1] | Cesium 134/137 |
| Certified | Yes | NY | SDW07.03110 | DW | Gamma Spectrometry | [EPA 901.1] | Barium 133 |
| Certified | Yes | NY | SDW07.03120 | DW | Gamma Spectrometry | [EPA 901.1] | Cobalt 60 |
| Certified | Yes | NY | SDW07.03130 | DW | Gamma Spectrometry | [EPA 901.1] | Zinc 65 |
| Applied | No | NJ | SDW07.03800 | DW | Radiochemical | [OTHER NJDHSS - Rev. 4, 2/99] | Radium - 224 |
| Certified | Yes | NY | SDW07.03900 | DW | Radiochemical | [USER DEFINED EPA 1984 Ra-03] [SM 7500-Ra B] | Radium - 226 |
| Certified | Yes | NY | SDW07.04100 | DW | Precipitation | [USER DEFINED EPA 1984 Ra-05] [SM 7500-Ra D] | Radium - 228 |
| Applied | No | NY | SDW07.05000 | DW | Precipitation | [SM 7500 -Ra B] | Radium - total |
| Applied | No | NY | SDW07.06000 | DW | Total Sr & Strontium 90 | [EPA 905.0] [SM 7500-Sr B] | Strontium - 89, 90 |
| Applied | No | NY | SDW07.06010 | DW | Strontium 90 | [EPA 905.0] [SM 7500-Sr B] | Strontium - 90 |
| Certified | Yes | NY | SDW07.08100 | DW | Co-Precipition | [USER DEFINED DOE 1990 U-2] | Uranium |

**Category: SHW04 – Inorganic Parameters**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Applied | No | NJ | SHW04.01000 | NPW | Acid Digestion/Surface and Groundwater, ICP, FLAA | [SW-846 3005A, Rev. 1, 7/92] | Metals, Total Rec and Dissolved |
| Certified | Yes | NJ | SHW04.01500 | NPW | Acid Digestion/Aqueous Samples, ICP, FLAA | [SW-846 3010A, Rev. 1, 7/92] | Metals, Total |
| Applied | No | NJ | SHW04.02000 | NPW | Acid Digestion For GFAA, Aqueous | [SW-846 3020A, Rev. 1, 7/92] | Metals |
| Certified | Yes | NJ | SHW04.02100 | NPW | Acid Digestion For GFAA, Micro asst Aqueous | [SW-846 3015, Rev. 0, 9/94] | Metals |
| Certified | Yes | NY | SHW04.05000 | NPW | ICP | [SW-846 6010B, Rev. 2, 12/96] | Aluminum |
| Certified | No | NY | SHW04.08000 | NPW | AA, Graphite Furnace | [SW-846 7041, Rev. 0, 9/86] | Antimony |

**Category: SHW05 – Organic Parameters, Prep. / Screening**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Applied | No | NJ | SHW05.01000 | NPW | Separatory Funnel Extraction | [SW-846 3510C, Rev. 3, 12/96] | Semivolatile organics |
| Applied | No | NJ | SHW05.02000 | NPW | Continuous Liquid-Liquid Extraction | [SW-846 3520C, Rev. 3, 12/96] | Semivolatile organics |

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**302 GROTE ST**
**BUFFALO, NY 14207**

**Category: SHW05 – Organic Parameters, Prep. / Screening**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NJ | SHW05.07000 | NPW | Purge & Trap Aqueous | [SW-846 5030B, Rev. 2, 12/96] | Volatile organics |

**Category: SHW06 – Organic Parameters, Chromatography**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NY | SHW06.05360 | NPW | GC, Direct Injection or P & T, PID-HECD | [SW-846 8021B, Rev. 2, 12/96] | Methyl tert-butyl ether |
| Certified | Yes | NY | SHW06.23066 | NPW | GC, Extraction, ECD, Capillary | [SW-846 8151A, Rev. 1, 9/96] | Pentachlorophenol |

**Category: SHW07 – Organic Parameters, Chromatography/MS**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NY | SHW07.04185 | NPW | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Dibromoethane (1,2-) (EDB) |
| Certified | Yes | NY | SHW07.05700 | NPW | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Dichlorobenzene (1,4-) |

**Category: SHW09 – Miscellaneous Parameters**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NY | SHW09.24100 | NPW | Extraction & Gravimetric - LL or SPE | [SW-846 1664A, Rev. 1, 2/99] | Oil & grease - hem |

**Category: WPP02 – Inorganic Parameters, Nutrients and Dema**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Applied | No | NY | WPP02.01000 | NPW | Electrometric or Phenolphthalein | [EPA 305.1] | Acidity as CaCO3 |
| Certified | Yes | NY | WPP02.01500 | NPW | Electrometric or Color Titration | [EPA 310.1] | Alkalinity as CaCO3 |
| Certified | Yes | NY | WPP02.03500 | NPW | Distillation, Electrode | [EPA 350.2 + .3] | Ammonia |
| Certified | Yes | NY | WPP02.05000 | NPW | Dissolved Oxygen Depletion | [EPA 405.1] | Biochemical oxygen demand |
| Certified | Yes | NY | WPP02.08000 | NPW | Digestion, ICP | [EPA 200.7] | Calcium |

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New Jersey Department of Environmental Protection

National Environmental Lab[illegible]tory Accreditation Program

# ANNUAL CERTIFIED PARAME[illegible]R LIST AND CURRENT STATUS

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**Laboratory Name: WASTE STREAM TECHNOLOGY INC Laboratory Number: NY977 Activity ID: NLC060001**
**302 GROTE ST**
**BUFFALO, NY 14207**

**Category: WPP02 – Inorganic Parameters, Nutrients and Dema**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Applied | No | NY | WPP02.10000 | NPW | Titrimetric | [EPA 410.1 or .2 or .3] [SM 5220 C] | Chemical oxygen demand |
| Certified | Yes | NY | WPP02.10500 | NPW | Spectrophotometric Manual/Auto | [EPA 410.4] [SM 5220 D] | Chemical oxygen demand |
| Certified | Yes | NY | WPP02.11000 | NPW | Titrimetric, Silver Nitrate | [SM 4500-Cl B] | Chloride |
| Certified | Yes | NY | WPP02.11500 | NPW | Titrimetric, Mercuric Nitrate | [ASTM D512-89(A)] | Chloride |
| Certified | Yes | NY | WPP02.12600 | NPW | Ion Chromatography | [EPA 300.0] | Chloride |
| Certified | Yes | NY | WPP02.15000 | NPW | Distillation, Spectrophotometric (Manual) | [EPA 335.2] | Cyanide |
| Certified | Yes | NY | WPP02.18100 | NPW | Ion Chromatography | [EPA 300.0] | Fluoride |
| Certified | Yes | NY | WPP02.19000 | NPW | Titrimetric, EDTA | [EPA 130.2] | Hardness - total as CaCO3 |
| Certified | Yes | NY | WPP02.24000 | NPW | Digestion, ICP | [EPA 200.7] | Magnesium |
| Certified | Yes | NY | WPP02.26100 | NPW | Ion Chromatography | [EPA 300.0] | Nitrate |
| Applied | No | NY | WPP02.26500 | NPW | Cadmium Reduction, Manual | [EPA 353.3] | Nitrate - nitrite |
| Certified | Yes | NY | WPP02.29000 | NPW | Gravimetric | [EPA 413.1] | Oil & grease - total recov |
| Certified | Yes | NY | WPP02.29100 | NPW | Gravimetric, Hexane Extractable Material-LL | [EPA 1664A] | Oil & grease - hem-LL |
| Applied | No | NY | WPP02.31500 | NPW | Ascorbic Acid, Manual Single Reagent | [EPA 365.2] | Orthophosphate |
| Certified | Yes | NY | WPP02.32000 | NPW | Ascorbic Acid, Manual Two Reagent | [EPA 365.3] | Orthophosphate |
| Applied | No | NY | WPP02.32100 | NPW | Ion Chromatography | [EPA 300.0] | Orthophosphate |
| Certified | Yes | NY | WPP02.32500 | NPW | Manual Distillation, Colorimetric 4AAP | [EPA 420.1] | Phenols |
| Certified | Yes | NY | WPP02.34000 | NPW | Persulfate Digestion + Manual | [EPA 365.2 + .3] | Phosphorus (total) |
| Certified | Yes | NY | WPP02.36500 | NPW | Digestion, ICP | [EPA 200.7] | Potassium |
| Certified | Yes | NY | WPP02.38000 | NPW | Gravimetric, 103-105 Degrees C | [EPA 160.3] | Residue - total |
| Certified | Yes | NY | WPP02.38500 | NPW | Gravimetric, 180 Degrees C | [EPA 160.1] | Residue - filterable (TDS) |
| Certified | Yes | NY | WPP02.39000 | NPW | Gravimetric, 103-105 Degrees C, Post Washing | [EPA 160.2] | Residue - nonfilterable (TSS) |
| Applied | No | NY | WPP02.39500 | NPW | Volumetric (Imhoff Cone) or Gravimetric | [EPA 160.5] | Residue - settleable |
| Applied | No | NY | WPP02.40000 | NPW | Gravimetric, 550 Degrees C | [EPA 160.4] | Residue - volatile |
| Certified | Yes | NY | WPP02.44000 | NPW | Digestion, ICP | [EPA 200.7] | Sodium |
| Certified | Yes | NY | WPP02.45500 | NPW | Wheatstone Bridge | [EPA 120.1] | Specific conductance |
| Certified | Yes | NY | WPP02.46500 | NPW | Turbidimetric | [EPA 375.4] | Sulfate |
| Certified | Yes | NY | WPP02.47100 | NPW | Ion Chromatography | [EPA 300.0] | Sulfate |
| Certified | Yes | NY | WPP02.47500 | NPW | Titrimetric, Iodine | [EPA 376.1] | Sulfides |
| Certified | Yes | NY | WPP02.48500 | NPW | Colorimetric (Methylene Blue) | [SM 5540 C] | Surfactants |

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**302 GROTE ST**
**BUFFALO, NY 14207**

**Category: WPP03 – Analyze-Immediately Inorganic Parameters**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NY | WPP03.09000 | NPW | Electrometric | [EPA 150.1] | pH |

**Category: WPP04 – Inorganic Parameters, Metals**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NY | WPP04.02000 | NPW | Digestion, ICP | [EPA 200.7] | Aluminum |
| Certified | Yes | NY | WPP04.04000 | NPW | Digestion, AA Furnace | [EPA 204.2] | Antimony |
| Certified | Yes | NY | WPP04.04100 | NPW | Digestion, Platform Furnace | [EPA 200.9] | Antimony |
| Certified | Yes | NY | WPP04.04500 | NPW | Digestion, ICP | [EPA 200.7] | Antimony |
| Certified | Yes | NY | WPP04.05100 | NPW | Digestion, Platform Furnace | [EPA 200.9] | Arsenic |
| Certified | Yes | NY | WPP04.05600 | NPW | Digestion, ICP | [EPA 200.7] | Arsenic |
| Certified | Yes | NY | WPP04.08000 | NPW | Digestion, ICP | [EPA 200.7] | Barium |
| Certified | Yes | NY | WPP04.11000 | NPW | Digestion, ICP | [EPA 200.7] | Beryllium |
| Applied | No | NY | WPP04.12000 | NPW | Digestion, AA Furnace | [EPA 213.2] | Cadmium |
| Applied | No | NY | WPP04.12100 | NPW | Digestion, Platform Furnace | [EPA 200.9] | Cadmium |
| Certified | Yes | NY | WPP04.13500 | NPW | Digestion, ICP | [EPA 200.7] | Cadmium |
| Certified | Yes | NY | WPP04.15000 | NPW | 0.45u Filter, Colorimetric DPC | [SM 3500-Cr D] | Chromium (VI) |
| Certified | Yes | NY | WPP04.18000 | NPW | Digestion, ICP | [EPA 200.7] | Chromium |
| Applied | No | NY | WPP04.19000 | NPW | Digestion, AA Furnace | [EPA 219.2] | Cobalt |
| Applied | No | NY | WPP04.19100 | NPW | Digestion, Platform Furnace | [EPA 200.9] | Cobalt |
| Certified | Yes | NY | WPP04.19500 | NPW | Digestion, ICP | [EPA 200.7] | Cobalt |
| Certified | Yes | NY | WPP04.21500 | NPW | Digestion, ICP | [EPA 200.7] | Copper |
| Certified | Yes | NY | WPP04.26500 | NPW | Digestion, ICP | [EPA 200.7] | Iron |
| Applied | No | NY | WPP04.27500 | NPW | Digestion, AA Furnace | [EPA 239.2] | Lead |
| Certified | Yes | NY | WPP04.27600 | NPW | Digestion, Platform Furnace | [EPA 200.9] | Lead |
| Certified | Yes | NY | WPP04.28000 | NPW | Digestion, ICP | [EPA 200.7] | Lead |
| Certified | Yes | NY | WPP04.31000 | NPW | Digestion, ICP | [EPA 200.7] | Manganese |
| Certified | Yes | NY | WPP04.33000 | NPW | Manual Cold Vapor | [EPA 245.1] | Mercury |
| Applied | No | NY | WPP04.34500 | NPW | Digestion, AA Furnace | [EPA 246.2] | Molybdenum |
| Certified | Yes | NY | WPP04.35000 | NPW | Digestion, ICP | [EPA 200.7] | Molybdenum |

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New Jersey Department of Environmental Protection

National Environmental La[illegible]tory Accreditation Program

# ANNUAL CERTIFIED PARAME[illegible]R LIST AND CURRENT STATUS

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**Laboratory Name: WASTE STREAM TECHNOLOGY INC Laboratory Number: NY977 Activity ID: NLC060001**
**302 GROTE ST**
**BUFFALO, NY 14207**

**Category: WPP04 – Inorganic Parameters, Metals**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Applied | No | NY | WPP04.37000 | NPW | Digestion, AA Furnace | [EPA 249.2] | Nickel |
| Certified | Yes | NY | WPP04.37500 | NPW | Digestion, ICP | [EPA 200.7] | Nickel |
| Certified | Yes | NY | WPP04.45000 | NPW | Digestion, AA Furnace | [EPA 270.2] | Selenium |
| Certified | Yes | NY | WPP04.45500 | NPW | Digestion, ICP | [EPA 200.7] | Selenium |
| Applied | No | NY | WPP04.47000 | NPW | Digestion, AA Furnace | [EPA 272.2] | Silver |
| Certified | Yes | NY | WPP04.48000 | NPW | Digestion, ICP | [EPA 200.7] | Silver |
| Certified | Yes | NY | WPP04.49500 | NPW | Digestion, AA Furnace | [EPA 279.2] | Thallium |
| Certified | Yes | NY | WPP04.49600 | NPW | Digestion, Platform Furnace | [EPA 200.9] | Thallium |
| Certified | Yes | NY | WPP04.50000 | NPW | Digestion, ICP | [EPA 200.7] | Thallium |
| Certified | Yes | NY | WPP04.54000 | NPW | Digestion, ICP | [EPA 200.7] | Vanadium |
| Certified | Yes | NY | WPP04.56500 | NPW | Digestion, ICP | [EPA 200.7] | Zinc |

**Category: WPP05 – Organic Parameters, Chromatography**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NY | WPP05.02010 | NPW | Purge & Trap, GC (PID) | [EPA 602] | Benzene |
| Certified | Yes | NY | WPP05.02020 | NPW | Purge & Trap, GC (PID) | [EPA 602] | Chlorobenzene |
| Certified | Yes | NY | WPP05.02030 | NPW | Purge & Trap, GC (PID) | [EPA 602] | Dichlorobenzene (1,2-) |
| Certified | Yes | NY | WPP05.02040 | NPW | Purge & Trap, GC (PID) | [EPA 602] | Dichlorobenzene (1,3-) |
| Certified | Yes | NY | WPP05.02050 | NPW | Purge & Trap, GC (PID) | [EPA 602] | Dichlorobenzene (1,4-) |
| Certified | Yes | NY | WPP05.02060 | NPW | Purge & Trap, GC (PID) | [EPA 602] | Ethylbenzene |
| Certified | Yes | NY | WPP05.02070 | NPW | Purge & Trap, GC (PID) | [EPA 602] | Toluene |
| Certified | Yes | NY | WPP05.02080 | NPW | Purge & Trap, GC (PID) | [EPA 602] | Xylenes (total) |
| Certified | Yes | NY | WPP05.09010 | NPW | Extract/GC (ECD) | [EPA 608] | Aldrin |
| Certified | Yes | NY | WPP05.09020 | NPW | Extract/GC (ECD) | [EPA 608] | Alpha BHC |
| Certified | Yes | NY | WPP05.09030 | NPW | Extract/GC (ECD) | [EPA 608] | Beta BHC |
| Certified | Yes | NY | WPP05.09040 | NPW | Extract/GC (ECD) | [EPA 608] | Delta BHC |
| Certified | Yes | NY | WPP05.09050 | NPW | Extract/GC (ECD) | [EPA 608] | Lindane (gamma BHC) |
| Certified | Yes | NY | WPP05.09060 | NPW | Extract/GC (ECD) | [EPA 608] | Chlordane |
| Certified | Yes | NY | WPP05.09070 | NPW | Extract/GC (ECD) | [EPA 608] | DDD (4,4'-) |

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New Jersey Department of Environmental Protection

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# ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

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**Laboratory Name: WASTE STREAM TECHNOLOGY INC Laboratory Number: NY977 Activity ID: NLC060001**
**302 GROTE ST**
**BUFFALO, NY 14207**

**Category: WPP05 -- Organic Parameters, Chromatography**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NY | WPP05.09080 | NPW | Extract/GC (ECD) | [EPA 608] | DDE (4,4'-) |
| Certified | Yes | NY | WPP05.09090 | NPW | Extract/GC (ECD) | [EPA 608] | DDT (4,4'-) |
| Certified | Yes | NY | WPP05.09100 | NPW | Extract/GC (ECD) | [EPA 608] | Dieldrin |
| Certified | Yes | NY | WPP05.09110 | NPW | Extract/GC (ECD) | [EPA 608] | Endosulfan I |
| Certified | Yes | NY | WPP05.09120 | NPW | Extract/GC (ECD) | [EPA 608] | Endosulfan II |
| Certified | Yes | NY | WPP05.09130 | NPW | Extract/GC (ECD) | [EPA 608] | Endosulfan sulfate |
| Certified | Yes | NY | WPP05.09140 | NPW | Extract/GC (ECD) | [EPA 608] | Endrin |
| Certified | Yes | NY | WPP05.09150 | NPW | Extract/GC (ECD) | [EPA 608] | Endrin aldehyde |
| Applied | No | NY | WPP05.09160 | NPW | Extract/GC (ECD) | [EPA 608] | Endrin ketone |
| Certified | Yes | NY | WPP05.09170 | NPW | Extract/GC (ECD) | [EPA 608] | Heptachlor |
| Certified | Yes | NY | WPP05.09180 | NPW | Extract/GC (ECD) | [EPA 608] | Heptachlor epoxide |
| Certified | Yes | NY | WPP05.09190 | NPW | Extract/GC (ECD) | [EPA 608] | Methoxychlor |
| Certified | Yes | NY | WPP05.09200 | NPW | Extract/GC (ECD) | [EPA 608] | Toxaphene |
| Certified | Yes | NY | WPP05.11010 | NPW | Extract/GC (ECD) | [EPA 608] | PCB 1016 |
| Certified | Yes | NY | WPP05.11020 | NPW | Extract/GC (ECD) | [EPA 608] | PCB 1221 |
| Certified | Yes | NY | WPP05.11030 | NPW | Extract/GC (ECD) | [EPA 608] | PCB 1232 |
| Certified | Yes | NY | WPP05.11040 | NPW | Extract/GC (ECD) | [EPA 608] | PCB 1242 |
| Certified | Yes | NY | WPP05.11050 | NPW | Extract/GC (ECD) | [EPA 608] | PCB 1248 |
| Certified | Yes | NY | WPP05.11060 | NPW | Extract/GC (ECD) | [EPA 608] | PCB 1254 |
| Certified | Yes | NY | WPP05.11070 | NPW | Extract/GC (ECD) | [EPA 608] | PCB 1260 |

**Category: WPP06 -- Organic Parameters, Chromatography/MS**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NY | WPP06.02010 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Benzene |
| Certified | Yes | NY | WPP06.02020 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Bromodichloromethane |
| Certified | Yes | NY | WPP06.02030 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Bromoform |
| Certified | Yes | NY | WPP06.02040 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Bromomethane |
| Certified | Yes | NY | WPP06.02050 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Carbon tetrachloride |
| Certified | Yes | NY | WPP06.02060 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Chlorobenzene |

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**Category: WPP06 – Organic Parameters, Chromatography/MS**

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|---|---|---|---|---|---|---|---|
| Certified | Yes | NY | WPP06.02070 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Chloroethane |
| Certified | Yes | NY | WPP06.02080 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Chloroethyl vinyl ether (2-) |
| Certified | Yes | NY | WPP06.02090 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Chloroform |
| Certified | Yes | NY | WPP06.02100 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Chloromethane |
| Certified | Yes | NY | WPP06.02110 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Dibromochloromethane |
| Certified | Yes | NY | WPP06.02120 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Dichlorobenzene (1,2-) |
| Certified | Yes | NY | WPP06.02130 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Dichlorobenzene (1,3-) |
| Certified | Yes | NY | WPP06.02140 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Dichlorobenzene (1,4-) |
| Certified | Yes | NY | WPP06.02150 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Dichloroethane (1,1-) |
| Certified | Yes | NY | WPP06.02160 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Dichloroethane (1,2-) |
| Certified | Yes | NY | WPP06.02170 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Dichloroethene (1,1-) |
| Certified | Yes | NY | WPP06.02180 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Dichloroethene (trans-1,2-) |
| Certified | Yes | NY | WPP06.02190 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Dichloropropane (1,2-) |
| Certified | Yes | NY | WPP06.02200 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Dichloropropene (cis-1,3-) |
| Certified | Yes | NY | WPP06.02210 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Dichloropropene (trans-1,3-) |
| Certified | Yes | NY | WPP06.02220 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Ethylbenzene |
| Certified | Yes | NY | WPP06.02230 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Methylene chloride (Dichloromethane) |
| Applied | No | NY | WPP06.02232 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Methyl tert-butyl ether |
| Applied | No | NY | WPP06.02234 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Tert-butyl alcohol |
| Applied | No | NY | WPP06.02238 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Styrene |
| Certified | Yes | NY | WPP06.02240 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Tetrachloroethane (1,1,2,2-) |
| Certified | Yes | NY | WPP06.02250 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Tetrachloroethene |
| Certified | Yes | NY | WPP06.02260 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Toluene |
| Certified | Yes | NY | WPP06.02270 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Trichloroethane (1,1,1-) |
| Certified | Yes | NY | WPP06.02280 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Trichloroethane (1,1,2-) |
| Certified | Yes | NY | WPP06.02290 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Trichloroethene |
| Certified | Yes | NY | WPP06.02300 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Trichlorofluoromethane |
| Certified | Yes | NY | WPP06.02310 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Vinyl chloride |
| Certified | Yes | NY | WPP06.02312 | NPW | GC/MS, P & T, Capillary Column | [EPA 624] | Xylenes (total) |
| Certified | Yes | NY | WPP06.03010 | NPW | Extract, GC/MS | [EPA 625] | Acenaphthene |
| Certified | Yes | NY | WPP06.03020 | NPW | Extract, GC/MS | [EPA 625] | Acenaphthylene |
| Certified | Yes | NY | WPP06.03030 | NPW | Extract, GC/MS | [EPA 625] | Anthracene |

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**302 GROTE ST**
**BUFFALO, NY 14207**

**Category: WPP06 – Organic Parameters, Chromatography/MS**

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|---|---|---|---|---|---|---|---|
| Certified | Yes | NY | WPP06.03040 | NPW | Extract, GC/MS | [EPA 625] | Benzo(a)anthracene |
| Certified | Yes | NY | WPP06.03050 | NPW | Extract, GC/MS | [EPA 625] | Benzo(b)fluoranthene |
| Certified | Yes | NY | WPP06.03060 | NPW | Extract, GC/MS | [EPA 625] | Benzo(k)fluoranthene |
| Certified | Yes | NY | WPP06.03070 | NPW | Extract, GC/MS | [EPA 625] | Benzo(a)pyrene |
| Certified | Yes | NY | WPP06.03080 | NPW | Extract, GC/MS | [EPA 625] | Benzo(ghi)perylene |
| Certified | Yes | NY | WPP06.03090 | NPW | Extract, GC/MS | [EPA 625] | Butyl benzyl phthalate |
| Certified | Yes | NY | WPP06.03100 | NPW | Extract, GC/MS | [EPA 625] | Bis (2-chloroethyl) ether |
| Certified | Yes | NY | WPP06.03110 | NPW | Extract, GC/MS | [EPA 625] | Bis (2-chloroethoxy) methane |
| Certified | Yes | NY | WPP06.03120 | NPW | Extract, GC/MS | [EPA 625] | Bis (2-ethylhexyl) phthalate |
| Certified | Yes | NY | WPP06.03130 | NPW | Extract, GC/MS | [EPA 625] | Bis (2-chloroisopropyl) ether |
| Certified | Yes | NY | WPP06.03140 | NPW | Extract, GC/MS | [EPA 625] | Bromophenyl-phenyl ether (4-) |
| Certified | Yes | NY | WPP06.03150 | NPW | Extract, GC/MS | [EPA 625] | Chloronaphthalene (2-) |
| Certified | Yes | NY | WPP06.03160 | NPW | Extract, GC/MS | [EPA 625] | Chlorophenyl-phenyl ether (4-) |
| Certified | Yes | NY | WPP06.03170 | NPW | Extract, GC/MS | [EPA 625] | Chrysene |
| Certified | Yes | NY | WPP06.03180 | NPW | Extract, GC/MS | [EPA 625] | Dibenzo(a,h)anthracene |
| Certified | Yes | NY | WPP06.03190 | NPW | Extract, GC/MS | [EPA 625] | Di-n-butyl phthalate |
| Certified | Yes | NY | WPP06.03200 | NPW | Extract, GC/MS | [EPA 625] | Dichlorobenzene (1,3-) |
| Certified | Yes | NY | WPP06.03210 | NPW | Extract, GC/MS | [EPA 625] | Dichlorobenzene (1,2-) |
| Certified | Yes | NY | WPP06.03220 | NPW | Extract, GC/MS | [EPA 625] | Dichlorobenzene (1,4-) |
| Certified | Yes | NY | WPP06.03230 | NPW | Extract, GC/MS | [EPA 625] | Dichlorobenzidine (3,3'-) |
| Certified | Yes | NY | WPP06.03240 | NPW | Extract, GC/MS | [EPA 625] | Diethyl phthalate |
| Certified | Yes | NY | WPP06.03250 | NPW | Extract, GC/MS | [EPA 625] | Dimethyl phthalate |
| Certified | Yes | NY | WPP06.03260 | NPW | Extract, GC/MS | [EPA 625] | Dinitrotoluene (2,4-) |
| Certified | Yes | NY | WPP06.03270 | NPW | Extract, GC/MS | [EPA 625] | Dinitrotoluene (2,6-) |
| Certified | Yes | NY | WPP06.03280 | NPW | Extract, GC/MS | [EPA 625] | Di-n-octyl phthalate |
| Certified | Yes | NY | WPP06.03290 | NPW | Extract, GC/MS | [EPA 625] | Fluoranthene |
| Certified | Yes | NY | WPP06.03300 | NPW | Extract, GC/MS | [EPA 625] | Fluorene |
| Certified | Yes | NY | WPP06.03310 | NPW | Extract, GC/MS | [EPA 625] | Hexachlorobenzene |
| Certified | Yes | NY | WPP06.03320 | NPW | Extract, GC/MS | [EPA 625] | Hexachlorobutadiene (1,3-) |
| Certified | Yes | NY | WPP06.03330 | NPW | Extract, GC/MS | [EPA 625] | Hexachloroethane |
| Certified | Yes | NY | WPP06.03340 | NPW | Extract, GC/MS | [EPA 625] | Indeno(1,2,3-cd)pyrene |
| Certified | Yes | NY | WPP06.03350 | NPW | Extract, GC/MS | [EPA 625] | Isophorone |

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**302 GROTE ST**
**BUFFALO, NY 14207**

**Category: WPP06 – Organic Parameters, Chromatography/MS**

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|---|---|---|---|---|---|---|---|
| Applied | No | NY | WPP06.03358 | NPW | Extract, GC/MS | [EPA 625] | Methylnaphthalene (2-) |
| Certified | Yes | NY | WPP06.03360 | NPW | Extract, GC/MS | [EPA 625] | Naphthalene |
| Applied | No | NY | WPP06.03366 | NPW | Extract, GC/MS | [EPA 625] | Chloroaniline (4-) |
| Applied | No | NY | WPP06.03367 | NPW | Extract, GC/MS | [EPA 625] | Nitroaniline (2-) |
| Applied | No | NY | WPP06.03368 | NPW | Extract, GC/MS | [EPA 625] | Nitroaniline (3-) |
| Applied | No | NY | WPP06.03369 | NPW | Extract, GC/MS | [EPA 625] | Nitroaniline (4-) |
| Certified | Yes | NY | WPP06.03370 | NPW | Extract, GC/MS | [EPA 625] | Nitrobenzene |
| Certified | Yes | NY | WPP06.03380 | NPW | Extract, GC/MS | [EPA 625] | N-Nitroso-di-n-propylamine |
| Certified | Yes | NY | WPP06.03390 | NPW | Extract, GC/MS | [EPA 625] | Phenanthrene |
| Certified | Yes | NY | WPP06.03400 | NPW | Extract, GC/MS | [EPA 625] | Pyrene |
| Certified | Yes | NY | WPP06.03410 | NPW | Extract, GC/MS | [EPA 625] | Trichlorobenzene (1,2,4-) |
| Applied | No | NY | WPP06.03417 | NPW | Extract, GC/MS | [EPA 625] | Methylphenol (2-) |
| Applied | No | NY | WPP06.03418 | NPW | Extract, GC/MS | [EPA 625] | Methylphenol (4-) |
| Certified | Yes | NY | WPP06.03420 | NPW | Extract, GC/MS | [EPA 625] | Methyl phenol (4-chloro-3-) |
| Certified | Yes | NY | WPP06.03430 | NPW | Extract, GC/MS | [EPA 625] | Chlorophenol (2-) |
| Certified | Yes | NY | WPP06.03440 | NPW | Extract, GC/MS | [EPA 625] | Dichlorophenol (2,4-) |
| Certified | Yes | NY | WPP06.03450 | NPW | Extract, GC/MS | [EPA 625] | Dimethylphenol (2,4-) |
| Certified | Yes | NY | WPP06.03460 | NPW | Extract, GC/MS | [EPA 625] | Dinitrophenol (2,4-) |
| Certified | Yes | NY | WPP06.03470 | NPW | Extract, GC/MS | [EPA 625] | Dinitrophenol (2-methyl-4,6-) |
| Certified | Yes | NY | WPP06.03480 | NPW | Extract, GC/MS | [EPA 625] | Nitrophenol (2-) |
| Certified | Yes | NY | WPP06.03490 | NPW | Extract, GC/MS | [EPA 625] | Nitrophenol (4-) |
| Certified | Yes | NY | WPP06.03500 | NPW | Extract, GC/MS | [EPA 625] | Pentachlorophenol |
| Certified | Yes | NY | WPP06.03510 | NPW | Extract, GC/MS | [EPA 625] | Phenol |
| Certified | Yes | NY | WPP06.03520 | NPW | Extract, GC/MS | [EPA 625] | Trichlorophenol (2,4,6-) |
| Applied | No | NY | WPP06.03530 | NPW | Extract, GC/MS | [EPA 625] | Benzoic acid |
| Applied | No | NY | WPP06.03570 | NPW | Extract, GC/MS | [EPA 625] | Aniline |
| Certified | Yes | NY | WPP06.03580 | NPW | Extract, GC/MS | [EPA 625] | Benzidine |
| Applied | No | NY | WPP06.03590 | NPW | Extract, GC/MS | [EPA 625] | Carbazole |
| Certified | Yes | NY | WPP06.03660 | NPW | Extract, GC/MS | [EPA 625] | Hexachlorocyclopentadiene |
| Certified | Yes | NY | WPP06.03680 | NPW | Extract, GC/MS | [EPA 625] | N-Nitrosodimethylamine |
| Certified | Yes | NY | WPP06.03690 | NPW | Extract, GC/MS | [EPA 625] | N-Nitrosodiphenylamine |

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**Category: WPP06 – Organic Parameters, Chromatography/MS**

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|---|---|---|---|---|---|---|---|
| Applied | No | NY | WPP06.03720 | NPW | Extract, GC/MS | [EPA 625] | Pyridine |

**Category: SHW02 – Characteristics of Hazardous Waste**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NY | SHW02.03000 | NPW, SCM | Aqueous Waste, Potentiometric | [SW-846 9040B, Rev. 2, 1/95] | Corrosivity - pH waste, >20% water |

**Category: SHW03 – Analyze-Immediately Parameters**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NY | SHW03.01000 | NPW, SCM | Aqueous, Electrometric | [SW-846 9040B, Rev. 2, 1/95] | pH |

**Category: SHW04 – Inorganic Parameters**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NY | SHW04.06500 | NPW, SCM | ICP | [SW-846 6010B, Rev. 2, 12/96] | Antimony |
| Certified | Yes | NY | SHW04.09000 | NPW, SCM | ICP | [SW-846 6010B, Rev. 2 12/96] | Arsenic |
| Certified | Yes | NY | SHW04.11500 | NPW, SCM | ICP | [SW-846 6010B, Rev. 2 12/96] | Barium |
| Certified | Yes | NY | SHW04.13500 | NPW, SCM | ICP | [SW-846 6010B, Rev. 2 12/96] | Beryllium |
| Certified | Yes | NY | SHW04.15500 | NPW, SCM | ICP | [SW-846 6010B, Rev. 2 12/96] | Cadmium |
| Certified | Yes | NY | SHW04.17500 | NPW, SCM | ICP | [SW-846 6010B, Rev. 2 12/96] | Calcium |
| Certified | Yes | NY | SHW04.18500 | NPW, SCM | ICP | [SW-846 6010B, Rev. 2 12/96] | Chromium |
| Certified | Yes | NY | SHW04.21000 | NPW, SCM | Colorimetric | [SW-846 7196A, Rev. 1, 7/92] | Chromium (VI) |
| Certified | Yes | NY | SHW04.22500 | NPW, SCM | ICP | [SW-846 6010B, Rev. 2 12/96] | Cobalt |
| Certified | Yes | NY | SHW04.24500 | NPW, SCM | ICP | [SW-846 6010B, Rev. 2 12/96] | Copper |
| Certified | Yes | NY | SHW04.26000 | NPW, SCM | ICP | [SW-846 6010B, Rev. 2 12/96] | Iron |
| Certified | Yes | NY | SHW04.27500 | NPW, SCM | ICP | [SW-846 6010B, Rev. 2 12/96] | Lead |
| Certified | Yes | NY | SHW04.30500 | NPW, SCM | ICP | [SW-846 6010B, Rev. 2, 12/96] | Magnesium |

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**Laboratory Name: WASTE STREAM TECHNOLOGY INC Laboratory Number: NY977 Activity ID: NLC060001**
**302 GROTE ST**
**BUFFALO, NY 14207**

**Category: SHW04 – Inorganic Parameters**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NY | SHW04.31500 | NPW, SCM | ICP | [SW-846 6010B, Rev. 2, 12/96] | Manganese |
| Certified | Yes | NY | SHW04.33000 | NPW, SCM | AA, Manual Cold Vapor | [SW-846 7470A, Rev. 1, 9/94] | Mercury - liquid waste |
| Certified | Yes | NY | SHW04.34000 | NPW, SCM | ICP | [SW-846 6010B, Rev. 2 12/96] | Molybdenum |
| Certified | Yes | NY | SHW04.35500 | NPW, SCM | ICP | [SW-846 6010B, Rev. 2, 12/96] | Nickel |
| Certified | Yes | NY | SHW04.38000 | NPW, SCM | ICP | [SW-846 6010B, Rev. 2 12/96] | Potassium |
| Certified | Yes | NY | SHW04.39000 | NPW, SCM | ICP | [SW-846 6010B, Rev. 2 12/96] | Selenium |
| Certified | Yes | NY | SHW04.41000 | NPW, SCM | ICP | [SW-846 6010B, Rev. 2 12/96] | Silver |
| Certified | Yes | NY | SHW04.43000 | NPW, SCM | ICP | [SW-846 6010B, Rev. 2 12/96] | Sodium |
| Certified | Yes | NY | SHW04.45000 | NPW, SCM | ICP | [SW-846 6010B, Rev. 2 12/96] | Thallium |
| Certified | Yes | NY | SHW04.47500 | NPW, SCM | ICP | [SW-846 6010B, Rev. 2 12/96] | Vanadium |
| Certified | Yes | NY | SHW04.49000 | NPW, SCM | ICP | [SW-846 6010B, Rev. 2 12/96] | Zinc |
| Dropped | No | NY | SHW04.50000 | NPW, SCM | AA | [SW-846 7950, Rev. 0, 9/86] | Zinc |

**Category: SHW06 – Organic Parameters, Chromatography**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | No | NY | SHW06.05010 | NPW, SCM | GC, Direct Injection or P & T, PID-HECD | [SW-846 8021B, Rev. 2, 12/96] | Benzene |
| Certified | Yes | NJ | SHW06.05020 | NPW, SCM | GC, Direct Injection or P & T, PID-HECD | [SW-846 8021B, Rev. 2, 12/96] | Chlorobenzene |
| Certified | Yes | NY | SHW06.05030 | NPW, SCM | GC, Direct Injection or P & T, PID-HECD | [SW-846 8021B, Rev. 2, 12/96] | Dichlorobenzene (1,2-) |
| Certified | Yes | NY | SHW06.05040 | NPW, SCM | GC, Direct Injection or P & T, PID-HECD | [SW-846 8021B, Rev. 2, 12/96] | Dichlorobenzene (1,3-) |
| Certified | Yes | NY | SHW06.05050 | NPW, SCM | GC, Direct Injection or P & T, PID-HECD | [SW-846 8021B, Rev. 2, 12/96] | Dichlorobenzene (1,4-) |
| Certified | Yes | NY | SHW06.05060 | NPW, SCM | GC, Direct Injection or P & T, PID-HECD | [SW-846 8021B, Rev. 2, 12/96] | Ethylbenzene |
| Certified | Yes | NY | SHW06.05070 | NPW, SCM | GC, Direct Injection or P & T, PID-HECD | [SW-846 8021B, Rev. 2, 12/96] | Toluene |
| Certified | Yes | NY | SHW06.05080 | NPW, SCM | GC, Direct Injection or P & T, PID-HECD | [SW-846 8021B, Rev. 2, 12/96] | Xylene (o-) |
| Certified | Yes | NY | SHW06.05090 | NPW, SCM | GC, Direct Injection or P & T, PID-HECD | [SW-846 8021B, Rev. 2, 12/96] | Xylene (m-) |
| Certified | Yes | NY | SHW06.05100 | NPW, SCM | GC, Direct Injection or P & T, PID-HECD | [SW-846 8021B, Rev. 2, 12/96] | Xylene (p-) |
| Certified | Yes | NY | SHW06.12010 | NPW, SCM | GC, Extraction, ECD or HECD, Capillary | [SW-846 8081A, Rev. 1, 12/96] | Aldrin |
| Certified | Yes | NY | SHW06.12020 | NPW, SCM | GC, Extraction, ECD or HECD, Capillary | [SW-846 8081A, Rev. 1, 12/96] | Alpha BHC |
| Certified | Yes | NY | SHW06.12030 | NPW, SCM | GC, Extraction, ECD or HECD, Capillary | [SW-846 8081A, Rev. 1, 12/96] | Beta BHC |
| Certified | Yes | NY | SHW06.12040 | NPW, SCM | GC, Extraction, ECD or HECD, Capillary | [SW-846 8081A, Rev. 1, 12/96] | Delta BHC |

KEY: AE = Air and Emissions, BT = Biological Tissues, DW = Drinking Water, NPW = Non-Potable Water, SCM = Solid and Chemical Materials

**Laboratory Name: WASTE STREAM TECHNOLOGY INC Laboratory Number: NY977 Activity ID: NLC060001**
**302 GROTE ST**
**BUFFALO, NY 14207**

**Category: SHW06 – Organic Parameters, Chromatography**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NY | SHW06.12050 | NPW, SCM | GC, Extraction, ECD or HECD, Capillary | [SW-846 8081A, Rev. 1, 12/96] | Lindane (gamma BHC) |
| Certified | Yes | NY | SHW06.12060 | NPW, SCM | GC, Extraction, ECD or HECD, Capillary | [SW-846 8081A, Rev. 1, 12/96] | Chlordane (technical) |
| Certified | Yes | NY | SHW06.12090 | NPW, SCM | GC, Extraction, ECD or HECD, Capillary | [SW-846 8081A, Rev. 1, 12/96] | DDD (4,4'-) |
| Certified | Yes | NY | SHW06.12100 | NPW, SCM | GC, Extraction, ECD or HECD, Capillary | [SW-846 8081A, Rev. 1, 12/96] | DDE (4,4'-) |
| Certified | Yes | NY | SHW06.12110 | NPW, SCM | GC, Extraction, ECD or HECD, Capillary | [SW-846 8081A, Rev. 1, 12/96] | DDT (4,4'-) |
| Certified | Yes | NY | SHW06.12120 | NPW, SCM | GC, Extraction, ECD or HECD, Capillary | [SW-846 8081A, Rev. 1, 12/96] | Dieldrin |
| Certified | Yes | NY | SHW06.12130 | NPW, SCM | GC, Extraction, ECD or HECD, Capillary | [SW-846 8081A, Rev. 1, 12/96] | Endosulfan I |
| Certified | Yes | NY | SHW06.12140 | NPW, SCM | GC, Extraction, ECD or HECD, Capillary | [SW-846 8081A, Rev. 1, 12/96] | Endosulfan II |
| Certified | Yes | NY | SHW06.12150 | NPW, SCM | GC, Extraction, ECD or HECD, Capillary | [SW-846 8081A, Rev. 1, 12/96] | Endosulfan sulfate |
| Certified | Yes | NY | SHW06.12160 | NPW, SCM | GC, Extraction, ECD or HECD, Capillary | [SW-846 8081A, Rev. 1, 12/96] | Endrin |
| Certified | Yes | NY | SHW06.12170 | NPW, SCM | GC, Extraction, ECD or HECD, Capillary | [SW-846 8081A, Rev. 1, 12/96] | Endrin aldehyde |
| Certified | Yes | NY | SHW06.12190 | NPW, SCM | GC, Extraction, ECD or HECD, Capillary | [SW-846 8081A, Rev. 1, 12/96] | Heptachlor |
| Certified | Yes | NY | SHW06.12200 | NPW, SCM | GC, Extraction, ECD or HECD, Capillary | [SW-846 8081A, Rev. 1, 12/96] | Heptachlor epoxide |
| Certified | Yes | NY | SHW06.12210 | NPW, SCM | GC, Extraction, ECD or HECD, Capillary | [SW-846 8081A, Rev. 1, 12/96] | Methoxychlor |
| Certified | Yes | NY | SHW06.12220 | NPW, SCM | GC, Extraction, ECD or HECD, Capillary | [SW-846 8081A, Rev. 1, 12/96] | Toxaphene |
| Certified | Yes | NY | SHW06.13110 | NPW, SCM | GC, Extraction, ECD or HECD, Capillary | [SW-846 8082, Rev. 0, 12/96] | PCB 1016 |
| Certified | Yes | NY | SHW06.13120 | NPW, SCM | GC, Extraction, ECD or HECD, Capillary | [SW-846 8082, Rev. 0, 12/96] | PCB 1221 |
| Certified | Yes | NY | SHW06.13130 | NPW, SCM | GC, Extraction, ECD or HECD, Capillary | [SW-846 8082, Rev. 0, 12/96] | PCB 1232 |
| Certified | Yes | NY | SHW06.13140 | NPW, SCM | GC, Extraction, ECD or HECD, Capillary | [SW-846 8082, Rev. 0, 12/96] | PCB 1242 |
| Certified | Yes | NY | SHW06.13150 | NPW, SCM | GC, Extraction, ECD or HECD, Capillary | [SW-846 8082, Rev. 0, 12/96] | PCB 1248 |
| Certified | Yes | NY | SHW06.13160 | NPW, SCM | GC, Extraction, ECD or HECD, Capillary | [SW-846 8082, Rev. 0, 12/96] | PCB 1254 |
| Certified | Yes | NY | SHW06.13170 | NPW, SCM | GC, Extraction, ECD or HECD, Capillary | [SW-846 8082, Rev. 0, 12/96] | PCB 1260 |
| Certified | Yes | NY | SHW06.23010 | NPW, SCM | GC, Extraction, ECD, Capillary | [SW-846 8151A, Rev 1, 9/96] | Dalapon |
| Certified | Yes | NY | SHW06.23020 | NPW, SCM | GC, Extraction, ECD, Capillary | [SW-846 8151A, Rev 1, 9/96] | Dicamba |
| Certified | Yes | NY | SHW06.23030 | NPW, SCM | GC, Extraction, ECD, Capillary | [SW-846 8151A, Rev 1, 9/96] | Dinoseb |
| Certified | Yes | NY | SHW06.23040 | NPW, SCM | GC, Extraction, ECD, Capillary | [SW-846 8151A, Rev 1, 9/96] | D (2,4-) |
| Certified | Yes | NY | SHW06.23050 | NPW, SCM | GC, Extraction, ECD, Capillary | [SW-846 8151A, Rev 1, 9/96] | T (2,4,5-) |
| Certified | Yes | NY | SHW06.23060 | NPW, SCM | GC, Extraction, ECD, Capillary | [SW-846 8151A, Rev 1, 9/96] | TP (2,4,5-) (Silvex) |

*KEY: AE = Air and Emissions, BT = Biological Tissues, DW = Drinking Water, NPW = Non-Potable Water, SCM = Solid and Chemical Materials*

New Jersey Department of Environmental Protection

National Environmental La[illegible]tory Accreditation Program

# ANNUAL CERTIFIED PARAME[illegible]R LIST AND CURRENT STATUS

Effective as of 07/01/2006 until 06/30/2007

**Laboratory Name: WASTE STREAM TECHNOLOGY INC Laboratory Number: NY977 Activity ID: NLC060001**
**302 GROTE ST**
**BUFFALO, NY 14207**

**Category: SHW07 – Organic Parameters, Chromatography/MS**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NY | SHW07.04010 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Benzene |
| Certified | Yes | NY | SHW07.04020 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Chlorobenzene |
| Certified | Yes | NY | SHW07.04030 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Dichlorobenzene (1,2-) |
| Certified | Yes | NY | SHW07.04040 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Dichlorobenzene (1,3-) |
| Certified | Yes | NY | SHW07.04050 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Dichlorobenzene (1,4-) |
| Certified | Yes | NY | SHW07.04060 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Ethylbenzene |
| Certified | Yes | NY | SHW07.04070 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Toluene |
| Certified | Yes | NY | SHW07.04080 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Xylenes (total) |
| Certified | Yes | NY | SHW07.04090 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Bromodichloromethane |
| Certified | Yes | NY | SHW07.04100 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Bromoform |
| Certified | Yes | NJ | SHW07.04110 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Bromomethane |
| Certified | Yes | NY | SHW07.04120 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Carbon tetrachloride |
| Certified | Yes | NY | SHW07.04130 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Chloroethane |
| Certified | Yes | NY | SHW07.04140 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Chloroethyl vinyl ether (2-) |
| Certified | Yes | NY | SHW07.04150 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Chloroform |
| Certified | Yes | NY | SHW07.04160 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Chloromethane |
| Certified | Yes | NY | SHW07.04170 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Dichloropropene (trans-1,3-) |
| Certified | Yes | NY | SHW07.04180 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Dibromochloromethane |
| Certified | Yes | NY | SHW07.04187 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Dibromo-3-chloropropane (1,2-) |
| Certified | Yes | NY | SHW07.04190 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Dichlorodifluoromethane |
| Certified | Yes | NY | SHW07.04200 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Dichloroethane (1,1-) |
| Certified | Yes | NY | SHW07.04210 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Dichloroethane (1,2-) |
| Certified | Yes | NY | SHW07.04220 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Dichloroethene (1,1-) |
| Certified | Yes | NY | SHW07.04230 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Dichloroethene (trans-1,2-) |
| Certified | Yes | NY | SHW07.04235 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Dichloroethene (cis-1,2-) |
| Certified | Yes | NY | SHW07.04240 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Dichloropropane (1,2-) |
| Certified | Yes | NY | SHW07.04242 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Dichloropropane (2,2-) |
| Certified | Yes | NY | SHW07.04250 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Dichloropropene (cis-1,3-) |
| Certified | Yes | NY | SHW07.04260 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Methylene chloride (Dichloromethane) |
| Certified | Yes | NY | SHW07.04270 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Tetrachloroethane (1,1,2,2-) |
| Certified | Yes | NY | SHW07.04280 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Tetrachloroethene |
| Certified | Yes | NY | SHW07.04290 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Trichloroethane (1,1,1-) |

KEY: AE = Air and Emissions, BT = Biological Tissues, DW = Drinking Water, NPW = Non-Potable Water, SCM = Solid and Chemical Materials

New Jersey Department of Environmental Protection

National Environmental Laboratory Accreditation Program

# ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

Effective as of 07/01/2006 until 06/30/2007

**Laboratory Name: WASTE STREAM TECHNOLOGY INC Laboratory Number: NY977 Activity ID: NLC060001**
**302 GROTE ST**
**BUFFALO, NY 14207**

**Category: SHW07 – Organic Parameters, Chromatography/MS**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NY | SHW07.04300 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Trichloroethane (1,1,2-) |
| Certified | Yes | NY | SHW07.04310 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Trichloroethene |
| Certified | Yes | NY | SHW07.04320 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Trichlorofluoromethane |
| Certified | Yes | NY | SHW07.04325 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Trichloropropane (1,2,3-) |
| Certified | Yes | NY | SHW07.04327 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Vinyl acetate |
| Certified | Yes | NY | SHW07.04330 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Vinyl chloride |
| Certified | Yes | NY | SHW07.04340 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Acetone |
| Certified | Yes | NY | SHW07.04350 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Carbon disulfide |
| Certified | Yes | NY | SHW07.04360 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Butanone (2-) |
| Certified | Yes | NY | SHW07.04370 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Hexanone (2-) |
| Certified | Yes | NY | SHW07.04380 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Pentanone (4-methyl-2-) |
| Certified | Yes | NY | SHW07.04390 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Methyl tert-butyl ether |
| Certified | Yes | NY | SHW07.04395 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Tert-butyl alcohol |
| Applied | No | NY | SHW07.04400 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Acrolein |
| Applied | No | NY | SHW07.04410 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Acrylonitrile |
| Applied | No | NY | SHW07.04500 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Hexachlorobutadiene (1,3-) |
| Applied | No | NY | SHW07.04530 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Hexachloroethane |
| Applied | No | NY | SHW07.04540 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260C, Rev. 2, 12/96] | Naphthalene |
| Certified | Yes | NY | SHW07.04560 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Tetrachloroethane (1,1,1,2-) |
| Applied | No | NY | SHW07.04570 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Trichlorobenzene (1,2,4-) |
| Applied | No | NY | SHW07.04580 | NPW, SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Nitrobenzene |
| Applied | No | NY | SHW07.05004 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | N-Nitrosodiethylamine |
| Certified | Yes | NY | SHW07.05005 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | N-Nitrosodimethylamine |
| Certified | Yes | NY | SHW07.05006 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | N-Nitroso-di-n-propylamine |
| Certified | Yes | NY | SHW07.05010 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | N-Nitrosodiphenylamine |
| Certified | Yes | NY | SHW07.05030 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Carbazole |
| Certified | Yes | NY | SHW07.05038 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Benzidine |
| Certified | Yes | NY | SHW07.05040 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Dichlorobenzidine (3,3'-) |
| Certified | Yes | NY | SHW07.05048 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Aniline |
| Certified | Yes | NY | SHW07.05050 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Chloraniline (4-) |
| Certified | Yes | NY | SHW07.05060 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Nitroaniline (2-) |
| Certified | Yes | NY | SHW07.05062 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Nitroaniline (3-) |

KEY: AE = Air and Emissions, BT = Biological Tissues, DW = Drinking Water, NPW = Non-Potable Water, SCM = Solid and Chemical Materials

New Jersey Department of Environmental Protection

National Environmental Laboratory Accreditation Program

# ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

Effective as of 07/01/2006 until 06/30/2007

**Laboratory Name: WASTE STREAM TECHNOLOGY INC Laboratory Number: NY977 Activity ID: NLC060001**
**302 GROTE ST**
**BUFFALO, NY 14207**

**Category: SHW07 – Organic Parameters, Chromatography/MS**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NY | SHW07.05063 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Nitroaniline (4-) |
| Certified | Yes | NY | SHW07.05070 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Chloronaphthalene (2-) |
| Certified | Yes | NY | SHW07.05080 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Hexachlorobenzene |
| Certified | Yes | NY | SHW07.05090 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Hexachlorobutadiene (1,3-) |
| Certified | Yes | NY | SHW07.05100 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Hexachlorocyclopentadiene |
| Certified | Yes | NY | SHW07.05110 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Hexachloroethane |
| Certified | Yes | NY | SHW07.05120 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Trichlorobenzene (1,2,4-) |
| Certified | Yes | NY | SHW07.05130 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Bis (2-chloroethoxy) methane |
| Certified | Yes | NY | SHW07.05132 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Bis (2-chloroethyl) ether |
| Certified | Yes | NY | SHW07.05140 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Bis (2-chloroisopropyl) ether |
| Certified | Yes | NY | SHW07.05150 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Chlorophenyl-phenyl ether (4-) |
| Certified | Yes | NY | SHW07.05160 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Bromophenyl-phenyl ether (4-) |
| Certified | Yes | NY | SHW07.05210 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Butyl benzyl phthalate |
| Certified | Yes | NY | SHW07.05220 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Bis (2-ethylhexyl) phthalate |
| Certified | Yes | NY | SHW07.05230 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Diethyl phthalate |
| Certified | Yes | NY | SHW07.05240 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Dimethyl phthalate |
| Certified | Yes | NY | SHW07.05250 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Di-n-butyl phthalate |
| Certified | Yes | NY | SHW07.05260 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Di-n-octyl phthalate |
| Certified | Yes | NY | SHW07.05270 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Acenaphthene |
| Certified | Yes | NY | SHW07.05280 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Anthracene |
| Certified | Yes | NY | SHW07.05290 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Acenaphthylene |
| Certified | Yes | NY | SHW07.05300 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Benzo(a)anthracene |
| Certified | Yes | NY | SHW07.05310 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Benzo(a)pyrene |
| Certified | Yes | NY | SHW07.05320 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Benzo(b)fluoranthene |
| Certified | Yes | NY | SHW07.05330 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Benzo(ghi)perylene |
| Certified | Yes | NY | SHW07.05340 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Benzo(k)fluoranthene |
| Certified | Yes | NY | SHW07.05350 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Chrysene |
| Certified | Yes | NY | SHW07.05360 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Dibenzo(a,h)anthracene |
| Certified | Yes | NY | SHW07.05370 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Fluoranthene |
| Certified | Yes | NY | SHW07.05380 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Fluorene |
| Certified | Yes | NY | SHW07.05390 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Indeno(1,2,3-cd)pyrene |
| Certified | Yes | NY | SHW07.05410 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Naphthalene |

KEY: AE = Air and Emissions, BT = Biological Tissues, DW = Drinking Water, NPW = Non-Potable Water, SCM = Solid and Chemical Materials

**Laboratory Name: WASTE STREAM TECHNOLOGY INC Laboratory Number: NY977 Activity ID: NLC060001**
**302 GROTE ST**
**BUFFALO, NY 14207**

**Category: SHW07 – Organic Parameters, Chromatography/MS**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NY | SHW07.05420 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Phenanthrene |
| Certified | Yes | NY | SHW07.05430 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Pyrene |
| Certified | Yes | NY | SHW07.05440 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Methyl phenol (4-chloro-3-) |
| Certified | Yes | NY | SHW07.05450 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Chlorophenol (2-) |
| Certified | Yes | NY | SHW07.05460 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Dichlorophenol (2,4-) |
| Certified | Yes | NY | SHW07.05470 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Dimethylphenol (2,4-) |
| Certified | Yes | NY | SHW07.05480 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Dinitrophenol (2,4-) |
| Certified | Yes | NY | SHW07.05490 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Dinitrophenol (2-methyl-4,6-) |
| Certified | Yes | NY | SHW07.05500 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Methylphenol (2-) |
| Certified | Yes | NY | SHW07.05510 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Methylphenol (4-) |
| Certified | Yes | NY | SHW07.05520 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Nitrophenol (2-) |
| Certified | Yes | NY | SHW07.05530 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Nitrophenol (4-) |
| Certified | Yes | NY | SHW07.05540 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Pentachlorophenol |
| Certified | Yes | NY | SHW07.05550 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Phenol |
| Certified | Yes | NY | SHW07.05560 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Trichlorophenol (2,4,5-) |
| Certified | Yes | NY | SHW07.05570 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Trichlorophenol (2,4,6-) |
| Certified | Yes | NY | SHW07.05710 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Benzoic acid |
| Certified | Yes | NY | SHW07.05720 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Benzyl alcohol |
| Certified | Yes | NY | SHW07.05750 | NPW, SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Pyridine |

**Category: SHW09 – Miscellaneous Parameters**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NY | SHW09.02000 | NPW, SCM | Distillation | [SW-846 9010B, Rev. 2, 12/96] | Cyanide |
| Certified | Yes | NY | SHW09.03000 | NPW, SCM | Distillation | [SW-846 9010B, Rev. 2, 12/96] | Cyanide - amenable to Cl2 |
| Certified | Yes | NY | SHW09.09000 | NPW, SCM | Redox Titration | [SW-846 9030B, Rev. 2, 12/96] | Sulfides, acid sol. & insol. |
| Certified | Yes | NY | SHW09.10100 | NPW, SCM | Titration | [SW-846 9034, Rev. 0, 12/96] | Sulfides, acid sol. & insol. |
| Certified | Yes | NY | SHW09.14000 | NPW, SCM | Electrometric | [SW-846 9040B, Rev. 2, 1/95] | pH - waste, >20% water |
| Applied | No | NY | SHW09.34000 | NPW, SCM | Titrimetric, Silver Nitrate | [SW-846 9253, Rev. 0, 9/94] | Chloride |

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New Jersey Department of Environmental Protection

National Environmental La' tory Accreditation Program

# ANNUAL CERTIFIED PARAME R LIST AND CURRENT STATUS

Effective as of 07/01/2006 until 06/30/2007

**Laboratory Name: WASTE STREAM TECHNOLOGY INC Laboratory Number: NY977 Activity ID: NLC060001**
**302 GROTE ST**
**BUFFALO, NY 14207**

**Category: SHW02 – Characteristics of Hazardous Waste**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NY | SHW02.01000 | SCM | Pensky Martens | [SW-846 1010, Rev. 0, 9/86] | Ignitability |
| Applied | No | NY | SHW02.02000 | SCM | Setaflash | [SW-846 1020A, Rev. 1, 7/92] | Ignitability |
| Certified | Yes | NY | SHW02.06900 | SCM | TCLP, Toxicity Procedure, ZHE | [SW-846 1311, Rev. 0, 7/92] | Volatile organics |
| Certified | Yes | NY | SHW02.07000 | SCM | TCLP, Toxicity Procedure, Shaker | [SW-846 1311, Rev. 0, 7/92] | Metals - semi volatile organics |
| Certified | Yes | NY | SHW02.07100 | SCM | EP Toxicity Test | [SW-846 1310A, Rev. 1, 7/92] | Metals - organics |
| Certified | Yes | NY | SHW02.08000 | SCM | Synthetic PPT Leachate Procedure | [SW-846 1312, Rev. 0, 9/94] | Metals - organics |
| Certified | Yes | NY | SHW02.09000 | SCM | Multiple Extraction | [SW-846 1320, Rev. 0, 9/86] | Metals - organics |

**Category: SHW04 – Inorganic Parameters**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NJ | SHW04.02500 | SCM | Dissolution of Oil, Grease & Wax | [SW-846 3040A, Rev. 1, 12/96] | Metals |
| Certified | Yes | NJ | SHW04.03000 | SCM | Acid Digestion, Soil Sediment & Sludge | [SW-846 3050B, Rev. 2, 12/96] | Metals |
| Certified | Yes | NY | SHW04.11100 | SCM | AA, Graphite Furnace | [SW-846 7060A, Rev. 0, 9/94] | Arsenic |
| Certified | Yes | NY | SHW04.33500 | SCM | AA, Manual Cold Vapor | [SW-846 7471A, Rev. 1, 9/94] | Mercury - solid waste |

**Category: SHW05 – Organic Parameters, Prep. / Screening**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NJ | SHW05.03000 | SCM | Soxhlet Extraction | [SW-846 3540C, Rev. 3, 12/96] | Semivolatile organics |
| Certified | Yes | NJ | SHW05.04000 | SCM | Automatic Soxhlet Extraction | [SW-846 3541, Rev. 0, 9/94] | Semivolatile organics |
| Certified | Yes | NJ | SHW05.05000 | SCM | Ultrasonic Extraction | [SW-846 3550B, Rev. 2, 12/96] | Semivolatile organics |
| Certified | Yes | NJ | SHW05.06000 | SCM | Waste Dilution | [SW-846 3580A, Rev. 1, 7/92] | Organics |
| Certified | Yes | NJ | SHW05.07300 | SCM | Closed System Purge & Trap | [SW-846 5035L, Rev. 0, 12/96] | Volatile organics - low conc. |
| Certified | Yes | NJ | SHW05.07310 | SCM | Methanol Extract, Closed System P & T | [SW-846 5035H, Rev. 0, 12/96] | Volatile organics - high conc. |
| Certified | Yes | NJ | SHW05.12000 | SCM | Cleanup-Florisil | [SW-846 3620B, Rev. 2, 12/96] | Semivolatile organics |
| Certified | Yes | NJ | SHW05.13000 | SCM | Cleanup-Silica Gel | [SW-846 3630C, Rev. 3, 12/96] | Semivolatile organics |
| Certified | Yes | NJ | SHW05.14000 | SCM | Cleanup-Gel Permeation | [SW-846 3640A, Rev. 1, 9/94] | Semivolatile organics |
| Certified | Yes | NJ | SHW05.16000 | SCM | Cleanup-Sulfur Removal | [SW-846 3660B, Rev. 2, 12/96] | Semivolatile organics |

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New Jersey Department of Environmental Protection

National Environmental Laboratory Accreditation Program

# ANNUAL CERTIFIED PARAMETER LIST AND CURRENT STATUS

*Effective as of 07/01/2006 until 06/30/2007*

**Laboratory Name: WASTE STREAM TECHNOLOGY INC Laboratory Number: NY977 Activity ID: NLC060001**
**302 GROTE ST**
**BUFFALO, NY 14207**

**Category: SHW05 – Organic Parameters, Prep. / Screening**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NJ | SHW05.17000 | SCM | Cleanup-Sulfuric Acid/KMnO4 | [SW-846 3665A, Rev. 1, 12/96] | Semivolatile organics |

**Category: SHW06 – Organic Parameters, Chromatography**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NY | SHW06.12180 | SCM | GC, Extraction, ECD or HECD, Capillary | [SW-846 8081A, Rev. 1, 12/96] | Endrin ketone |
| Certified | Yes | NY | SHW06.23041 | SCM | GC, Extraction, ECD, Capillary | [SW-846 8151A, Rev. 1, 9/96] | DB (2,4-) |
| Certified | Yes | NY | SHW06.23063 | SCM | GC, Extraction, ECD, Capillary | [SW-846 8151A, Rev. 1, 9/96] | MCPA |
| Certified | Yes | NY | SHW06.23064 | SCM | GC, Extraction, ECD, Capillary | [SW-846 8151A, Rev. 1, 9/96] | MCPP |

**Category: SHW07 – Organic Parameters, Chromatography/MS**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NY | SHW07.04011 | SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Bromobenzene |
| Certified | Yes | NY | SHW07.04012 | SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Butyl benzene (n-) |
| Certified | Yes | NY | SHW07.04013 | SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Sec-butylbenzene |
| Certified | Yes | NY | SHW07.04014 | SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Tert-butylbenzene |
| Certified | Yes | NY | SHW07.04022 | SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Chlorotoluene (2-) |
| Certified | Yes | NY | SHW07.04023 | SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Chlorotoluene (4-) |
| Certified | Yes | NY | SHW07.04065 | SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Isopropylbenzene |
| Certified | Yes | NY | SHW07.04073 | SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Trimethylbenzene (1,2,4-) |
| Certified | Yes | NY | SHW07.04074 | SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Trimethylbenzene (1,3,5-) |
| Certified | Yes | NY | SHW07.04089 | SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Bromochloromethane |
| Certified | Yes | NY | SHW07.04241 | SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Dichloropropane (1,3-) |
| Certified | Yes | NY | SHW07.04550 | SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Styrene |
| Certified | Yes | NY | SHW07.04590 | SCM | GC/MS, P & T or Direct Injection, Capillary | [SW-846 8260B, Rev. 2, 12/96] | Dioxane (1,4-) |
| Certified | Yes | NY | SHW07.05170 | SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Dinitrotoluene (2,4-) |
| Certified | Yes | NY | SHW07.05180 | SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Dinitrotoluene (2,6-) |
| Certified | Yes | NY | SHW07.05190 | SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Isophorone |

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New Jersey Department of Environmental Protection

National Environmental Lab-ratory Accreditation Program

# ANNUAL CERTIFIED PARAME. R LIST AND CURRENT STATUS

Effective as of 07/01/2006 until 06/30/2007

**Laboratory Name: WASTE STREAM TECHNOLOGY INC Laboratory Number: NY977 Activity ID: NLC060001**
**302 GROTE ST**
**BUFFALO, NY 14207**

**Category: SHW07 -- Organic Parameters, Chromatography/MS**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NY | SHW07.05200 | SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Nitrobenzene |
| Certified | Yes | NY | SHW07.05400 | SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Methylnaphthalene (2-) |
| Certified | Yes | NY | SHW07.05590 | SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Methylphenol (3-) |
| Certified | Yes | NY | SHW07.05600 | SCM | GC/MS, Extract or Dir Inj, Capillary | [SW-846 8270C, Rev. 3, 12/96] | Dibenzofuran |

**Category: SHW09 -- Miscellaneous Parameters**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NY | SHW09.04100 | SCM | Titrimetric/Manual Spectrophotometric | [SW-846 9014, Rev. 0, 12/96] | Cyanide |
| Certified | Yes | NY | SHW09.13050 | SCM | Ion Chromatography | [SW-846 9056, Rev. 0, 9/94] | Sulfate |
| Certified | Yes | NY | SHW09.16000 | SCM | Mix with Water or Calcium Chloride | [SW-846 9045C, Rev. 3, 1/95] | pH - soil and waste |
| Certified | Yes | NY | SHW09.21000 | SCM | Colorimetric, Man, 4AAP Distillation | [SW-846 9065, Rev. 0, 9/86] | Phenols |
| Certified | Yes | NY | SHW09.25000 | SCM | Extraction & Gravimetric | [SW-846 9071 B, Rev. 2, 5/99] | Oil & grease - sludge-hem |
| Certified | Yes | NY | SHW09.25100 | SCM | Extraction & Gravimetric - LL or SPE | [SW-846 9071 B, Rev. 2, 5/99] | Oil & grease - sludge-hem-npm |
| Applied | No | NY | SHW09.29000 | SCM | Flow-Through Paint Filter, Observation | [SW-846 9095, Rev. 0, 9/86] | Free liquid |
| Certified | Yes | NY | SHW09.30150 | SCM | Ion Chromatography | [SW-846 9056, Rev. 0, 12/94] | Nitrate |
| Certified | Yes | NY | SHW09.30250 | SCM | Ion Chromatography | [SW-846 9056, Rev. 0, 12/96] | Bromide |
| Certified | Yes | NY | SHW09.33100 | SCM | Ion Chromatography | [SW-846 9056, Rev. 0, 12/96] | Chloride |
| Certified | Yes | NY | SHW09.54150 | SCM | Ion Chromatography | [SW-846 9056, Rev. 0, 12/94] | Orthophosphate |
| Certified | Yes | NJ | SHW09.60106 | SCM | Precipitation | [SM 7500-Ra B] | Radium - 226 |
| Certified | Yes | NJ | SHW09.60160 | SCM | Gamma Spectrometry | [DOE 4.5.2.3] | Photon Emitters |
| Certified | Yes | NJ | SHW09.60310 | SCM | Alpha Spectrometry | [DOE U-02] | Uranium |

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**Laboratory Name: WASTE STREAM TECHNOLOGY INC Laboratory Number: NY977 Activity ID: NLC060001**
**302 GROTE ST**
**BUFFALO, NY 14207**

**Category: SHW09 – Miscellaneous Parameters**

| Status | Eligible to Report NJ Data | State | Code | Matrix | Technique Description | Approved Method | Parameter Description |
|---|---|---|---|---|---|---|---|
| Certified | Yes | NJ | SHW09.60400 | SCM | Alpha Spectrometry | [DOE 4.5.5] | Thorium |

Joseph F. Aiello, Chief J. Aiello

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U.S. Army Corps of Engineers

RECEIVED MAY 1 3 2004

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
12565 WEST CENTER ROAD
OMAHA NE 68144-3869

REPLY TO
ATTENTION OF

May 7, 2004

Hazardous, Toxic and Radioactive Waste
Center of Expertise

Dan Vollmer
Waste Stream Technology Inc.
302 Grote Street
Buffalo, NY 14207

Dear Mr. Vollmer:

This correspondence addresses the recent evaluation of Waste Stream Technology Inc. (WST) of Buffalo, NY by the U.S. Army Corps of Engineers (USACE) for chemical and radiological analysis in support of the USACE Hazardous, Toxic and Radioactive Waste Program.

Your laboratory is now validated for the parameters listed below:

| METHOD | PARAMETERS | MATRIX(1) |
|---|---|---|
| 300 series | Anions(5) | Water(2) |
| 1632 | Chemical Speciation of Arsenic | Water(2) |
| 9010C/9014 | Cyanide | Water(2) |
| 9013/9010C/9014 | Cyanide | Solid(2) |
| 8151A | Herbicides | Water(2) |
| 8151A | Herbicides | Solids(2) |
| 3510C/8081B | Organochlorine Pesticides | Water(2) |
| 3550B/8081B | Organochlorine Pesticides | Solids(2) |
| 3510C/8082A | Polychlorinated Biphenyls | Water(2) |
| 3550B/8082A | Polychlorinated Biphenyls | Solids(2) |
| 3510C/8270C | Semivolatile Organics | Water(2) |
| 3550B/8270C | Semivolatile Organics | Solids(2) |
| 3005A/3010A/3015A/6010C/7470A | TAL Metals(3) | Water(2) |
| 3051A/6010C/7471B | TAL Metals(3) | Solids(2) |
| 9060 | Total Organic Carbon | Water(2) |
| 5030B/5035/Mod 8015 | TPH - GRO | Water(2) |
| 5030B/5035/Mod 8015 | TPH - GRO | Solids(2) |
| 3510C/Mod 8015 | TPH – DRO | Water(2) |
| 3550B/Mod 8015 | TPH - DRO | Solids(2) |
| 5030B/5035/8260B | Volatile Organics | Water(2) |
| 5030B/5035/8260B | Volatile Organics | Solids(2) |

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| | | |
|---|---|---|
| M-RADSMPLPREP-01-XX | Radioactive Analysis Sample Preparation | Water(4) |
| M-RADSMPLPREP-01-XX | Radioactive Analysis Sample Preparation | Solids(4) |
| M-TEVA-01-XX | Measuring Thorium with Eichrom TEVA Columns | NA(4) |
| M-UTEVA-01-XX | Measuring Uranium or Thorium with Eichrom UTEVA Columns | NA(4) |
| M-RA228EPA-00-XX | Measuring Radium 228 by EPA 904.0 | Water(4) |
| M-RA226&224-00-XX | Measuring Radium-226 and Radium 224 by Alpha Spectrometry | NA(4) |
| M-GAMMA-01-XX | Gamma Spectrometry using EG&G ORTEC Dspec | Water(4) |
| M-GAMMA-01-XX | Gamma Spectrometry using EG&G ORTEC Dspec | Solids(4) |
| M-ALPHANYLST-02-XX | Alpha Spectroscopy Counting System | NA(4) |
| M-GASPRO-02-XX | Gas Proportional Alpha-Beta Counter | Water(4) |

Remarks:

1) 'Solids' includes soils, sediments, and solid waste. NA = not applicable

2) The laboratory has successfully analyzed a Proficiency Testing (PT) or performance evaluation sample for this method/matrix.

3) TAL Metals: Aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, silver, sodium, thallium, vanadium, and zinc.

4) Approval for this parameter is based primarily on review of SOPs.

5) Anions: Chloride, fluoride, sulfate, nitrate, nitrite, and ortho-phosphate.

Enclosed for your information is a copy of the Laboratory Inspection and Evaluation Report. Your laboratory has responded to the deficiencies as noted in the report. No further responses are necessary.

Based on the successful analysis of the National Environmental Laboratory Accreditation Conference Proficiency Testing samples for the appropriate fields of testing, the results of the laboratory inspection, and your Corrective Action Report, your laboratory will be validated for sample analysis by the methods listed above. Approval for radiological parameters is based on review of the laboratory's SOPs; the results of the laboratory inspection, the Corrective Action Report, and the laboratory's analysis of Performance Evaluation samples from commercial suppliers and for the DOE Quality Assessment Program (QAP). The evaluation of your facility is based substantially on ISO Guide 25 (General Requirements for the Competence of Testing Laboratories) and USACE Engineering Manual (EM) 200-1-3, Appendix I (Shell for Analytical Chemistry Requirements. The period of validation is 24 months and expires on May 7, 2006.

The USACE reserves the right to conduct additional laboratory inspections or to suspend validation status for any or all of the listed parameters if deemed necessary. It should be noted that your laboratory may not subcontract USACE analytical work to any other laboratory location without the approval of this office. This laboratory validation does not guarantee the delivery of any analytical samples from a USACE Contracting Officer Representative.

Any questions or comments can be directed to Dr. Jan W. Dunker at (402) 697-2566. General questions regarding laboratory validation may be directed to the Laboratory Validation Coordinator at (402) 697-2574.

Sincerely,

for Marcia C. Davies, Ph.D.
Director, USACE Hazardous,
Toxic and Radioactive Waste
Center of Expertise

Enclosure

Florida Department of Health

FLORIDA DEPARTMENT OF HEALTH

# State of Florida
## Department of Health, Bureau of Laboratories

**This is to certify that**

E87662

**Waste Stream Technology, Inc.**

302 Grote Street

Buffalo, NY 14207

has complied with Florida Administrative Code 64E-1, for the examination of Environmental samples in the following categories:

**DRINKING WATER - Group II Unregulated Contaminants, Other Regulated Contaminants, Primary Inorganic Contaminants, Secondary Inorganic Contaminants**

**NON-POTABLE WATER - Extractable Organics, General Chemistry, Metals, Pesticides-Herbicides-PCB's, Volatile Organics**

**SOLID and CHEMICAL MATERIALS - Extractable Organics, Metals, Pesticides-Herbicides-PCB's, Volatile Organics**

Continued certification is contingent upon successful on-going compliance with the NELAC Standards and FAC Rule 64E-1 regulations. Specific methods and analytes certified are cited on the Laboratory Scope of Accreditation for this laboratory and are on file at the Bureau of Laboratories, P. O. Box 210, Jacksonville, Florida 32231. Clients and customers are urged to verify with this agency the laboratory's certification status in Florida for particular methods and analytes.

**EFFECTIVE JULY 1, 2005** **THROUGH JUNE 30, 2006**

**Ming S. Chan, Ph.D.**
**Bureau Chief, Bureau of Laboratories**
**Florida Department of Health**
**DH Form 1697, 7/04**
**NON-TRANSFERABLE 05/27/2005-E87662**

Jeb Bush
Governor

FLORIDA DEPARTMENT OF HEALTH

John O. Agwunobi, M.D., M.B.A., M.P.H.
Secretary



## *Laboratory Scope of Accreditation*

THIS LISTING OF ACCREDITED ANALYTES SHOULD BE USED ONLY WHEN ASSOCIATED WITH A VALID CERTIFICATE

**State Laboratory ID:** E87662 **EPA Lab Code:** NY00068 (716) 876-5290

E87662
Waste Stream Technology, Inc.
302 Grote Street
Buffalo, NY 14207

**Matrix:** Drinking Water

| Analyte | Method/Tech | Category | Certification Type | Effective Date |
|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| 1,1,1-Trichloroethane | EPA 524.2 | Other Regulated Contaminants | NELAP | 5/16/2001 |
| 1,1,2,2-Tetrachloroethane | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| 1,1,2-Trichloroethane | EPA 524.2 | Other Regulated Contaminants | NELAP | 5/16/2001 |
| 1,1-Dichloroethane | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| 1,1-Dichloroethylene | EPA 524.2 | Other Regulated Contaminants | NELAP | 5/16/2001 |
| 1,1-Dichloropropene | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| 1,2,3-Trichlorobenzene | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| 1,2,3-Trichloropropane | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| 1,2,4-Trichlorobenzene | EPA 524.2 | Other Regulated Contaminants | NELAP | 5/16/2001 |
| 1,2,4-Trimethylbenzene | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| 1,2-Dichlorobenzene | EPA 524.2 | Other Regulated Contaminants | NELAP | 5/16/2001 |
| 2-Dichloroethane | EPA 524.2 | Other Regulated Contaminants | NELAP | 5/16/2001 |
| ,2-Dichloropropane | EPA 524.2 | Other Regulated Contaminants | NELAP | 5/16/2001 |
| 1,3,5-Trimethylbenzene | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| 1,3-Dichlorobenzene | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| 1,3-Dichloropropane | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| 1,4-Dichlorobenzene | EPA 524.2 | Other Regulated Contaminants | NELAP | 5/16/2001 |
| 2,2-Dichloropropane | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| 2,4,6-Trichlorophenol | EPA 625 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| 2,4-Dinitrotoluene (2,4-DNT) | EPA 625 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| 2,6-Dinitrotoluene (2,6-DNT) | EPA 625 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| 2-Chlorophenol | EPA 625 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| 2-Chlorotoluene | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| 2-Methyl-4,6-dinitrophenol | EPA 625 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| 4-Chlorotoluene | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| 4-Isopropyltoluene | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| Antimony | EPA 200.9 | Primary Inorganic Contaminants | NELAP | 5/16/2001 |
| Arsenic | EPA 200.7 | Primary Inorganic Contaminants | NELAP | 5/16/2001 |
| Arsenic | EPA 200.9 | Primary Inorganic Contaminants | NELAP | 5/16/2001 |
| Barium | EPA 200.7 | Primary Inorganic Contaminants | NELAP | 5/16/2001 |
| Benzene | EPA 524.2 | Other Regulated Contaminants | NELAP | 5/16/2001 |
| Beryllium | EPA 200.7 | Primary Inorganic Contaminants | NELAP | 5/16/2001 |
| Bromobenzene | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| Bromochloromethane | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| utyl benzyl phthalate | EPA 625 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |

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## *Laboratory Scope of Accreditation*



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**State Laboratory ID:** E87662 **EPA Lab Code:** NY00068 (716) 876-5290

E87662
Waste Stream Technology, Inc.
302 Grote Street
Buffalo, NY 14207

**Matrix:** Drinking Water

| Analyte | Method/Tech | Category | Certification Type | Effective Date |
|---|---|---|---|---|
| Cadmium | EPA 200.7 | Primary Inorganic Contaminants | NELAP | 5/16/2001 |
| Cadmium | EPA 200.9 | Primary Inorganic Contaminants | NELAP | 5/16/2001 |
| Carbon tetrachloride | EPA 524.2 | Other Regulated Contaminants | NELAP | 5/16/2001 |
| Chlorobenzene | EPA 524.2 | Other Regulated Contaminants | NELAP | 5/16/2001 |
| Chloroethane | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| Chromium | EPA 200.7 | Primary Inorganic Contaminants | NELAP | 5/16/2001 |
| cis-1,2-Dichloroethylene | EPA 524.2 | Other Regulated Contaminants | NELAP | 5/16/2001 |
| cis-1,3-Dichloropropene | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| Copper | EPA 200.7 | Secondary Inorganic Contaminants,Primary Inorganic Contaminants | NELAP | 5/16/2001 |
| Dibromomethane | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| Dichlorodifluoromethane | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| hloromethane (DCM, Methylene chloride) | EPA 524.2 | Other Regulated Contaminants | NELAP | 5/16/2001 |
| thyl phthalate | EPA 625 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| Dimethyl phthalate | EPA 625 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| Di-n-butyl phthalate | EPA 625 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| Di-n-octyl phthalate | EPA 625 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| Ethylbenzene | EPA 524.2 | Other Regulated Contaminants | NELAP | 5/16/2001 |
| Fluoride | EPA 300.0 | Primary Inorganic Contaminants | NELAP | 5/16/2001 |
| Hexachlorobutadiene | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| Iron | EPA 200.7 | Secondary Inorganic Contaminants | NELAP | 5/16/2001 |
| Isophorone | EPA 625 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| Isopropylbenzene | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| Lead | EPA 200.9 | Primary Inorganic Contaminants | NELAP | 5/16/2001 |
| Manganese | EPA 200.7 | Secondary Inorganic Contaminants | NELAP | 5/16/2001 |
| Mercury | EPA 245.1 | Primary Inorganic Contaminants | NELAP | 5/16/2001 |
| Methyl bromide (Bromomethane) | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| Methyl chloride (Chloromethane) | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| Methyl tert-butyl ether (MTBE) | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| Naphthalene | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| n-Butylbenzene | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| Nickel | EPA 200.7 | Primary Inorganic Contaminants | NELAP | 5/16/2001 |
| Nitrobenzene | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| n-Propylbenzene | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| Phenol | EPA 625 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| 3utylbenzene | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |

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**State Laboratory ID:** E87662 **EPA Lab Code:** NY00068 (716) 876-5290

**E87662**
**Waste Stream Technology, Inc.**
**302 Grote Street**
**Buffalo, NY 14207**

**Matrix:** Drinking Water

| Analyte | Method/Tech | Category | Certification Type | Effective Date |
|---|---|---|---|---|
| Selenium | EPA 200.9 | Primary Inorganic Contaminants | NELAP | 5/16/2001 |
| Silver | EPA 200.7 | Secondary Inorganic Contaminants | NELAP | 5/16/2001 |
| Sodium | EPA 200.7 | Primary Inorganic Contaminants | NELAP | 5/16/2001 |
| Styrene | EPA 524.2 | Other Regulated Contaminants | NELAP | 5/16/2001 |
| tert-Butylbenzene | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| Tetrachloroethylene (Perchloroethylene) | EPA 524.2 | Other Regulated Contaminants | NELAP | 5/16/2001 |
| Thallium | EPA 200.9 | Primary Inorganic Contaminants | NELAP | 5/16/2001 |
| Toluene | EPA 524.2 | Other Regulated Contaminants | NELAP | 5/16/2001 |
| Total dissolved solids | EPA 160.1 | Secondary Inorganic Contaminants | NELAP | 5/16/2001 |
| trans-1,2-Dichloroethylene | EPA 524.2 | Other Regulated Contaminants | NELAP | 5/16/2001 |
| trans-1,3-Dichloropropylene | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| Trichloroethene (Trichloroethylene) | EPA 524.2 | Other Regulated Contaminants | NELAP | 5/16/2001 |
| hlorofluoromethane | EPA 524.2 | Group II Unregulated Contaminants | NELAP | 5/16/2001 |
| ylene (total) | EPA 524.2 | Other Regulated Contaminants | NELAP | 5/16/2001 |
| Zinc | EPA 200.7 | Secondary Inorganic Contaminants | NELAP | 5/16/2001 |

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*Laboratory Scope of Accreditation*



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State Laboratory ID: E87662 EPA Lab Code: NY00068 (716) 876-5290

E87662
**Waste Stream Technology, Inc.**
**302 Grote Street**
**Buffalo, NY 14207**

**Matrix: Non-Potable Water**

| Analyte | Method/Tech | Category | Certification Type | Effective Date |
|---|---|---|---|---|
| 1,1,1-Trichloroethane | EPA 624 | Volatile Organics | NELAP | 5/16/2001 |
| 1,1,1-Trichloroethane | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |
| 1,1,2,2-Tetrachloroethane | EPA 624 | Volatile Organics | NELAP | 5/16/2001 |
| 1,1,2,2-Tetrachloroethane | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |
| 1,1,2-Trichloroethane | EPA 624 | Volatile Organics | NELAP | 5/16/2001 |
| 1,1,2-Trichloroethane | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |
| 1,1-Dichloroethane | EPA 624 | Volatile Organics | NELAP | 5/16/2001 |
| 1,1-Dichloroethane | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |
| 1,1-Dichloroethylene | EPA 624 | Volatile Organics | NELAP | 5/16/2001 |
| 1,1-Dichloroethylene | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |
| 1,2,4-Trichlorobenzene | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| 1,2-Dichlorobenzene | EPA 624 | Volatile Organics | NELAP | 5/16/2001 |
| Dichlorobenzene | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| Dichlorobenzene | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |
| 1,2-Dichloroethane | EPA 624 | Volatile Organics | NELAP | 5/16/2001 |
| 1,2-Dichloroethane | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |
| 1,2-Dichloropropane | EPA 624 | Volatile Organics | NELAP | 5/16/2001 |
| 1,2-Dichloropropane | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |
| 1,3-Dichlorobenzene | EPA 624 | Volatile Organics | NELAP | 5/16/2001 |
| 1,3-Dichlorobenzene | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| 1,3-Dichlorobenzene | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |
| 1,4-Dichlorobenzene | EPA 624 | Volatile Organics | NELAP | 5/16/2001 |
| 1,4-Dichlorobenzene | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| 1,4-Dichlorobenzene | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |
| 2,4,5-T | EPA 8151 | Pesticides-Herbicides-PCB's | NELAP | 7/1/2003 |
| 2,4,6-Trichlorophenol | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| 2,4-D | EPA 8151 | Pesticides-Herbicides-PCB's | NELAP | 7/1/2003 |
| 2,4-Dichlorophenol | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| 2,4-Dimethylphenol | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| 2,4-Dinitrophenol | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| 2,4-Dinitrophenol | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| 2,4-Dinitrotoluene (2,4-DNT) | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| 2,6-Dinitrotoluene (2,6-DNT) | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| 2-Chloroethyl vinyl ether | EPA 624 | Volatile Organics | NELAP | 5/16/2001 |
| 2-Chloroethyl vinyl ether | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |
| loronaphthalene | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |

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Jeb Bush
Governor

FLORIDA DEPARTMENT OF HEALTH

John O. Agwunobi, M.D., M.B.A., M.P.H.
Secretary

*Laboratory Scope of Accreditation*



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**State Laboratory ID: E87662** **EPA Lab Code: NY00068** **(716) 876-5290**

**E87662**
**Waste Stream Technology, Inc.**
**302 Grote Street**
**Buffalo, NY 14207**

**Matrix: Non-Potable Water**

| Analyte | Method/Tech | Category | Certification Type | Effective Date |
|---|---|---|---|---|
| 2-Chlorophenol | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| 2-Chlorophenol | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| 2-Methyl-4,6-dinitrophenol | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| 2-Methylnaphthalene | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| 2-Nitrophenol | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| 2-Nitrophenol | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| 3,3'-Dichlorobenzidine | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| 3,3'-Dichlorobenzidine | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| 4,4'-DDD | EPA 608 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| 4,4'-DDD | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 7/1/2003 |
| 4,4'-DDE | EPA 608 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| 4,4'-DDE | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 7/1/2003 |
| DDT | EPA 608 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| ¬,¬ -DDT | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 7/1/2003 |
| 4-Bromophenyl phenyl ether | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| 4-Chloro-3-methylphenol | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| 4-Chloro-3-methylphenol | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| 4-Chlorophenyl phenylether | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| 4-Nitrophenol | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| 4-Nitrophenol | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| Acenaphthene | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| Acenaphthene | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| Acenaphthylene | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| Acenaphthylene | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| Aldrin | EPA 608 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Aldrin | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 7/1/2003 |
| alpha-BHC (alpha-Hexachlorocyclohexane) | EPA 608 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| alpha-BHC (alpha-Hexachlorocyclohexane) | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 7/1/2003 |
| Aluminum | EPA 200.7 | Metals | NELAP | 5/16/2001 |
| Anthracene | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| Anthracene | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| Antimony | EPA 200.7 | Metals | NELAP | 5/16/2001 |
| Aroclor-1016 (PCB-1016) | EPA 608 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Aroclor-1016 (PCB-1016) | EPA 8082 | Pesticides-Herbicides-PCB's | NELAP | 7/1/2003 |
| Aroclor-1221 (PCB-1221) | EPA 608 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| 'or-1221 (PCB-1221) | EPA 8082 | Pesticides-Herbicides-PCB's | NELAP | 7/1/2003 |

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E87662
Waste Stream Technology, Inc.
302 Grote Street
Buffalo, NY 14207

**Matrix:** Non-Potable Water

| Analyte | Method/Tech | Category | Certification Type | Effective Date |
|---|---|---|---|---|
| Aroclor-1232 (PCB-1232) | EPA 608 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Aroclor-1232 (PCB-1232) | EPA 8082 | Pesticides-Herbicides-PCB's | NELAP | 7/1/2003 |
| Aroclor-1242 (PCB-1242) | EPA 608 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Aroclor-1242 (PCB-1242) | EPA 8082 | Pesticides-Herbicides-PCB's | NELAP | 7/1/2003 |
| Aroclor-1248 (PCB-1248) | EPA 608 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Aroclor-1248 (PCB-1248) | EPA 8082 | Pesticides-Herbicides-PCB's | NELAP | 7/1/2003 |
| Aroclor-1254 (PCB-1254) | EPA 608 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Aroclor-1254 (PCB-1254) | EPA 8082 | Pesticides-Herbicides-PCB's | NELAP | 7/1/2003 |
| Aroclor-1260 (PCB-1260) | EPA 608 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Aroclor-1260 (PCB-1260) | EPA 8082 | Pesticides-Herbicides-PCB's | NELAP | 7/1/2003 |
| Arsenic | EPA 200.7 | Metals | NELAP | 5/16/2001 |
| Arsenic | EPA 6010 | Metals | NELAP | 5/16/2001 |
| [illegible]um | EPA 200.7 | Metals | NELAP | 5/16/2001 |
| [illegible]um | EPA 6010 | Metals | NELAP | 7/1/2003 |
| Benzene | EPA 624 | Volatile Organics | NELAP | 5/16/2001 |
| Benzene | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |
| Benzidine | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| Benzo(a)anthracene | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| Benzo(a)anthracene | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| Benzo(a)pyrene | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| Benzo(a)pyrene | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| Benzo(b)fluoranthene | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| Benzo(b)fluoranthene | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| Benzo(g,h,i)perylene | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| Benzo(g,h,i)perylene | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| Benzo(k)fluoranthene | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| Beryllium | EPA 200.7 | Metals | NELAP | 5/16/2001 |
| beta-BHC (beta-Hexachlorocyclohexane) | EPA 608 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| beta-BHC (beta-Hexachlorocyclohexane) | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 7/1/2003 |
| bis(2-Chloroethoxy)methane | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| bis(2-Chloroethoxy)methane | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| bis(2-Chloroethyl) ether | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| bis(2-Chloroisopropyl) ether | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| bis(2-Chloroisopropyl) ether | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| bis(2-Ethylhexyl) phthalate (DEHP) | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| [illegible]Ethylhexyl) phthalate (DEHP) | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |

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## *Laboratory Scope of Accreditation*

**THIS LISTING OF ACCREDITED ANALYTES SHOULD BE USED ONLY WHEN ASSOCIATED WITH A VALID CERTIFICATE**

**State Laboratory ID:** E87662 **EPA Lab Code:** NY00068 (716) 876-5290

E87662
Waste Stream Technology, Inc.
302 Grote Street
Buffalo, NY 14207

**Matrix:** Non-Potable Water

| Analyte | Method/Tech | Category | Certification Type | Effective Date |
|---|---|---|---|---|
| Bromodichloromethane | EPA 624 | Volatile Organics | NELAP | 5/16/2001 |
| Bromodichloromethane | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |
| Bromoform | EPA 624 | Volatile Organics | NELAP | 5/16/2001 |
| Bromoform | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |
| Butyl benzyl phthalate | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| Butyl benzyl phthalate | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| Cadmium | EPA 200.7 | Metals | NELAP | 5/16/2001 |
| Cadmium | EPA 6010 | Metals | NELAP | 5/16/2001 |
| Calcium | EPA 200.7 | Metals | NELAP | 5/16/2001 |
| Carbon tetrachloride | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |
| Chlordane (tech.) | EPA 608 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Chlordane (tech.) | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 7/1/2003 |
| C[illegible]robenzene | EPA 624 | Volatile Organics | NELAP | 5/16/2001 |
| C[illegible]robenzene | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |
| Chloroethane | EPA 624 | Volatile Organics | NELAP | 5/16/2001 |
| Chloroethane | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |
| Chloroform | EPA 624 | Volatile Organics | NELAP | 5/16/2001 |
| Chloroform | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |
| Chromium | EPA 200.7 | Metals | NELAP | 5/16/2001 |
| Chromium | EPA 6010 | Metals | NELAP | 5/16/2001 |
| Chromium VI | EPA 218.4 | Metals | NELAP | 5/16/2001 |
| Chrysene | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| Chrysene | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| cis-1,3-Dichloropropene | EPA 624 | Volatile Organics | NELAP | 5/16/2001 |
| cis-1,3-Dichloropropene | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |
| Cobalt | EPA 200.7 | Metals | NELAP | 5/16/2001 |
| Copper | EPA 200.7 | Metals | NELAP | 5/16/2001 |
| Copper | EPA 6010 | Metals | NELAP | 5/16/2001 |
| delta-BHC | EPA 608 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| delta-BHC | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 7/1/2003 |
| Dibenz(a,h) anthracene | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| Dibenz(a,h) anthracene | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| Dibromochloromethane | EPA 624 | Volatile Organics | NELAP | 5/16/2001 |
| Dibromochloromethane | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |
| Dicamba | EPA 8151 | Pesticides-Herbicides-PCB's | NELAP | 7/1/2003 |
| D[illegible]rodifluoromethane | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |

## *Laboratory Scope of Accreditation*



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**State Laboratory ID:** E87662 **EPA Lab Code:** NY00068 (716) 876-5290

E87662
Waste Stream Technology, Inc.
302 Grote Street
Buffalo, NY 14207

**Matrix:** Non-Potable Water

| Analyte | Method/Tech | Category | Certification Type | Effective Date |
|---|---|---|---|---|
| Dieldrin | EPA 608 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Dieldrin | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 7/1/2003 |
| Diethyl phthalate | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| Diethyl phthalate | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| Dimethyl phthalate | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| Dimethyl phthalate | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| Di-n-butyl phthalate | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| Di-n-butyl phthalate | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| Di-n-octyl phthalate | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| Di-n-octyl phthalate | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| Endosulfan I | EPA 608 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Endosulfan I | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 7/1/2003 |
| sulfan II | EPA 608 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| sulfan II | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 7/1/2003 |
| Endosulfan sulfate | EPA 608 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Endosulfan sulfate | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 7/1/2003 |
| Endrin | EPA 608 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Endrin | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 7/1/2003 |
| Endrin aldehyde | EPA 608 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Endrin aldehyde | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 7/1/2003 |
| Endrin ketone | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 7/1/2003 |
| Ethylbenzene | EPA 624 | Volatile Organics | NELAP | 5/16/2001 |
| Ethylbenzene | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |
| Fluoranthene | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| Fluoranthene | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| Fluorene | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| Fluorene | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| gamma-BHC (Lindane, gamma-Hexachlorocyclohexane) | EPA 608 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| gamma-BHC (Lindane, gamma-Hexachlorocyclohexane) | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 7/1/2003 |
| Heptachlor | EPA 608 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Heptachlor | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 7/1/2003 |
| Heptachlor epoxide | EPA 608 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Heptachlor epoxide | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 7/1/2003 |
| Hexachlorobenzene | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| chlorobenzene | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| hlorobutadiene | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |

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*Laboratory Scope of Accreditation*



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**State Laboratory ID:** E87662 **EPA Lab Code:** NY00068 (716) 876-5290

E87662
Waste Stream Technology, Inc.
302 Grote Street
Buffalo, NY 14207

**Matrix:** Non-Potable Water

| Analyte | Method/Tech | Category | Certification Type | Effective Date |
|---|---|---|---|---|
| Hexachlorobutadiene | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |
| Hexachlorobutadiene | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| Hexachlorocyclopentadiene | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| Hexachlorocyclopentadiene | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| Hexachloroethane | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| Indeno(1,2,3-cd)pyrene | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| Indeno(1,2.3-cd)pyrene | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| Iron | EPA 200.7 | Metals | NELAP | 5/16/2001 |
| Isophorone | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| Lead | EPA 200.7 | Metals | NELAP | 5/16/2001 |
| Lead | EPA 6010 | Metals | NELAP | 5/16/2001 |
| Magnesium | EPA 200.7 | Metals | NELAP | 5/16/2001 |
| nganese | EPA 200.7 | Metals | NELAP | 5/16/2001 |
| mercury | EPA 245.1 | Metals | NELAP | 5/16/2001 |
| Mercury | EPA 7470 | Metals | NELAP | 5/16/2001 |
| Methoxychlor | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 7/1/2003 |
| Methyl bromide (Bromomethane) | EPA 624 | Volatile Organics | NELAP | 5/16/2001 |
| Methyl chloride (Chloromethane) | EPA 624 | Volatile Organics | NELAP | 5/16/2001 |
| Methyl chloride (Chloromethane) | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |
| Methylene chloride | EPA 624 | Volatile Organics | NELAP | 5/16/2001 |
| Methylene chloride | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |
| Molybdenum | EPA 200.7 | Metals | NELAP | 5/16/2001 |
| Molybdenum | EPA 6010 | Metals | NELAP | 5/16/2001 |
| Naphthalene | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| Naphthalene | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| Nickel | EPA 200.7 | Metals | NELAP | 5/16/2001 |
| Nickel | EPA 6010 | Metals | NELAP | 5/16/2001 |
| Nitrobenzene | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| n-Nitrosodimethylamine | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| n-Nitrosodi-n-propylamine | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| n-Nitrosodiphenylamine | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| Oil & Grease | EPA 1664 | General Chemistry | NELAP | 5/16/2001 |
| Pentachlorophenol | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| Pentachlorophenol | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| Phenanthrene | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| ıanthrene | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |

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**State Laboratory ID:** E87662 **EPA Lab Code:** NY00068 (716) 876-5290

E87662
Waste Stream Technology, Inc.
302 Grote Street
Buffalo, NY 14207

**Matrix:** Non-Potable Water

| Analyte | Method/Tech | Category | Certification Type | Effective Date |
|---|---|---|---|---|
| Phenol | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| Phenol | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| Potassium | EPA 200.7 | Metals | NELAP | 5/16/2001 |
| Pyrene | EPA 625 | Extractable Organics | NELAP | 5/16/2001 |
| Pyrene | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| Pyridine | EPA 8270 | Extractable Organics | NELAP | 7/1/2003 |
| Residue-filterable (TDS) | EPA 160.1 | General Chemistry | NELAP | 5/16/2001 |
| Residue-nonfilterable (TSS) | EPA 160.2 | General Chemistry | NELAP | 5/16/2001 |
| Residue-settleable | EPA 160.5 | General Chemistry | NELAP | 5/16/2001 |
| Residue-total | EPA 160.3 | General Chemistry | NELAP | 5/16/2001 |
| Residue-volatile | EPA 160.4 | General Chemistry | NELAP | 5/16/2001 |
| Selenium | EPA 200.7 | Metals | NELAP | 5/16/2001 |
| ium | EPA 6010 | Metals | NELAP | 5/16/2001 |
| [illegible] | EPA 200.7 | Metals | NELAP | 5/16/2001 |
| Silver | EPA 6010 | Metals | NELAP | 7/1/2003 |
| Silvex (2,4,5-TP) | EPA 8151 | Pesticides-Herbicides-PCB's | NELAP | 7/1/2003 |
| Sodium | EPA 200.7 | Metals | NELAP | 5/16/2001 |
| Tetrachloroethylene (Perchloroethylene) | EPA 624 | Volatile Organics | NELAP | 5/16/2001 |
| Tetrachloroethylene (Perchloroethylene) | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |
| Thallium | EPA 200.7 | Metals | NELAP | 5/16/2001 |
| Toluene | EPA 624 | Volatile Organics | NELAP | 5/16/2001 |
| Toluene | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |
| Toxaphene (Chlorinated camphene) | EPA 608 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| trans-1,2-Dichloroethylene | EPA 624 | Volatile Organics | NELAP | 5/16/2001 |
| trans-1,3-Dichloropropylene | EPA 624 | Volatile Organics | NELAP | 5/16/2001 |
| Trichloroethene (Trichloroethylene) | EPA 624 | Volatile Organics | NELAP | 5/16/2001 |
| Trichloroethene (Trichloroethylene) | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |
| Trichlorofluoromethane | EPA 624 | Volatile Organics | NELAP | 5/16/2001 |
| Trichlorofluoromethane | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |
| Vanadium | EPA 200.7 | Metals | NELAP | 5/16/2001 |
| Vinyl chloride | EPA 624 | Volatile Organics | NELAP | 5/16/2001 |
| Vinyl chloride | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |
| Xylene (total) | EPA 8260 | Volatile Organics | NELAP | 7/1/2003 |
| Zinc | EPA 200.7 | Metals | NELAP | 5/16/2001 |
| Zinc | EPA 6010 | Metals | NELAP | 5/16/2001 |

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*Laboratory Scope of Accreditation*



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**State Laboratory ID:** E87662 **EPA Lab Code:** NY00068 (716) 876-5290

E87662
Waste Stream Technology, Inc.
302 Grote Street
Buffalo, NY 14207

**Matrix:** Solid and Chemical Materials

| Analyte | Method/Tech | Category | Certification Type | Effective Date |
|---|---|---|---|---|
| 1,1,1-Trichloroethane | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| 1,1,2,2-Tetrachloroethane | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| 1,1,2-Trichloroethane | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| 1,1-Dichloroethane | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| 1,1-Dichloroethylene | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| 1,2-Dichlorobenzene | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| 1,2-Dichloroethane | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| 1,2-Dichloropropane | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| 1,3-Dichlorobenzene | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| 1,4-Dichlorobenzene | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| 2,4,5-T | EPA 8151 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| 2,4-D | EPA 8151 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| '-Dinitrophenol | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| -Dinitrotoluene (2,4-DNT) | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| 2,6-Dinitrotoluene (2,6-DNT) | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| 2-Chloroethyl vinyl ether | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| 2-Chlorophenol | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| 2-Methylnaphthalene | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| 2-Nitrophenol | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| 3,3'-Dichlorobenzidine | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| 4,4'-DDD | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| 4,4'-DDE | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| 4,4'-DDT | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| 4-Chloro-3-methylphenol | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| 4-Chloroaniline | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| 4-Methylphenol (p-Cresol) | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| 4-Nitrophenol | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| Acenaphthene | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| Acenaphthylene | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| Acetone | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| Aldrin | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| alpha-BHC (alpha-Hexachlorocyclohexane) | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Anthracene | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| Aroclor-1016 (PCB-1016) | EPA 8082 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Aroclor-1221 (PCB-1221) | EPA 8082 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| :lor-1232 (PCB-1232) | EPA 8082 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |

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**State Laboratory ID: E87662** **EPA Lab Code: NY00068** **(716) 876-5290**

**E87662**
**Waste Stream Technology, Inc.**
**302 Grote Street**
**Buffalo, NY 14207**

**Matrix: Solid and Chemical Materials**

| Analyte | Method/Tech | Category | Certification Type | Effective Date |
|---|---|---|---|---|
| Aroclor-1242 (PCB-1242) | EPA 8082 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Aroclor-1248 (PCB-1248) | EPA 8082 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Aroclor-1254 (PCB-1254) | EPA 8082 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Aroclor-1260 (PCB-1260) | EPA 8082 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Arsenic | EPA 6010 | Metals | NELAP | 5/16/2001 |
| Barium | EPA 6010 | Metals | NELAP | 5/16/2001 |
| Benzene | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| Benzo(a)anthracene | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| Benzo(a)pyrene | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| Benzo(b)fluoranthene | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| Benzo(g,h,i)perylene | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| beta-BHC (beta-Hexachlorocyclohexane) | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| [illegible]-Chloroethoxy)methane | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| [illegible]-Chloroisopropyl) ether | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| bis(2-Ethylhexyl) phthalate (DEHP) | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| Bromodichloromethane | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| Bromoform | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| Butyl benzyl phthalate | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| Cadmium | EPA 6010 | Metals | NELAP | 5/16/2001 |
| Carbon disulfide | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| Carbon tetrachloride | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| Chlordane (tech.) | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Chlorobenzene | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| Chloroethane | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| Chloroform | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| Chromium | EPA 6010 | Metals | NELAP | 5/16/2001 |
| Chrysene | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| cis-1,3-Dichloropropene | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| Dalapon | EPA 8151 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| delta-BHC | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Dibenz(a,h) anthracene | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| Dibromochloromethane | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| Dicamba | EPA 8151 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Dichlorodifluoromethane | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| Dieldrin | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| [illegible]yl phthalate | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |

**"STATE" indicates certification for the analyte by the method specified. "NELAP" further indicates certification compliant with the NELAC Standards.**

**THIS LISTING OF ACCREDITED ANALYTES SHOULD BE USED ONLY WHEN ASSOCIATED WITH A VALID CERTIFICATE**

**State Laboratory ID:** E87662 **EPA Lab Code:** NY00068 (716) 876-5290

E87662
Waste Stream Technology, Inc.
302 Grote Street
Buffalo, NY 14207

**Matrix:** Solid and Chemical Materials

| Analyte | Method/Tech | Category | Certification Type | Effective Date |
|---|---|---|---|---|
| Dimethyl phthalate | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| Di-n-butyl phthalate | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| Di-n-octyl phthalate | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP) | EPA 8151 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Endosulfan I | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Endosulfan II | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Endosulfan sulfate | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Endrin | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Endrin aldehyde | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Endrin ketone | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Ethylbenzene | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| Fluoranthene | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| rene | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| ma-BHC (Lindane, gamma-Hexachlorocyclohexane) | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Heptachlor | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Heptachlor epoxide | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Hexachlorobenzene | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| Hexachlorobutadiene | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| Hexachlorobutadiene | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| Hexachlorocyclopentadiene | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| Indeno(1,2,3-cd)pyrene | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| Lead | EPA 6010 | Metals | NELAP | 5/16/2001 |
| Mercury | EPA 7470 | Metals | NELAP | 5/16/2001 |
| Mercury | EPA 7471 | Metals | NELAP | 5/16/2001 |
| Methoxychlor | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Methyl bromide (Bromomethane) | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| Methyl chloride (Chloromethane) | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| Methyl tert-butyl ether (MTBE) | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| Methylene chloride | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| Naphthalene | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| Nickel | EPA 6010 | Metals | NELAP | 5/16/2001 |
| Nitrobenzene | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| Pentachlorophenol | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| Phenanthrene | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| Phenol | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| ne | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |

*Laboratory Scope of Accreditation*



**THIS LISTING OF ACCREDITED ANALYTES SHOULD BE USED ONLY WHEN ASSOCIATED WITH A VALID CERTIFICATE**

**State Laboratory ID:** E87662 **EPA Lab Code:** NY00068 (716) 876-5290

**E87662**
**Waste Stream Technology, Inc.**
**302 Grote Street**
**Buffalo, NY 14207**

**Matrix:** Solid and Chemical Materials

| Analyte | Method/Tech | Category | Certification Type | Effective Date |
|---|---|---|---|---|
| Pyridine | EPA 8270 | Extractable Organics | NELAP | 5/16/2001 |
| Selenium | EPA 6010 | Metals | NELAP | 5/16/2001 |
| Silver | EPA 6010 | Metals | NELAP | 5/16/2001 |
| Silvex (2,4,5-TP) | EPA 8151 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Styrene | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| Tetrachloroethylene (Perchloroethylene) | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| Toluene | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| Toxaphene (Chlorinated camphene) | EPA 8081 | Pesticides-Herbicides-PCB's | NELAP | 5/16/2001 |
| Trichloroethene (Trichloroethylene) | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| Trichlorofluoromethane | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| Vinyl chloride | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |
| Xylene (total) | EPA 8260 | Volatile Organics | NELAP | 5/16/2001 |

**"STATE" indicates certification for the analyte by the method specified. "NELAP" further indicates certification compliant with the NELAC Standards.**

State of Connecticut, Department of Public Health

# State of Connecticut, Department of Public Health

## Approved Environmental Laboratory

THIS IS TO CERTIFY THAT THE LABORATORY DESCRIBED BELOW HAS BEEN APPROVED BY THE STATE DEPARTMENT OF PUBLIC HEALTH PURSUANT TO APPLICABLE PROVISIONS OF THE PUBLIC HEALTH CODE AND GENERAL STATUTES OF CONNECTICUT, FOR MAKING THE EXAMINATIONS, DETERMINATIONS OR TESTS SPECIFIED BELOW WHICH HAVE BEEN AUTHORIZED IN WRITING BY THAT DEPARTMENT.

## WASTE STREAM TECHNOLOGY, INC.

LOCATED AT 302 Grote Street IN Buffalo, NY 14207

AND REGISTERED IN THE NAME OF Edward M. Oddo

THIS CERTIFICATE IS ISSUED IN THE NAME OF Brian S. Schepart, Ph. D. WHO HAS BEEN DESIGNATED

BY THE REGISTERED OWNER\AUTHORIZED AGENT TO BE IN CHARGE OF THE LABORATORY WORK COVERED BY THIS CERTIFICATE OF APPROVAL AS FOLLOWS:

**Potable Water**

**Examination for:**
**Radiochemicals**

**SEE COMPUTER PRINT-OUT FOR SPECIFIC TESTS APPROVED**

THIS CERTIFICATE EXPIRES June 30, 2006 AND IS REVOCABLE FOR CAUSE BY THE STATE DEPARTMENT OF PUBLIC HEALTH

DATED AT HARTFORD, CONNECTICUT, THIS 11th DAY OF May 2004

PH-0306

Ellen J. Blaschinski

PUBLIC HEALTH SERVICE MANAGER, DIVISION OF ENVIRONMENTAL HEALTH

CONNECTICUT DEPARTMENT OF PUBLIC HEALTH
BUREAU OF REGULATORY SERVICES
410 CAPITOL AVENUE
HARTFORD, CT 06134
ENVIRONMENTAL LABORATORY CERTIFICATION SECTION

# WASTE STREAM TECHNOLOGY, INC.

**CT PUBLIC HEALTH APPROVAL NUMBER:**
**PH- 0306**

**DATE ISSUED:** May 11, 2004
**EXPIRATION DATE:** June 30, 2006

**ADDRESS:**
**302 Grote Street**
**Buffalo, N.Y. 14207**

**DIRECTOR:**
**Brian S. Schepart, Ph.D.**

**CO-DIRECTOR(S):**

**REGISTRANT:**
**Edward M. Oddo**

**Reviewed and Approved by:**

# APPROVED ANALYTES LIST

[TESTS ***APPROVED*** INDICATED BY "✓"]

## RADIOCHEMISTRY

| | |
|---|---|
| **Cesium -134** | |
| **Cesium -137** | |
| **Cobalt -60** | |
| **Gross alpha** | ✓ |
| **Gross beta** | ✓ |
| **Iodine-131** | |
| **Nickel -65** | |
| **Photon Emitters** | ✓ |
| **Radium-226** | ✓ |
| **Radium-228** | ✓ |
| **Radon** | |
| **Strontium -89** | |
| **Strontium -90** | |
| **Tritium** | |
| **Uranium** | ✓ |

## ASBESTOS

| | |
|---|---|
| **Air - Fiber Counting {PCM}** | |
| **Air - Fiber Counting {TEM}** | |
| **Bulk Materials-Identification {PLM}** | |
| **Bulk Materials-Identification {TEM}** | |
| **Water – {TEM}** | |

# STATE OF CONNECTICUT

## DEPARTMENT OF PUBLIC HEALTH

May 10, 2004

Mr. Edward M. Oddo, Registrant
Waste Stream Technology, Inc.
302 Grote Street
Buffalo, NY 14207

Dear Mr. Oddo:

In accordance with Sections 19a-29a and 25-40 of the Connecticut General Statutes, and Sections 19a-36-A25 through 19a-36-A33, 19a-36-A57 through 19a-36-A63, and 19-4-1 of the Connecticut Public Health Code, registration and approval of the above-mentioned laboratory is hereby granted. On the records of this Department you are listed as Registrant, and **Brian S. Schepart**, Ph. D. as Director.

The Connecticut registration number assigned to your laboratory is **PH- 0306**. This registration will expire on **June 30, 2006.**

Please find enclosed a Certificate of Approval as a Public Health Laboratory. Before you can perform any tests in addition to those listed on this certificate, prior written approval from this department must be obtained.

In the event your laboratory should need additional information, please contact a laboratory certification officer at (860) 509-7389.

Sincerely yours,

Jeffrey C. Curran
Supervising Environmental Laboratory Consultant

C:\0PH_Numbered_Docs\PH0306_InitialAppFrm_051004.doc

Certified Mail: 70032260000548401604

*Phone:* (860) 509-7389
*Telephone Device for the Deaf: (860) 509-7191*
*410 Capitol Avenue - MS #* 51Lab
*P.O. Box 340308 Hartford, CT 06134*
*Affirmative Action / An Equal Opportunity Employer*

Commonwealth of Pennsylvania
Department of Environmental Protection

# COMMONWEALTH OF PENNSYLVANIA
# DEPARTMENT OF ENVIRONMENTAL PROTECTION

*OFFICE OF FIELD OPERATIONS*

*BUREAU OF LABORATORIES*

Certifies that

**WASTE STREAM TECHNOLOGY INC**
**302 GROTE ST**
**BUFFALO, NY 14207**
**68-757**

Having duly met the requirement of
Chapter 109, Subchapter H, Safe Drinking Water Rules and Regulations
issued under the Pennsylvania Safe Drinking Water Act of May 1, 1984
(P.L. 206, No. 43), (35 P.S. §§ 721.1 - 721.17)
and the National Environmental Laboratory Accreditation Conference Standards

is hereby approved as a

## Certified Drinking Water Laboratory

As more fully described in the attached Scope of Accreditation

Expiration Date: March 1, 2005

Roger H. Carlson, PhD, Director
Bureau of Laboratories

Certificate not transferable
Surrender upon revocation
To Be Conspicuously Displayed at the Laboratory
Not valid unless accompanied by a valid Scope of Accreditation
Shall not be used to imply endorsement by the Commonwealth of Pennsylvania
*Customers are urged to verify the laboratory's current status*

1500-FM-LAB0007 Rev. 10/2003

Pennsylvania Department of Environmental Protection

*Laboratory Scope of Accreditation*



**Organization**

757 (716)876-5290

**Waste Stream Technology, Inc.**
**302 Grote Street**
**Buffalo, NY 14207**

**SDWA Certification**

| Method Code | Method Ref | Analyte | Status | Date Effective | Type | AA |
|---|---|---|---|---|---|---|
| 10112400 | EPA 900 | Gross-alpha | Accredited | 2/20/2004 | NELAP | NY |
| 10112400 | EPA 900 | Gross-beta | Accredited | 2/20/2004 | NELAP | NY |
| 10112808 | EPA 901.1 | Gross gamma | Accredited | 2/20/2004 | NELAP | NY |
| 10212201 | EPA Ra- 03 | Radium-226 | Accredited | 2/20/2004 | NELAP | NY |
| 10212803 | EPA Ra-05 | Radium-228 | Accredited | 2/20/2004 | NELAP | NY |
| | DOE 1990 | U-02 Uranium MS | Accredited | 2/20/2004 | NELAP | NY |

Print Date 4/14/2004 8:55:18 AM



Customers are urged to verify the laboratory's current accreditation standing.

RECEIVED MAR 1 1 2004

Pennsylvania Department of Environmental Protection

**P. O. Box 1467**
**Harrisburg, PA 17105-1467**
February 27, 2004

**Bureau of Laboratories**

717-783-7150
Fax: 717-783-1502

Waste Stream Technology Inc
302 Grote St
Buffalo, NY 14207

Re: Lab ID No. 68-757

Dear Sir:

Enclosed is your new certificate to operate as a Pennsylvania Certified Drinking Water Laboratory. It is valid for a period of one year from the date of issuance unless otherwise indicated.

The Department of Environmental Protection (Department) has assigned you a new laboratory number. This number is effective immediately. Please use this number on all correspondence with the PA Department of Environmental Protection (Department).

Your laboratory is certified to perform only the analyses stated on the certificate. The certificate remains the property of Department and should be displayed in the laboratory.

Please note this certification must be renewed annually. Under 25 Pa. Code Section 109.808, renewal applications must be submitted to the Department no later than 60 days prior to the expiration of the certification. Failure to submit a renewal application within this time period may result in a lapse of the laboratory's certification. Should this occur, the laboratory may not conduct any further analyses for which certification is required and must notify the public water suppliers served by the laboratory of the laboratory's failure to renew its certification. Copies of the renewal application may be found on the Department's web site (www.dep.state.pa.us/dep/deputate/mts/bol).

If you have any questions concerning your certificate, you may contact the Laboratory Accreditation Section at the address, phone number or fax number listed above.

Sincerely,

Richard H. Sheibley, Chief
Laboratory Accreditation Section

Enclosure

Pennsylvania Department of Environmental Protection

**PO Box 1467**
**Harrisburg, PA 17105-1467**
April 14, 2004

**Bureau of Laboratories**

Phone: 717-783-7150
Fax: 717-783-1502

**CERTIFIED MAIL NO. 7002 3150 0003 4032 0952**

Brian S. Schepart, Ph.D.
Waste Stream Technology, Inc.
302 Grote Street
Buffalo, NY 14207-2496

RE: Updated Accreditation Status
DEP 68-757

Dear Dr. Schepart:

Your current status in the National Environmental Laboratory Accreditation Program in Pennsylvania is as shown on the enclosed listing. That list of accredited fields of testing replaces all previous lists.

Waste Stream Technology, Inc. shall not use this Scope of Accreditation to imply endorsement by the Department or the National Environmental Laboratory Accreditation Program. In order to maintain accreditation, Waste Stream Technology, Inc. must remain in compliance with Departmental regulations and guidance.

Any person aggrieved by this action may appeal, pursuant to Section 4 of the Environmental Hearing Board Act, 35 P.S. Section 7514, and the Administrative Agency Law, 2 Pa. C.S. Chapter 5A, to the Environmental Hearing Board, Second Floor, Rachel Carson State Office Building, 400 Market Street, PO Box 8457, Harrisburg, PA 17105-8457, 717-787-3483. TDD users may contact the Board through the Pennsylvania Relay Service, 800-654-5984. Appeals must be filed with the Environmental Hearing Board within 30 days of receipt of written notice of this action unless the appropriate statute provides a different time period. Copies of the appeal form and the Board's rules of practice and procedure may be obtained from the Board. The appeal form and the Board's rules of practice and procedure are also available in Braille or on audiotape from the Secretary to the Board at 717-787-3483. This paragraph does not, in and of itself, create any right of appeal beyond that permitted by applicable statutes and decisional law. If you want to challenge this action, your appeal must reach the Board within 30 days. You do not need a lawyer to file an appeal with the Board. Important legal rights are at stake, however, so you should show this document to a lawyer at once. If you cannot afford a lawyer, you may qualify for free Pro Bono representation. Call the Secretary to the Board 717-787-3483 for more information.

If you have any questions regarding your laboratory certification status, please contact Mr. Ronald L. Houck, Jr. at 717-705-2433.

Sincerely,

Richard H. Sheibley, Chief
Laboratory Accreditation Program

Enclosure

Pennsylvania Department of Environmental Protection

*Laboratory Scope of Accreditation*



## Organization

757 (716)876-5290

**Waste Stream Technology, Inc.**
**302 Grote Street**
**Buffalo, NY 14207**

## SDWA Certification

| Method Code | Method Ref | Analyte | Status | Date Effective | Type | AA |
|---|---|---|---|---|---|---|
| 10112400 | EPA 900 | Gross-alpha | Accredited | 2/20/2004 | NELAP | NY |
| 10112400 | EPA 900 | Gross-beta | Accredited | 2/20/2004 | NELAP | NY |
| 10112808 | EPA 901.1 | Gross gamma | Accredited | 2/20/2004 | NELAP | NY |
| 10212201 | EPA Ra- 03 | Radium-226 | Accredited | 2/20/2004 | NELAP | NY |
| 10212803 | EPA Ra-05 | Radium-228 | Accredited | 2/20/2004 | NELAP | NY |

Print Date 2/20/2004 2:45:56 PM

Utah Department of Health

State of Utah
JON HUNTSMAN Jr.
*Governor*
GARY HERBERT
*Lieutenant Governor*

**Utah Department of Health**
David N. Sundwall, MD
*Executive Director*

**Epidemiology and Laboratory Services**
Barbara R. Jepson, MPA, MT (ASCP) - Acting Director
*Division Director*

**Bureau of Laboratory Improvement**
David B Mendenhall, MPA, MT (ASCP)
*Bureau Director*

NELAP
Recog

4/13/2005

Waste Stream Technology, Inc
Brian Schepart, Ph.D.
302 Grote St
Buffalo NY 14207

ID # WAS
Account # 7168465290

Director,

On the basis of your most recent assessment, Proficiency Testing results and continuing compliance with the ELCP requirements, the laboratory listed is certified for environmental monitoring under the Resource Conservation and Recovery Act and authorized to perform the following methods, for the analytes and matrix listed:l

**Radiochemistry**

| | Solid | Non-Potable Water | |
|---|---|---|---|
| 9315 | ☑ | ☐ | Alpha Emit Radium Isotope |
| 9320 | ☑ | ☐ | Radium 228 |

The effective date of this certificate letter is: 4/12/2005.

The analytes by method which a laboratory is authorized to perform at any given time will be those indicated in the most recent certificate letter. The most recent certification letter supersedes all previous certification or authorization letters. It is the certified laboratory's responsibility to review this letter for discrepancies. The certified laboratory must document any discrepancies in this letter and send notice to this bureau within 15 days of receipt. This certificate letter will be recalled in the event your laboratory's certification is revoked.

Respectfully,
Barbara R. Jepson

Barbara R. Jepson, MPA, MT (ASCP) - Acting Director
*Division Director*

The expiration for the laboratory's certification is 6/30/2005. The Utah Environmental Laboratory Certification Program (ELCP) encourages clients and data users to verify the most current certification letter for the authorized method. For further assistance please call Lorna Ward 801-584-8469.

# Quality Control Sample Acceptance Criteria

| METHOD 6010B, 7000 SERIES COMPOUND LISTS AND LABORATORY CONTROL SAMPLE (LCS) OBJECTIVES | |
|---|---|
| Constituent | LCS Objectives (% Recovery) |
| Aluminum | 85-115 |
| Antimony | 85-115 |
| Antimony (SW-846 7041) | 80-120 |
| Arsenic | 85-115 |
| Barium | 85-115 |
| Beryllium | 85-115 |
| Cadmium | 85-115 |
| Calcium | 85-115 |
| Chromium | 85-115 |
| Cobalt | 85-115 |
| Copper | 85-115 |
| Iron | 85-115 |
| Lead | 85-115 |
| Lead (SW-846 7421) | 80-120 |
| Magnesium | 85-115 |
| Manganese | 85-115 |
| Mercury (SW-846 7470A) | 80-120 |
| Nickel | 85-115 |
| Potassium | 85-115 |
| Selenium | 85-115 |
| Silver | 85-115 |
| Sodium | 85-115 |
| Thallium | 85-115 |
| Vanadium | 85-115 |
| Zinc | 85-115 |

# Waste Stream Technology Inc.

## QC Acceptance Criteria for Metals

| Analyte | Reference Sample QC Limits | | RPD QC Limits | Matrix Spike QC Limits | |
|---|---|---|---|---|---|
| | Soil | Water | | Soil | Water |
| Zinc | 85 - 115 | 85 - 115 | 25 | 75 - 125 | 75 - 125 |
| Lead | 85 - 115 | 85 - 115 | 25 | 75 - 125 | 75 - 125 |
| Cadmium | 85 - 115 | 85 - 115 | 25 | 75 - 125 | 75 - 125 |
| Cobalt | 85 - 115 | 85 - 115 | 25 | 75 - 125 | 75 - 125 |
| Nickel | 85 - 115 | 85 - 115 | 25 | 75 - 125 | 75 - 125 |
| Barium | 85 - 115 | 85 - 115 | 25 | 75 - 125 | 75 - 125 |
| Manganese | 85 - 115 | 85 - 115 | 25 | 75 - 125 | 75 - 125 |
| Iron | 85 - 115 | 85 - 115 | 25 | 75 - 125 | 75 - 125 |
| Chromium | 85 - 115 | 85 - 115 | 25 | 75 - 125 | 75 - 125 |
| Magnesium | 85 - 115 | 85 - 115 | 25 | 75 - 125 | 75 - 125 |
| Vanadium | 85 - 115 | 85 - 115 | 25 | 75 - 125 | 75 - 125 |
| Aluminum | 85 - 115 | 85 - 115 | 25 | 75 - 125 | 75 - 125 |
| Beryllium | 85 - 115 | 85 - 115 | 25 | 75 - 125 | 75 - 125 |
| Calcium | 85 - 115 | 85 - 115 | 25 | 75 - 125 | 75 - 125 |
| Copper | 85 - 115 | 85 - 115 | 25 | 75 - 125 | 75 - 125 |
| Silver | 85 - 115 | 85 - 115 | 25 | 75 - 125 | 75 - 125 |
| Potassium | 85 - 115 | 85 - 115 | 25 | 75 - 125 | 75 - 125 |
| Sodium | 85 - 115 | 85 - 115 | 25 | 75 - 125 | 75 - 125 |
| Arsenic | 85 - 115 | 85 - 115 | 25 | 75 - 125 | 75 - 125 |
| Antimony | 85 - 115 | 85 - 115 | 25 | 75 - 125 | 75 - 125 |
| Selenium | 85 - 115 | 85 - 115 | 25 | 75 - 125 | 75 - 125 |
| Thallium | 85 - 115 | 85 - 115 | 25 | 75 - 125 | 75 - 125 |
| Mercury | 80 - 120 | 80 - 120 | 25 | 75 - 125 | 75 - 125 |

| METHOD 1632 ARSENIC SPECIATION LIST AND LABORATORY CONTROL SAMPLE OBJECTIVES | |
|---|---|
| **Constituent** | **LCS Objectives (% Recovery)** |
| As(III) | 75-125 |
| $AsH_3$ | 75-125 |
| MMA | 75-125 |
| DMA | 75-125 |

# WASTE STREAM TECHNOLOGY INC.

## 2003 Laboratory Control Sample QC Limits for Volatile Organics by GC/MS Methods 624 and 8260B (Comparison Table-H2O)



| Compound | Laboratory Control Sample QC Limits (%) | | |
|---|---|---|---|
| | 60VWREFC | 60VWREF2 | 60VWREF3 |
| dichlorodifluoromethane | 53 - 142 | 14 - 168 | 35 - 179 |
| chloromethane | 36 - 117 | 20 - 159 | 37 - 153 |
| vinyl chloride | 71 - 118 | 57 - 140 | 68 - 140 |
| bromomethane | 40 - 140 | 41 - 141 | 57 - 139 |
| chloroethane | 63 - 123 | 66 - 124 | 68 - 124 |
| trichlorofluoromethane | 83 - 115 | 59 - 139 | 69 - 140 |
| 1,1-dichloroethene | 76 - 124 | 61 - 127 | 67 -132 |
| acetone | 53 - 152 | 75 - 141 | 67 - 141 |
| carbon disulfide | 64 - 125 | 55 - 125 | 56 - 124 |
| methylene chloride | (41) - 251 | (41) - 240 | (14) - 242 |
| methyl-t-butyl ether | 53 - 145 | 74 - 117 | 75 - 111 |
| trans-1,2-dichloroethene | 73 - 125 | 64 - 125 | 69 - 127 |
| 1,1-dichloroethane | 79 - 116 | 69 - 117 | 67 - 124 |
| vinyl acetate | 44 - 90 | (2) - 100 | 32 - 95 |
| 2-butanone | 65 - 136 | 76 - 129 | 69 - 133 |
| 2,2-dichloropropane | 81 - 111 | 68 - 121 | 77 - 120 |
| cis-1,2-dichloroethene | 77 - 116 | 63 - 125 | 72 - 124 |
| chloroform | 80 - 111 | 73 - 120 | 79 - 120 |
| bromochloromethane | 73 - 127 | 65 - 122 | 64 - 128 |
| 1,1,1-trichloroethane | 77 - 119 | 69 - 124 | 73 - 126 |
| carbon tetrachloride | 79 - 113 | 62 - 125 | 71 - 124 |
| 1,1-dichloropropene | 78 - 111 | 70 - 113 | 69 - 120 |
| benzene | 81 - 112 | 75 - 114 | 78 - 117 |
| 1,2-dichloroethane | 73 - 106 | 68 - 113 | 68 - 115 |
| trichloroethene | 75 - 109 | 75 - 102 | 76 - 101 |
| 1,2-dichloropropane | 77 - 104 | 74 - 108 | 81 - 106 |
| bromodichloromethane | 79 - 113 | 75 - 117 | 78 - 115 |
| 2-chloroethylvinyl ether | 17 - 168 | 36 - 168 | 35 - 152 |
| 4-methyl-2-pentanone | 66 - 127 | 69 - 133 | 69 - 130 |
| cis-1,3-dichloropropene | 79 - 109 | 74 - 107 | 76 - 107 |
| toluene | 82 - 110 | 78 - 113 | 83 - 113 |
| trans-1,3-dichloropropene | 80 - 118 | 80 - 116 | 84 - 111 |
| 1,1,2-trichloroethane | 75 - 110 | 84 - 106 | 82 - 106 |
| 2-hexanone | 57 - 136 | 56 - 148 | 67 - 128 |
| tetrachloroethene | 84 - 119 | 69 - 121 | 66 - 130 |
| 1,3-dichloropropane | 74 - 110 | 80 - 107 | 82 - 105 |
| dibromochloromethane | 81 - 114 | 72 - 118 | 76 - 118 |
| 1,2-dibromoethane | 72 - 113 | 73 - 110 | 76 - 110 |
| 2-chlorohexane | 85 - 111 | 78 - 113 | 77 - 117 |
| chlorobenzene | 79 - 109 | 73 - 113 | 78 - 116 |

# WASTE STREAM TECHNOLOGY INC.

## 2003 Laboratory Control Sample
## for Volatile Organics by GC/MS
## Methods 624 and 8260B (Comparison Table-H2O)



| Compound | Laboratory Control Sample QC Limits (%) | | |
|---|---|---|---|
| | 60VWREFC | 60VWREF2 | 60VWREF3 |
| 1,1,1,2-tetrachloroethane | 78 - 105 | 69 - 112 | 72 - 112 |
| ethylbenzene | 82 - 110 | 76 - 115 | 81 - 118 |
| m,p-xylene | 85 - 112 | 78 - 114 | 81 - 117 |
| o-xylene | 84 - 112 | 75 - 114 | 77 - 116 |
| styrene | 83 - 112 | 76 - 118 | 82 - 115 |
| bromoform | 73 - 114 | 60 - 126 | 61 - 127 |
| isopropylbenzene | 88 - 115 | 79 - 123 | 85 - 122 |
| 1,1,2,2-tetrachloroethane | 72 - 121 | 79 - 116 | 75 - 118 |
| bromobenzene | 80 - 111 | 73 - 117 | 74 - 122 |
| 1,2,3-trichloropropane | 62 - 123 | 73 - 122 | 75 - 119 |
| n-propylbenzene | 83 - 112 | 81 - 116 | 78 - 124 |
| 2-chlorotoluene | 79 - 111 | 80 - 116 | 78 - 123 |
| 1,3,5-trimethylbenzene | 83 - 110 | 80 - 117 | 82 - 122 |
| 4-chlorotoluene | 80 - 112 | 81 - 117 | 79 - 124 |
| tert-butylbenzene | 84 - 114 | 77 - 122 | 76 - 123 |
| 2,4-trimethylbenzene | 81 - 110 | 80 - 112 | 80 - 114 |
| sec-butylbenzene | 84 - 113 | 75 - 117 | 73 - 125 |
| p-isopropyltoluene | 90 - 120 | 83 - 120 | 80 - 127 |
| 1,3-dichlorobenzene | 83 - 111 | 76 - 116 | 82 - 117 |
| 1,4-dichlorobenzene | 82 - 112 | 76 - 114 | 78 - 117 |
| n-butylbenzene | 83 - 113 | 77 - 119 | 78 - 124 |
| 1,2-dichlorobenzene | 81 - 110 | 76 - 116 | 81 -116 |
| 1,2-dibromo-3-chloropropane | 55 - 135 | 69 - 125 | 65 - 127 |
| 1,2,4-trichlorobenzene | 88 - 125 | 67 - 124 | 66 - 130 |
| hexachlorobutadiene | 81 - 123 | 57 - 137 | 73 - 134 |
| naphthalene | 57 - 193 | 59 - 144 | 63 - 147 |
| 1,2,3-trichlorobenzene | 71 - 172 | 57 - 139 | 53 - 153 |
| n-amyl acetate | 70 - 130 | NA | NA |
| ethyl acetate | 70 - 130 | NA | NA |
| isopropyl acetate | 70 - 130 | NA | NA |
| tertiary butyl alcohol | 70 - 130 | NA | NA |
| acrylonitrile | 70 - 130 | 70 - 130 | NA |
| acrolein | 60 - 140 | NA | NA |
| Dibromofluoromethane (%) | 82 - 116 | 75 - 125 | NA |
| 1,2 Dichloroethane-d4 (%) | 76 - 114 | 76 - 118 | 77 - 118 |
| Toluene-d8 (%) | 84 - 118 | 73 - 117 | 84 - 112 |
| Bromofluorobenzene (%) | 82 - 117 | 76 - 115 | 79 - 125 |

# WASTE STREAM TECHNOLOGY INC.

## 2003 Matrix Spike Sample QC Limits and MS/MSD RPD Limits for Volatile Organics by GC/MS Methods 624 and 8260B



| Compound | Matrix Spike Sample QC Limits (%) | | | MS/MSD RPD Limits (%) | |
|---|---|---|---|---|---|
| | Water | Soil | TCLP | Water | Soil |
| dichlorodifluoromethane | 46 - 162 | 28 - 164 | NA | 20 | 25 |
| chloromethane | 37 - 135 | 39 - 126 | NA | 20 | 25 |
| vinyl chloride | 60 - 146 | 58 - 144 | 62 - 144 | 20 | 25 |
| bromomethane | 24 - 161 | 17 - 156 | NA | 20 | 25 |
| chloroethane | 63 - 136 | 63 - 151 | NA | 20 | 25 |
| trichlorofluoromethane | 65 - 147 | 72 - 130 | NA | 20 | 25 |
| 1,1-dichloroethene | 64 - 137 | 76 - 125 | 69 - 127 | 20 | 25 |
| acetone | 23 - 192 | 35 - 214 | NA | 20 | 25 |
| carbon disulfide | 48 - 141 | 64 - 116 | NA | 20 | 25 |
| methylene chloride | 52 - 143 | 22 - 169 | NA | 20 | 25 |
| methyl-t-butyl ether | 43 - 162 | 66 - 142 | NA | 20 | 25 |
| trans-1,2-dichloroethene | 74 - 131 | 80 - 119 | NA | 20 | 25 |
| 1,1-dichloroethane | 67 - 128 | 67 - 131 | NA | 20 | 25 |
| vinyl acetate | 15 - 116 | 10 - 112 | NA | 20 | 25 |
| 2-butanone | 64 - 143 | 26 - 219 | 60 - 165 | 20 | 25 |
| 2,2-dichloropropane | 74 - 116 | 72 - 129 | NA | 20 | 25 |
| cis-1,2-dichloroethene | 76 - 120 | 75 - 129 | NA | 20 | 25 |
| chloroform | 79 - 118 | 78 - 125 | 78 - 125 | 20 | 25 |
| bromochloromethane | 71 - 127 | 70 - 144 | NA | 20 | 25 |
| 1,1,1-trichloroethane | 72 - 126 | 74 - 125 | NA | 20 | 25 |
| carbon tetrachloride | 71 - 125 | 69 - 118 | 71 - 124 | 20 | 25 |
| 1,1-dichloropropene | 73 - 117 | 74 - 113 | NA | 20 | 25 |
| benzene | 78 - 118 | 82 - 118 | 82 - 115 | 20 | 25 |
| 1,2-dichloroethane | 72 - 118 | 73 - 128 | 77 - 125 | 20 | 25 |
| trichloroethene | 59 - 133 | 55 - 140 | 75 - 109 | 20 | 25 |
| 1,2-dichloropropane | 77 - 109 | 75 - 119 | NA | 20 | 25 |
| bromodichloromethane | 78 - 117 | 73 - 123 | NA | 20 | 25 |
| 2-chloroethylvinyl ether | NA | NA | NA | 20 | 25 |
| 4-methyl-2-pentanone | 63 - 136 | 32 - 184 | NA | 20 | 25 |
| cis-1,3-dichloropropene | 72 - 113 | 67 - 117 | NA | 20 | 25 |
| toluene | 69 - 124 | 72 - 132 | NA | 20 | 25 |
| trans-1,3-dichloropropene | 81 - 117 | 68 - 137 | NA | 20 | 25 |
| 1,1,2-trichloroethane | 74 - 113 | 65 - 136 | NA | 20 | 25 |
| 2-hexanone | 59 - 140 | 33 - 184 | NA | 20 | 25 |
| tetrachloroethene | 78 - 119 | 70 - 128 | 71 - 122 | 20 | 25 |
| 1,3-dichloropropane | 80 - 109 | 65 - 135 | NA | 20 | 25 |
| dibromochloromethane | 82 - 114 | 64 - 138 | NA | 20 | 25 |
| 1,2-dibromoethane | 77 - 112 | 65 - 132 | NA | 20 | 25 |
| 1-chlorohexane | 77 - 116 | 70 - 118 | | | |
| chlorobenzene | 81 - 112 | 77 - 124 | 75 - 118 | 20 | 25 |

# WASTE STREAM TECHNOLOGY INC.

## 2003 Matrix Spike Sample QC Limits and MS/MSD RPD Limits for Volatile Organics by GC/MS Methods 624 and 8260B



| Compound | Matrix Spike Sample QC Limits (%) | | | MS/MSD RPD Limits (%) | |
|---|---|---|---|---|---|
| | Water | Soil | TCLP | Water | Soil |
| 1,1,1,2-tetrachloroethane | 73 - 112 | 69 - 123 | NA | 20 | 25 |
| ethylbenzene | 66 - 127 | 79 - 122 | NA | 20 | 25 |
| m,p-xylene | 68 - 129 | 78 - 127 | NA | 20 | 25 |
| o-xylene | 70 - 123 | 77 - 128 | NA | 20 | 25 |
| styrene | 83 - 117 | 48 - 148 | NA | 20 | 25 |
| bromoform | 73 - 118 | 56 - 131 | NA | 20 | 25 |
| isopropylbenzene | 84 - 125 | 80 - 128 | NA | 20 | 25 |
| 1,1,2,2-tetrachloroethane | 65 - 126 | 59 - 141 | NA | 20 | 25 |
| bromobenzene | 80 - 115 | 76 - 131 | NA | 20 | 25 |
| 1,2,3-trichloropropane | 68 - 124 | 58 - 155 | NA | 20 | 25 |
| n-propylbenzene | 79 - 122 | 80 - 129 | NA | 20 | 25 |
| 2-chlorotoluene | 78 - 122 | 78 - 133 | NA | 20 | 25 |
| 1,3,5-trimethylbenzene | 77 - 122 | 76 - 133 | NA | 20 | 25 |
| 4-chlorotoluene | 76 - 122 | 82 - 126 | NA | 20 | 25 |
| tert-butylbenzene | 75 - 124 | 77 - 132 | NA | 20 | 25 |
| 1,[illegible] trimethylbenzene | 72 - 120 | 71 - 130 | NA | 20 | [illegible] |
| se[illegible] butylbenzene | 74 - 122 | 77 - 123 | NA | 20 | 25 |
| p-isopropyltoluene | 77 - 132 | 81 - 129 | NA | 20 | 25 |
| 1,3-dichlorobenzene | 86 - 111 | 79 - 123 | NA | 20 | 25 |
| 1,4-dichlorobenzene | 81 - 114 | 78 - 121 | 75 - 119 | 20 | 25 |
| n-butylbenzene | 70 - 136 | 80 - 116 | NA | 20 | 25 |
| 1,2-dichlorobenzene | 82 - 116 | 76 - 126 | NA | 20 | 25 |
| 1,2-dibromo-3-chloropropane | 55 - 142 | 34 - 171 | NA | 20 | 25 |
| 1,2,4-trichlorobenzene | 69 - 125 | 60 - 119 | NA | 20 | 25 |
| hexachlorobutadiene | 55 - 137 | 47 - 119 | NA | 20 | 25 |
| naphthalene | 52 - 157 | 34 - 165 | NA | 20 | 25 |
| 1,2,3-trichlorobenzene | 56 - 134 | 52 - 125 | NA | 20 | 25 |
| n-amyl acetate | 60 - 140 | NA | NA | 20 | NA |
| ethyl acetate | 60 - 140 | NA | NA | 20 | NA |
| isopropyl acetate | 60 - 140 | NA | NA | 20 | NA |
| tertiary butyl alcohol | 60 - 140 | NA | NA | 20 | NA |
| acrylonitrile | 60 - 140 | 60 - 140 | NA | 20 | 25 |
| acrolein | 50 - 150 | NA | NA | 30 | NA |

# WASTE STREAM TECHNOLOGY INC.

## 2003 Laboratory Control Sample QC Limits for Volatile Organics by GC/MS Methods 624 and 8260B



| Compound | Laboratory Control Sample QC Limits (%) | | |
|---|---|---|---|
| | Water | Soil | TCLP |
| dichlorodifluoromethane | 14 - 168 | 13 - 156 | NA |
| chloromethane | 20 - 159 | 46 - 107 | NA |
| vinyl chloride | 57 - 140 | 38 - 143 | 62 - 146 |
| bromomethane | 41 - 141 | 31 - 146 | NA |
| chloroethane | 66 - 124 | 53 - 140 | NA |
| trichlorofluoromethane | 59 - 139 | 67 - 128 | NA |
| 1,1-dichloroethene | 61 - 127 | 72 - 123 | 69 - 124 |
| acetone | 75 - 141 | 38 - 173 | NA |
| carbon disulfide | 55 - 125 | 58 - 119 | NA |
| methylene chloride | 48 - 133 | 26 - 200 | NA |
| methyl-t-butyl ether | 74 - 117 | 76 - 129 | NA |
| trans-1,2-dichloroethene | 64 - 125 | 79 - 119 | NA |
| 1,1-dichloroethane | 69 - 117 | 79 - 117 | NA |
| vinyl acetate | 10 - 100 | 38 - 106 | NA |
| 2-butanone | 76 - 129 | 77 - 138 | 70 - 137 |
| 2,2-dichloropropane | 68 - 121 | 76 - 133 | NA |
| cis-1,2-dichloroethene | 63 - 125 | 79 - 129 | NA |
| chloroform | 73 - 120 | 79 - 123 | 84 - 116 |
| bromochloromethane | 65 - 122 | 76 - 134 | NA |
| 1,1,1-trichloroethane | 69 - 124 | 82 - 120 | NA |
| carbon tetrachloride | 62 - 125 | 82 - 115 | 73 - 122 |
| 1,1-dichloropropene | 70 - 113 | 78 - 116 | NA |
| benzene | 75 - 114 | 79 - 120 | 79 - 116 |
| 1,2-dichloroethane | 68 - 113 | 75 - 122 | 76 - 114 |
| trichloroethene | 75 - 102 | 70 - 117 | 75 - 106 |
| 1,2-dichloropropane | 74 - 108 | 74 - 119 | NA |
| bromodichloromethane | 75 - 117 | 79 - 125 | NA |
| 2-chloroethylvinyl ether | 36 - 168 | NA | NA |
| 4-methyl-2-pentanone | 69 - 133 | 66 - 132 | NA |
| cis-1,3-dichloropropene | 74 - 107 | 78 - 119 | NA |
| toluene | 78 - 113 | 78 - 122 | NA |
| trans-1,3-dichloropropene | 80 - 116 | 81 - 131 | NA |
| 1,1,2-trichloroethane | 84 - 106 | 78 - 121 | NA |
| 2-hexanone | 56 - 148 | 60 - 138 | NA |
| tetrachloroethene | 69 - 121 | 77 - 133 | 72 - 127 |
| 1,3-dichloropropane | 80 - 107 | 76 - 119 | NA |
| dibromochloromethane | 72 - 118 | 80 - 130 | NA |
| 1,2-dibromoethane | 73 - 110 | 76 - 120 | NA |
| 1-chlorohexane | 78 - 113 | 73 - 127 | NA |
| chlorobenzene | 73 - 113 | 77 - 124 | 76 - 116 |

# WASTE STREAM TECHNOLOGY INC.

## 2003 Laboratory Control Sample for Volatile Organics by GC/MS Methods 624 and 8260B



| Compound | Laboratory Control Sample QC Limits (%) | | |
|---|---|---|---|
| | Water | Soil | TCLP |
| 1,1,1,2-tetrachloroethane | 69 - 112 | 73 - 122 | NA |
| ethylbenzene | 76 - 115 | 80 - 121 | NA |
| m,p-xylene | 78 - 114 | 77 - 123 | NA |
| o-xylene | 75 - 114 | 77 - 123 | NA |
| styrene | 76 - 118 | 79 - 125 | NA |
| bromoform | 60 - 126 | 73 - 132 | NA |
| isopropylbenzene | 79 - 123 | 81 - 127 | NA |
| 1,1,2,2-tetrachloroethane | 79 - 116 | 63 - 136 | NA |
| bromobenzene | 73 - 117 | 82 - 125 | NA |
| 1,2,3-trichloropropane | 73 - 122 | 75 - 116 | NA |
| n-propylbenzene | 81 - 116 | 79 - 123 | NA |
| 2-chlorotoluene | 80 - 116 | 78 - 123 | NA |
| 1,3,5-trimethylbenzene | 80 - 117 | 76 - 122 | NA |
| 4-chlorotoluene | 81 - 117 | 78 - 124 | NA |
| tert-butylbenzene | 77 - 122 | 77 - 123 | NA |
| 2,4-trimethylbenzene | 80 - 112 | 73 - 122 | NA |
| sec-butylbenzene | 75 - 117 | 76 - 121 | NA |
| p-isopropyltoluene | 83 - 120 | 80 - 130 | NA |
| 1,3-dichlorobenzene | 76 - 116 | 80 - 124 | NA |
| 1,4-dichlorobenzene | 76 - 114 | 81 - 125 | 76 - 120 |
| n-butylbenzene | 77 - 119 | 77 - 122 | NA |
| 1,2-dichlorobenzene | 76 - 116 | 77 - 128 | NA |
| 1,2-dibromo-3-chloropropane | 69 - 125 | 59 - 126 | NA |
| 1,2,4-trichlorobenzene | 67 - 124 | 75 - 132 | NA |
| hexachlorobutadiene | 57 - 137 | 67 - 132 | NA |
| naphthalene | 59 - 144 | 61 - 140 | NA |
| 1,2,3-trichlorobenzene | 57 - 139 | 76 - 132 | NA |
| n-amyl acetate | 70 - 130 | NA | NA |
| ethyl acetate | 70 - 130 | NA | NA |
| isopropyl acetate | 70 - 130 | NA | NA |
| tertiary butyl alcohol | 70 - 130 | NA | NA |
| acrylonitrile | 70 - 130 | 70 - 130 | NA |
| acrolein | 60 - 140 | NA | NA |
| Dibromofluoromethane (%) | 82 - 116 | 75 - 125 | NA |
| 1,2 Dichloroethane-d4 (%) | 74 - 117 | 69 - 132 | 77 - 118 |
| Toluene-d8 (%) | 82 - 123 | 81 - 121 | 76 - 124 |
| Bromofluorobenzene (%) | 85 - 123 | 83 - 121 | 83 - 121 |

# WASTE STREAM TECHNOLOGY INC.

## 2003 Laboratory Control Sample and Surrogate QC Limits for Semivolatile Organics by GC/MS Methods 625 and 8270C



| Compound | Laboratory Control Sample QC Limits (%) | | |
|---|---|---|---|
| | Water | Solid | TCLP |
| pyridine | NA | NA | 6 - 51 |
| n-nitrosodimethylamine | 15 - 63 | 48 - 109 | NA |
| phenol | 13 - 44 | 61 - 109 | NA |
| bis(2-chloroethyl)ether | 37 - 121 | 52 - 119 | NA |
| 2-chlorophenol | 36 - 101 | 60 - 104 | NA |
| 1,3-dichlorobenzene | 39 - 106 | 62 - 103 | NA |
| 1,4-dichlorobenzene | 41 - 107 | 62 - 105 | 49 - 102 |
| benzyl alcohol | 37 - 76 | 59 - 107 | NA |
| 1,2-dichlorobenzene | 41 - 108 | 63 - 106 | NA |
| 2-methylphenol | 32 - 93 | 69 - 114 | 44 - 88 |
| bis(2-chloroisopropyl)ether | 40 - 120 | 63 - 117 | NA |
| 3 & 4-methylphenol | 41 - 93 | 76 - 136 | 47 - 85 |
| n-nitroso-di-n-propylamine | 37 - 118 | 58 - 112 | NA |
| hexachloroethane | 36 - 107 | 59 - 106 | 45 - 103 |
| nitrobenzene | 35 - 114 | 57 - 109 | 50 - 107 |
| isophorone | 38 - 123 | 66 - 110 | NA |
| 2-nitrophenol | 46 - 112 | 68 - 110 | NA |
| 2[illegible]imethylphenol | 43 - 114 | 62 - 121 | NA |
| bis(2-chloroethoxy)methane | 42 - 120 | 66 - 110 | NA |
| benzoic acid | 20 - 100 | 34 - 121 | NA |
| 2,4-dichlorophenol | 47 - 109 | 66 - 109 | NA |
| 1,2,4-trichlorobenzene | 38 - 112 | 60 - 105 | NA |
| naphthalene | 44 - 114 | 65 - 108 | NA |
| 4-chloroaniline | 58 - 114 | 71 - 112 | NA |
| hexachlorobutadiene | 38 - 124 | 58 - 122 | 53 - 108 |
| 4-chloro-3-methylphenol | 46 - 111 | 71 - 114 | NA |
| 2-methylnaphthalene | 16 - 128 | 44 - 113 | NA |
| hexachlorocyclopentadiene | 31 - 133 | 35 - 151 | NA |
| 2,4,6-trichlorophenol | 50 - 121 | 69 - 112 | 65 - 106 |
| 2,4,5-trichlorophenol | 38 - 126 | 64 - 108 | 67 - 99 |
| 2-chloronaphthalene | 46 - 119 | 67 - 110 | NA |
| 2-nitroaniline | 48 - 128 | 70 - 120 | NA |
| dimethylphthalate | 51 - 128 | 69 - 117 | NA |
| acenaphthylene | 53 - 130 | 72 - 123 | NA |
| 3-nitroaniline | 55 - 126 | 75 - 118 | NA |
| 2,6-dinitrotoluene | 54 - 128 | 76 - 116 | NA |
| acenaphthene | 45 - 130 | 69 - 115 | NA |
| 2,4-dinitrophenol | 31 - 142 | 62 - 135 | NA |
| 4[illegible]ophenol | 10 - 48 | 52 - 118 | NA |
| di[illegible]izofuran | 49 - 123 | 71 - 111 | NA |

# WASTE STREAM TECHNOLOGY INC.

## 2003 Laboratory Control Sample and Surrogate QC Limits for Semivolatile Organics by GC/MS Methods 625 and 8270C



| Compound | Laboratory Control Sample QC Limits (%) | | |
|---|---|---|---|
| | Water | Solid | TCLP |
| 2,4-dinitrotoluene | 56 - 128 | 76 - 119 | 66 - 125 |
| diethylphthalate | 41 - 134 | 62 - 121 | NA |
| fluorene | 49 - 124 | 71 - 112 | NA |
| 4-nitroaniline | 49 - 127 | 68 - 125 | NA |
| 4-chlorophenyl-phenylether | 40 - 126 | 66 - 111 | NA |
| 4,6-dinitro-2-methylphenol | 59 - 144 | 70 - 140 | NA |
| n-nitrosodiphenylamine | 55 - 128 | 68 - 118 | NA |
| azobenzene | 60 - 140 | 60 - 140 | NA |
| 4-bromophenyl-phenylether | 48 - 113 | 62 - 106 | NA |
| hexachlorobenzene | 53 - 126 | 66 - 122 | 67 - 113 |
| pentachlorophenol | 45 - 123 | 61 - 115 | 58 - 118 |
| phenanthrene | 58 - 129 | 72 - 123 | NA |
| anthracene | 57 - 127 | 73 - 118 | NA |
| carbazole | 60 - 140 | 76 - 112 | NA |
| di-n-butylphthalate | 59 - 126 | 74 - 115 | NA |
| fluoranthene | 58 - 122 | 74 - 113 | NA |
| benzidine | 10 - 50 | 5 - 63 | NA |
| pyrene | 60 - 133 | 75 - 122 | NA |
| butylbenzylphthalate | 60 - 133 | 78 - 120 | NA |
| 3,3'-dichlorobenzidine | 54 - 118 | 59 - 124 | NA |
| benzo(a)anthracene | 55 - 124 | 72 - 114 | NA |
| chrysene | 57 - 128 | 67 - 119 | NA |
| bis(2-ethylhexyl)phthalate | 60 - 130 | 75 - 118 | NA |
| di-n-octylphthalate | 60 - 130 | 74 - 124 | NA |
| benzo(b)fluoranthene | 52 - 125 | 70 - 113 | NA |
| benzo(k)fluoranthene | 49 - 124 | 66 - 113 | NA |
| benzo(a)pyrene | 57 - 124 | 74 - 116 | NA |
| indeno(1,2,3-cd)pyrene | 39 - 139 | 58 - 128 | NA |
| dibenzo(a,h)anthracene | 59 - 130 | 65 - 131 | NA |
| benzo(g,h,i)perylene | 52 - 135 | 59 - 132 | NA |
| 2-fluorophenol (%) | 24 - 59 | 50 - 112 | 22 - 57 |
| phenol-d6 (%) | 16 - 40 | 52 - 117 | 15 - 38 |
| nitrobenzene-d5 (%) | 37 - 118 | 48 - 122 | 45 - 106 |
| 2-fluorobiphenyl (%) | 40 - 119 | 50 - 121 | 45 - 105 |
| 2,4,6-tribromophenol (%) | 44 - 124 | 50 - 132 | 45 - 119 |
| p-terphenyl-d14 (%) | 44 - 121 | 36 - 134 | 31 - 127 |

# WASTE STREAM TECHNOLOGY INC.

## 2003 Matrix Spike Sample QC Limits and MS/MSD RPD Limits for Semivolatile Organics by GC/MS Methods 625 and 8270C



| Compound | Matrix Spike Sample QC Limits (%) | | | MS/MSD RPD Limits (%) | |
|---|---|---|---|---|---|
| | Water | Soil | TCLP | Water | Soil |
| pyridine | NA | NA | 5 - 66 | NA | NA |
| n-nitrosodimethylamine | 21 - 65 | 30 - 112 | NA | 30 | 35 |
| phenol | 18 - 40 | 35 - 126 | NA | 30 | 35 |
| bis(2-chloroethyl)ether | 57 - 116 | 44 - 120 | NA | 30 | 35 |
| 2-chlorophenol | 54 - 93 | 48 - 115 | NA | 30 | 35 |
| 1,3-dichlorobenzene | 57 - 101 | 49 - 109 | NA | 30 | 35 |
| 1,4-dichlorobenzene | 60 - 102 | 47 - 112 | 51 - 100 | 30 | 35 |
| benzyl alcohol | 37 - 86 | 50 - 109 | NA | 30 | 35 |
| 1,2-dichlorobenzene | 48 - 116 | 50 - 110 | NA | 30 | 35 |
| 2-methylphenol | 48 - 88 | 52 - 121 | 13 - 126 | 30 | 35 |
| bis(2-chloroisopropyl)ether | 64 - 115 | 53 - 120 | NA | 30 | 35 |
| 3 & 4-methylphenol | 49 - 88 | 62 - 142 | 26 - 114 | 30 | 35 |
| n-nitroso-di-n-propylamine | 56 - 114 | 57 - 113 | NA | 30 | 35 |
| hexachloroethane | 59 - 100 | 46 - 106 | 42 - 107 | 30 | 35 |
| nitrobenzene | 50 - 113 | 41 - 118 | 44 - 129 | 30 | 35 |
| isophorone | 65 - 110 | 57 - 118 | NA | 30 | 35 |
| 2-nitrophenol | 60 - 106 | 53 - 114 | NA | 30 | 35 |
| [illegible]methylphenol | 68 - 95 | 41 - 136 | NA | 30 | 35 |
| bis(2-chloroethoxy)methane | 69 - 107 | 53 - 122 | NA | 30 | 35 |
| benzoic acid | 10 - 38 | 10 - 138 | NA | 30 | 35 |
| 2,4-dichlorophenol | 64 - 100 | 49 - 123 | NA | 30 | 35 |
| 1,2,4-trichlorobenzene | 58 - 103 | 43 - 120 | NA | 30 | 35 |
| naphthalene | 66 - 104 | 49 - 119 | NA | 30 | 35 |
| 4-chloroaniline | 44 - 116 | 49 - 123 | NA | 30 | 35 |
| hexachlorobutadiene | 61 - 115 | 38 - 138 | 54 - 116 | 30 | 35 |
| 4-chloro-3-methylphenol | 66 - 95 | 63 - 118 | NA | 30 | 35 |
| 2-methylnaphthalene | 37 - 138 | 37 - 131 | NA | 30 | 35 |
| hexachlorocyclopentadiene | 45 - 125 | 10 - 141 | NA | 30 | 35 |
| 2,4,6-trichlorophenol | 67 - 113 | 55 - 124 | 50 - 122 | 30 | 35 |
| 2,4,5-trichlorophenol | 63 - 116 | 49 - 127 | 47 - 128 | 30 | 35 |
| 2-chloronaphthalene | 65 - 110 | 55 - 121 | NA | 30 | 35 |
| 2-nitroaniline | 65 - 122 | 69 - 120 | NA | 30 | 35 |
| dimethylphthalate | 77 - 114 | 60 - 126 | NA | 30 | 35 |
| acenaphthylene | 75 - 117 | 68 - 124 | NA | 30 | 35 |
| 3-nitroaniline | 61 - 125 | 67 - 125 | NA | 30 | 35 |
| 2,6-dinitrotoluene | 67 - 124 | 66 - 126 | NA | 30 | 35 |
| acenaphthene | 78 - 112 | 60 - 127 | NA | 30 | 35 |
| 2,4-dinitrophenol | 45 - 140 | 10 - 174 | NA | 30 | 35 |
| [illegible]ophenol | 10 - 44 | 25 - 132 | NA | 30 | 35 |
| dibenzofuran | 72 - 112 | 62 - 124 | NA | 30 | 35 |

# WASTE STREAM TECHNOLOGY INC.

## 2003 Matrix Spike Sample QC Limits and MS/MSD RPD Limits for Semivolatile Organics by GC/MS Methods 625 and 8270C



| Compound | Matrix Spike Sample QC Limits (%) | | | MS/MSD RPD Limits (%) | |
|---|---|---|---|---|---|
| | Water | Soil | TCLP | Water | Soil |
| 2,4-dinitrotoluene | 64 - 127 | 67 - 126 | 48 - 133 | 30 | 35 |
| diethylphthalate | 70 - 126 | 56 - 130 | NA | 30 | 35 |
| fluorene | 75 - 111 | 64 - 121 | NA | 30 | 35 |
| 4-nitroaniline | 67 - 120 | 62 - 128 | NA | 30 | 35 |
| 4-chlorophenyl-phenylether | 71 - 112 | 58 - 125 | NA | 30 | 35 |
| 4,6-dinitro-2-methylphenol | 72 - 145 | 10 - 196 | NA | 30 | 35 |
| n-nitrosodiphenylamine | 70 - 125 | 49 - 146 | NA | 30 | 35 |
| azobenzene | 79 - 129 | 59 - 145 | NA | 30 | 35 |
| 4-bromophenyl-phenylether | 61 - 105 | 53 - 118 | NA | 30 | 35 |
| hexachlorobenzene | 70 - 116 | 59 - 129 | 50 - 127 | 30 | 35 |
| pentachlorophenol | 64 - 111 | 12 - 144 | 30 - 146 | 30 | 35 |
| phenanthrene | 78 - 119 | 56 - 136 | NA | 30 | 35 |
| anthracene | 78 - 115 | 67 - 127 | NA | 30 | 35 |
| carbazole | 71 - 117 | 68 - 122 | NA | 30 | 35 |
| di-n-butylphthalate | 78 - 119 | 66 - 129 | NA | 30 | 35 |
| fluoranthene | 78 - 112 | 65 - 124 | NA | 30 | 35 |
| bel[illegible]ine | 5 - 36 | 5 - 47 | NA | 30 | 35 |
| pyrene | 74 - 126 | 64 - 140 | NA | 30 | 35 |
| butylbenzylphthalate | 77 - 126 | 65 - 141 | NA | 30 | 35 |
| 3,3'-dichlorobenzidine | 51 - 120 | 27 - 128 | NA | 30 | 35 |
| benzo(a)anthracene | 72 - 115 | 68 - 120 | NA | 30 | 35 |
| chrysene | 72 - 124 | 59 - 136 | NA | 30 | 35 |
| bis(2-ethylhexyl)phthalate | 80 - 124 | 64 - 138 | NA | 30 | 35 |
| di-n-octylphthalate | 79 - 128 | 49 - 170 | NA | 30 | 35 |
| benzo(b)fluoranthene | 73 - 114 | 59 - 134 | NA | 30 | 35 |
| benzo(k)fluoranthene | 76 - 117 | 59 - 130 | NA | 30 | 35 |
| benzo(a)pyrene | 76 - 113 | 69 - 121 | NA | 30 | 35 |
| indeno(1,2,3-cd)pyrene | 56 - 127 | 36 - 138 | NA | 30 | 35 |
| dibenzo(a,h)anthracene | 70 - 122 | 46 - 134 | NA | 30 | 35 |
| benzo(g,h,i)perylene | 59 - 124 | 28 - 142 | NA | 30 | 35 |

# WASTE STREAM TECHNOLOGY INC.

## 2003 Laboratory Control Sample and Surrogate QC Limits for Pesticide and PCBs by GC/ECD Methods 608, 8081A and 8082

| Compound | Laboratory Control Sample QC Limits (%) | | |
|---|---|---|---|
| | Water | Solid | TCLP |
| alpha-BHC | 69 - 130 | 80 - 127 | NA |
| beta-BHC | 66 - 130 | 73 - 124 | NA |
| gamma-BHC (Lindane) | 69 - 130 | 75 - 124 | 60 - 122 |
| delta-BHC | 71 - 136 | 77 - 132 | NA |
| Heptachlor | 67 - 136 | 80 - 135 | 59 - 136 |
| Aldrin | 61 - 146 | 86 - 126 | NA |
| Heptachlor Epoxide | 67 - 123 | 76 - 118 | 64 - 120 |
| Endosulfan I | 71 - 125 | 78 - 120 | NA |
| 4,4'-DDE | 67 - 121 | 77 - 123 | NA |
| Dieldrin | 65 - 128 | 71 - 128 | NA |
| Endrin | 65 - 149 | 82 - 144 | 68 - 137 |
| Endosulfan II | 73 - 129 | 80 - 119 | NA |
| 4,4' - DDD | 66 - 131 | 79 - 130 | NA |
| Endrin Aldehyde | 67 - 125 | 56 - 114 | NA |
| Endosulfan Sulfate | 65 - 150 | 59 - 176 | NA |
| 4,4' - DDT | 57 - 169 | 78 - 167 | NA |
| Endrin Ketone | 64 - 158 | 74 - 164 | NA |
| Methoxychlor | 61 - 150 | 79 - 157 | 62 - 143 |
| Toxaphene | 60 - 150 | 60 - 150 | 60 - 150 |
| Chlordane | 60 - 150 | 60 - 150 | 60 - 150 |
| Aroclor 1016 | 56 - 137 | 68 - 126 | NA |
| Aroclor 1221 | 60 - 140 | 60 - 140 | NA |
| Aroclor 1232 | 60 - 140 | 60 - 140 | NA |
| Aroclor 1242 | 60 - 140 | 60 - 140 | NA |
| Aroclor 1248 | 60 - 140 | 60 - 140 | NA |
| Aroclor 1254 | 60 - 140 | 60 - 140 | NA |
| Aroclor 1260 | 54 - 135 | 63 - 134 | NA |
| Tetrachloro-m-xylene (%) | 67 - 131 | 74 - 122 | 67 - 123 |
| Decachlorobiphenyl (%) | 68 - 129 | 64 - 127 | 68 - 132 |

| Compound | Laboratory Control Sample QC Limits (%) | |
|---|---|---|
| | Wipes | Oil |
| Aroclor 1016 | 60 - 144 | 63 - 144 |
| Aroclor 1221 | 60 - 140 | 60 - 140 |
| Aroclor 1232 | 60 - 140 | 60 - 140 |
| Aroclor 1242 | 60 - 140 | 60 - 140 |
| Aroclor 1248 | 60 - 140 | 60 - 140 |
| Aroclor 1254 | 60 - 140 | 60 - 140 |
| Aroclor 1260 | 60 - 142 | 66 - 154 |
| Tetrachloro-m-xylene (%) | 70 - 141 | 54 - 131 |
| Decachlorobiphenyl (%) | 49 - 142 | 51 - 145 |

# WASTE STREAM TECHNOLOGY INC.

## 2003 Matrix Spike Sample QC Limits and MS/MSD RPD Limits for Pesticides and PCBs Methods 608, 8081A and 8082

| Compound | Matrix Spike Sample QC Limits (%) | | | MS/MSD RPD Limits (%) | |
|---|---|---|---|---|---|
| | Water | Soil | TCLP | Water | Soil |
| alpha-BHC | 68 - 117 | 75 - 124 | NA | 25 | 30 |
| beta-BHC | 74 - 110 | 55 - 134 | NA | 25 | 30 |
| gamma-BHC (Lindane) | 71 - 113 | 70 - 116 | 55 - 125 | 25 | 30 |
| delta-BHC | 64 - 133 | 63 - 141 | NA | 25 | 30 |
| Heptachlor | 53 - 137 | 73 - 123 | 55 - 134 | 25 | 30 |
| Aldrin | 54 - 117 | 56 - 139 | NA | 25 | 30 |
| Heptachlor Epoxide | 59 - 118 | 58 - 128 | 35 - 132 | 25 | 30 |
| Endosulfan I | 61 - 121 | 64 - 120 | NA | 25 | 30 |
| 4,4'-DDE | 51 - 133 | 30 - 169 | NA | 25 | 30 |
| Dieldrin | 57 - 128 | 69 - 124 | NA | 25 | 30 |
| Endrin | 61 - 140 | 61 - 147 | 58 - 148 | 25 | 30 |
| Endosulfan II | 58 - 125 | 69 - 118 | NA | 25 | 30 |
| 4,4' - DDD | 59 - 133 | 45 - 170 | NA | 25 | 30 |
| Endrin Aldehyde | 46 - 130 | 23 - 136 | NA | 25 | 30 |
| Endosulfan Sulfate | 59 - 135 | 62 - 141 | NA | 25 | 30 |
| 4,4' - DDT | 64 - 136 | 42 - 172 | NA | 25 | 30 |
| Endrin Ketone | 54 - 140 | 58 - 153 | NA | 25 | 30 |
| Methoxychlor | 56 - 149 | 45 - 169 | 43 - 165 | 25 | 30 |
| Toxaphene | 50 - 160 | 50 - 160 | 50 - 160 | 25 | 30 |
| Chlordane | 50 - 160 | 50 - 160 | 50 - 160 | 25 | 30 |
| Aroclor 1016 | 56 - 140 | 69 - 126 | NA | 25 | 30 |
| Aroclor 1221 | 50 - 160 | 50 - 160 | NA | 25 | 30 |
| Aroclor 1232 | 50 - 160 | 50 - 160 | NA | 25 | 30 |
| Aroclor 1242 | 50 - 160 | 50 - 160 | NA | 25 | 30 |
| Aroclor 1248 | 50 - 160 | 50 - 160 | NA | 25 | 30 |
| Aroclor 1254 | 50 - 160 | 50 - 160 | NA | 25 | 30 |
| Aroclor 1260 | 37 - 140 | 62 - 152 | NA | 25 | 30 |

| Compound | Matrix Spike Sample QC Limits (%) | MS/MSD RPD Limits (%) |
|---|---|---|
| | Oil | Oil |
| Aroclor 1016 | 50 - 160 | 30 |
| Aroclor 1221 | 50 - 160 | 30 |
| Aroclor 1232 | 50 - 160 | 30 |
| Aroclor 1242 | 50 - 160 | 30 |
| Aroclor 1248 | 50 - 160 | 30 |
| Aroclor 1254 | 50 - 160 | 30 |
| Aroclor 1260 | 50 - 160 | 30 |

# WASTE STREAM TECHNOLOGY INC.

## 2003 Laboratory Control Sample and Surrogate QC Limits for Herbicides by GC/ECD Methods 615 and 8151A

| Compound | Laboratory Control Sample QC Limits (%) | | |
|---|---|---|---|
| | Water | Solid | TCLP |
| Dalapon | 40 - 130 | 40 - 130 | NA |
| 4-Nitrophenol | 40 - 130 | 40 - 130 | NA |
| Dicamba | 40 - 130 | 40 - 130 | NA |
| MCPP | 40 - 130 | 40 - 130 | NA |
| MCPA | 40 - 130 | 40 - 130 | NA |
| Dichloroprop | 40 - 130 | 40 - 130 | NA |
| 2,4-D | 40 - 130 | 40 - 130 | 68 - 167 |
| Pentachlorophenol | 40 - 130 | 40 - 130 | NA |
| 2,4,5-TP | 40 - 130 | 40 - 130 | 81 - 143 |
| 2,4,5-T | 40 - 130 | 40 - 130 | NA |
| 2,4-DB | 40 - 130 | 40 - 130 | NA |
| Dinoseb | 40 - 130 | 40 - 130 | NA |
| 2,4-DCPAA (%) | 27 - 151 | 22 - 140 | 24 - 146 |

# WASTE STREAM TECHNOLOGY INC.

## 2003 Matrix Spike Sample QC Limits and MS/MSD RPD Limits for Herbicide Methods 615 and 8151A

| Compound | Matrix Spike Sample QC Limits (%) | | | MS/MSD RPD Limits (%) | |
|---|---|---|---|---|---|
| | Water | Soil | TCLP | Water | Soil |
| Dalapon | 30 - 140 | 30 - 140 | NA | 30 | 35 |
| 4-Nitrophenol | 30 - 140 | 30 - 140 | NA | 30 | 35 |
| Dicamba | 30 - 140 | 30 - 140 | NA | 30 | 35 |
| MCPP | 30 - 140 | 30 - 140 | NA | 30 | 35 |
| MCPA | 30 - 140 | 30 - 140 | NA | 30 | 35 |
| Dichloroprop | 30 - 140 | 30 - 140 | NA | 30 | 35 |
| 2,4-D | 30 - 140 | 30 - 140 | 41 - 171 | 30 | 35 |
| Pentachlorophenol | 30 - 140 | 30 - 140 | NA | 30 | 35 |
| 2,4,5-TP | 30 - 140 | 30 - 140 | 78 - 146 | 30 | 35 |
| 2,4,5-T | 30 - 140 | 30 - 140 | NA | 30 | 35 |
| 2,4-DB | 30 - 140 | 30 - 140 | NA | 30 | 35 |
| Dinoseb | 30 - 140 | 30 - 140 | NA | 30 | 35 |

# Radiochemistry Lab Data Quality Objectives

Effective 9/24/2004

| Data Quality Control Objectives | Analysis | | | | | | | Acceptance Criteria | Flagging Requirement/Corrective Actions<br>All flags applied to sample data are to be announced and explained in the Sample Group Case Narrative |
|---|---|---|---|---|---|---|---|---|---|
| | Gamma Spectrum | Gross Alpha | Gross Beta | Radium 226 | Radium 228 | Thorium Isotopic | Uranium Isotopic | | |
| Holding Time | | X | X | | X | | | < 4 $t_{1/2}$ for most critical isotope | None - If criteria is met<br>J - If criteria for holding times is not met<br>R - If criteria for holding time is not met and the data is <MDA |
| Preservation | | | | | | | | Bioassay, Drinking Water, or Ground Water samples to be preserved to a pH = 2.0 with Nitric Acid. Hydrochloric Acid is acceptable, if clearly identified by sampler.<br>Unpreserved samples preserved at time of receipt by the Rad Lab, not to be analyzed within 16 hours of preservation. | None - If criteria is met<br>J - If criteria for preservation is not met. |
| Energy Calibration Check | X | | | X | X | | | Daily prior to use of Gamma Spectroscopy system (geometry specific). | None - If criteria is met<br>J - If criteria is exceeded >24 hrs. = 32 hrs.<br>R - If criteria is exceeded by > 32 hrs. |
| | | | | | | | | Per sample analyzed by Gamma Spectroscopy<br>Check of Peak Centroid Energy of Analyte<br>± 0.5 keV from Calculated Peak Warning<br>±2.0 = E > ±0.5 Control<br>E > ± 2.0 Unacceptable | None - If Warning criteria is met<br>J - If Control criteria met<br>R - If Control criteria exceeded<br>Trend analysis of Recovery results |
| | | | | | | | | 50 = R = 100 % Warning<br>20 - 50% < R >100 - 150% Control<br>20% < R > 150% Unacceptable<br>± 2ó deviation Warning limit between results | |
| Enrgy Pulser Check | | | | X | | X | X | Daily prior to use of Alpha Spectroscopy system<br>Pass system check criteria | None - If criteria is met<br>J- If criteria is exceeded >24 hrs. = 32 hrs.<br>R - If criteria is exceeded by > 32 hrs. |
| Cal Check | | X | X | | | | | Daily prior to use | None - If criteria is met<br>J- If criteria is exceeded >24 hrs. = 32 hrs.<br>R - If criteria is exceeded by > 32 hrs. |
| | | | | | | | | 50 = R = 100 % Warning<br>20 - 50% < R >100 - 150% Control<br>20% < R > 150% Unacceptable<br>± 2ó deviation Warning limit between results | None - If Warning criteria is met<br>J - If Control criteria met<br>R - If Control criteria exceeded<br>Trend analysis of Recovery results |

# Radiochemistry Lab Data Quality Objectives

Effective [illegible]/2004

| Data Quality Control Objectives | Analysis | | | | | | | Acceptance Criteria | Flagging Requirement/Corrective Actions<br>All flags applied to sample data are to be announced and explained in the Sample Group Case Narrative |
|---|---|---|---|---|---|---|---|---|---|
| | Gamma Spectrum | Gross Alpha | Gross Beta | Radium 226 | Radium 228 | Thorium Isotopic | Uranium Isotopic | | |
| Background Count Rate | X | X | X | X | X | X | X | Calculated monthly for each geometry and counting time used with each counting system.<br>± 3ó deviation Warning limit between results | None - If criteria is met in < 4 days*<br>J - If criteria not met within +5 - 7 days<br>R - If criteria not met within = 8 days |
| | | | | X | X | X | X | Current Alpha Spectrum background file used | None - If criteria met<br>Reanalyze with proper file - If criteria not met |
| | X | X | X | | | | | Checked Daily prior to use<br>± 3ó deviation Warning limit between results | None - If criteria is met in < 4 days*<br>J - If criteria not met within +5 - 7 days<br>R - If criteria f not met within = 8 days* |
| Method Blank | X | X | X | X | X | X | X | One per sample batch of the same matrix<br>± 3ó deviation Warning limit between results | None - If criteria is met<br>R - If criteria not met |
| Laboratory Control Sample | X | X | X | X | X | X | X | One per sample batch of the same matrix<br>± 3ó deviation Warning limit between results | Trend analysis applied<br>None - If Warning criteria met<br>Corrective Actions - If Warning criteria exceeded |
| Laboratory Control Sample Recovery | X | X | X | X | X | X | X | One per sample batch of the same matrix<br>See following tables for warning and control limits.<br>± 2ó deviation Warning limit between results<br>± 3ó deviation Control limit between results | None - If Warning criteria is met<br>J - If Control criteria met<br>R - If Control criteria exceeded |
| Method Blank/Sample Normalized Absolute Difference | | X | X | X | X | X | X | One per sample batch of the same matrix determined against lowest sample activity measured, when blank activity is subtracted from sample activity.<br>**Not Applicable** to Air Filter matrix due to inability to simulate a representative blank air at prescribed volumes of air through filter<br>NAD as calculated<br>> 2.58 Warning<br>1.96 = NAD = 2.58 Control<br>NAD < 1.96 Unacceptable | None - If Warning criteria is met<br>NJ - If Control criteria met<br>NR - If Control criteria exceeded<br><br>NAD examined against background result trend.<br>IF background within specifications and sample results near background,<br>THEN Control criteria will be exceeded.<br>In this instance NO flag is required.<br>Explanation required in Case Narrative |

# Radiochemistry Lab Data Quality Objectives

Effective 9/24/2004

| Data Quality Control Objectives | Analysis | | | | | | | Acceptance Criteria | Flagging Requirement/Corrective Actions<br>All flags applied to sample data are to be announced and explained in the Sample Group Case Narrative |
|---|---|---|---|---|---|---|---|---|---|
| | Gamma Spectrum | Gross Alpha | Gross Beta | Radium 226 | Radium 228 | Thorium Isotopic | Uranium Isotopic | | |
| Duplicate | X | X | X | X | X | X | X | One per sample batch of the same matrix<br>**Not Applicable** to Air Filter matrix IF sample is being digested,<br>AND ONLY personal breathing zone air filters comprise sample batch. | None – If criteria met<br>R – If criteria not met |
| Sample/ Duplicate Normalized Absolute Difference | X | X | X | X | X | X | X | One per sample batch of the same matrix<br>NAD as calculated<br>> 3.92 Warning<br>1.96 = NAD = 3.92 Control<br>NAD < 1.96 | Calculate when performed<br>None – If Warning criteria is met<br>NJ – If Control criteria met<br>NR – If Control criteria exceeded |
| Tracer Recovery | | | | X | X | X | X | One per sample and method blank<br>50 = R = 100 % Warning<br>20 – 50% < R >100 – 150% Control<br>20% < R > 150% Unacceptable<br>± 2ó deviation Warning limit between results | ± 3ó deviation Warning limit between results<br>None – If Warning criteria is met<br>J – If Control criteria met<br>R – If Control criteria exceeded<br>Trend analysis of Recovery results |
| Matrix Spike Recovery | | X | X | X | X | X | X | One per sample batch of the same matrix<br>See following tables for warning and control limits. | ± 3ó deviation Warning limit between results<br>None – If Warning criteria is met<br>J – If Control criteria met<br>R – If Control criteria exceeded |
| Target Nuclide Identification | X | | X | X | X | X | X | Per sample analyzed by Gamma Spectroscopy<br>Check of Peak Centroid Energy of Analyte<br>E = ± 0.5 keV Warning<br>± 0.5 > E = ± 2.0 Control<br>E > ± 2.0 Unacceptable<br><br>Per sample analyzed by Alpha Spectroscopy<br>Check of Peak Centroid Energy of Analyte<br>E = ± 100 keV Warning<br>± 100 keV > E = ± 750 keV Control<br>E > ± 750 keV Unacceptable | None – If Warning criteria is met<br>J – If Control criteria met<br>R – If Control criteria exceeded |

| Data Quality Control Objectives | Analysis | | | | | | | Acceptance Criteria | Flagging Requirement/Corrective Actions<br>All flags applied to sample data are to be announced and explained in the Sample Group Case Narrative |
|---|---|---|---|---|---|---|---|---|---|
| | Gamma Spectrum | Gross Alpha | Gross Beta | Radium 226 | Radium 228 | Thorium Isotopic | Uranium Isotopic | | |
| FWHM | X | | | X | X | X | X | Review FWHM values for each peak of interest<br>Gamma Spectroscopy<br>FWHM = 1.4 Warning<br>FWHM = 1.4-2.8 Control<br>FWHM > 2.8 Unacceptable<br>Alpha Spectroscopy<br>FWHM = 150 Warning<br>>80 FWHM = 150-350 Control<br>< 350 Review for Acceptability | None – If Warning criteria is met<br>J – If Control criteria met<br>R – If Control criteria exceeded |
| Equilibrium | X | | | X | X | X | X | Each sample where the analyses performed provide sufficient data to relate secular equilibrium and transient equilibrium to the results | None - When criteria met<br>J - If criteria not met |
| Isotope Distribution | X | | | | | X | X | Each sample where the analyses performed provide sufficient data to relate expected isotope distribution based on historical or calculated correlation data | None - When criteria met<br>J - If criteria not met |

Legend

A Sample Batch is equal to a maximum of 20 samples of the same matrix, AND if soil, from the same sample site.

The above stated Data Quality Objectives (DQOs) are those currently applied by The Radiochemistry Lab at Waste Stream Technology, Inc. The client may request changes to any of these parameters. Specification changes will be documented and approved by written agreement prior to performance of any analysis.

- - Deviation from prescribed Quality Criteria requires approval from the Radiochemistry Lab Manager

# Radiochemistry Lab Data Quality Objectives

Effective 9/24/2004

| | matrix | | warning limits | control limits |
|---|---|---|---|---|
| Radium 226 | soil | lcs | 63-121 | 48-136 |
| | | ms/msd | 53-135 | 32-156 |
| Radium 226 | air filter | lcs | 43-117 | 24-136 |
| | | ms/msd | 51-104 | 37-117 |
| Radium 226 | bioassay | lcs | 87-117 | 80-125 |
| | | ms/msd | 80-107 | 74-113 |
| Radium 226 | water | lcs | 90-114 | 84-120 |
| | | ms/msd | 70-123 | 57-136 |
| Thorium 230 | soil | lcs | 64-118 | 51-131 |
| | | ms/msd | 84-122 | 75-132 |
| Thorium 230 | air filter | lcs | 72-114 | 62-124 |
| | | ms/msd | 69-106 | 60-116 |
| Thorium 230 | bioassay | lcs | 59-114 | 45-128 |
| | | ms/msd | 76-119 | 65-130 |
| Total Uranium | soil | lcs | 82-103 | 77-109 |
| | | ms/msd | 64-113 | 52-125 |
| Radium 224 | water | lcs | 49-103 | 36-117 |
| | | ms/msd | 50-108 | 35-123 |
| Radium 228 | soil | lcs | 103-127 | 97-133 |
| Radium 228 | water | lcs | 22-146 | 0-177 |
| | | ms/msd | 37-156 | 7-186 |

| | matrix | Isotope | Warning Limits | Control Limits |
|---|---|---|---|---|
| Gamma Spec | Soil | K 40 | 101-132 | 93-140 |
| | | Cs 137 | 110-124 | 106-128 |
| | | Bi 212 | 47-99 | 34-112 |
| | | Pb 212 | 107-124 | 103-128 |
| | | Bi 214 | 99-125 | 92-131 |
| | | Pb 214 | 103-131 | 97-138 |
| | | Ac 228 | 103-127 | 97-133 |
| | | Th 234 | 113-250 | 79-284 |
| | Water | Co 60 | 99-115 | 95-119 |
| | | Zn 65 | 73-137 | 57-153 |
| | | Ba 133 | 94-102 | 92-104 |
| | | Cs 134 | 108-120 | 89-108 |
| | | Cs 137 | 108-119 | 105-122 |

# APPENDIX C

## MEASUREMENT PERFORMANCE CRITERIA

| PRECISION AND ACCURACY OBJECTIVES | | | |
|---|---|---|---|
| **Parameters** | **Precision (Relative Percent Difference)** | **Accuracy % of Spike Recovery** | |
| **SOIL MATRICES** | | | |
| **TAL Metals** | | **LCS** | **MS/MSD** |
| Aluminum | 25 | 80-120 | 75-125 |
| Antimony | 25 | 80-120 | 75-125 |
| Arsenic | 25 | 80-120 | 75-125 |
| Barium | 25 | 80-120 | 75-125 |
| Beryllium | 25 | 80-120 | 75-125 |
| Cadmium | 25 | 80-120 | 75-125 |
| Calcium | 25 | 80-120 | 75-125 |
| Chromium | 25 | 80-120 | 75-125 |
| Cobalt | 25 | 80-120 | 75-125 |
| Copper | 25 | 80-120 | 75-125 |
| Iron | 25 | 80-120 | 75-125 |
| Lead | 25 | 80-120 | 75-125 |
| Magnesium | 25 | 80-120 | 75-125 |
| Manganese | 25 | 80-120 | 75-125 |
| Nickel | 25 | 80-120 | 75-125 |
| Potassium | 25 | 80-120 | 75-125 |
| Selenium | 25 | 80-120 | 75-125 |
| Silver | 25 | 80-120 | 75-125 |
| Sodium | 25 | 80-120 | 75-125 |
| Thallium | 25 | 80-120 | 75-125 |
| Vanadium | 25 | 80-120 | 75-125 |
| Zinc | 25 | 80-120 | 75-125 |
| Mercury | 25 | 80-120 | 75-125 |
| **TCL VOCs** | | **LCS** | **MS/MSD** |
| 1,1,1,2-Tetrachloroethane | 25 | 75-125 | 60-140 |
| 1,1,1-Trichloroethane | 25 | 70-135 | 74-125 |
| 1,1,2,2-Tetrachloroethane | 25 | 55-130 | 59-141 |
| 1,1,2-Trichloroethane | 25 | 60-125 | 65-136 |
| 1,1-Dichloroethane | 25 | 75-125 | 67-131 |
| 1,1-Dichloroethene | 25 | 65-135 | 76-125 |
| 1,2-Dichloroethane | 25 | 70-135 | 73-128 |
| 1,2-Dichloropropane | 25 | 70-120 | 75-119 |
| 2-Butanone | 25 | 30-160 | 26-219 |
| 2-Hexanone | 25 | 45-145 | 33-184 |
| 4-Methyl-2-pentanone | 25 | 45-145 | 32-184 |
| Acetone | 25 | 20-160 | 35-214 |
| Acrylonitrile | 25 | 70-130 | 60-140 |

| PRECISION AND ACCURACY OBJECTIVES | | | |
|---|---|---|---|
| **Parameters** | **Precision (Relative Percent Difference)** | **Accuracy % of Spike Recovery** | |
| Benzene | 25 | 75-125 | 82-118 |
| Bromodichloromethane | 25 | 70-130 | 73-123 |
| Bromoform | 25 | 55-135 | 56-131 |
| Bromomethane | 25 | 30-160 | 17-156 |
| Carbon Disulfide | 25 | 45-160 | 64-116 |
| Carbon Tetrachloride | 25 | 65-135 | 69-118 |
| Chlorobenzene | 25 | 75-125 | 77-124 |
| Chloroethane | 25 | 40-155 | 63-151 |
| Chloroform | 25 | 70-125 | 78-125 |
| Chloromethane | 25 | 50-130 | 39-126 |
| cis-1,2-Dichloroethene | 25 | 65-125 | 75-129 |
| cis-1,3-Dichloropropene | 25 | 70-125 | 67-117 |
| Dibromochloromethane | 25 | 65-130 | 64-138 |
| Ethylbenzene | 25 | 75-125 | 79-122 |
| m,p-Xylene | 25 | 80-125 | 78-127 |
| Methylene Chloride | 25 | 55-140 | 22-169 |
| o-Xylene | 25 | 75-125 | 77-128 |
| Styrene | 25 | 75-125 | 48-148 |
| Tetrachloroethene | 25 | 65-140 | 70-128 |
| Toluene | 25 | 70-125 | 72-132 |
| trans-1,2-Dichloroethene | 25 | 65-135 | 80-119 |
| trans-1,3-Dichloropropene | 25 | 65-125 | 68-137 |
| Trichloroethene | 25 | 75-125 | 55-140 |
| Vinyl Acetate | 25 | 38-106 | 10-112 |
| Vinyl Chloride | 25 | 60-125 | 58-144 |
| **TCL SVOCs** | | **LCS** | **MS/MSD** |
| 1,2,4-Trichlorobenzene | 35 | 45-110 | 43-120 |
| 1,2-Dichlorobenzene | 35 | 45-95 | 50-110 |
| 1,3-Dichlorobenzene | 35 | 40-100 | 49-109 |
| 1,4-Dichlorobenzene | 35 | 35-105 | 47-112 |
| 2,4,5-Trichlorophenol | 35 | 50-110 | 49-127 |
| 2,4,6-Trichlorophenol | 35 | 45-110 | 55-124 |
| 2,4-Dichlorophenol | 35 | 45-110 | 49-123 |
| 2,4-Dimethylphenol | 35 | 30-105 | 41-136 |
| 2,4-Dinitrophenol | 35 | 15-130 | 10-174 |
| 2,4-Dinitrotoluene | 35 | 50-115 | 67-126 |
| 2,6-Dinitrotoluene | 35 | 50-110 | 66-126 |
| 2-Chloronaphthalene | 35 | 45-105 | 55-121 |
| 2-Chlorophenol | 35 | 45-105 | 48-115 |

| PRECISION AND ACCURACY OBJECTIVES | | | |
|---|---|---|---|
| **Parameters** | **Precision (Relative Percent Difference)** | **Accuracy % of Spike Recovery** | |
| 2-Methyl-4,6-dinitrophenol | 35 | 30-135 | 10-196 |
| 2-Methylnaphthalene | 35 | 45-105 | 37-131 |
| 2-Methylphenol | 35 | 40-105 | 52-121 |
| 2-Nitroaniline | 35 | 45-120 | 69-120 |
| 2-Nitrophenol | 35 | 40-110 | 53-114 |
| 3 & 4-Methylphenol | 35 | 40-105 | 62-142 |
| 3,3'-Dichlorobenzidine | 35 | 10-130 | 27-128 |
| 3-Nitroaniline | 35 | 25-110 | 67-125 |
| 4-Bromophenyl-phenylether | 35 | 45-115 | 53-118 |
| 4-Chloro-3-Methylphenol | 35 | 45-115 | 63-118 |
| 4-Chloroaniline | 35 | 10-95 | 49-123 |
| 4-Chlorophenyl-phenylether | 35 | 45-110 | 58-125 |
| 4-Nitroaniline | 35 | 35-115 | 62-128 |
| 4-Nitrophenol | 35 | 15-140 | 25-132 |
| Acenaphthene | 35 | 45-110 | 60-127 |
| Acenaphthylene | 35 | 45-105 | 68-124 |
| Anthracene | 35 | 55-105 | 67-127 |
| Benzidine | 35 | 5-63 | 5-47 |
| Benzo(a)anthracene | 35 | 50-110 | 68-120 |
| Benzo(a)pyrene | 35 | 50-110 | 69-121 |
| Benzo(b)fluoranthene | 35 | 45-115 | 59-134 |
| Benzo(g,h,i)perylene | 35 | 40-125 | 28-142 |
| Benzo(k)fluoranthene | 35 | 45-125 | 59-130 |
| Benzoic Acid | 35 | 0-110 | 10-138 |
| Benzyl Alcohol | 35 | 20-125 | 50-109 |
| bis(2-Chloroethoxy)methane | 35 | 45-110 | 53-122 |
| bis(2-Chloroethyl)ether | 35 | 40-105 | 44-120 |
| bis(2-Chloroisopropyl)ether | 35 | 20-115 | 53-120 |
| bis(2-Ethylhexyl)phthalate | 35 | 45-125 | 64-138 |
| Butylbenzyl phthalate | 35 | 50-125 | 65-141 |
| Carbazole | 35 | 45-115 | 68-122 |
| Chrysene | 35 | 55-110 | 59-136 |
| Dibenzo(a,h)anthracene | 35 | 40-125 | 46-134 |
| Dibenzofuran | 35 | 50-105 | 62-124 |
| Diethyl phthalate | 35 | 50-115 | 56-130 |
| Dimethyl phthalate | 35 | 50-110 | 60-126 |
| di-n-Butylphthalate | 35 | 55-110 | 66-129 |
| di-n-Octylphthalate | 35 | 40-130 | 49-170 |
| Fluoranthene | 35 | 55-115 | 65-124 |

| PRECISION AND ACCURACY OBJECTIVES | | | |
|---|---|---|---|
| **Parameters** | **Precision (Relative Percent Difference)** | **Accuracy % of Spike Recovery** | |
| Fluorene | 35 | 50-110 | 64-121 |
| Hexachlorobenzene | 35 | 45-120 | 59-129 |
| Hexachlorobutadiene | 35 | 40-115 | 38-138 |
| Hexachlorocyclopentadiene | 35 | 35-151 | 10-141 |
| Hexachloroethane | 35 | 35-110 | 46-106 |
| Indeno(1,2,3-cd)pyrene | 35 | 40-120 | 36-138 |
| Isophorone | 35 | 45-110 | 57-118 |
| Naphthalene | 35 | 40-105 | 49-119 |
| Nitrobenzene | 35 | 40-115 | 41-118 |
| n-Nitrosodimethylamine | 35 | 20-115 | 30-112 |
| n-Nitroso-di-n-propylamine | 35 | 40-115 | 57-113 |
| n-Nitrosodiphenylamine | 35 | 50-115 | 49-146 |
| Pentachlorophenol | 35 | 25-120 | 12-144 |
| Phenanthrene | 35 | 50-110 | 56-136 |
| Phenol | 35 | 40-100 | 35-126 |
| Pyrene | 35 | 45-125 | 64-140 |
| **TCL Pesticides and PCBs** | | **LCS** | **MS/MSD** |
| 4,4'-DDD | 30 | 30-135 | 45-170 |
| 4,4'-DDE | 30 | 70-125 | 51-133 |
| 4,4'-DDT | 30 | 45-140 | 42-172 |
| Aldrin | 30 | 45-140 | 56-139 |
| Alpha-BHC | 30 | 60-125 | 75-124 |
| Beta-BHC | 30 | 60-125 | 55-134 |
| Delta-BHC | 30 | 55-130 | 63-141 |
| Dieldrin | 30 | 65-125 | 69-124 |
| Endosulfan I | 30 | 15-135 | 64-120 |
| Endosulfan II | 30 | 35-140 | 69-118 |
| Endosulfan Sulfate | 30 | 60-135 | 62-141 |
| Endrin | 30 | 60-135 | 61-147 |
| Endrin Aldehyde | 30 | 35-145 | 23-136 |
| Endrin Ketone | 30 | 65-135 | 58-153 |
| Gamma-BHC (Lindane) | 30 | 60-125 | 70-116 |
| Heptachlor | 30 | 50-140 | 73-123 |
| Heptachlor Epoxide | 30 | 65-130 | 58-128 |
| Methoxychlor | 30 | 55-145 | 45-169 |
| Toxaphene | NA | 60-150 | NA |
| Chlordane | NA | 60-150 | NA |
| Aroclor 1016 | 30 | 40-140 | 69-126 |
| Aroclor 1221 | NA | NA | NA |

| PRECISION AND ACCURACY OBJECTIVES | | | |
|---|---|---|---|
| **Parameters** | **Precision (Relative Percent Difference)** | **Accuracy % of Spike Recovery** | |
| Aroclor 1232 | NA | NA | NA |
| Aroclor 1242 | NA | NA | NA |
| Aroclor 1248 | NA | NA | NA |
| Arclor 1254 | NA | NA | NA |
| Aroclor 1260 | 30 | 60-130 | 62-152 |
| **TCLP ANALYSES** | | | |
| **TCLP Metals** | | **LCS** | **MS/MSD** |
| Arsenic | 25 | 80-120 | 75-125 |
| Barium | 25 | 80-120 | 75-125 |
| Cadmium | 25 | 80-120 | 75-125 |
| Chromium | 25 | 80-120 | 75-125 |
| Lead | 25 | 80-120 | 75-125 |
| Selenium | 25 | 80-120 | 75-125 |
| Silver | 25 | 80-120 | 75-125 |
| Mercury | 25 | 80-120 | 75-125 |
| **TCLP VOCs** | **LCS/LCSD** | **LCS** | **MS** |
| Vinyl Chloride | 20 | 57-127 | 54-125 |
| 1,1-Dichloroethene | 20 | 70-123 | 70-123 |
| Chloroform | 20 | 71-130 | 71-124 |
| 2-Butanone | 20 | 66-156 | 59-177 |
| 1,2-Dichloroethane | 20 | 75-125 | 74-123 |
| Carbon Tetrachloride | 20 | 70-125 | 67-114 |
| Trichloroethene | 20 | 78-118 | 73-119 |
| Benzene | 20 | 78-119 | 81-114 |
| Tetrachloroethene | 20 | 71-119 | 72-116 |
| Chlorobenzene | 20 | 81-115 | 81-113 |
| **TCLP SVOCs** | **LCS/LCSD** | **LCS** | **MS** |
| Pyridine | 30 | 7-52 | 5-66 |
| 1,4-Dichlorobenzene | 30 | 46-95 | 51-110 |
| Nitrobenzene | 30 | 61-93 | 44-129 |
| Hexachloroethane | 30 | 44-101 | 42-107 |
| Hexachlorobutadiene | 30 | 51-114 | 54-116 |
| 2,4,6-Trichlorophenol | 30 | 62-101 | 50-122 |
| 2,4,5-Trichlorophenol | 30 | 60-105 | 47-128 |
| 2,4-Dinitrotoluene | 30 | 72-113 | 48-133 |
| Hexachlorobenzene | 30 | 67-127 | 50-127 |
| Pentachlorophenol | 30 | 54-132 | 30-146 |
| Total Cresols | 30 | 37-76 | 26-114 |

| PRECISION AND ACCURACY OBJECTIVES | | | |
|---|---|---|---|
| **Parameters** | **Precision (Relative Percent Difference)** | **Accuracy % of Spike Recovery** | |
| **TCLP Pesticides** | **LCS/LCSD** | **LCS** | **MS** |
| Endrin | 25 | 80-151 | 58-148 |
| Gamma-BHC | 25 | 78-124 | 55-125 |
| Heptachlor | 25 | 71-139 | 55-134 |
| Heptachlor Epoxide | 25 | 75-124 | 35-132 |
| Methoxychlor | 25 | 64-142 | 43-165 |
| **TCLP Herbicides** | **LCS/LCSD** | **LCS** | **MS** |
| 2,4,5-TP | 30 | 70-144 | 78-146 |
| 2,4-D | 30 | 57-151 | 41-171 |
| **RCRA Characteristics** | | **LCS** | **MS** |
| Ignitability | 35 | NA | NA |
| Corrosivity | 35 | NA | NA |
| Reactive Sulfide | 35 | 66-109 | 66-109 |
| Reactive Cyanide | 35 | 7-12 | 2-20 |
| **WATER MATRICES** | | | |
| **Total PCBs** | | **LCS** | **MS/MSD** |
| Aroclor 1016 | 30 | 25-145 | 25-145 |
| Aroclor 1221 | NA | NA | NA |
| Aroclor 1232 | NA | NA | NA |
| Aroclor 1242 | NA | NA | NA |
| Aroclor 1248 | NA | NA | NA |
| Arclor 1254 | NA | NA | NA |
| Aroclor 1260 | 30 | 30-145 | 30-145 |
| **WIPE SAMPLES** | | | |
| **Total PCBs** | | **LCS** | **MS/MSD** |
| Aroclor 1016 | NA | 60-144 | NA |
| Aroclor 1221 | NA | NA | NA |
| Aroclor 1232 | NA | NA | NA |
| Aroclor 1242 | NA | NA | NA |
| Aroclor 1248 | NA | NA | NA |
| Arclor 1254 | NA | NA | NA |
| Aroclor 1260 | NA | 60-142 | NA |
| Note: Laboratory-specific precision and accuracy objectives are updated on an annual basis. Updated values will be provided when they become available. | | | |

| SURROGATE PERCENT RECOVERY CRITERIA FOR ORGANIC ANALYSES | | |
|---|---|---|
| **Compounds** | **TCLP Percent Recovery Limits** | **Solid Percent Recovery Limits** |
| **VOCs** | | |
| 4-Bromofluorobenzene | 85-123 | 85-120 |
| 1,2-Dichloroethane-d4 | 66-123 | NA |
| Toluene-$d_8$ | 81-118 | 85-115 |
| **SVOCs** | | |
| Phenol-$d_5$ | 10-35 | 40-100 |
| 2-Fluorophenol | 14-53 | 35-105 |
| 2,4,6-Tribromophenol | 45-124 | 35-125 |
| Nitrobenzene-d5 | 38-96 | 35-100 |
| 2-Fluorobiphenyl | 41-95 | 45-105 |
| Terphenyl-$d_{14}$ | 42-127 | 30-125 |
| **Pesticides and PCBs** | | |
| Tetrachloro-m-xylene | 63-132 | 70-125 |
| Decachlorobiphenyl | 71-137 | 55-130 |
| **Herbicides** | | |
| DCAA | 25-153 | NA |
| Note: Laboratory-specific surrogate compound recovery limits are updated on an annual basis. Updated values will be provided when they become available. | | |