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SAMPLING AND ANALYSIS PLAN SUPPLYSIDE AND FORRESTAL LANDFILLS NS GREAT  
LAKES IL  
5/1/2005  
TOLTEST, INC

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**ENVIRONMENTAL JOB ORDER CONTRACT  
NO. N68950-00-D-0200  
DELIVERY ORDER NO. 0102**

**SAMPLING AND ANALYSIS PLAN  
SUPPLYSIDE AND FORRESTAL LANDFILLS  
NAVAL STATION GREAT LAKES  
GREAT LAKES, ILLINOIS**

**PREPARED FOR**



**DEPARTMENT OF THE NAVY  
NAVAL STATION GREAT LAKES  
ENVIRONMENTAL DEPARTMENT  
BUILDING 1-A, 201 DECATUR AVENUE  
GREAT LAKES, ILLINOIS 60088-5600**

**SUBMITTED  
MAY 2005**

**BY**

***TOLTEST* INC.**

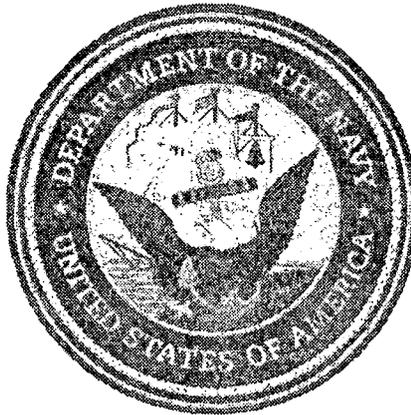
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**TOLTEST PROJECT NO. 73775.01**

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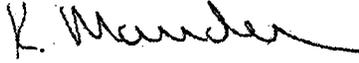
**CONTRACT NO. N68950-00-D-0200  
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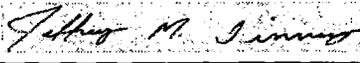
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**TolTest, Inc.  
1000 S. Northpoint Boulevard  
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*TolTest, Inc. hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under this contract is complete, accurate, and complies with all requirements of the contract.*

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## TABLE OF CONTENTS

<u>Section</u>	<u>Page No.</u>
<b>1.0 Project Description</b> .....	<b>1</b>
1.1 Introduction .....	1
1.2 Project Sampling Objectives .....	1
1.3 Data Quality Objectives.....	1
<b>2.0 Preparation for Sampling</b> .....	<b>3</b>
2.1 Training Requirements .....	3
2.2 Pre-Sampling Tasks.....	3
2.3 Sampling Locations .....	3
2.4 Project Target Parameters and Intended Data Usage .....	4
<b>3.0 Sampling Procedures</b> .....	<b>5</b>
3.1 Sampling Procedures .....	5
3.2 QC Sample Procedures .....	5
3.3 Sample Disposal .....	5
3.4 Sample Identification System.....	5
3.4.1 QC Sample Identifiers .....	6
3.5 Field Activity Documentation/Logbook.....	6
3.6 Sample Containers, Sample Preservation, and Maximum Holding Time.....	6
3.7 Decontamination Procedures.....	6
3.8 Rinse blanks.....	7
<b>4.0 Custody Procedures</b> .....	<b>8</b>
4.1 Field Custody Procedures.....	8
4.2 Sample Packaging and Shipment Procedures.....	8
<b>Appendix A Standard PWC Requirements for Toxicity Characteristic Leaching Procedures (TCLP) Analysis Listing</b>	
<b>Appendix B L1 &amp; L2 Testing Protocol</b>	



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## 1.0 PROJECT DESCRIPTION

### 1.1 Introduction

TolTest, Inc. (TolTest) has prepared this Sampling and Analysis Plan (SAP) for the Monitoring Well Installation and Confirmatory Sampling at the Supplyside and Forrestal Landfills located at Naval Station Great Lakes (NSGL), Great Lakes, Illinois under Contract #N68950-00-D-0200, Delivery Order No. 0102. This SAP describes the field activities to be performed and defines the procedures and methods that shall be used to collect field measurements and samples. It also discusses quality assurance/quality control (QA/QC) samples, and the requirements for sample chain of custody, documentation, and shipping.

This project includes furnishing all labor, transportation, supervision, material and equipment, to perform the operations in connection with the well excavation, sampling, and analysis associated with this delivery order. Fieldwork will be conducted as described in this SAP and in the Work Plan (WP). Quality assurance objectives for sampling and analysis are addressed in the Quality Assurance Project Plan (QAPP).

### 1.2 Project Sampling Objectives

The sampling objectives are to collect samples for disposal characterization for the soil cuttings generated during well installation and one year of quarterly groundwater sampling.

### 1.3 Data Quality Objectives

Data Quality Objectives (DQOs) are qualitative and quantitative statements specifying the quality of the data required to support decisions made during interim measures cleanup, and are based on the end uses of the data to be collected.

The primary DQOs for sampling described in this SAP are to produce data of sufficient quality and quantity to characterize and evaluate the method of disposal for the soil cuttings. The additional DQOs are for sampling and analyzing on a quarterly basis for one year, groundwater from 11 monitoring wells installed at the Supplyside and Forrestal Landfills. The data collected for disposal characterization must be of acceptable quantity and quality to demonstrate compliance with established Resource Conservation and Recovery Act (RCRA) requirements and/or specific disposal facility requirements. These objectives will be achieved by controlling sample collection, sample custody, sample analysis, sample data review, and data reporting. Sample collection procedures are described in Section 3.0 of this plan.

Sampling and analytical methods will be consistent with standard methods outlined by the United States Environmental Protection Agency (USEPA) and meet Contract Laboratory Program (CLP) Level III criteria. Laboratory data will be calculated and reported in a manner consistent with USEPA-approved analytical procedures and with other TolTest programs that report similar data. Data acquisition will be amenable to evaluation of precision, accuracy, representativeness, comparability, and completeness as discussed in Section 3.0 of the QAPP.



If the laboratory is unable to meet these reporting goals, TolTest will contact the Laboratory Project Manager to discuss corrective action measures. If after implementation of corrective action measures the laboratory is still unable to meet project reporting goals, TolTest will contact the Contracting Officer (CO) to discuss resolution options.



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## 2.0 PREPARATION FOR SAMPLING

This section includes procedures and steps to be followed prior to sampling and includes training requirements, pre-sampling tasks, sampling locations, analytical requirements, and project target parameters and intended data usage.

### 2.1 Training Requirements

Personnel responsible for collecting field samples will be required to read this SAP and will be familiar with all required methods and procedures. Personnel in charge of evaluating, and reviewing the laboratory field data must have a working knowledge of the analytical methods employed.

All field personnel will be trained as described in the Health and Safety Plan (HASP). Required training includes the following:

- Occupational Safety and Health Administration (OSHA) 40-hour Hazardous Waste and Emergency Response Training per 29 Code of Federal Regulations (CFR) 1910.120, updated by annual 8-hour refresher training.
- OSHA 8-hour supervisor's training course in Hazardous Waste Site Safety per 29 CFR 1910.120(e) (field management personnel only).
- Site-specific training.
- Respiratory training.

### 2.2 Pre-Sampling Tasks

Prior to sample collection, the following tasks will be completed:

- Review information, such as the WP, HASP, QAPP, previous site characterization reports, disposal records, etc., to gain general knowledge of the potential materials to be encountered.
- Inventory all supplies daily to determine if additional sampling equipment is needed.
- Obtain all necessary documentation materials, including, field logbooks, sample labels, chain of custody forms, etc.
- Confirm that utilities have been marked prior to well installation activities.

### 2.3 Sampling Locations

#### Supplyside Landfill

After the installation of the 7 groundwater monitoring wells, the soil from the borings will be analyzed utilizing the Standard PWC Requirements for Toxicity Characteristic Leaching Procedure (TCLP) Analysis in order to characterize the material for disposal (**Appendix A**). A single composite sample will be taken from the cuttings.



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After installation and development of the groundwater monitoring wells, groundwater samples will be collected on a quarterly basis for one year. Each sample will be sampled utilizing L1 & L2 sampling protocols (**Appendix B**).

*Forrestal Landfill*

After the installation of the 4 groundwater monitoring wells, the soil from the borings will be analyzed utilizing the Standard PWC Requirements for Toxicity Characteristic Leaching Procedure (TCLP) Analysis in order to characterize the material for disposal. A single composite sample will be collected for the cuttings.

After installation and development of the groundwater monitoring wells, groundwater samples will be obtained on a quarterly basis for one year. Each sample will be sampled utilizing L1 & L2 sampling protocols.

**2.4 Project Target Parameters and Intended Data Usage**

Intended data usages are to characterize and properly dispose of soil cuttings generated from the borings and evaluate the presence of potential contamination of groundwater from landfill activities. Groundwater analytical results will be compared to IEPA L1 & L2 testing protocols. Analytical requirements are discussed further in the QAPP.

All analytical data will be presented to the NSGL Environmental team who will determine any follow up tasks.



### **3.0 SAMPLING PROCEDURES**

The sampling procedures to be used will be consistent with the purpose of this project. This section outlines procedures for obtaining soil samples from the installation of the groundwater monitoring wells, and groundwater samples from the developed groundwater monitoring wells.

#### **3.1 Sampling Procedures**

All soil samples will be composite and groundwater samples will be grab samples. Sampling personnel will wear appropriate protective gloves while handling the samples.

Soil cuttings from each landfill will be placed in a designated roll off and upon completion of all installation activities, a composite sample will be collected from each roll off.

Groundwater observed during well installation will be collected in 55-gal drums and a grab sample taken.

All samples will be labeled and tagged with the sampler's name, time and date of collection, sample number, and analytical parameter. All samples collected in the field will be placed directly on ice in a cooler to await shipping to the off-site laboratory.

#### **3.2 QC Sample Procedures**

Quality Control will be consistent with standard methods outlined by the United States Environmental Protection Agency (USEPA) and meet Contract Laboratory Program (CLP) Level III criteria. Laboratory data will be calculated and reported in a manner consistent with USEPA-approved analytical procedures and with other TolTest programs that report similar data. The NSGL Environmental team will approve significant changes in the location or number of samples.

#### **3.3 Sample Disposal**

Samples will be retained at the laboratory under control of the sample custodian for 30 days after analysis. Upon approval by the TolTest PM, the samples will be disposed following applicable state and federal regulations.

#### **3.4 Sample Identification System**

The sample identification system consists of site-specific sample numbers. The first letter 'S' is short for Supplyside Landfill followed by the groundwater monitoring well number. A first letter 'F' will be used for Forrestal Landfill. Following a hyphen, the next letter will represent either a soil sample (S), groundwater sample (G), or a liquid waste sample (L). A two-digit unique sample number follows this letter. Following a second hyphen, the next six numbers will represent the date the sample was collected (ex. 040305 = April 3, 2005). Field duplicates will use the letters FD in place of the unique sample number.

An example of a sample identifier would be as follows: S01-S01-040305, or Supplyside Landfill,



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Groundwater Monitoring Well 01, soil sample number 01, sampled on April 3, 2005. The sampling personnel will log the location of each sample for cross-reference purposes.

### 3.4.1 QC Sample Identifiers

The first set of three characters, representing the landfill, will be followed by two characters representing the QC designation (TB = trip blank, RB = rinse blank) followed by six numbers representing the month, day, and year (ex. 040305 = April 3, 2005). An example of a sample identifier would be as follows: S01-RB040305, or a rinse blank obtained on April 3, 2005 at Supplyside Landfill.

### 3.5 Field Activity Documentation/Logbook

All information pertinent to the environmental samples, including specific field collection data and laboratory observations will be recorded in permanently bound notebooks. TolTest's contract laboratory also employs a specific information management system to assist in tracking the progress of each sample through the analytical process.

### 3.6 Sample Containers, Sample Preservation, and Maximum Holding Time

All samples collected will be preserved according to USEPA and/or Contracting Officer protocols established for the parameters of interest. Appropriate measures will be taken to ensure that storage requirements with respect to temperature are maintained during transport to the laboratory and prior to login and storage at the laboratory. The contract laboratory will supply the appropriate sample containers for each sample matrix and parameter. All sample containers will be certified clean, EPA-approved, laboratory-prepared glass sample jars with Teflon®-lined lids. Samples will be analyzed in the laboratory on a standard turn-around-time (TAT) of 21 days unless expedited TAT is requested.

### 3.7 Decontamination Procedures

Any soil sampling equipment that is not disposable will be decontaminated according to the following procedures:

- Wash in soapy water (alconox or equivalent)
- Rinse in potable water
- Rinse with 10% nitric acid
- Rinse with reagent grade or deionized water
- Air dry

The amount of decontamination water generated for each sampling event will be kept to a minimum, generally less than two gallons per each sampling event. Decontamination water will be poured onto soil that is being shipped off-site for disposal. The small amount of water will be soaked up by the soil, thus eliminating the need to characterize and dispose of another waste stream.



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### 3.8 Rinse blanks

Rinse blanks will be obtained during well installation activities only to demonstrate the effectiveness of the equipment decontamination process. Rinse blanks are obtained by pouring reagent grade or deionized water over the sampling equipment and collecting it in a clean pan or bowl. This water is then decanted into sample containers and analyzed for the parameters appropriate to the site. One rinse blank will be obtained for every 20 or less regular soil samples.



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## 4.0 CUSTODY PROCEDURES

Sample custody is addressed in three parts: field sample collection, laboratory analysis, and final evidence file.

### 4.1 Field Custody Procedures

Field logbooks will provide the means of recording sampling activities. Entries will be described in as much detail as possible so that sampling personnel or others could reconstruct a particular situation without reliance on memory. Field logbooks will be bound 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. The project-specific document number will identify each logbook.

The title page of each logbook will contain the following:

- Person to whom the book is assigned
- Logbook number
- Project name
- Project start date
- End date

Entries into the logbook will contain a variety of information. At the beginning of each entry, the dates, start time, weather, names of all project team members present, and level of personal protection being used will be entered. The names of visitors to the site and the purpose of their visit will also be recorded in the field logbook.

Measurements made and samples collected will be recorded in the logbook. All entries will be made in ink, signed, and dated and no erasures will be made. If an incorrect entry is made, the information will be crossed out with a single strike mark signed and dated by the sampler. Whenever a sample is collected or a measurement is made, a detailed description of the location of the station will be recorded. All equipment used to make measurements will be identified, along with the date of calibration. The equipment used to collect samples will be noted along with the time of sampling, sample description, depth at which the sample was collected, volume and number of containers. The number of the photographs taken of the station, if any, will also be noted.

### 4.2 Sample Packaging and Shipment Procedures

The sample packaging and shipment procedures summarized below will ensure that the samples will arrive at the laboratory with the chain of custody intact.

- a. The field sampler is personally responsible for the care and custody of the samples until they are transferred or properly dispatched. As few people as possible should handle the samples.



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- b. All bottles will be identified by use of sample labels with sample numbers, sampling locations, date/time of collection, sampler's initials and type of analysis.
  - c. A properly completed chain of custody form will accompany samples. The sample numbers and locations will be listed on the chain of custody form. When transferring the possession of samples, the individuals relinquishing and receiving will sign, date, and note the time on the record. This record documents transfer of custody of sample from the sampler to the permanent laboratory.
  - d. Samples will be properly packaged on ice at 4° C for shipment and dispatched to the laboratory for analysis with a separate signed custody record enclosed in and secured to the inside top of each sample box or cooler. Shipping containers will be secured with strapping tape and custody seals for shipment to the laboratory. The preferred procedure includes use of a custody seal attached to the front right and back left of the cooler. The custody seals are covered with clear plastic tape. The cooler is sealed with strapping tape in at least two locations.
  - e. The chain of custody record identifying the contents will accompany all shipments. The original record and yellow copies will accompany the shipment and the pink copies will be retained by the sampler for returning to the project file.
  - f. Samples will be transported by overnight carrier to the laboratory the same day the samples are collected in the field.

Sampling Analysis Plan  
Contract No. N68950-00-D-0200  
Supplyside and Forrestal Landfills  
Naval Station Great Lakes, Great Lakes, Illinois  
TolTest Project No. 73775.01

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## APPENDIX A

### STANDARD PWC REQUIREMENTS FOR TOXICITY CHARACTERISTIC LEACHING PROCEDURES (TCLP) ANALYSIS LISTING

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**Standard PWC Requirements for  
Toxicity Characteristic Leaching Procedures (TCLP) Analysis**

- RCRA Metals (As, Ba, Cd, Cr, Hg, Pb, Se, Ag) 6010
- Volatile Organic Compounds (VOC's) 8260  
w/ extraction for Volatiles (ZHE)
- Semi-Volatile Organic Compounds (SVOC's) 8270
- Density, Color, and Odor
- BTU/Lb
- Flash Point (cc) 1010
- pH
- Reactive with Acid, Base, and Water 7.3.1
- Reactive Sulfide and Cyanide 7.3.2
- Phenolics (Low Level Detection)
- Polychlorinated Biphenyls (PCB's) 8080
- Water Content (Karl Fisher)
- Paint Filter Test 9095
- Organochlorine Pesticides 8080
- Chlorinated Herbicides 8150

Sampling Analysis Plan  
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**APPENDIX B**  
**L1 & L2 TESTING PROTOCOL**



**ILLINOIS ENVIRONMENTAL PROTECTION AGENCY  
GROUNDWATER – LIST L1**

<b>TEST PARAMETERS</b>	<b>METHODS</b>
RCRA Metals: As, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Ag, An by ICP	200.7
Pb by GFAA	239.2
Cyanide	335.2
Oils	413.1/413.2
TDS	160.1
NH3 – Ammonia	350.1/350.2
BOD	405.1
Phosphorus	365.1/365.2
Cr-Hex	218.4/218.5
Fluoride	413A
Phenols	420.1
TSS	160.2
Bacterial – Fecal Coliform	909C
Hg – Mercury	245.1/245.2/245.5
COD	410.1/410.2

**ILLINOIS ENVIRONMENTAL PROTECTION AGENCY  
GROUNDWATER – LIST L2**

<b>TEST PARAMETERS</b>	<b>METHOD</b>
VOC 8260	8260
VOC 8260 extended list	8260
SVOC 8270 w/PNA SIM	8270
Herbicides 8151	8151
Chlorinated Pesticides 8081	8081
PCB's 8082	8082
N/P Pesticides 507	507
Carbamates Pesticides 531.1 (Subbed out)	531.1
23 TAL Metals (TACO Limits) 6010-7841-7471	6010/7841/7471
NH3 – Ammonia	350.1/350.2
Bacterial – Fecal Coliform	909C
COD	410.1/410.2
Chloride	325.2/325.3
Cyanide	335.2
Fluoride	413A
Nitrate	352.1
Oil, Hexane Soluble	1664
Phenols	420.1
Phosphorus	365.1/365.2
Sulfate	375.4
TDS	160.1
TOC	415.1
TSS	160.2