WASTE ANALYSIS PLAN

US ECOLOGY – BEATTY, NV

APRIL 1, 2004

(Revised 11/17/05)

SECTION 8

WASTE ANALYSIS PLAN

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8.1.0 INTRODUCTION

The purpose of this Waste Analysis Plan (WAP) is to document the necessary sampling methodologies, analytical techniques, and overall procedures which are undertaken for hazardous wastes (hereinafter "waste") which enter the US Ecology – Beatty, NV (USEN) Facility for treatment, storage and/or disposal. Types of treatment and disposal activities include evaporation, stabilization, crushing, size reduction, and landfilling of hazardous and non-hazardous wastes. Tanks and surface impoundments providing management for liquids and container management operations are also a part of the facility's operations. Specifically and in accordance with 40 CFR §264.13(b), this plan delineates the following:

- The parameters for which each hazardous waste will be analyzed and the rationale for the selection of these parameters [i.e.; how analysis for these parameters will provide sufficient information on the properties of the waste (Section 8.3.0)];
- The test methods which will be used to test for these parameters (Section 8.3.0);
- The sampling method which will be used to obtain a representative sample of the waste to be analyzed (Section 8.2.0);
- The frequency with which the initial analysis of the waste will be reviewed or repeated to assure the analysis is accurate and up to date (Section 8.4.3);
- The waste analyses hazardous waste generators have agreed to supply (Section 8.4.2);
- The methods which will be used to meet the additional waste analysis requirements for specific waste management methods as specified in 40 CFR §§264.17, 264.314, 264.341, and 268.7 (Section 8.6.0).
- For surface impoundments exempted from land disposal restrictions under 40 CFR §268.4(a), the procedures and schedules for:
  - (i) the sampling of impoundment contents (na);
  - (ii) the analysis of test data (na); and
  - (iii) the annual removal of residue which does not meet the standards of 40 CFR Part 268, Subpart D (na);
- The procedures which will be used to inspect and, if necessary, analyze each movement of hazardous waste received on-site to assure it matches the identity of the waste designated on the accompanying manifest or shipping paper, including:
  - (i) the procedures which will be used to determine the identity of each movement of waste managed at the facility (Section 8.5.1); and the sampling method which will be used to obtain a representative sample of the waste to be identified (Section 8.2.0)
  - (ii) the procedures which will be used to determine whether a hazardous waste generator or treater has added a biodegradable sorbent to the waste (Section 8.4.1).

It is the policy of USEN that all wastes managed on-site will be subjected to these procedures. This is to help ensure the facility will be in compliance with applicable permits and regulations. For the purpose of implementation and performance of this WAP, "USEN" means any US Ecology - Nevada and any other (USE) laboratory, subsidiary/affiliated laboratory, or designated contract laboratory.

USEN maintains, as part of its WAP-required records, generator-supplied and internally developed information, decisions and forms. This documentation may be received, stored, transmitted, and/or retrieved electronically in addition to, or in lieu of, hard (paper) copy.

"Facility Management" includes the Facility / General Manager and the managers of the major facility functions, such as Laboratory, Technical, Operations, or Environmental, and their designees.

References are made throughout this plan to regulations promulgated by the EPA regarding waste analysis requirements for hazardous waste management facilities. These requirements are generally found in 40 CFR Part 264, Subpart B, which has been adopted by reference in the rules of the Nevada Division of Environmental Protection (NvDEP). Unless otherwise specified herein, cited federal regulations have been adopted by reference by the NvDEP.

USEN strives to maintain, at all times, complete compliance with the hazardous waste regulations. Because new testing requirements, such as those promulgated under the land disposal restrictions (LDRs), often become immediately and / or effective prior to the time WAP revisions can be formally made and approved by all appropriate agencies, it is impossible to have in place an approved WAP meeting all the conditions of the immediately effective requirements. In light of these facts, USEN will have in place a written protocol specifying the new testing and frequency requirements prior to processing of the regulated waste. USEN may also periodically revise the protocol to reflect scientific advances, additional land ban requirements, and/or other pertinent factors. If WAP revisions are necessary because of a new regulatory rule, they will be submitted within 90 days after their effective date.

8.2.0 SAMPLING METHODOLOGY

Sampling is performed by the generator (including their representatives) to make the initial waste determination and/or by USEN to identify incoming waste shipments. Specific sampling procedures are dependent on both the nature of the material and the type of containment. This section presents sampling methodologies to be utilized by USEN personnel when collecting representative samples for analysis pursuant to 40 CFR §§264.13(a)(1), 264.13(b)(3), and 264.13(c)(2). Waste generators are referred to 40 CFR Part 261, Appendix I for sampling procedures.

Typically, when a waste shipment arrives on-site for treatment, storage, or disposal, a determination has already been made by the generator that the waste is either:

- a listed hazardous waste, as defined in Subpart D of 40 CFR Part 261;
- a characteristic hazardous waste, as defined in Subpart C of 40 CFR Part 261;
- a solid waste which is not hazardous waste, as defined by 40 CFR §261.4(b).

The waste characterization on the Waste Product Questionnaire[1] (WPQ) provides information concerning the distribution, as well as the nature of the waste components. Therefore, as described in EPA document SW-846, sampling is appropriate (e.g., vertical compositing). The waste shipment is inspected, sampled, and/or analyzed to ensure it matches the overall identity of the waste designated in the pre-acceptance paperwork (WPQ etc.). If examination indicates strata in the waste, then each layer may be composited in proportion to its estimated volume or analyzed separately.

The sampling equipment and procedures described in this WAP represent USEN's recommended sampling protocol for general types of waste materials and containment. Specific waste materials or shipments may require different sampling techniques. Therefore, deviations from the recommended protocol do not constitute violations of acceptable sampling practices or conditions of this WAP.

8.2.1 SAMPLING MATERIALS

At a minimum, the methodologies utilized for specific materials correspond to those referenced in 40 CFR Part 261, Appendix I. The sampling methods and the equipment utilized for different materials are presented in the following table.

Table 1: Sampling Methods and Equipment

Material	Equipment
Extremely viscous liquid	Thief or COLIWASA/tube sampler
Crushed or powdered material	Tube sampler, trier, auger, scoop, or shovel
Soil-like material	Tube sampler, trier, auger, scoop, or shovel

[1] Also commonly referred to as a waste profile.

Table 1: Sampling Methods and Equipment	
Material	**Equipment**
Fly ash-like material	Tube sampler, trier, auger, scoop, or shovel
Containerized liquids	COLIWASA/tube sampler, weighted bottle, cup, bomb, or tank sampling port
Steel or Large Solid Objects (e.g.; tanks, process devices)	Drill

8.2.2 SAMPLING OF CONTAINERS

USEN has instituted specific methodologies for taking samples from various container types. The type of container may be stationary or transportable, such as drums, tanks, portable transport units (e.g., tote bins, roll-off boxes, lugger boxes), tankers, or dump-type trucks. Sampling devices are selected depending on the size and type of the container and on the specific material involved.

Access to a container influences the location from which samples can be taken. Specific sampling procedures are dependent on both the distribution and the nature of the waste components in the container. Due to these variations, minor modifications may be needed to the recommended sampling procedure in order to obtain a sample. Although preferential sampling devises are noted below, any device from Table 1, agency guidance, or under Lab Manager's direction may be used.

8.2.2.1 Containers and Tanks

Sampling small containers (e.g., drums, cartons, & other small units) varies with the nature of the waste. For flowable materials, the sampling device of choice is a Coliwasa or tubing. For non-flowable wastes, a tubing or trier is typically used to obtain a representative sample.

Large containers and tanks of flowable or solid materials may be either stationary or mobile. Liquids may be sampled with Coliwasa, tubing, weighted bottle, or bomb sampler to allow for sampling at various depths. Tank sampling may be accomplished through ports or taps located along the side of the tank or sampling through pumps or fitings. These samples may be composited to yield a representative sample. Light, dry powders and granules may be sampled with a scoop, tubing or thief. Heavier solids may be sampled by trier, shovel, or by coring with heavy tubing. Tank sediments may be sampled from the bottom-sampling valve when not readily sampled from above.

8.2.3 PROCESS IN-LINE SAMPLING

The variability of the waste stream at any point in a treatment process is first determined from knowledge of the process, from the results of a preliminary investigation of the waste stream, or from analytical testing. Sampling frequency is based upon sampling from appropriate in-line sampling points in the process stream and potential sample compositing for analysis. The samples can vary in size, depending on the flow rate of the stream.

8.2.4 GENERAL CONSIDERATIONS

In the operation of a hazardous waste management facility a number of issues become apparent, which are not necessarily anticipated in regulations or standard methods. Below are sections addressing several issues of this nature. It is USEN's intention to address these issues in this WAP to provide insight into the developed techniques.

8.2.4.1 Disposition of Samples

Samples of waste streams are commonly disposed in the same fashion as the waste stream itself. If, for example, a waste is approved for stabilization and landfilling, the sample may be stabilized (e.g.; in the lab, in containers, or mix bins) and subsequently disposed. Samples received, which are unauthorized for management on-site, are typically returned to the generator (or representative) or aggregated (under the provisions of 40 CFR §262.34) and sent off-site to an authorized facility for subsequent

management or managed on-site. To facilitate sample management, samples approved for the same management processes may be consolidated (e.g.; in tanks or containers) and managed under the provisions of 40 CFR §262.34. Should samples arrive on-site from an identified generator, but without proper waste identification, USEN will attempt to contact the generator to identify the associated waste and appropriate hazardous waste codes, if any. If a sample identity cannot be resolved, or if the generator of the waste sample cannot be determined, USEN will attempt to identify the generator and send it back or such samples may be managed as on-site generated waste and subject to classification as characteristic wastes (D001 through D043) for the characteristics / contaminants reasonably expected to be in the waste.

8.2.4.2 Frozen Samples

Samples of frozen loads are defrosted prior to analysis (Note: to speed up fingerprinting, samples may be heated under the vent hood). In some cases, it may be required to defrost entire loads or, for drum loads, 10% of the load, to facilitate sampling or to inspect for free standing liquids. As an alternative, and if conditions warrant (e.g., anticipated freezing conditions) a sample of waste being delivered may be taken at the point of generation for the purpose of satisfying the requirements of this plan. Such samples will be taken from either the load or place of generation or accumulation. If this procedure is utilized, the load will also be visually inspected on-site for Physical Appearance to check against obvious differences in waste type.

8.2.4.3 Sampling Safety Precautions

Sampling personnel wear personal protective equipment (PPE) (e.g.; eye, foot, hand, head & respiratory protection & protective clothing), as necessary. Load receipt personnel check the manifest or other shipping or pre-acceptance information to be familiar with the material and ensure necessary precautions are taken.

8.2.4.4 Remote Project Sampling and/or Analysis

In cases where USEN directs off-site sampling (e.g.; a rail transfer station) or analysis for the purpose of having that sample or analysis meet the requirements of the USEN provisions (e.g., Fingerprint Testing, etc.), USEN will instruct an on-site representative in the requirements of this WAP or a USE representative will be at the project site to ensure compliance with the provisions of this WAP.

8.2.4.5 Sampling of LDR Waste

When waste is treated for the purpose of meeting LDR treatment standards or, for LDR confirmation testing, samples are taken on a grab sample basis in conformance with EPA guidance for non-wastewater concentration based treatment standards (see 40 CFR §268.40(b)). Any grab sample must pass the appropriate treatment standards in order for compliance to be assured. When there is any uncertainty in achievement of treatment standards, the procedures for re-sampling are utilized.

8.2.4.6 Interim Processing Loads

Following treatment, the treated waste may be sent to the landfill for final disposal and “staged” in the landfill while applicable verification testing is performed as described in Section 8.3.0. Staged material may be staged for up to 10 working days unless the verification samples need to be sent to an off-site lab for analysis. If samples require off-site analysis, materials may be staged for up to 30 days while awaiting verification results.

8.2.4.7 Re-Sampling

Wastes treated on- or off-site and/or staged as interim processing piles to await analytical results, may need re-sampling for confirmatory (verification) analyses, especially to account for time-of-treatment effects. Unless, the waste is being re-sampled to verify

treatment achievement over time (in which case, only 1 sample is required), re-samples will consist of two (2) grab samples which may be composited. If results from the initial sample indicate a failure to meet LDR treatment standards, the (composited) samples shall either be taken to verify the results of the initial sample or the waste shall be retreated. If the (composited) re-samples fail, the waste is classified as not passing the LDR standard. If the (composited) re-samples pass, the waste meets treatment standards and may be disposed.

8.2.4.8 Lab Packs

Lab pack material is generally accepted subject to a contents review. Lab pack materials which are proposed to be managed on-site are inventoried, and the inventories are sent to the facility for review. The inventories are reviewed for incompatibility of contained materials, land disposal restrictions, and utilization of appropriate packing materials. Since lab packs contain many small quantities of individual materials, they are not sampled, but are inspected to ensure adequate packing material is present and the drum is at least 90% full (if destined for direct landfilling). If necessary, absorbent material may be added until the lab pack is 90% full.

8.2.4.9 Management of Residues[2]

Management of waste residues and other miscellaneous equipment or debris originating from on-site management areas or activities may be managed as on-site generated wastes under the conditions of Section 8.5.1 and classified according to their hazardous waste characteristics, if any. However, where an on-site generated waste is derived from a specific identifiable waste, it will be managed in accordance with the approved management conditions for that waste (e.g.; a spill of F002 material may be managed as F002), or if precluded by permit, regulation, or operational conditions, it may be subject to alternative management, as appropriate. Stabilization residues and other treatment residues will carry the waste code(s) and will be managed in the same manner as the last waste stream in the unit. For example, sludges removed from a stabilization mix bin which last received K061 wastes would carry the K061 code and must meet appropriate treatment standards for K061 before being land disposed on-site, if that were the selected disposal option. Residues from waste treatment units will carry the waste codes and be managed consistent with the waste last managed in the unit. The applicable waste codes and corresponding waste management methods will be based upon the “First In, First Out” principle. Residues from truck washouts and equipment washes conducted in the truck wash bay, stabilization process, or in other areas are captured and managed either with the materials being managed at those locations or as on-site generated waste. Residues in or from “RCRA Empty” containers are not subject to this WAP since they are not solid or hazardous wastes.

8.2.4.10 Rejected Load or Rejected Partial-Load, and Re-Manifesting Procedures

Manifest discrepancies are resolved, if possible, by contacting the generator, transporter, or their representative to obtain the needed information. There are many cases where entire loads or portions of loads may be rejected (e.g., a bulk load contains un-profiled or unacceptable[3] materials,...). The regulations (40 CFR Parts 264, Subpart E - *Manifest System, Recordkeeping, and Reporting*) do not give instructions on how materials are rejected or re-manifested. The exact manifesting procedures will be determined considering the variables associated with any particular rejection, but, in general, the following is a summary of the typical considerations associated with rejecting materials.

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[2] Residues is used to mean solids and liquids contained or generated in sumps, truck & equipment washing units, tank cleaning, equipment maintenance, repair, or replacement, pipes, valves, filters, filter media, miscellaneous samples, and personal protective equipment.

[3] The material may be "unacceptable" for many reasons, only one of which is due to permit constraints. The term "unacceptable" is not meant to mean unacceptable due to permit constraints, but to also cover those materials for which the facility has not developed the expertise or process in managing the waste and for other causes.

For all shipments, some of the variables are: 1) if the manifest has been or has not been signed by USEN, and 2) if the entire load or just a portion of the load is being rejected. In either case, two (2) options are available. The 1st option includes sending material out on the original manifest noting in Block 19 that the load is being rejected back to the point of origination or the alternate facility designated on the manifest or verbally designated. If the manifest has not already been signed, the original manifest may be utilized by either striking through the original TSDF destination and inserting the new (alternate) destination or by simply noting in block 19 the new destination. If the manifest has been signed, an additional line may be struck through USEN's signature on the manifest.

A 2nd option is to generate a new manifest. This procedure is less preferable since USEN must complete the Generator's section of the manifest and, in this case, language may be inserted in blocks J, K, or 15 indicating USEN is the generator **for shipping purposes only** and referencing the original manifest. This option is often useful for bulk loads for which a portion is being rejected in containers (e.g.; aerosol cans removed from a bulk load may be sent back to the generator packaged in DOT shipping containers,...) and for rejecting or forwarding on a portion of a container shipment. In either case, USEN will copy the generator notifications and/or certifications for that shipment and attach a copy to the outgoing manifest(s) rather than altering the notifications and/or certifications made by the generator.

Although not required for entire load rejections, USEN will generally keep a copy of the manifest(s), subsequently generated manifest(s), and notifications and/or certifications. In cases where the waste is being manifested back to the generator, USEN does not need to complete the LDR Notifications or Certifications since the waste is not being sent for land disposal.

8.2.4.11 Hazardous Waste Marketed as Fuel

Wastes, which qualify for energy recovery, may be marketed as hazardous waste derived fuel (HWDF). Commercial chemical products which are fuels and waste (used) oils subject to regulation under 40 CFR Part 279 are not regulated as hazardous wastes and are not covered by this WAP. Wastes managed under this WAP (e.g., hazardous wastes which are not discarded fuel products) are selected for use as HWDF generally according to the terms of the March 16, 1983 EPA enforcement policy. Although this enforcement policy has been superceded with the issuance of the BIF regulations in February 1991, the 5,000 BTU/lb minimum heat content for HWDF previously established by this policy is used as a guide in selecting wastes for HWDF. However, if the BIF to receive the HWDF has met the requirements to burn hazardous waste derived fuels with <5,000 BTU/lb, then appropriate material may be sent to that facility. Containerized (e.g.; drum quantities) wastes destined for use as HWDF may be stored to aggregate materials for consolidation into bulk loads (bulking) for off-site disposition.

8.2.4.12 Non-Hazardous Wastes (NHW)

USEN accepts wastes, which are not hazardous as defined under RCRA. Although non-hazardous wastes are not subject to RCRA WAP requirements, USEN does utilize this WAP and the procedures contained herein to review non-hazardous wastes, however, depending on the specific waste, specific sections of this WAP may not be applicable (e.g.; manifesting provisions, LDR verification of treated wastes, etc.).

8.2.4.13 Protectively-Characterized Wastes

Generators occasionally "protectively" (overly)-characterize[4] wastes sent to off-site TSDs for a variety of reasons (including public relations, legal reasons, financial incentives, lack of characterization experience, or lack of specific analytical information). USEN has analytical resources and technical personnel trained and experienced in proper regulatory / waste classification and who are capable of detecting protective-

[4] "Over-characterization" means the practice of applying waste codes or UHCs to a waste which do not regulatorily apply and/or to the practice of not applying appropriate LDR Notifications or Certifications.

classification. Examples of protective-characterization include remedial projects where soils are classified according to a specific waste characteristic (e.g., D008 - lead), but where any specific load(s) do not fail the TCLP analysis for the specific waste characteristic as a "protective" measure. USEN, where it possesses specific analytical data, process knowledge, or regulatory knowledge may properly characterize waste during the pre-acceptance or load-arrival process. Prior to disposal, USEN will complete an appropriate Notification, if deemed necessary, and/or an appropriate LDR Certification, as necessary.

8.2.4.14 Standard Profiles

"Standard profiles" may be used for waste streams which are 1) similar in physical or chemical characteristics or 2) generated by similar industries or processes. This profile designation is consistent with EPA's approach of assigning a listed waste code to similar process wastes. All the wastes within a standard profile are generally managed at USEN using the same treatment process.

USEN may develop standard profiles based on information from waste streams targeted for this process. USEN reviews the generator provided information to evaluate whether an individual waste stream is sufficiently similar in physical and/or chemical characteristics to an established standard profile. A specific waste stream may be identified as conforming to an approved standard profile by evaluating the individual waste stream information against the standard profile. The specific waste stream information must fall within the standard profile representative ranges in order to incorporate that waste stream into the standard profile.

Specific candidate waste streams, which, upon review, are identified as conforming to an existing approved standard profile will be managed under the existing waste management decision specific for that standard profile.

8.2.4.15 Trans-Shipped Wastes

Waste destined for other facilities may not be subject to this WAP since they will be subject to the waste analysis plan of the facility to which they will be forwarded. For proper segregation, the materials will be segregated into areas appropriate to the DOT Hazardous Class. For materials received at another USE affiliate company and subsequently shipped to the USEN Facility, the other facility will transmit the relevant analytical information to the facility for use in the pre-acceptance or load arrival review programs, as is appropriate.

8.3.0 ANALYTICAL RATIONALE

Waste characterization information is obtained by USEN on a WPQ. USEN obtains all the information required by 40 CFR §264.13(a)(1) [as outlined in 40 CFR §264.13(a)(2) and comment] to treat, store, or dispose of a waste. Analyses are provided by USEN to augment the waste characterization, when necessary, and to identify incoming waste shipments. Analyses are also utilized to provide data necessary for proper waste handling.

Analytical parameters are classified as Fingerprint Analyses and Supplemental Analyses.

Fingerprint Analyses – All incoming wastes are subjected to the mandatory analyses as a first step in the analytical scheme. Fingerprint analyses are performed on incoming waste shipment samples, except as noted in Section 8.5.1.1, in order to: 1) identify a waste shipment; and 2) ensure the appropriate waste management technique can be utilized. Fingerprint Analyses will also be performed on a waste sample, when necessary for pre-acceptance purposes, if the generator-supplied information is not sufficient.

Supplemental Analyses – Facility management may select additional supplemental analyses to obtain information required for efficient process control or to further evaluate a positive result from a mandatory screening test (for example, a flash point may be run to provide more specific waste data when a positive flammability potential is reported during the mandatory analysis testing).

Supplemental analyses are performed on incoming waste shipment and in-process samples as specified by this WAP or facility management to:

- Confirm and/or augment existing information on the waste;
- Further identify a waste and/or;
- Further ensure the appropriate treatment, storage, or disposal process(es) can be utilized and to provide operations information utilized for control of these processes.

Supplemental Analyses may also be performed on any waste sample, when necessary for pre-acceptance purposes, if the generator-supplied information is not sufficient.

This arrangement allows a tiered approach to waste identification, enabling USEN to structure the analyses to adequately identify the waste or to define operational parameters for various treatment processes. At a minimum, all wastes, except as noted in Section 5.1.1, are subjected to the Fingerprint Analyses as a 1st step in the analytical scheme. Supplemental Analyses are performed at the direction of facility management. The parameters which constitute the Fingerprint Analyses and Supplemental Analyses are described below and primarily consist of "standard" analytical techniques (recognized by the EPA, ASTM or other authoritative sources). In addition to the identified Fingerprint and Supplemental Analyses, USEN may utilize other "standard" analytical techniques and "unique" analyses (developed by USEN) for analysis of wastes. Such use would generally consist of monitoring operating equipment or techniques where this use does not impact regulatory decisions or reporting and, therefore, is not covered by this WAP. A summary of the analytical parameters and their usage is provided herein. Analyses are not necessarily repeated for sequential activities or movement of the same waste within the facility unless required by changes in the waste's character. Facility Management may waive specific Fingerprint or Supplemental Analyses if performing the analysis presents a safety hazard in the laboratory (e.g., organic extraction on an oxidizing waste) or if the characteristic or constituent (e.g.; UHCs) are not reasonably expected to be in the waste.

8.3.1 FINGERPRINT ANALYSES

Fingerprint Analyses consist of basic screening procedures performed to provide general waste identification. The Fingerprint Analyses is compared with the WPQ and pre-acceptance evaluation data to confirm that the waste is the same waste that was characterized during the pre-acceptance process (e.g., WPQ, manifest and/or shipping papers). These analyses may be used in conjunction with other waste analyses and information to further identify a waste and/or ensure the type of on-site management chosen is suitable for that particular waste.

The parameters and associated rationale of the Fingerprint Analyses are as follows:

- **Physical Description** (appearance) is used to determine the general properties of the waste. This facilitates comparison of the sampled waste with prior waste descriptions or samples. It is also used to verify the presence or absence of free standing liquid, as well as any obvious change in physical properties.
- **pH Screen** is undertaken to indicate the pH and, in general, the corrosive nature of the waste. pH may not apply to certain waste types, (e.g., organic wastes, oil waste, or wastes which are not water soluble).
- **Water Reactivity Screen** (Water Compatibility) is used to determine whether the waste has a potential to vigorously react with water to form gases or other products, or whether it generates significant heat. This testing does not apply to wastes that are already in contact with excess water, or for which sufficient analytical data exist that indicate no potential reactivity with water.
- **Flammability Screen** is used to indicate the fire-producing potential of the waste. This testing can be applied to all waste liquids, semi-solids or solids. It is used to identify obvious changes in a waste such as flammable waste substituted for an inert solid. This test is not performed on solids unless the waste contains free liquids.
- **Cyanide Screen** is used to indicate whether the waste has the potential to produce hydrogen cyanide gas upon acidification below pH 2. It is not required if the pH of the waste is < 9.0, if the waste is not water-soluble, or if the waste is organic. Wastes

containing total releasable cyanide with concentrations < 250 ppm are considered non-reactive.

- **Sulfide Screen** is used to indicate whether the waste has the potential to produce hydrogen sulfide gas upon acidification below pH 2. It is not required if the pH of the waste is < 6.0, if the waste is not water-soluble, or if the waste is organic. Wastes containing total releasable sulfide with concentrations < 500 ppm are considered non-reactive.

8.3.2 SUPPLEMENTAL ANALYSES

Supplemental Analyses are performed to further identify wastes, provide safety information, and/or to provide process control information, as directed by facility management. The results of these analyses provide additional confidence concerning the proper management methods. Most of the parameters, which constitute the Supplemental Analyses utilize the most recent standard analytical techniques recognized by EPA, ASTM and other authoritative sources or have been developed by US Ecology (USE) through its operating experience for general waste identification and / or proper waste management and which meet USE performance standards. Standard supplemental analytical parameters are identified in the following table; the referenced method or equivalent standard method will be used for analyses of these parameters.

Sample Work Up Techniques:	
Method	**Reference**
General Extractions	
EP Toxicity	1-1310A
TCLP	1-1311
Metals Acid Digestion	
Flame atomic absorption spectroscopy (AAS) or inductively coupled plasma spectroscopy (ICP)	1-3005, 3010
Microwave assisted	1-3015, 2-3030, 3-D4309, D5258
Graphite furnace atomic absorption spectroscopy (GFDAA)	1-3020
Oils, greases, or waxes	1-3031
Dissolution procedure for oils, greases, waxes	1-3040
Sludges, soils, and oils	1-3050
Microwave assisted	1-3051
Alkaline digestion	1-3060
Parr acid bomb digestion	3-E886, E926
Organic Extractions and Cleanups	
Extraction Procedure for Oily Wastes	1-1330
Organic Extraction and Sample Preparation	1-3500
Waste Dilution	1-3580, 3585
Separatory funnel liquid-liquid extraction	1-3510
Continuous liquid-liquid extraction	1-3520
Soxhlet extraction	1-3540, 3541
Sonication extraction	1-3550
Purge and Trap	1-5030
Solid phase extraction (SPE)	1-3535
Hexadecane Extraction and Screening of purgeable organics	1-3820
Alumina cleanup	1-3610, 3611
Florisil cleanup	1-3620
Silica gel cleanup	1-3630
Gel-permeation cleanup	1-3640
Acid-base partition cleanup	1-3650
Sulfur cleanup	1-3660
Sulfuric acid / permanganate cleanup	1-3665

Sample Work Up Techniques:	
Method	**Reference**
Inorganic analytical methods:	
Inductively coupled plasma atomic emission spectroscopy	1-6010, 6020
Antimony	
Atomic absorption, direct aspiration method	1-7040, 4-204.1
Atomic absorption, furnace method	1-7041, 4-204.2
Arsenic	
Atomic absorption, furnace method	1-7060, 4-206.2
Atomic absorption, gaseous hydride method	1-70614-206.3
Barium	
Atomic absorption, direct aspiration method	1-7080, 4-208.1
Atomic absorption, furnace method	1-7081, 4-208.2
Beryllium	
Atomic absorption, direct aspiration method	1-70904-210.1
Atomic absorption, furnace method	1-7091, 4-210.2
Cadmium	
Atomic absorption, direct aspiration method	1-7130, 4-213.1
Atomic absorption, furnace method	1-7131, 4-213.2
Calcium	
Atomic absorption, direct aspiration method	1-7130, 4-213.1
Atomic absorption, furnace method	1-7131, 4-213.2
Chromium	
Atomic absorption, direct aspiration method	1-7190, 4-218.1
Atomic absorption, furnace method	1-7191, 4-218.2
Hexavalent chromium: Co-precipitation	1-7195
Hexavalent chromium: Colorimetric	1-7196, 2-3500CrD
Hexavalent chromium: Chelation-extraction	1-7197, 4-218.4
Hexavalent chromium: Diff. phase polarography	1-7198
Copper	
Atomic absorption, direct aspiration method	1-7210, 4-220.1
Atomic absorption, furnace method	1-7211, 4-220.2
Iron	
Atomic absorption, direct aspiration method	1-7380, 4-236.1
Atomic absorption, furnace method	1-7381, 4-236.2
Phenanthroline method (ferrous)	2-3500FeD
Lead	
Atomic absorption, direct aspiration method	1-7420, 4-239.1
Atomic absorption, furnace method	1-7421, 4-239.2
Magnesium	
Atomic absorption, direct aspiration method	1-7450, 4-242.1
Manganese	
Atomic absorption, direct aspiration method	1-7460, 4-243.1
Atomic absorption, furnace method	1-7461, 4-243.2
Mercury (manual cold-vapor technique	
In liquid waste	1-7470
In solid or semisolid waste	1-7471
Nickel	
Atomic absorption, direct aspiration method	1-7520, 4-249.1
Atomic absorption, furnace method	1-7521, 4-249.2
Osmium	
Atomic absorption, direct aspiration method	1-7550
Atomic absorption, furnace method	1-7551
Selenium	

Sample Work Up Techniques:	
Method	**Reference**
Atomic absorption, furnace method	1-7740, 4-270.2
Atomic absorption, gaseous hydride method	1-7741, 4-270.3
Atomic absorption, gaseous hydride method	1-7742, 4-206.3
Silver	
Atomic absorption, direct aspiration method	1-7760, 4-272.1
Atomic absorption, furnace method	1-7761, 4-272.2
Thallium	
Atomic absorption, direct aspiration method	1-7840, 4-279.1
Atomic absorption, furnace method	1-7841, 4-279.2
Vanadium	
Atomic absorption, direct aspiration method	1-7910
Atomic absorption, furnace method	1-7911
Zinc	
Atomic absorption, direct aspiration method	1-7950, 4-289.1
Atomic absorption, furnace method	1-7951, 4-289.2
Organic Analytical Methods:	
Gas Chromatographic Methods	
Halogenated volatile organics	1-8010, 8021
Non-halogenated Volatile Organics	1-8015
Aromatic Volatile Organics	1-8020, 8021
Acrolein, Acrylonitrile, Acetonitrile	1-8031
Phenols	1-8040, 8041
Phthalate Esters	1-8060, 8061
Nitrosamines	1-8070
Organochlorine pesticides, halowaxes, and PCB's	1-8080, 8081
PCBs	1-8080, 8082
Nitroaromatics and cyclic ketones	1-8090, 8091
Polynuclear Aromatic Hydrocarbons	1-8100
Haloethers	1-8110, 8111
Chlorinated Hydrocarbons	1-8120, 8121
Organophosphate Pesticides	1-8140, 8141
Chlorinated Herbicides	1-8150, 8151
Gas Chromatographic/Mass Spectroscopy Methods	
Volatile Organics	1-8240, 8260, 7-624
Semi-volatile Organics:	1-8250, 8270, 7-625
Other Organic Methods	
Qualitative infrared (IR) spectroscopy method	1-8410, 8430, 8440, 3-D2621, D4053
GC/FTIR method	1-8410
Heating value, bomb combustion method	1-5050, 3-D240, D2015
Halogen and Sulfur Content	
Chlorine content	3-D808, D2361, D4327
Halogen content	3-D808, D2361, D4327
Sulfur content	3-D129, D3177, D4327
Oil and Grease	1-4030, 9070, 9071, 2-5520, 4-413.1, 413.2
Petroleum hydrocarbons, total recoverable	2-5520, 4-418.1
Solvent distillation	4-D86, D1078
Total organic carbon	1-9020, 9060, 2-5310, 3-D2579
Total Organic Halides (TOX)	2-506
Screening Methods	
Physical Description	3-D4979
Flammability Screen	3-D4982
Water Compatibility	3-D5058

Sample Work Up Techniques:	
Method	**Reference**
Oxidizer Screen	3-D4981
pH Screen	3-D4980
Sulfide Screen	3-D4978
	Gas Detection Tubes (e.g.; Dragger, Sensidyne, MSA)
Cyanide Screen	3-D5049
	Gas Detection Tubes (e.g.; Dragger, Sensidyne, MSA)
Commingled Liquid Waste Compatibility Test	3-D5058
Poymerization Potential	3-D5058
Paint Filter Test	1-9095
Bulk Density and Apparent Specific Gravity Screen	3-D5057
Polychlorinated Biphenylls (PCBs) screen	1-4020, 9097
Liner Compatibility Screen	1-9090
Miscellaneous Analytical Methods:	
Acidity	2-2310
Alkalinity	2-2320
Ammonia	2-4500NH_3, 4-350.3
Anions	
By ion chromatography	1-9056, 3-D4327, 4-300.0
Chlorides	1-9250, 9251, 9252, 9253, 2-4500Cl^-, 4-300.0, 325.3
Sulfates	1-9035, 9036, 9038, 2-4500SO_4^{2-}, 4-300.0, 375.3
Nitrates	1-9200, 9210, 2-4500NO_3^-, 4-300.0, 352.1, 353.2
Fluoride	1-9214, 2-4500F^-, 4-300.0, 340.2, 340.3
Bromides	1-9211, 2-4500Br^-, 4-300.0, 320.1
Phosphates	2-4500P, 4-300.0, 365.1
% Ash	2-2540, 3-D482, D3174
Conductivity / conductance	1-9050, 2-2510, 3-D1125, 4-120.1
Cyanides	
Total and amenable cyanides	1-9010, 9012, 9013, 2-4500CN^-, 4-335.1
Dissociable cyanides	1-9213, 2-4500CN^-
Test Method to Determine Hydrogen Cyanide Released from Wastes (Reactive Cyanides)	1-7.3.3.2
Flash point / Ignitability	
Pensky-Martens closed-cup method	1-1010, 3-D93
Setaflash closed-cup method	1-1020, 3-D3278
Cleveland open-cup method	3-D1498
Oxidation / reduction (redox) potential (ORP)	3-D1498
pH measurement	1-9040, 9041, 9045, 2-4500H^-, 3-E70, 4-150.1
Solids	
Total (TS) at 103/105^{O}C	2-2540, 4-160.3
Dissolved (TDS) at 180^{O}C	2-2540, 4-160.1
Total suspended (TSS) at 103/1`05^{O}C	2-2540, 4-150.2
Fixed and volatile at 500^{O}C	2-2540, 4-160.4
Total Solids (moisture content)	Various (e.g.; Ohaus, Microwave Oven)
Specific Gravity	1-9030, 2-2710F, 3-D70, D891, D1217, D1429

Sample Work Up Techniques:		
	Method	**Reference**
	Sulfides	
	Extractable sulfides	1-9031
	Soluble sulfides	1-9215, 2-4500S^{2-}
	Test Method to Determined Hydrogen Sulfide Released from Wastes (Reactive Sulfides)	1-7.3.4.2
	Total sulfides	1-9030A, 2-4500S^{2-}
	Viscosity	3-D88, D446, D2983
	Water Content	3-D95, D3173, D4006, E203

The above referenced procedures are described in the following publications (although the latest update to any of the below referenced documents are acceptable). The first digit of the reference numbers above are keyed to the numbers shown below:

1.	***Test Methods for Evaluating Solid Waste***, SW-846, U.S. Environmental Protection Agency, Office of Water and Waste Management, Washington, D.C. 20406
2.	***Standard Methods for the Examination of Water and Waste Water***, American Public Health Association (APHA), American Water Works Associations, Water Environment Federation
3.	***Annual Book of ASTM Standards***, American Society for Testing Materials (ASTM), 100 Barr Harbor Drive, West Conshohocken, PA 19428
4.	***Methods for Chemical Analysis of Water and Wastes***, EPA-600/4-79-020, U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory (EMSL), Cincinnati, Ohio 45268
5.	"Infrared Analysis Method," IERL-RTP Procedures Manual: level I Environmental Assessment, EPA-600/7-78-201
6.	"Acid Digestion Bombs," Bulletin 4745, Parr Instrument Company, Moline, IL 61265
7.	"Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater," Title 40, Part 136, Appendix A, CFR, USEPA, EMSL
8.	Bellar, T.A., and Lichtenberg, J.J., "The Determination of Polychlorinated Biphenyls in Transformer Fluid and Waste Oils," EPA-600/4-81-045, USEPA, EMSL

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- Standard analytical procedures not listed here, which may be needed, will be taken from the above-referenced sources or other recognized sources (e.g.; Official Methods of Analysis of the Association of Official Analytical Chemist (AOAC), 15th Edition, AOAC, Arlington Virginia, 1990) or more recent supplements or editions.
- **Beilstein Screen** is used to indicate the presence of halogenated organics in aqueous and organic wastes.
- **Bench-Scale Treatment Evaluation** to determine the appropriate ratios of wastes to reagents or waste-to-waste to be used in the treatment process to produce the desired reaction / result.
- **Chlorides** determine if the major acid component is hydrochloric acid or its salt.
- **Cyanides Peroxide Amenability** determines the effectiveness of H_2O_2 for cyanide treatment.
- **Cyanides Chlorination Amenability** (Sodium Hypochlorite or direct Chlorination) is run to determine the effectiveness of hypochlorite for cyanide treatment.
- **Cyanides Conversion Amenability** is performed to determine the effectiveness of other types of reagents treatment for cyanides.
- **Filter Time** is used to determine filterability of waste.
- **Filterable Residue** quantifies the suspended solids present to determine filtration requirements in process operations.
- **Flash Point/Ignitability** further identifies ignitable wastes to establish proper storage mode and conformance with permit conditions.
- **Gas Chromatographic Scan** is used to identify specific organic compounds.

- **Qualitative IR Spectroscopy** is run to provide a fingerprint spectrum of organic wastes.
- **Liquid Waste Compatibility** determines whether liquid wastes which are to be combined together are compatible. This is a required supplemental analysis when combining different wastes.
- **Load Bearing Capacity Test** is used to determine structural integrity of stabilized material to be landfilled.
- **Metals Content** may be determined to quantify metals concentrations for process operating parameters or potential salt precipitation for monitoring certain processes.
- **Nitrates** determine if the major acid component is nitric acid or its salt.
- **Non-Filterable Residue** quantifies the dissolved solids present to determine acceptability for certain processes.
- **Oil and Grease** quantifies the amount of oil and grease so as not to impact certain processes.
- **Organic Content** (OC) provides a conservative measure of organic carbon in a waste. This determination may use the procedure for Total Organic Carbon (for suitable waste forms), or may be calculated based on the results of a water content test using Karl Fisher or Dean Stark methods. Organic content is conservatively determined as the difference of water and ash from the total sample.
- **Oxidizer Screen** is used to indicate the oxidation characteristics of a waste stream.
- **Paint Filter Test** is used to indicate if free liquids are present in a solid or semi-solid material.
- **PCB Screening** indicates whether or not PCBs are present in a waste.
- **PCBs in Aqueous Liquids** determines whether PCBs are present in liquid waste.
- **Percent Acidity** determines the acidity in the waste. It may be performed if the waste is aqueous and below a pH of 4.
- **Percent Alkalinity** determines the amount of alkalinity in the waste. It may be performed if the waste is aqueous and above a pH of 7.
- **Percent Ash** is used to determine the ash content in waste feeds to the indirect thermal desorber.
- **Percent Solids by Centrifuge** determines the percentage of suspended solids by centrifugation.
- **pH** provides a more precise measurement of pH and an indication of corrosivity when determining process parameters.
- **Phosphates** determine if the major acid component is phosphoric acid or its salt.
- **Soluble Sulfides** are analyzed to provide quantitative backup to the reactive sulfides screen.
- **Solvent Screen** is used to identify the presence of LDR solvent constituents.
- **Specific Gravity / Bulk Density** indicates density of the waste. This information is used to convert weight of materials to volumes (and visa versa).
- **Stabilization Treatment Studies** are run to determine if a waste is amenable to stabilization and to determine the appropriate reagent-to-waste ratio.
- **Sulfates** determine if the major acid component is sulfuric acid or its salt.
- **Sulfide Peroxide Amenability** determines the effectiveness of H_2O_2 for sulfide treatment.
- **Sulfide Conversion Amenability** is tested to determine the effectiveness of other types of reagents treatment for sulfides.
- **Sulfur Content** determines the sulfur content of waste to be incinerated and thus its capability to generate SO_2 (SO_X) gases.
- **Total and Amenable Cyanides** quantifies the concentration of all free and most complexed cyanides (total cyanides) and/or cyanide species amenable to alkaline chlorination (amenable cyanides). Results may be used for treatability determinations, to monitor treatment processes, and/or to meet disposal restrictions including Land Disposal Restrictions.
- **TOC** may be used to determine the organic concentration in waste and may be used as a surrogate for UHCs and other organic analyses.

- **TOX** may be used to determine the organic-chloride concentration in waste and may be used as a surrogate for chlorinated organic analyses.
- **Total Solids** quantifies suspended and dissolved solids and moisture content for selected processes.
- **Total Sulfides** is used to quantify the concentration of total sulfides to back up the sulfides screen.
- **Viscosity** determines the waste pumpability.
- **Visual Oil and Grease** provides a qualitative assessment of filterability and organic contents.
- Waste Compatibility is tested to determine whether wastes stored or processed together are compatible.
- **Waste Compatibility** is used to determine whether the waste has a potential to react vigorously with water, to form gases, other products, or to generate extreme heat and to determine if it is soluble in water. This test does not apply to wastes already in contact with excess water nor to wastes known to be water reactive.
- **Water Content** is used to determine the percent of water present in a waste.

Other standard analytical techniques parameters not listed here may be added utilized as required by changes in regulations, company policy, etc. These techniques will be taken from recognized sources (e.g.; SW-846, ASTM, AWWA, etc.).

8.4.0 PRE-ACCEPTANCE PROCEDURES

The generator is responsible for characterizing the waste (40 CFR §262.11) and determining the applicability of 40 CFR Part 264, Subpart CC). The generator is also responsible for presenting the waste characterization results on a completed Waste Product Questionnaire (WPQ).

The generator's waste characterization normally includes an analysis of a representative sample of the waste, however, in some cases, generator knowledge of the waste is sufficient. The generator or an independent laboratory (including USEN) may perform analyses. Testing and analyses are performed using standard test methods (EPA, ASTM, AWWA, or other approved standards) or alternative methods approved in USEN's RCRA permit.

The generator also evaluates the candidate waste for additional characteristics that may exclude the waste from acceptance at USEN and certifies that the waste does not exhibit any of these characteristics. Wastes restricted from on-site management (i.e.; pyrophoric wastes) will not be approved for on-site management.

USEN has developed a series of criteria to determine the acceptability of specific wastes for management at USEN. These criteria are referred to as pre-acceptance reviews and dictate what information USEN must have available in order to determine the acceptability of the waste for on-site management. At a minimum, USEN will obtain all the information required by 40 CFR §264.13(a)(1) [as outlined in 40 CFR §264.13(a)(2) and comment].

The pre-acceptance review is the mechanism for deciding to reject or accept a particular type of waste, prior to its acceptance at the facility, based on the conditions or limitations of existing permits, the waste's compatibility with other wastes being managed on-site, and the waste's suitability for management utilizing the process options available on-site. The pre-acceptance review for USEN may be carried out on-site, at another USE facility, or upon receipt of the load prior to (or in conjunction with) waste acceptance. Accordingly, and consistent with EPA guidance and this WAP, USEN will obtain analytical information, where necessary, either during the pre-acceptance review, incoming load review, or prior to on-site disposal to confirm the concentration of constituents of concern (those reasonably expected to be in the waste).

8.4.1 PROCEDURAL REQUIREMENTS

For each new waste stream that is a candidate for on-site management, except where noted herein, the following procedures are implemented:

USEN will obtain the following information, as appropriate:

1. Pertinent chemical and physical data (i.e., waste characteristics) and, when appropriate, representative sampling information and certification on the WPQ.

2. A representative sample, if required and available (a representative sample may not be required by USEN if facility management determines the pre-acceptance documentation gives sufficient information to maintain compliance with permit and operational constraints and submittal of a sample for analysis would not aid in the disposal decision process. For example, the items identified in Section 8.5.1.1 would not require a pre-acceptance sample).

3. Land Disposal Restriction Notification/Certification and/or data (40 CFR §268.7) unless submitted on a load-by-load basis.

4. Other supporting documentation as appropriate, including any information such as process description, additional analytical results, Material Safety Data sheets, product ingredients, etc.

As required, USEN will perform the Fingerprint Analyses and any Supplemental Analyses necessary on a pre-acceptance sample of the waste. These analyses are performed to provide the information needed to determine if the waste can be managed on-site and/or to determine if it matches the identity of the waste from the pre-acceptance review. The analyses will be performed utilizing the parameters outlined in Section 8.3.0.

After evaluating the above information and any information obtained from the Fingerprint Analyses or Supplemental Analyses, USEN will determine the acceptability of the waste based on:

- The permit conditions for the facility, and
- The availability of the proper waste management techniques.

USEN maintains, as part of its pre-acceptance information, generator-supplied and USE-developed information. This information may be accessed electronically or via hard copy.

8.4.2 PRE-ACCEPTANCE EVALUATION

USEN is responsible for the pre-acceptance evaluation decision (i.e., whether to accept or reject the waste). Samples of waste necessary for pre-acceptance consideration are subjected to the Fingerprint Analyses. USEN may require Supplemental Analyses to screen samples for other contaminants or properties, which indicate possible treatment or disposal modes. The basis for requiring these additional analyses are:

- Determination of waste management technique(s) to be used;
- Facility management's experience and judgment;
- WPQ description of the chemical and physical properties of the waste;
- WPQ description of the process generating the waste;
- Any additional documentation supplied by the generator, including information that the waste is subject to the Land Disposal Restrictions of 40 CFR Part 268, if appropriate; and
- Results of any Fingerprint Analyses and any previous Supplemental Analyses, including LDR confirmatory analyses.

The pre-acceptance evaluation is concluded with documentation of the decision regarding the acceptability of the waste and the proposed method of management. Included within the documentation is the required notification to the generator that the waste is approved for management in accordance with the facility's permit and 40 CFR §264.12(b).

USEN's technical disposal decisions are based on:

- Management methods available;
- Conditions or limitations of existing permits and regulations;
- Capability to manage the waste in a safe and environmentally sound manner;
- WPQ description of the process generating the waste;
- WPQ description of the chemical and physical properties of the waste;

- Any additional documentation supplied by the generator, including information that the waste is subject to a Land Disposal Restriction of 40 CFR Part 268, if appropriate;
- Results of Fingerprint Analyses, if necessary;
- Results of Supplemental Analyses, as appropriate; and
- Management's technical experience and judgment.

8.4.3 WASTE PROFILE RE-EVALUATION

In accordance with 40 CFR §264.13(a)(3), a waste profile re-evaluation will be conducted when one of the following occurs:

- A generator notifies USEN that the process generating the waste has changed; or
- The results of inspection or analysis indicate the waste received at the facility does not match the identity of the waste designated on the accompanying manifest (or shipping paper).
- When this occurs USEN will review the available information, if existing analytical or reference information is not sufficient, the generator may be asked to review and update the current waste profile, to supply a new profile, and/or to submit a sample for analysis, or USEN may utilize a sample obtained from a load of the waste.

8.5.0 INCOMING WASTE SHIPMENT PROCEDURES

Each shipment of waste is inspected, sampled and analyzed as defined herein before acceptance, except as noted in Section 8.5.1.1. This serves two purposes. First, it compares the actual waste identity with that determined in the pre-acceptance phase and the waste manifest. Second, it further ensures proper disposition of the waste for treatment, storage, and/or disposal. Other USEN personnel (or USE-approved subcontractor) can provide the Fingerprint and/or Supplemental Analyses required for acceptance. Waste shipments, which have arrived on-site, are considered to be in the receiving process until a final decision regarding waste acceptability is made; at such time the wastes are considered accepted or are rejected.

In addition, all initial waste shipments which are subject to the Land Disposal Restrictions of 40 CFR Part 268 and which have been treated, exempted, subject to a variance, or already meet the appropriate treatment standard may be accompanied by a one-time form from the treater or generator certifying the waste meets the appropriate treatment standard, treated with the prescribed treatment method, prohibition exemption, or variance. This form must include the applicable analytical data or reference to such data, in accordance with 40 CFR §268.7. Furthermore, initial waste shipments subject to the Land Disposal Restrictions of 40 CFR Part 268 and require treatment may be supported by one-time written documentation notifying USEN of the appropriate treatment standard or prohibition including any applicable data or reference to such data or documentation which must be met in accordance with 40 CFR §268.7, except as otherwise allowed.

8.5.1 RECEIVING PROCEDURES

The sampling and analysis of the incoming waste will utilize appropriate methods (Section 8.2.0) and parameters (Section 8.3.0). Inspections are performed as described herein.

Upon arrival of a waste shipment at USEN, the accompanying manifest is reviewed for completeness and the shipment is inspected for agreement with the manifest information (see section 8.5.2 for resolution of significant manifest discrepancies).

All shipments arriving for on-site management will be visually inspected. Incoming shipments are sampled and analyzed for the Fingerprint Parameters as identified in Section 8.3.1 and any Supplemental Analyses specified by facility management, except as noted in Section 8.5.1.1.

Subject to the exceptions in Section 8.5.1.1, bulk waste loads are sampled and analyzed, except where large volumes of a single waste stream are received from a single source, (e.g.; a site cleanup, a large volume generator, etc.). In such cases, all shipments are inspected and at least 10% of such loads are sampled and analyzed. Bulk waste may also be sampled in an original bulk container (e.g., rail tanker, gondola car, etc.).

In the case of shipments of non-bulk containers, at least 10% of the containers from each waste stream in the shipment are sampled, except as provided in Section 8.5.1.1. Container samples from the same profile may be composited prior to analysis, providing the individual samples have similar physical descriptions. At a minimum, all remaining un-sampled containers are visually inspected for container integrity and labeling. If a significant discrepancy in waste type is discovered, the contents of all of the containers for that waste stream are inspected. In some cases, where the waste stream is consistent but packaged for ease of transportation or disposal (e.g., multiple yd^3 bags containing the same waste) the load may be managed as a bulk load.

8.5.1.1 Exceptions

Exceptions to the foregoing requirements include the following:

- Waste contained in a lab-Pack (combination packaging). Combination packaging is defined in 49 CFR §171.8 as "...one or more inner packagings secured in a non-bulk outer packaging" and is subject to the Department of Transportation shipping package requirements of 49 CFR Part 173.
- Commercial products or chemicals: off-specification, outdated, unused, contaminated or banned. This also includes products voluntarily removed from the market place by a manufacturer or distributor.
- "Empty" containers of waste materials, commercial products or chemicals. This applies to portable containers which have been emptied, but which may hold residues of the product, chemical, or containers containing other empty containers. Examples of containers are: tanks, drums, barrels, cans, bags, liners, etc. A container shall be determined "empty" according to the criteria specified at 40 CFR §261.7. These empty containers may be crushed, shredded, or landfilled intact.
- Residue and debris from the cleanup of spills or releases of chemical substances, previously approved wastes, commercial products, or a waste which would otherwise qualify as an exception.
- Wastes that are visually identifiable through an inspection process. Examples may include cathode ray tubes, batteries, fluorescent light tubes, filters and filter cartridges, wire or tubing, paper products, metal sheeting and parts, crushed glass, piping, and other debris.
- Demolition wastes. This consists of waste produced from the demolition or dismantling of industrial process equipment or facilities contaminated with chemicals from the process. Knowledge of the process and chemicals used in the process allows characterization of the waste sufficient for safe management.
- Articles, debris, non-RCRA wastes, equipment and clothing containing or contaminated with polychlorinated biphenyls (PCBs). This includes PCB capacitors, transformers, gloves or aprons from draining operations, empty drums that formerly held PCBs, etc.
- PCB drainings and flushings removed from PCB articles. This includes PCB articles flushed with a substance (e.g. toluene or unused diesel).
- USEN site-generated waste, including hazardous and non-hazardous waste.
- Household hazardous waste, pesticide, waste from small quantity generators, and/or small volume waste streams (<100 tons per year). For these exceptions, the generator will supply USEN with sufficient chemical and physical characteristics information for proper management of the waste.
- Controlled substances regulated by government agencies including drugs and/or materials from clandestine labs.
- Materials designated for storage and trans-shipment off-site. These materials are received for storage and subsequent trans-shipment only and are not otherwise actively managed on-site. If it is determined USEN will process a waste previously designated for storage and subsequent trans-shipment, the waste will be reviewed utilizing the normal approval process prior to on-site processing. For materials received at another regulated company and subsequently shipped to USEN, the other facility may transmit the relevant information to USEN for use in the pre-acceptance or load arrival review programs, as is appropriate.

- Wastes from remedial projects in which the waste characterization is known through a sampling plan that was approved by a federal or state agency (e.g.; CERCLA project) or other well-developed plan.
- Debris as defined at 40 CFR §268.2. These materials will be visually inspected prior to acceptance in order to ensure the waste meets the definition of debris.
- Contaminated personnel protective equipment (PPE) (e.g., gloves, tyveks, respirator cartridges).
- Aerosol cans.
- Vitrified, Cemented, and Other Materials Exhibiting High Structural Integrity. There are several materials which are not conducive to sampling which must be recognized. Structural steel, tanks, pipe, cement, glass, empty drums, machinery, equipment, manufactured items, monolithic / cemented materials, and several other materials are managed which do not allow for normal sampling protocols. By necessity, these materials must be managed on a case-by-case basis. In some cases a clean-up agency (e.g., EPA, NvDEP, etc...), generator, or contractor has established a basis of data and waste characterization information. In those cases, this information may be utilized in lieu of pre-acceptance analytical and incoming load analytical information, and the physical appearance screen will be utilized to confirm material acceptability upon arrival.
- Exempt Radioactive Waste (including NORM, NARM, etc).
- Sampling and analysis of the above waste materials is not required: unless specifically requested by USEN. These materials are not sampled and analyzed because the chemical and physical characteristics of the waste are known in sufficient and reliable detail or the waste has been previously characterized and shipped from another generator, broker or TSDF, or visual inspection of these shipments is sufficient for verification of their identity. USEN will obtain and evaluate all the information required by 40 CFR §264.13(a)(1) [as outlined in 40 CFR §264.13(a)(2) and comment] necessary to characterize, treat, store, or dispose of the waste.
- In addition, USEN may waive incoming waste load sampling and analysis where the pre-acceptance documentation supplies sufficient information to assure compliance with permit conditions and operational constraints, or any of the following conditions exist:
- Obtaining a representative sample poses an unnecessary hazard of acute or chronic exposure of USEN employees to carcinogenic, mutagenic, neoplastigenic, teratogenic, or sensitizing materials;
- The material may react violently with air or moisture;
- The material's odor poses a public nuisance when sampled; or
- A sample cannot be reasonably obtained, such as filter cartridges, tank clean-out sludge (prior to the clean-out), large pieces of contaminated material, or contaminated debris.

In these cases, the shipment will still be inspected for conformance with manifest and pre-acceptance documentation as previously described.

8.5.1.2 [Reserved]

8.5.2 DECISION EVALUATION LOGIC

There are major decision points regarding the need for evaluation of whether a waste found to be dissimilar to the pre-acceptance evaluation could still be accepted. USEN decides whether additional analyses are required for a particular waste based on the following:

- Results of Fingerprint Analyses;
- Knowledge of generator and/or waste-generating process;
- Results of pre-acceptance evaluation;
- Waste codes.

Further testing will be conducted as necessary if the results indicate unexpected characteristics with respect to pre-acceptance analytical results, or if there is suspicion the waste composition has changed. Effectiveness of the waste identification step is dependent on the following components:

- Inspection;

- Sampling (where required);
- Analytical results (where required);
- Waste Product Questionnaire;
- Hazardous Waste Manifest;
- Waste Screening Analytical Results;
- Facility management's judgment.

To facilitate the waste identification process, fingerprint analytical data is compared to the corresponding pre-acceptance analysis. The Fingerprint Analysis verifies the waste is indeed the same waste as represented by the pre-acceptance analysis. When a load is received, the pre-acceptance information is reviewed. USEN classifies waste as being in non-conformance if there is a significant discrepancy between the waste shipment and the manifest (as defined in 40 CFR §264.72), unless the discrepancy can be clarified.

Wastes found to be in non-conformance may be rejected immediately, or may be re-evaluated for possible acceptance despite the variance. Re-evaluation will be based on any or all of the following criteria:

- Permit authorization;
- Land Disposal Restrictions;
- Discussions with the generator;
- Facility conditions;
- Facility management's judgment.

Pursuant to 40 CFR §264.72, USEN must attempt to resolve with the generator or transporter significant discrepancies between the actual waste and that shown on the manifest. Changes to the manifest or WPQ may be made with the customer's concurrence or at the customer's request. Any corrections or other changes made to the manifest or WPQ will normally be initialed by the person making the change. Although not required by regulation, other discrepancies noted (such as improper mailing addresses, identification numbers, telephone numbers) may be corrected or noted in manifest block 19.

For bulk loads manifested by weight, the load is typically weighed on-site. However, if the scale is out of service, other methods may be employed to estimate the weight of the delivery. Other methods include utilization of nearby (off-site) scales, weight estimation techniques, and utilization of tare weights to calculate approximate net weights. If a significant weight discrepancy is noted, the procedures of 40 CFR §264.72 are employed. For bulk loads manifested by volume, this mechanism is not appropriate as visual estimates are too subjective, settling may occur during transport, and liquids are subject to phase separation, and specific gravity calculations can be very inaccurate. For piece count deliveries (e.g., vans of containers, etc.), the piece count is confirmed. Under typical conditions all of these activities are conducted upon delivery to the facility or during the load acceptance process. However, there are situations when these conditions are not satisfied upon delivery (e.g., a load is delivered and staged prior to being approved or accepted, small containers are contained within heat shrink material and cannot be counted prior to breaking the load, etc.). In these instances and consistent with 40 CFR §264.71(a)(3), the transporter is given a signed copy of the manifest. If a significant weight or piece count discrepancy is later discovered, an attempt to reconcile it will be made. If a significant manifest discrepancy cannot be resolved within 15 days of discovery, notification of the discrepancy will be sent to the NvDEP, along with the steps taken to resolve the discrepancy.

8.6.0 PROCESS OPERATIONS PROCEDURES

Each movement of a waste within the facility, during which any change in its characteristics may occur, may make the waste subject to additional inspection, sampling, and analysis to determine appropriate handling and management of the waste. Many of the analyses needed for the treatment, storage, and/or disposal functions are performed during incoming shipment identification and are not repeated unless it is known or believed that waste characteristics may have significantly changed during storage or processing and/or such information is deemed necessary for the safe management of the waste.

Existing and anticipated process operations at the facility, for which current and periodic sampling and analyses are important, include the following:

- Treatment, including stabilization and thermal desorption;
- Storage; and
- Disposal, consisting of landfilling and evaporation.

The analytical procedures for each of these processes are described separately below.

8.6.1 STORAGE

Before any waste is placed into storage USEN will assess the compatibility of the waste with wastes already in storage.

8.6.1.1 Liquid Storage / Transfer

Liquid wastes may be transferred from containers to tanks or to trucks although a waste may be fed directly to the designated treatment unit (e.g.; stabilization tank). Upon arrival, liquid waste will be subjected to the appropriate waste identification analyses, plus a commingled waste compatibility test, if appropriate, to assure safe storage. If a liquid load is exempted from sampling, as described in Section 8.5.1.1, the waste will be segregated from other wastes based on USEN's technical assessment of the waste (e.g.; compatibility class).

8.6.1.2 Containerized Storage

Using the predominant hazard classification on incoming containerized waste, the proper storage area will be designated to insure segregation of stored incompatible waste.

Based on the initial hazard determination made by the generator on the WPQ and/or the final identification of the waste shipment, containerized waste will typically be segregated in the following manner: flammable, corrosive, and oxidizing waste materials will be separated from incompatible materials or stored in separate areas. Wastes are separated/maintained in separate storage areas until they are treated, transferred, or disposed.

8.6.2 TREATMENT AND TRANSFER OPERATIONS

This section discusses process analyses associated with hazardous waste treatment operations at the facility. In addition, transfer of materials for off-site disposition by combustion is addressed, since this process involves bulking of waste materials to meet the receiving (off-site) facility's specifications.

The treatment sampling & analysis program may be divided into three (3) segments, each with a specific purpose to be utilized as necessary:

- Pre-treatment analyses confirm the waste falls within the selected process design and to allow adjustment of the process operational conditions during treatment;
- In-process analyses are performed, as necessary, to monitor treatment progress; and
- Post-treatment analyses confirm successful treatment and that the characteristics of the process effluent are such that it can be sent to the next step (disposal, treatment, ...), based upon relevant constraints. Process residues for LDR wastes will be analyzed and/or evaluated, as needed, against the appropriate treatment standards or prohibitions. Any residues or waste sent off-site for disposal or further management will have the appropriate notification and/or certification form (in accordance with 40 CFR Part 268).

8.6.2.1 Bulking

Typically, this activity involves pumping containerized liquid / semi-solid wastes into tank trucks or other large containers for delivery off-site. Waste containing sufficient heating values for combustion are bulked with other suitable waste. The resultant bulked materials are used to provide heat content for combustion processes (either as hazardous waste derived fuel (HWDF) or as a hazardous waste, as applicable) at off-site lime kilns, incinerators, or similar operations. Incidental mixing of wastes that occurs

when several waste streams are bulked is not considered blending. Other bulking activities include the aggregation of liquid or solid wastes for common treatment or disposal.

Pre-acceptance analyses are used to determine the acceptability of each waste stream as a fuel or heat source, for appropriate wastes. Additional analysis for heat value may be required for materials destined for supplemental fuels, depending on the regulatory status of the potential receiving BIF(s), to evaluate sham-recycling restrictions. For materials destined for incineration, on the other hand, this analysis is not typically necessary. Wastes aggregated for common treatment or disposal is not typically considered during the pre-acceptance process.

In-process analyses may be performed to assure the aggregation / bulking of wastes does not create a reactivity or incompatibility issue and the resultant waste is within the receiving facility's specifications, if any. Field compatibility may be checked with the aid of a bucket or other suitable container. Grab samples of the waste to be bulked and / or aggregated are placed in the field container and observed to ensure no negative reaction occurs. Waste specification verification is necessary because acceptance criteria for the USEN facility are different than the receiving facility's specifications, which are based upon that facility's permits, regulations, or other needs. For example, if the receiving facility has a minimum requirement for heat value and a maximum requirement for chlorides, then the bulked material requirements will be a function of the receiving facility's requirements for both parameters.

Post-treatment analyses may consist of tests necessary to confirm that the bulked material is suitable for use as fuels or for incineration. In addition, wastes aggregated for common treatment are typically reviewed to determine appropriate waste characterization, if any, and to develop treatment recipes.

8.6.2.2 Stabilization

USEN utilizes several different treatment technologies in order to meet the applicable LDR requirements, or other requirements, as applicable. The term "stabilization" is used in its generic sense to mean the treatment of a waste material to make it physically and chemically stable. In this sense, it consists of those processes (including, but not limited to macro-encapsulation, micro-encapsulation, oxidation, reduction, pozzolonic reaction, & solidification), which make the material pass applicable LDR standards or other applicable standard(s).

In this process, waste is treated to meet land disposal restrictions (e.g., elimination of free liquids, chemical and/or physical stabilization to remove or immobilize hazardous constituents, micro-encapsulation, macro-encapsulation, etc) or to meet other appropriate requirements (e.g., permit or regulatory requirements).

Pre-treatment analyses consist of tests necessary to insure the wastes can be treated to meet the applicable treatment requirement. In-process analyses are generally not required, although some reactions require the monitoring of waste pH during the treatment process. Post-treatment analyses are performed, as necessary, to ensure restricted wastes meet applicable treatment standards.

8.6.2.2.1 Wastes Treated On-site

Certain wastes are treated on-site to meet specified treatment standards. Typically, USEN requires a representative sample of the waste prior to on-site management. The waste sample is then mixed with various types of reagents[5] to determine an acceptable mix design (recipe) by which the waste is treated (separately or along with other wastes) to pass the required standard(s) or alternate methods.

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[5] Typical reagents utilized on-site include fly ash, portland cement, cement kiln dust, lime, gypsum, water, clays, and carbon, although many other treatment reagents may be utilized, Including other wastes with characteristics appropriate for treatment.

A recipe is chosen to meet the appropriate LDR standard(s), as applicable. Waste shipments of that particular waste are then treated according to the treatment identified as capable of attaining the applicable treatment standard(s). A treatment certification will be made for each batch treated. In some cases, it may be appropriate to create mix designs after acceptance, but prior to treatment (e.g.: aggregated batches of mixed wastes streams, etc), or perhaps during or after treatment (if an approximate recipe is first determined and / or in-process analysis aids in further mix design development). In most of these cases, the treatment standards are verified prior to ultimate disposal. LDR confirmational testing is conducted on waste stabilized at the facility to confirm achievement of applicable treatment standards, except alternate treatment standards or methods (e.g.; macro- & micro-encapsulation). Samples are collected from the first batch of each hazardous waste stream treated at the facility, and at least once a year, thereafter[6]. The sampling frequency may be increased on waste streams that exhibit significant variable characteristics, as determined necessary.

Since treated wastes are treated based on a developed or verified recipe, they are assumed to meet the applicable treatment standard(s) and may be staged in storage or disposal units (e.g.; landfills) pending confirmatory analyses, if applicable. If post-treatment analyses determine a treated batch does not meet applicable standards, the waste will be retrieved for re-treatment or off-site management.

8.6.2.2.2 Wastes Meeting the Treatment or Technology Standard upon Arrival

USEN receives waste meeting applicable treatment standards that either has been treated by the generator, a treatment facility, or meets the standard as initially generated. These shipments must be accompanied by a proper notification and certification or, if determined to meet the standard by USEN, USEN may complete the correct certification. Wastes in this category may be analyzed for conformance with the treatment standards during the pre-acceptance review, during the load acceptance review, or when USEN believes the waste may meet the appropriate standard or method (e.g.; for compliance with alternate treatment methods).

Wastes received meeting a technology-based treatment standard cannot and will not be tested for LDR constituent standards. The LDR required analysis for this type of waste is that it is properly certified, in full or in part, to have been treated by the appropriate technology.

8.6.2.2.3 Treating Wastes Containing Free Liquids

In this process, wastes not otherwise restricted are treated solely to stabilize (solidify) free liquids. Pre-treatment analyses consist of the Fingerprint Analyses performed on incoming shipments unless free-standing liquids are observed (in which case USEN can conclude the waste has free liquids without the analytical test). If free standing liquids are present, they are either removed, stabilized by either placing a stabilization agent in the container or placing the contents into a stabilization tank and crushing or shredding the container, or by shredding the container and its contents and, if necessary, stabilizing the shredded material. If free-standing liquids are not observed and process specific criteria are met, then the waste may be landfilled directly. If free liquids are decanted, any remaining material containing free liquids will be stabilized using appropriate reagents prior to landfilling, if necessary. Bulk loads, which otherwise do not contain significant quantities of free standing liquids may be “spot stabilized” in order to meet the requirements of 40 CFR §264.314(a)(2) as is sometimes necessary for otherwise dry wastes which have received precipitation during transportation and such precipitation is visible during the incoming load inspection process. If incidental water is detected during

[6] A sample of a treated waste stream may be used during one year to provide the annual verification testing for the following year. If this occurs, waste streams treated before or after this are not affected in any way as a result of the analytical results received or resultant recipe changes. The Lab Manager may change the recipe immediately or upon the new annual period.

the off-loading process, this is not a violation of the RCRA ban on the placement of free-liquids in landfills.

In addition, Supplemental Analyses may be requested by USEN to further evaluate the waste. Stabilized wastes will be tested using the Paint Filter Liquids test if the presence of free liquids is still suspected.

8.6.2.2.4 Treating Wastes to an Approved Delisting Requirement

Wastes treated to an approved delisting requirement shall be sampled and analyzed in accordance with the specific delisting requirements. Such sampling and analysis may be documented by the regulated delisting facility / activity.

8.6.2.2.5 Universal Waste

USEN is a Destination Facility[7] for Universal Waste. Universal Waste managed at a destination facility is subject to all applicable requirements of 40 CFR Parts 264, 265, 266, 268, 270, and 124. In essence, once at the USEN Facility, the waste must be managed as hazardous waste subject to the same applicable waste codes and LDR treatment standards / methods.

8.6.2.3 Hazardous Debris Treatment

USEN manages RCRA Hazardous debris according to the treatment standards specified in 40 CFR Part 268.45. As stated in 40 CFR Part 268.2:

> "Debris means solid material exceeding a 60 mm particle size that is intended for disposal and that is: A manufactured object; or plant or animal matter; or natural geologic material. However, the following materials are not debris: Any material for which a specific treatment standard is provided in Subpart D, Part 268, namely lead acid batteries, cadmium batteries, and radioactive lead solids; Process residuals such as smelter slag and residues from the treatment of waste, wastewater, sludges, or air emission residues; and Intact containers of hazardous waste that are not ruptured and that retain at least 75% of their original volume. A mixture of debris that has not been treated to the standards provided by Sec. 268.45 and other material is subject to regulation as debris if the mixture is comprised primarily of debris, by volume, based on visual inspection."

RCRA Hazardous Debris is debris that contains a hazardous waste specified 40 CFR Part 261. The land disposal restrictions (LDR) of Part 268 require that certain wastes meet treatment standards before land disposal. Treatment standards are either concentration-based or technology-based. A waste with a concentration-based standard may be treated to meet LDR using any effective treatment method (except impermissible dilution). A technology-based standard requires treatment by the specified technology. Appropriate technologies for treatment of hazardous waste are identified as "Alternative Treatment Standards."

40 CFR Part 268.45 outlines alternative treatment standards for hazardous debris. If a waste stream meets the debris definition, it may be treated using a technology based treatment standard, and land disposed in a Subtitle C landfill. Technology based treatment standards authorized for debris treatment include, extraction, destruction, and immobilization technologies. USEN currently performs the following immobilization treatment for hazardous debris:

- Microencapsulation – As defined in 40 CFR Part 268.45, Table 1, is "Stabilization of the debris with the following reagents (or waste reagents) such that the leachability of the hazardous contaminants is reduced: (1) Portland cement; or (2) lime/ pozzolans

[7] As defined at 40 CFR §273.9.

(e.g., fly ash and cement kiln dust). Reagents (e.g., iron salts, silicates, and clays) may be added to enhance the set/cure time and/or compressive strength, or to reduce the leachability of the hazardous constituents." Microencapsulation treatment is performed in the stabilization unit.

- Macroencapsulation – As defined in 40 CFR Part 268.45, Table 1 is "Application of surface coating materials such as polymeric organics (e.g., resins and plastics) or use of a jacket of inert inorganic materials to substantially reduce surface exposure to potential leaching media." In some cases, it is advantageous to macroencapsulate materials (e.g., "debris") subject to this standard in the landfill. The debris is placed in a suitable final location (e.g.; in forms, etc) within the landfill, and macro-encapsulation is performed in-place with the selected reagent(s) or materials (e.g.; HDPE, LDPE, Portland cement, etc).

Hazardous debris that has been treated by immobilization technologies remains hazardous, but meets the alternative treatment standards. Immobilized hazardous debris is disposed in the Subtitle C landfill.

8.6.3 LOW TEMPERATURE THERMAL DESORPTION (LTTD)

Typically, this activity involves the placement of bulk or containerized solid wastes into trays for delivery to an on-site thermal desorption unit. Waste containing organic constituents (typically > 500 ppm) are treated in this infra-red (IR) LTTD to desorb the organic materials. The resultant treated solid waste is tested to ensure it meets appropriate LDR treatment standards and, if further stabilization is required, the material is transferred to the waste stabilization process described above. If the waste meets appropriate LDR standards, after treatment, the material can be disposed on-site. Incidental mixing of wastes that occurs when several waste streams are bulked or when trans-loading waste is not considered blending or treatment.

Pre-treatment analyses consist of tests or analytical reviews to insure the wastes can be treated to meet the applicable treatment requirement. In-process analyses are generally not required. Post-treatment analyses are performed, as necessary, to ensure restricted wastes meet applicable treatment standards.

8.6.4 LANDFILL DISPOSAL

USEN's sampling & analyses program is an integral part of this phase of operation as the results serve to evaluate compliance with permit constraints, land disposal restrictions, and determine safety constraints. Landfill disposal operations generally require only pre-disposal analyses. Wastes to be landfilled are typically subject to the Fingerprint Analyses for pre-acceptance samples and incoming waste shipments.

8.6.5 EVAPORATION

The Evaporation Pad is used to reduce the volume of waste by solar evaporation of the liquid components of waste. Pre-acceptance evaluation and waste receipt controls are also used as part of the waste process controls. Wastes designated for placement in the Evaporation Pad are predominantly aqueous waste. No waste subject to 40 CFR Part 264, Subpart CC management requirements is accepted for management in this unit..

8.7.0 QUALITY ASSURANCE/QUALITY CONTROL

The following quality assurance/quality control (QA/QC or "quality") information for this facility is being provided as required by 40 CFR §270.30(e) and in accordance with the following EPA guidance documents:

- *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846*, Third Edition, Final Update I, U.S. EPA, Office of Solid Waste, Washington, DC, July 1992, Chapter One, as updated

- *Handbook for analytical Quality Control in Water and Wastewater laboratories,* EPA 600/4-79-019, March 1979, US Environmental Protection Agency (USEPA), Environmental Monitoring and Support Laboratory (EMSL), Cincinnati, OH..

Quality protocols are applicable to both sampling and analytical techniques. This section does not provide specific QA/QC performance standards for individual sampling and analysis techniques. Such specifics are defined in specific USEN operating procedures. The specific performance standards are dynamic and are revised as warranted to reflect technological advances in sampling and analytical techniques. These performance standards are described in policies, which are maintained and used at USEN. Portions of these policies have been summarized in the following sections.

8.7.1 SAMPLING PROGRAM

Sampling procedures are described in Section 8.2.0 of this WAP. The selection of the sample collection device depends on the type of sample, the sample container, the sampling location and the nature and distribution of the waste components. In general, the methodologies used for specific materials correspond to those referenced in 40 CFR Part 261, Appendix I. The selection and use of the sampling device is supervised or performed by a person thoroughly familiar with the sampling requirements.

Sampling equipment is typically constructed of non-reactive materials such as glass, PVC plastic, aluminum, or stainless steel. Care is taken in the selection of the sampling device to prevent contamination of the sample and to ensure compatibility of materials. For example, glass bottles are not used to collect hydrofluoric acid wastes.

With some exceptions, all bulk and containerized waste shipments are sampled (see Section 8. 5.1.1). Individual container samples that are related may be composited prior to analysis.

8.7.2 ANALYTICAL PROGRAM

USEN has developed a program of analytical quality practices and procedures to ensure that precision and accuracy are maintained. These programs, which include use of control standards, duplicates, spikes, and blanks are required. Non-company laboratories employed by the company demonstrate quality control practices that are comparable to USEN's practices.

Good laboratory practices which encompass sampling, sample handling, housekeeping and safety are required by specific USEN procedures.

8.7.3 CONCLUSION

The aforementioned sampling and analytical quality practices help ensure the data obtained are precise and accurate for the waste stream being sampled. The analytical results are used by facility management to decide whether or not to accept a particular waste and, upon acceptance, to determine the appropriate method of treatment, storage, and disposal. Results are also important to ensure that wastes are managed properly by the facility and that incompatible wastes are not inadvertently combined. The quality of these results are as important as the results themselves. Thus, the quality of the analytical data, the thoroughness and care with which the sampling and analyses are performed and reported, provides an important basis for day-to-day operational decisions.