ATTACHMENT 1

WASTE ANALYSIS PLAN

Attachment 1
Waste Analysis Plan

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1.0 Overview

The objective of the Waste Analysis Plan (WAP) is to describe the procedures and processes that will be used to obtain sufficient information about waste streams to operate the facility in accordance with applicable permit requirements. More specifically, the waste analysis plan: (1) ensures that wastes accepted by Aragonite are appropriate for management at the facility; (2) specifies the collection of information about each load of waste to enable the facility to properly store, manage, and incinerate the material; and (3) ensures that the wastes that arrive at the facility are the same as those evaluated in the profiling process and represented on the manifest.

This plan also anticipates that wastes will be generated on site by Aragonite and will ultimately be accepted for storage, treatment, or both at the Aragonite facility. These wastes will be sampled, and fingerprint chemistry will be determined as outlined in Section 3.2, and incineration burn chemistry will be developed based on Section 3.3. Profiles are developed using appropriate knowledge and/or analysis and are periodically recertified. Rainwater and snowmelt, collected in containment areas where spill cleanup procedures have been completed (if necessary) and transferred to a tank are not subject to the incoming load analyses. If the waste is generated from a spill of waste accepted, the information necessary to store and incinerate this material may be obtained from the spilled waste profile and acceptance sampling data.

This waste analysis plan addresses the RCRA-regulated, TSCA-regulated, and other wastes that will be transferred, stored, or treated by incineration at the Aragonite, Utah facility. This facility will operate as both a transfer/storage and a treatment facility.

The purpose of this WAP is to establish necessary sampling methodologies, analytical techniques, and overall procedures that will be used for hazardous wastes accepted at the facility.

This waste analysis plan establishes the following:

- The procedures for determining that waste streams will be acceptable for management at the facility and for notifying the generator that the waste will be accepted or rejected.
- The procedures for characterizing the wastes and establishing appropriate management strategies.
- The frequency and methods for sampling and analyzing incoming loads of waste.
- The parameters for which each waste will be analyzed and the rationale for the selection of these parameters.
- The methods for tracking waste codes to ensure compliance with the land disposal restrictions.

A Quality Assurance Plan (QAP) is included as Appendix 1 of this WAP. The QAP describes the methods and procedures that Aragonite laboratory personnel use to assure integrity of laboratory data. The QAP contains the specific procedures and practices used within the laboratory in order to ensure that the resulting data are technically sound, statistically valid, and properly documented.

This waste analysis plan is supported by Standard Operating Procedures (SOP). The SOPs are used by Aragonite laboratory personnel as detailed instructions for performing the necessary procedures. The SOPs are incorporated by reference as part of this waste analysis plan as stand-alone documents. They are required for Utah certification of the Aragonite laboratory and will be followed for compliance with the permit. These procedures may be updated as appropriate without prior UDWMRC approval.

2.0 Identification of Wastes to be Managed

Aragonite accepts wastes for storage and treatment. These wastes include those regulated under the Resource Conservation and Recovery Act (RCRA), the Hazardous and Solid Waste Amendments (HSWA), the Toxic Substances Control Act (TSCA), Superfund wastes (CERCLA), infectious wastes, and other non-hazardous wastes such as household hazardous waste, industrial wastes, etc.

Aragonite accepts wastes in a variety of physical forms, including liquids, sludges, solids, and compressed gases, although these wastes may not arrive in a 100% homogenous form.

Condition 2.C. identifies the wastes and waste codes that are acceptable and that are prohibited at the facility. Conditions 3.C., 4.C., and 5.C. specify wastes and waste codes that are acceptable or prohibited for management in the different waste management units at the facility. There are no restrictions on waste codes for transfer operations.

Superfund (CERCLA) wastes and some wastes generated from spill response efforts are not neatly identified by only one or two waste codes. Most generated waste streams are a mixture of waste codes, necessitating the listing of numerous waste codes. Some of the waste codes are allowed by the permit to enable the facility to accept complex mixtures that have a multiplicity of waste codes present in limited quantities. Lab packs are one such example.

The types of PCB materials accepted for storage, incineration, or transfer operations at the facility are summarized on Table 1. Definitions of the terms used in the table are given. These wastes are regulated under the Toxic Substances Control Act (TSCA) and may be commingled with RCRA-regulated wastes.

Table 1 SUMMARY OF TSCA WASTES FOR INCINERATION			
PCB TYPE [1]	**CLASS**	**TYPICAL PCB CONCENTRATION (DRY WEIGHT)**	**TREATMENT POINT**
Oil	Liquid	0-90%	kiln, ABC
Water	Liquid	0-10%	kiln, ABC
articles & capacitors	Solid	20%	kiln
miscellaneous solids	Solid	0-10%	kiln
soils, spill cleanup	Solid, sludge	0-50%	kiln

1 oil is a dielectric liquid containing PCB and a chlorinated solvent and is hydrocarbon based; miscellaneous solids means gloves, protective clothing, debris, etc.; soils means dirt, earth, rock.

Aragonite also temporarily (ten days or less) holds wastes manifested to another facility at the Aragonite facility during transit similar to that allowed in R315-263-12. This is referred to as transfer operations. The waste may be part of a load for which some of the material is destined for the Aragonite facility. When transfer wastes are shipped off site, the original manifest accompanies the waste. This differs from wastes that are accepted for storage only and then subsequently shipped to another facility where a new manifest is generated with the Aragonite facility as the generator in this situation.

No profile approval procedures are necessary for transfer wastes. The load is not accepted but rather is held on a temporary basis. There are no requirements for sampling or ensuring that the wastes are comparable to a profile. Aragonite will comply with the transporter requirements in R315-263-30 and 31 for these wastes. Also, the containers will be inspected to ensure they are in good condition. The containers will be managed in accordance with the procedures in Attachment 8.

Since these transfer containers are not incinerated at the facility, determination of incineration parameters is not necessary.

3.0 Waste Characterization

This section describes the procedures that are followed for approving a waste stream for management at the facility, sampling and analyzing or inspecting incoming loads, resolving discrepancies that may occur upon receipt of the waste, and determining incineration parameters.

To facilitate the waste receiving and management process, Aragonite categorizes the waste based on the form in which it is received. This categorization defines how the waste will be received,

sampled, analyzed, and ultimately managed at the facility. Incineration parameters will also be determined according to the waste category. Table 2 provides a description of the waste categories, a waste category code for each category, a definition of the category, and examples of waste in the category.

Table 2
Waste Categories

Category	Category Code	Definition	Examples
Routine Waste	1a (liquid) 1b (solid) 1c (sludge) 1d (mixture)	Wastes that can be sampled and analyzed	Containerized wastes, commingled liquids and sludges, commingled solids, PCB's
Lab Packs	2	A container (bottle, jar, sealed bag, etc.) or containers packed inside a larger shipping container as described in R315-264-316 and in accordance with the specifications of 49 CFR §173.12(b). The following restriction applies to lab packs: water reactives may not exceed four liters in the inner containers. Lab packs will have the following attributes: A lab pack profile, and a Packing Slip or Inventory Sheet.	Chemicals from the cleanout of commercial, industrial, educational, or institutional laboratories
Consolidation Containers	3	Shipping containers containing small containers (bottles, jars, cans, bags) of consumer-packaged materials. The outer container may or may not contain loose absorbent or absorbent pads.	Aerosols, batteries, paints in cans, single substance waste streams (all with the same DOT hazard class), mixed waste streams that are not regulated by either the EPA or the DOT (latex paints, resins, driveway sealers, caulking and sealing compounds, spackling, etc.), mixed solid or liquid pesticide streams from Household Hazardous Waste and Agriculture Pesticide collection events (not containing E.P.A. F027)

Table 2 Waste Categories			
Category	Category Code	Definition	Examples
Debris	4	Debris means a homogeneous or heterogeneous 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 R315-268-40 through 49, 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.	Debris contains a wide variety of materials. Examples include steel plates, glass, rocks, and small identical empty containers or objects, mixtures of spill absorbent, Tyvek® suits, rubber booties and gloves, bricks, rocks, metal, and paper towels. Items that may not be part of a debris profile include containers containing any liquid.
Consumer Products (includes Pharmaceuticals and Gas Cylinders)	5	Material that is in its original unopened packaging (as a product) and compressed gas cylinders with contents still under pressure. For consumer products and pharmaceuticals, the packaging is still in good condition so that the contents are easily identified. SDS may or may not be available for this material. For gas cylinders, each cylinder, as it arrives at the facility, is in good condition with all required markings, tags or labels identifying the gas contents intact, in accordance with IFC 3003.2.2.	Examples of consumer products and pharmaceuticals include personal care products and over the counter, or prescription medications. Examples of gas cylinders include butane, ethane, and acetylene
Controlled Substances	6	Containerized material that is defined as a controlled substance by the DEA, the FDA, or both (e.g., cocaine, etc.). Aragonite has a permit, issued through the DEA, allowing generators of these controlled substances to relinquish control to specific personnel at the Aragonite facility, who in turn, maintain control of the shipment from the point of its arrival at the facility until it enters the incinerator.	Schedule I-V Controlled Substances

Table 2 Waste Categories			
Category	Category Code	Definition	Examples
Infectious Waste	7a (Hi-Merc) 7b (Lo-Merc)	A solid waste that contains or may reasonably be expected to contain pathogens of sufficient virulence and quantity that exposure to the waste by a susceptible host could result in an infectious disease. Containers of infectious waste must meet the following packaging criteria: either be poly or fiber containers (no steel drums) and DOT approved for the packaged wastes; maximum size 85-gallon outer containers; sharps in puncture resistant containers; free liquids < 3 gallons; containers with free liquids shall contain absorbent material sufficient to absorb 15% of the volume of free liquids; containers must be locked or otherwise secured to prevent accidental opening during handling (e.g., zip-ties on clamp-type rings, duct tape over the opening mechanism); and no unknowns. All outer containers of infectious waste shall be marked on the side/lid, "Sharps Container Inside" if sharps are present in the inner container.	Animal wastes, carcasses, body parts, human blood, human blood products, human body fluid wastes, microbiological wastes, pathological wastes, sharps.
APHIS Waste	8	A solid waste that is regulated by the Animal and Plant Health Inspection Service of the US Department of Agriculture due to the presence of animal and/or plant invasive pests or noxious weeds that, if released, could be damaging to crops or native species.	Samples from testing laboratories, experimental plant seeds, soil from remediation activities conducted in an APHIS quarantine zone, soil, seeds, weeds, soil or seed samples, brush, insects, fruit, plants
Explosives	9	Material that meets the definition of a DOT Division 1.3, Compatibility Group G explosive or Division 1.4 explosive. Division 1.3 explosives are explosives with a fire hazard, and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard. 1.3G explosives are a pyrotechnic substance or article containing a pyrotechnic substance, or article containing both an explosive substance and an illuminating, incendiary, tear-producing or smoke-producing substance. Division 1.4 explosives are explosives that present a minor explosion hazard, the explosive effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected.	Display and consumer fireworks, smoke grenades, flares, model rocket motors

Because of differences in physical form, packaging, and management options for the many waste types that will be handled at the facility, and since the ability to sample and analyze the different waste matrices varies, different procedures are necessary. Section 3.1 describes the profile approval procedures for each of these waste categories. Section 3.2 describes waste acceptance and handling of discrepancies. Section 3.3 describes determination of incineration parameters. Aragonite will clearly document the waste category for each waste stream accepted at the facility by noting the Category Code for each waste stream in WINWeb or on the *Waste Receiving Report*. If more than one characterization procedure applies to a given waste stream, Aragonite will choose one of the applicable characterization procedures and document that designation.

The storage and acceptance (fingerprint) parameters in Table 3 are determined prior to the waste being accepted. This is because appropriate information must be known in order to properly store and manage the waste prior to incineration. The incineration parameters in Table 4 do not need to be determined at the time of acceptance but must be determined prior to incineration. For routine wastes (Section 3.2.1) the fingerprint parameters are determined through sampling and analysis and documented in waste tracking. However, for other waste categories (Sections 3.2.2 through 3.2.9) samples are not necessarily taken and analyzed. In order to assure that the proper characterization is documented, the following scheme will be followed:

Ignitability:

- Liquid samples that test positive for ambient ignitability or flash point at 140°F will be considered ignitable liquids subject to the restrictions in Conditions 3.C.3., 4.C.3., and 4.C.4.
- For wastes that are not sampled and analyzed, the characterization as an ignitable liquid will be determined from the manifest and/or profile.
- Material shipped as "flammable liquids" or with a DOT hazard class of "3" will be considered ignitable liquids.
- Aerosols shipped with a DOT hazard class of "2.1" shall be considered ignitable liquids.
- Wastes with profiles that list the flash point as less than 140°F shall be considered ignitable.
- If the waste is ignitable and any part of the waste is a liquid or sludge, it will be considered an ignitable liquid.
- If a waste is considered to be ignitable, this will be documented in WINWeb or on the *Waste Receiving Report*.
- If any of the above indicate that the waste is an ignitable liquid, but Aragonite does not believe that it is an ignitable liquid, the reason for the decision to not manage the waste as an ignitable liquid will be noted in WINWeb or on the *Waste Receiving Report*.

Reactive Cyanides/Sulfides:

- If a waste tests positive for the cyanide or sulfide screen, it will be considered a reactive cyanide or sulfide subject to the restrictions in Conditions 3.C.4. However, if a waste tests positive for the cyanide or sulfide screen that is not expected (i.e., the profile, manifest, and pre waste class code do not indicate that it should contain cyanides/sulfides), the cyanide/sulfide spot test will be done to confirm the screen. If the

spot test is positive, the cyanide/sulfide determination will be confirmed and, if required, the discrepancy will be resolved. If the spot test is negative, the results from the screen will be considered a false positive and the waste will not be characterized as a reactive cyanide or sulfide.

- For wastes that are not sampled and analyzed, the characterization as a reactive cyanide/sulfide will be determined from the manifest and/or profile.
- Material shipped as "cyanide" or "sulfide", or that contains any cyanides or sulfides in the profile constituents will be considered reactive cyanide or sulfide.
- If a waste is considered to be a reactive cyanide or sulfide, this will be documented in WINWeb or on the *Waste Receiving Report*.
- If any of the above indicate that the waste is a reactive cyanide or sulfide, but Aragonite does not believe that it is a reactive cyanide or sulfide, the reason for the decision to not manage the waste as a cyanide or sulfide will be noted in WINWeb or on the *Waste Receiving Report*.

Oxidizers:

- If a waste tests positive for the oxidizer screen, it will be considered an oxidizer subject to the restrictions in Conditions 3.C.4. and 4.C.2. However, if a waste tests positive when screening for oxidizers but is known to contain a compound that may provide a false positive result for this screening method or if the concentration of the constituent(s) causing the positive result is lower than the DOT concentration for Class 5.1, this determination will be noted in WINWeb or on the *Waste Receiving Report* and it will not be characterized as an oxidizer.
- For wastes that are not sampled and analyzed, the characterization as an oxidizer will be determined from the manifest and/or profile.
- Material shipped as defined in Module 3.C.4 will be considered an oxidizer and managed accordingly
- Wastes that contain any known oxidizers in the profile constituents will be considered oxidizers.
- If a waste is considered to be an oxidizer, this will be documented in WINWeb or on the *Waste Receiving Report*.
- If any of the above indicate that the waste is an oxidizer, but Aragonite does not believe that it is an oxidizer, the reason for the decision to not manage the waste as an oxidizer will be noted in WINWeb or on the *Waste Receiving Report*.

pH:

- If the pH of a waste measures less than 2.0 (acid) or greater than 12.5 (base), it will be considered corrosive and subject to any compatibility considerations necessary for proper management. If the pH of a waste measures less than 2.0 (acid), it will be subject to the restrictions in Condition 4.C.6.
- For wastes that are not sampled and analyzed, the characterization as a corrosive will be determined from the manifest and/or profile.
- Wastes that contain any known acids or bases in the profile constituents, or carry the D002 waste code, will be considered corrosive.

- If a waste is considered to be corrosive, this will be documented in WINWeb or on the *Waste Receiving Report*.
- If any of the above indicate that the waste is corrosive, but Aragonite does not believe that it is corrosive, the reason for the decision to not manage the waste as corrosive will be noted in WINWeb or on the *Waste Receiving Report*.

Water Reactive:

- If a waste tests positive for the water reactivity test (subject to the conditions identified in Note 3 of Table 7), it will be considered water reactive subject to the restrictions in Conditions 2.C.2.a. and 3.C.6.
- For wastes that are not sampled and analyzed, the characterization as a water reactive waste will be determined from the manifest and/or profile.
- Material shipped as "water reactive" or with a DOT hazard class of "4.3" will be considered water reactive.
- Wastes that contain any known water reactive constituents in the profile constituents will be considered water reactive.
- If a waste is considered to be water reactive, this will be documented in WINWeb or on the *Waste Receiving Report*.
- If any of the above indicate that the waste is water reactive, but Aragonite does not believe that it is water reactive, the reason for the decision to not manage the waste as water reactive will be noted in WINWeb or on the *Waste Receiving Report*.

When using the DOT shipping descriptions or hazard classes in characterizing the wastes for management at the facility, all applicable shipping names and hazard classes will be used, not just the primary ones. These will be properly documented in WINWeb or on the *Waste Receiving Report.*

Clean Harbors Aragonite may perform the Table 3 storage and acceptance analyses in the E-5 fingerprint area. Laboratory fume hoods have been installed in E-5 between the western most wall of E-5 to the south of the entrance door and immediately west of the containment wall of Bay 2. The E-5 fingerprint area is classified as a Class C fire hazard laboratory unit under NFPA and shall meet all applicable NFPA requirements. Whenever a waste sample and/or chemicals are present in a fume hood, the exhaust fan shall be running, and the hood sash shall be positioned to ensure that the minimum required airflow is maintained. The fire door between the E-5 fingerprint area and E-6 shall remain closed and sealed off.

3.1 Profile Approval Process

3.1.1 Routine Wastes

Before Aragonite can approve a waste stream for storage or treatment at the facility, a completed Waste Profile Sheet must be provided by the generator. Profiles can be submitted electronically or via hard copy. When the profile information is determined to be complete, it will be reviewed

in order to assess the acceptability of the waste stream for management at the facility. These profile approval procedures occur prior to notifying the generator that the waste stream is acceptable for management at the Aragonite facility.

Waste Profile Sheets contain information about the generator, physical and chemical characteristics of the waste, process generating the waste, applicable waste codes, applicable DOT shipping name, and generator certification that the information provided is accurate. The following list details the minimum information that must be supplied as part of the Waste Profile Sheet:

- Generator Information
  - Generator
  - Address
  - Facility Contact
  - Phone #
  - Generator EPA ID#
- General Information
  - Generating Process
  - Common Name of Waste
  - Rate of Generation
  - DOT Shipping Name
  - DOT Hazard Class
  - EPA Waste Codes
- Chemical Composition
  - List of Chemical Constituents and Concentrations
- Physical Description
  - Physical Description
  - Physical State
  - Phases/Layering
  - % Free Liquid
- Regulatory Information
  - Regulated or Licensed Radioactive Waste
  - Regulated Infectious Waste
  - Dioxin Listed Waste
  - TSCA Regulated Waste
- Generator Certification
  - Certification signed by the generator that the information supplied on the Waste Profile Sheet and any attachments or supplements represent a complete and accurate description of the waste.

Following the review of the Waste Profile Sheet, the waste stream is evaluated for management at the facility. This evaluation includes a review of:

- Appropriate documents to ensure that acceptance of the waste material at Aragonite will be in compliance with company policies and all applicable federal, state, and local laws and regulations.

- Existing treatment and storage facilities and capabilities to ensure that the waste material can be satisfactorily managed by Aragonite or an off-site facility.

- The physical and chemical characteristics of the waste material to ensure that the material is compatible with other wastes which are present.

- The waste characterization information and available analytical data to ensure that the waste material does not contain any specific waste codes, compounds, or properties which are prohibited at Aragonite.

All profiles for all waste streams must be approved by waste acceptance personnel. Final approval is electronically documented in WIN as approved with a one-year expiration date. This electronic documentation can be provided upon request. Following approval of the candidate waste stream and prior to shipment of the waste, the generator is notified in writing that the Aragonite facility has the appropriate permits for and will accept the waste stream in accordance with Condition 2.B. and R315-264-12(b).

At a minimum, the profile evaluation is repeated when a generator notifies Aragonite that the process generating the waste has changed (e.g., when the raw materials to the process have changed), if Aragonite has reason to suspect that the waste is in non-conformance with profile documentation, or annually.

For an annual recertification, Aragonite will ask the generator to note any changes in the waste stream or to certify that the waste stream has not changed. After a review of the generator's certification, the profile will be recertified. If there are changes in the waste stream that do not result in the waste stream being unacceptable, the profile will be updated and recertified. If there are changes in the waste stream that result in the waste stream becoming unacceptable, the profile will be canceled, and the generator notified.

If the waste is approved for management at the facility, a unique identification number is assigned to the waste stream. This number is used to track the material through the subsequent stages of the waste management process. The internal routing type and process codes will be used to identify and manage various waste types.

3.1.2 Lab Packs

The profile approval process for lab packs is the same as described in Section 3.1.1 except as described in this section.

Lab packs are packaged by Clean Harbors' employees on behalf of Aragonite or are packaged by personnel who are not employed by Clean Harbors.

If packaged by Clean Harbors' personnel, an inventory sheet for each lab pack is not required for profile approval but is included with each shipment. All the chemicals are inventoried as the lab packs are packaged by Clean Harbors' employees; as a result, Aragonite will know the contents of each lab pack.

If the lab packs are packaged by non-Clean Harbors' personnel, inventory packing lists must be sent to Clean Harbors' technical personnel, acting on behalf of Aragonite, and preapproved prior to shipment. The generator also provides the remaining required information from the Waste Profile Sheet listed in Section 3.1.1 for that batch of lab packs. The drum numbers of the lab packs that have been approved will be indicated on the lab pack review form. The remainder of the profile approval process (e.g., evaluation of the acceptability of the batch and the notification of the profile approval being sent to the generator) is the same as for lab packs packaged by Clean Harbors' employees.

3.1.3 Consolidation Containers

The profile approval process for consolidation containers is the same as described in Section 3.1.1. The generator will also supply a detailed written description of the waste stream.

3.1.4 Debris

The profile approval procedures for debris are identical to those for routine waste in Section 3.1.1. The generator will also supply a detailed written description of the waste stream.

3.1.5 Consumer Products, Pharmaceuticals, and Gas Cylinders

The profile approval procedures for consumer products, pharmaceuticals, and gas cylinders are identical to those for routine waste in Section 3.1.1.

3.1.6 Controlled Substances

The profile approval process for this category of wastes is identical to that for routine wastes in Section 3.1.1.

3.1.7 Infectious Wastes

Generators shipping infectious waste to the Aragonite facility are required to identify the type of material that is being sent on the profile.

The profile approval procedures for infectious waste are the same as those for routine wastes in Section 3.1.1.

For waste that is not classified as infectious waste, but which contains blood, body fluids, human or animal parts, feces, or other material normally suspected to be infectious, or which may be

classified as medical waste in other states, documentation shall be included in the profile explaining why it was determined to not be infectious.

Wastes or materials shipped as a DOT hazard class of "6.2" will be considered infectious.

Certain types of disinfectants and preservatives used in conjunction with infectious waste can contain various levels of mercury. Generators are required to identify the concentration of mercury in their infectious waste on the Waste Profile.

Where known quantities of specific chemicals are included in a container of infectious waste, this shall be specified on the waste profile.

3.1.8 APHIS Wastes

The profile approval process for this category of wastes is identical to that for routine wastes in Section 3.1.1.

3.1.9 Explosives

The profile approval process for this category of wastes is the same as that for routine wastes in Section 3.1.1. Additionally, the generator will provide diagrams or photographs of the waste stream for use in identifying and verifying incoming shipments of 1.3G explosives. The Permittee will maintain these diagrams and photographs as part of the operating record.

The generator will also supply sufficient information to establish incineration parameters for each waste stream in this category.

3.2 Load Receiving, Acceptance and Handling of Discrepancies

Aragonite's inbound inspection and sampling process ensures that incoming waste materials conform to information provided on the shipping paper and waste profile and can be managed safely at the facility. Certain waste streams, however, are not sampled and analyzed and alternative methods are used to determine conformance to the manifest and profile information and to determine the incineration parameters. In general, wastes that are not subject to sampling and analysis include, but are not limited to:

- Waste streams not conducive to sampling – those wastes for which representative samples cannot be easily obtained or sampling is impractical,
- Waste streams that inhibit analysis – those wastes that could possibly be sampled but may not be easily analyzed,
- Wastes streams that could cause health, safety or environmental concerns if sampled and analyzed,
- DEA Controlled Substances

3.2.1 Routine Wastes

If the waste profile is approved, the waste stream is scheduled for shipment to the facility. Upon arrival at the facility, the waste is inspected, sampled, and analyzed as described below prior to it being accepted or commingled with other waste streams. This serves two purposes. First, it compares the waste characteristics of the actual load with those listed on the profile and on the waste manifest. Second, it establishes the characteristics that identify the proper management of the waste while at the facility.

Aragonite determines the acceptability of the waste based on:

- conformance between the waste profile and the load analyses;
- permit conditions at the facility; and
- the availability of proper waste management techniques.

Waste is not accepted until the waste has been determined to match the profile or all discrepancies have been adequately resolved.

Potential discrepancies for waste shipments include differences in quantity or type between the manifested waste and the waste actually received.

Quantity discrepancies are determined by conducting a piece count of the number of individual containers or weighing bulk shipments and comparing the results with the quantity indicated on the manifest. The number of containers must be correct: there is no tolerance for a quantity discrepancy. The weight of bulk shipments must be within ±10% of the manifested weight.

Waste type discrepancies are determined by inspection and by comparing analyses of the incoming load to the profile information and the manifest description. A waste type discrepancy is defined as obvious differences between the waste and what is indicated on the shipping paper which can be discovered by inspection or waste analysis. A difference that would change the regulatory status or the USDOT shipping name of the waste would be considered a discrepancy.

Examples include:

- The waste is profiled with a flash point of 160ºF and is not characterized as flammable (D001) but the waste received has a flash point <140ºF and should be characterized as flammable (D001).
- The waste is manifested as a “Waste Corrosive Liquid” D002 but the waste received, and the profile describe the waste as “Waste Flammable Liquid” D001.

If discrepancies in the quantity or type of waste occur, Aragonite will attempt to reconcile the discrepancy with the generator.

For quantity discrepancies, Aragonite will conduct a recount of the shipment, contact the generator to confirm the quantity that was shipped, and will contact locations where intermediate stops were made between the generator and the facility to ensure that drums were not inadvertently added or removed from the shipment.

If discrepancies of waste type occur, the waste may be rejected out-of-hand, or it may be re-evaluated for possible acceptance by the facility despite the variance. This procedure is intended to prevent the unnecessary movement of a waste material back and forth between the facility and the generator in cases where the material can be readily handled by the facility. By eliminating this unnecessary movement, the facility is attempting to reduce further possible exposure of this waste to human health and the environment. The re-evaluation process involves the following steps:

- The sampling and analytical data are reviewed to verify that they are indeed correct.
- Additional analyses may be necessary in order to resolve discrepancies or to re-profile the waste.
- The generator is contacted by Aragonite. In cases where the waste can be managed at the facility in a safe and environmentally sound manner, the discrepancy is resolved between Aragonite and the generator by creating a new profile for the waste or updating the existing profile. Waste that is not amenable to acceptance by Aragonite is rejected.
- If the profile or shipping description overclassifies the waste (e.g., the material is shipped as a flammable but is not actually flammable, or the profile and manifest show it as a cyanide but it tests negative as a cyanide) then the generator will be contacted to resolve the discrepancy. If the generator indicates that he overclassified the waste, this will be documented on the manifest and operating record. However, a new profile will not need to be created nor will the existing profile need to be updated.

The resolution of the manifest discrepancy will be noted on both the manifest and in the operating record. If the discrepancy cannot be resolved within 15 days, the Director will be notified.

Container shipments are sampled as described in Section 4.8. The sample composites are analyzed for the acceptance parameters listed in Table 3. If the wastes can be managed and are not prohibited at the facility, the containers can then be accepted. As discussed in Section 3.3.1.1, the composite samples are analyzed for the incineration parameters listed in Table 4 prior to incineration of the waste. If containerized waste at Aragonite is shipped to the Clive facility for storage, the waste may later be manifested back to the Aragonite facility and accepted on piece count alone, without further inspection or sampling, provided the material was previously inspected, sampled, and accepted at the Aragonite facility and the material is in its original shipping containers.

Prior to being accepted, tankers of bulk liquid and sludge waste may be placed in the truck unloading/drive through direct burn station, E-1, E-5, and E-4 receiving docks, or bulk

solids/sludge pad. Tankers of bulk liquid waste may also be placed in the drive through corrosive direct burn station prior to being accepted. Alternately, tankers of liquid and sludge waste may be held outside of permitted storage awaiting analysis (subject to timeframes specified elsewhere in the permit) to determine if the waste can be accepted. Once a determination is made that the waste can be managed at the facility, it is placed into permitted storage, either bulk container storage or tank storage. Each bulk liquid and sludge shipment is sampled as described in Section 4.11 and analyzed for the acceptance parameters listed in Table 3. As discussed in Section 3.3.1.2, the blended liquids and sludges are analyzed for the incineration parameters listed in Table 4 prior to incineration of the waste to ensure compliance with permit feed limitations.

Prior to being accepted, containers of bulk solids may be placed in the E-1, E-5, and E-4 receiving docks, or the bulk solids/sludge pad. Alternately, containers of bulk solids may be held outside of permitted storage awaiting analysis (subject to timeframes specified elsewhere in the permit) to determine if the waste can be accepted. Once a determination is made that the waste can be managed at the facility, it is placed into permitted storage, either bulk container storage or tank storage. Each bulk solid shipment is sampled as described in Section 4.11 and analyzed for the acceptance parameters listed in Table 3. As discussed in Section 3.3.1.3, the bulk solids are analyzed for the incineration parameters listed in Table 4 prior to incineration of the waste to ensure compliance with permit feed limitations.

The wastes may be processed (i.e., decanted, shredded, etc.), commingled, or both with other wastes prior to incineration. Each movement of a waste within the facility, during which any change in its characteristics may occur, makes the waste subject to additional inspection, sampling, and analysis to determine the appropriate handling and management of the waste. All of the analyses needed for the acceptance and storage functions are performed during incoming load verification. These are not repeated unless it is known or believed that the waste characteristics may change during storage or processing.

3.2.2 Lab Packs

Upon receipt at the facility, the lab pack waste will be inspected, and the accompanying paperwork reviewed. Any discrepancies in piece count will be considered a manifest discrepancy and managed using the process described in Section 3.2.1.

All lab packs arriving at the facility will be accompanied by a detailed inventory of the contents of each container. The container packing list details each small container within the primary container, including the chemical name, number of containers, container size, and physical state. The items on each inventory sheet are reviewed and compared to the manifest and profile to ensure that it matches the manifest and profile and can be accepted. Differences between the inventory sheet and the profile will be considered discrepancies per Section 3.2.1 and will be resolved as outlined in Section 3.2.1. Differences between the inventory sheet and the container contents will be considered discrepancies per Section 3.2.1 and will be resolved as outlined in Section 3.2.1.

Lab packs packaged by Clean Harbors' personnel will not be opened to compare packing lists with contents. This step has already been verified during the packing process. The packing list will clearly show who packed the lab pack and easily identify that they are Clean Harbor's personnel. Lab packs packaged by non-Clean Harbors' personnel will have 10% of containers shipped per manifest opened and the contents compared with the packing lists. Aragonite will document which lab packs are verified and the result of the verification process.

Individual containers within the lab pack will not normally be opened and tested. However, all inner containers greater than four liters will be tested for LEL using Aragonite Method 14 if they are designated for processing as kiln-direct or in the bulk solids building. Liquid waste streams of organic peroxides, oxidizers, aromatic and aliphatic ethers, nitric acid >10%, isocyanates, and ignitables that exceed four liters will be decanted or poured off rather than being fed as direct charges.

Materials that are determined not to be acceptable, either through review of the container contents sheet or physical examination, will be returned to the generator or shipped off-site to an approved transfer, treatment/disposal facility. The generator will be contacted prior to any subsequent off-site movement of the waste.

Since the inner containers are generally not sampled and analyzed, the profile, manifest, and/or inventory sheets will be reviewed to establish the characteristics that identify the proper management for storage and/or processing of the waste while at the facility.

3.2.3 Consolidation Containers

The process for receiving acceptance and the handling of discrepancies for consolidation containers is the same as described in Section 3.2.1. except for sampling and analysis.

Prior to accepting the consolidation container, the contents of each container are inspected for physical appearance. The person conducting the inspection will ascertain the type (aerosols, batteries, paint in cans, single substance waste streams, caulk, etc.), and confirms that the contents meet the criteria of a consolidation container defined under Table 2. He will also document that the contents are the same as described on the profile.

Since the inner containers are generally not sampled and analyzed, the profile and manifest will be reviewed to establish the characteristics that identify the proper management of the waste while at the facility.

3.2.4 Debris

The process for receiving, acceptance and the handling of discrepancies for debris is the same as described in Section 3.2.1, except that debris is not sampled or analyzed.

Prior to accepting the debris waste, the contents of each container or each bulk load are inspected for physical appearance. The person conducting the inspection will ascertain the contents of the

container and confirm that it meets the criteria for debris defined under Table 2. He will also document that the contents are the same as described on the profile.

Since the waste is not sampled and analyzed, the profile and manifest will be reviewed to establish the characteristics that identify the proper management of the waste while at the facility.

If the debris is to be placed into one of the bulk tanks, it will be tested for LEL in accordance with method Aragonite 14. Other information necessary to properly store the material (e.g., potential incompatibilities) will be obtained and evaluated from the profile information supplied by the generator.

If, upon examination, the debris is found to contain intact containers of waste, process residuals, air emission residues, or batteries (in other words, it does not meet the regulatory definition of debris), a discrepancy exists which will be resolved using the process described in Section 3.2.1.

3.2.5 Consumer Products, Pharmaceuticals, and Gas Cylinders

The process for receiving, acceptance and the handling of discrepancies for Consumer Products, Pharmaceuticals and Gas Cylinders (collectively Consumer Products) is the same as described in Section 3.2.1, except that consumer products are not sampled or analyzed.

Prior to accepting the Consumer Product waste, the contents of each container are inspected for physical appearance and to ensure that the product labeling is consistent with the profile information. If any of the product containers (excluding cylinders) are found to have been opened, or are not sealed, the person conducting the inspection will reopen the containers and the contents will be compared to one of the unopened containers to ascertain that the material is the same. This information will be documented in the operating record.

Gas cylinders are inspected for physical appearance and to ensure that the product labeling is consistent with the profile information. The operating record will document how each cylinder's contents are classified in accordance with the material types defined in the International Fire Code.

The inspector will confirm that the material meets the criteria for consumer products and pharmaceuticals defined under Table 2. Other information necessary to properly manage the material (e.g. flash point, potential incompatibilities, etc.) will be obtained and evaluated from the profile provided by the generator.

3.2.6 Controlled Substances

Due to DEA regulations, only designated Aragonite personnel will accept and maintain control of the shipment upon its arrival at the facility.

The general requirements for receiving and acceptance for waste classified as Controlled Substances, and the handling of discrepancies, are the same as described in Section 3.2.1, except that these materials are not sampled or analyzed. Controlled substances can be placed in a locked office of someone authorized to maintain control of DEA wastes, in a locked van on one of the docks of the container storage buildings, or in one of the two safes in Building E3 prior to acceptance. Aragonite may receive controlled substances from DEA registered generators or directly from the ultimate user as defined by DEA.

DEA wastes may come from two different types of sources that have different verification procedures: those shipped with DEA form 222 or form 41, and those that are part of a take-back or mail-back program under 21 CFR §1317.

Container contents are checked and verified to match DEA form 222 or form 41. Discrepancies in piece count, waste type or individual unit count are subject to specific DEA notification and resolution requirements. The containers will be barcoded so they can be tracked in the waste tracking system. The load will be placed onto a burn plan as soon as practicable and directly fed to the incinerator. In case the shipment cannot be immediately placed on the burn plan, designated personnel shall lock the shipment in one or both of two safes located in Building E-3. The combination to the safes is only known to those personnel designated under the DEA permit and the area has security cameras that are monitored 24 hours a day by personnel in the incineration control room.

When the facility incinerates DEA regulated materials, such as take-back or mail-back programs that cannot be opened in accordance with 21 CFR §1317, the facility will not open, inspect and/or sample these containers. For acceptance, the facility will weigh each container and verify a piece count with the shipping documentation. Additionally, a radioactive screen will be performed on each container in accordance with the Aragonite Radioactivity Screen (Aragonite-6) (except that the containers will not be opened for the test).

3.2.7 Infectious Wastes

The process for receiving, acceptance and the handling of discrepancies for Infectious Waste is the same as described in Section 3.2.1, except that wastes are not inspected, sampled, or analyzed.

Each container of infectious waste shall be weighed individually at Aragonite prior to being fed to the incinerator or being repackaged when shipped in reusable primary containers with sealed inner containers or containing sharps. This weight shall be recorded in the facility operating record. If this container was shipped from another Clean Harbors facility, the container(s) weight information will already be populated in WIN and that weight may be used instead of weighing the container again.

Since the waste is not sampled and analyzed, the profile and manifest will be reviewed to establish the characteristics that identify the proper management of the waste while at the

facility.

3.2.8 APHIS Wastes

The process for receiving, acceptance and the handling of discrepancies for APHIS Waste is the same as described in Section 3.2.1. However, Aragonite may make a request to the Director that the containers from a specific waste stream not be opened due to circumstances unique to that waste stream. Aragonite will not need to open and/or sample these containers if the request is granted by the Director.

Bulk shipments of APHIS waste (e.g., soil from a remediation site) may also be accepted to be incinerated. Any bulk shipments will be sampled and analyzed as described in Section 3.2.1.

Each container of APHIS waste shall be weighed individually at Aragonite prior to being fed to the incinerator. This weight shall be recorded in the facility operating record. If this container was shipped from another Clean Harbors facility, the container(s) weight information will already be populated in WIN and that weight maybe used instead of weighing the container again.

If the waste is not sampled and analyzed, the profile and manifest will be reviewed to establish the characteristics that identify the proper management of the waste while at the facility.

3.2.9 Explosives

The process for receiving, acceptance and handling of discrepancies for explosive wastes is the same as described in Section 3.2.1 except the material will not be sampled or analyzed.

Prior to accepting DOT Division 1.3G and 1.4 waste, the contents of each container are inspected for physical appearance to verify that the waste is consistent with the profile. The photographs or diagram provided in the profile approval process for 1.3G explosives will be used in the acceptance process to confirm the waste matches the profile. Any received material that does not match the physical appearance of the waste in the physical description, photograph, or diagram, or is otherwise inconsistent with the profile information will be treated as a discrepancy.

3.3 Determination of Incineration Parameters

Incineration parameters for routine wastes will be based on the analysis taken of each shipment that is destined for incineration at the facility. For those wastes which cannot be sampled or analyzed during the normal receiving process the facility will develop set(s) of incineration parameters for each category of waste using the procedures described in Sections 3.3.2 - 3.3.8 below.

3.3.1 Routine Wastes

This section describes the methods for determining the incineration parameters (Table 4) for routine wastes received at Aragonite. Section 3.3.1.1 describes the procedures for containerized wastes that have not been commingled with other wastes. Sections 3.3.1.2 and 3.3.1.3 describe the requirements for wastes that have been processed and/or commingled with other wastes prior to incineration.

3.3.1.1 Containerized Wastes

Container shipments are sampled as described in Section 4.8. The sample composites are analyzed for the incineration parameters listed in Table 4 prior to incineration.

3.3.1.2 Commingled (Blended) Liquids and Sludges

All liquids and sludges, either containerized or in bulk, are first subject to compatibility testing as described in ASTM method D5058-90 Test Method A, prior to being commingled. If they pass, they may be blended. Incompatible bulk waste is not commingled. Any successive blending of liquids is also subject to the same compatibility testing.

Prior to being fed to the incinerator, the incineration parameters from Table 4 for the blended liquids and sludges are determined. These values can be determined by either of two methods.

- A sample of the blended waste can be obtained and analyzed for the incineration parameters. A new sample will be obtained and analyzed if waste is added to the tank.

- Alternatively, these values can be determined mathematically (using a weighted average) from incineration parameter analysis of material added to the blend tank, such as bulk tanker loads or transfers from other storage tanks. The latter method is used only when incineration parameter analysis is available for each portion of material added to the blend tank.

3.3.1.3 Commingled Solids

All solids, either containerized or in bulk, are first subject to compatibility testing as described in EPA-600/2-80-076 or ASTM method D5058-90 Test Method A, prior to being commingled. If they pass, they may be placed in the same tank. Incompatible bulk waste is not commingled. Any successive commingling of solids is also subject to the same compatibility testing. Prior to placing materials in the bulk solids tanks or shredding, they will be tested for explosive vapors using method Aragonite-14. Wastes that fail the test will not be shredded or placed in the bulk solids tanks.

Prior to incineration, the bulk solids feed is characterized for the incineration parameters listed in Table 4 using one of several options depending on whether the tank contents will be mixed prior to incineration.

- If the tank contents will not be mixed prior to incineration, the rolloff or end dump with the highest value for each incineration parameter will be used and that value will be assigned to the entire tank. If wastes with higher values are added to the tank, the tank chemistry will be updated to account for this waste.

- A weighted average may be used instead of the highest rolloff or end dump for determining the Btu incineration parameter. If a weighted average method is used, it is implemented using the contents in the top 25% of each tank. The average Btu of each tank is recalculated when new material is placed in the tank or when the material for which the weighted average has been calculated (i.e., the top 25% of the tank contents) has been removed as indicated by the waste tracking system (which uses a last in/first out system). To calculate a new weighted average Btu for the tank when new material is placed in the tank before the top 25% has been removed, a new top 25% is determined using the rolloff or end dump values from the material that the waste tracking system shows as being in the tank.

- When material is being shredded or transferred into the feed tank from other tank(s) (e.g., when material from T-404A, T-404B-East or T-403 is being shredded or transferred into T-404B-West), and the combined waste streams are fed to the incinerator, the chemistry of the feed to the incinerator will be determined using the highest value for each parameter of the tank(s) (or the highest weighted average in the case of Btu).

- If the tank contents are mixed, incineration parameters for the entire tank will be estimated using weighted averages of the incineration parameters analyzed for individual rolloffs or end dumps placed in the tank or a composite prepared from those rolloffs or end dumps.

- Alternatively, if the tank contents are to be mixed, rolloff or end dumps may be accepted and off loaded using the acceptance analyses (Table 3) only. Then, after mixing the tank, incineration parameters will be determined on a representative sample from the tank (as described in Section 4.10).

The following criteria will be used to ensure that the wastes in the bulk solids tanks are adequately mixed. The material to be mixed will be in tank T-403 or T-404B-East. Mixing will be accomplished with a backhoe, or equivalent, that can reach to all sides and the bottom of the tank. Mixing will occur for at least 30 minutes. The doors to the bulk solids tank may not remain open for mixing for more than 90 minutes during each 24-hour period. The waste shall be mixed until it appears relatively homogenous.

3.3.1.4 Commingled Wastes for the Shred Tower

Containers will be selected for the shred tower process through profile review and knowledge of the chemicals in each container. No oxidizers, infectious wastes, explosives, water reactives, or compressed gas cylinders are allowed to be processed in the shred tower.

Materials are processed in the shred tower in “feed drops”. A feed drop consists of a combination of barrels, boxes, overpacks, and other containers up to 52" x 48" x 60". These containers can either be on a pallet or on a slip-sheet. A feed drop for the shred tower will be compiled by checking for compatibility by using EPA-600/2-80-076 or ASTM Method D5058-90 Test Method A. Each such evaluation for compatibility will be documented in the operating record. No incompatible materials will be placed on the same feed drop or placed next to each other on the conveyor belt. When a feed drop is incompatible with the previous feed drop, the shred tower will be purged prior to feeding the incompatible feed drop. The purge will consist of a minimum of two drops of stacked pallets and/or bags of vermiculite, or two feed drops of material that is compatible with the incompatible feed drops. This will ensure incompatible materials will not mix while in the shredder or auger.

The incineration chemistry of each of the containers making up the feed drop will be determined as described in this plan. The chemistry of the feed drops will then be determined by using a mass balance of the chemistry of the waste contained in the containers of the feed drop. The chemistry will be applied to the entire weight of the feed drop, which includes the weight of the drums. The weight of the feed drop is determined by the combined weight of containers and material when it was accepted. Chemistry will be determined, and included in the feed calculations, for material used in purging feed drops. Material will be considered incinerated for waste tracking purposes as it enters the upper shred chamber (i.e., after it exits the airlock).

3.3.2 Lab Packs

Since individual containers in lab packs are not sampled or analyzed upon receipt at the Aragonite facility, the process used to determine the incineration parameters for these lab pack materials differs from the one provided for routine wastes in Section 3.3.1. The process for lab packs relies on the development of an average (or mean) plus two standard deviations, or the maximum, for Btu, and three standard deviations, or the maximum, for each of the other incineration parameters in Table 4, and the application of this set of values to each type of lab pack received by the facility. Using the process outlined below, the facility will develop a matrix that provides a unique set of incineration parameters for each type of lab pack that is received. The type of lab pack received will be based upon the DOT hazard class code.

For each lab pack DOT hazard class code, Aragonite will randomly select fifty (50) lab packs (Example: 50 lab pack containers shipped as DOT class 9 are selected). The inner containers in each of the selected lab packs are composited into one sample. The composite sample will then be analyzed for all incineration parameters in Table 4. The average and two standard deviations, or the maximum, for Btu, and three standard deviations, or the maximum, for each of the other incineration parameters in Table 4, for the composite samples will be determined and will represent the incineration parameters for the lab pack classification. This process will be repeated for each lab pack DOT hazard class. Once this process has been completed for all DOT hazard classes, the matrix will be populated with incineration parameters for each lab pack hazard class. Subsequently, whenever a lab pack is incinerated, it will be assigned the

incineration parameters from the matrix that corresponds to the DOT hazard class of the lab pack.

The evaluation process will be repeated with a minimum of 10 lab pack containers from each DOT hazard class annually and the matrix updated annually to ensure that it reflects the current mix of lab packs received by the facility. Further, the process will be conducted, and the matrix updated whenever a lab pack is received at the facility with a DOT hazard class code that has not been previously received.

Records of supporting analyses and calculations used to determine lab pack incineration parameters will be maintained in the facility operating record.

As an alternative, the inventory sheets that accompany specific lab pack shipments may be used to develop incineration parameters instead of using the matrix parameters. Aragonite will document how the incineration parameters for these specific wastes are calculated from the inventory sheets.

3.3.3 Consolidation Containers

Individual containers shipped in consolidation containers are not sampled or analyzed at the Aragonite facility. The process used to determine incineration parameters for these consolidated materials relies on the development of an average (or mean) plus two standard deviations, or the maximum, for Btu, and three standard deviations, or the maximum, for each of the other incineration parameters in Table 4, and the application of this set of values to each type of consolidation container received by the facility. Using the process outlined below, the facility will develop a matrix that provides a unique set of incineration parameters for each type of consolidation container that is received. The type of consolidation container received will be based upon the DOT hazard class code.

For each consolidation container DOT hazard class code, Aragonite will randomly select fifty (50) consolidation containers. Each type of material (paint, caulking, aerosol, etc.) in the consolidation container will be identified and a relative percentage of the material in each of the containers determined. To develop the incineration parameters for each material, special homogenizing and blending methods, such as cryogenic shredding, will be used to generate analytical data from samples of each type of material. The incineration parameters may also be determined from the description of the material, generating process, generator knowledge, literature searches, good engineering judgment, and data generated by the facility on similar waste streams. If the consolidation container holds containers that contain more than four ounces of a material for which a representative sample can be obtained and analyzed, a representative sample of the material in the inner containers will be collected and analyzed for the parameters on Table 4.

Using the analytical data for each of the materials in the sampled container and the relative percentage of the material in the container, the values of the incineration parameters for that container will be determined. The average and two standard deviations, or the maximum, for

Btu, and three standard deviations, or the maximum, for each of the other incineration parameters in Table 4, for the individual sampled consolidation containers will then be determined and will represent the incineration parameters for that consolidation container classification. This process will be repeated for each consolidation container DOT hazard class. Subsequently, whenever a consolidation container is incinerated, it will be assigned the incineration parameters of the applicable consolidation container hazard class.

The evaluation process will be repeated, and the incineration parameters updated annually with a minimum of 10 containers from each DOT hazard class to ensure that it reflects the current mix of materials held within consolidation containers. This new data will be added to the current data and a new average plus two standard deviations, or the maximum, for Btu, and three standard deviations, or the maximum, for each of the other incineration parameters in Table 4, calculated. Further, the process will be conducted, and the incineration parameters updated whenever the facility has information that the current mix within the consolidation containers being received is not representative of that class of consolidation containers.

Records of supporting analyses and calculations used to determine incineration parameters for consolidation containers will be maintained in the facility operating record.

3.3.4 Debris

Individual containers and bulk shipments of debris are not sampled or analyzed at the Aragonite facility. The process for determining the incineration parameters for debris relies on the development of an average (or mean) plus two standard deviations, or the maximum, for Btu, and three standard deviations, or the maximum, for each of the other incineration parameters in Table 4, and the application of this set of values to each type of debris containers or bulk shipments received by the facility. Using the process outlined below, the facility will develop a matrix that provides a unique set of incineration parameters for each type of debris that is received. The type of debris received will be based upon the DOT hazard class code.

For each debris DOT hazard class code, Aragonite will randomly select fifty (50) debris containers (including rolloffs) shipped. Each type of debris (wood, steel, pipe, bricks, plastic, etc.) in the debris container will be identified and a relative percentage of the material in each of the containers determined. To develop the incineration parameters for the debris, techniques such as, but not limited to, scarifying, scraping, pulverizing, homogenizing, or wiping will be used to generate analytical data from samples of each type of debris. The incineration parameters may also be determined from the description of the material, generating process, generator knowledge, literature searches, good engineering judgment, and valid data generated by the facility or customers on similar waste streams.

Using the analytical data for each of the materials in the sampled container and the relative percentage of the material in the container, the values of the incineration parameters for that container will be determined. The average and two standard deviations, or the maximum, for Btu, and three standard deviations, or the maximum, for each of the other incineration parameters in Table 4, for the individual sampled debris containers will then be determined and

will represent the incineration parameters for that debris container classification. This process will be repeated for each debris DOT hazard class. Subsequently, whenever a debris container, or a batch from a bulk shipment, is incinerated, it will be assigned the incineration parameters of the applicable debris hazard class.

The evaluation process will be repeated with a minimum of 10 containers (including rolloffs) from each DOT hazard class and the incineration parameters updated annually to ensure that it reflects the current mix of materials held within each type of debris container. This new data will be added to the current data and a new average plus two standard deviations, or the maximum, for Btu, and three standard deviations, or the maximum, for each of the other incineration parameters in Table 4, calculated. Further, the process will be conducted, and the incineration parameters updated whenever the facility has information that the current mix within the debris containers being received is not representative of that class of debris.

Records of supporting analyses and calculations used to determine incineration parameters for debris will be maintained in the facility operating record.

3.3.5 Consumer Products, Pharmaceuticals, and Gas Cylinders

Individual containers shipped in consumer product / pharmaceutical containers are not sampled or analyzed at the Aragonite facility. The process used to determine incineration parameters for these materials relies on the development of an average (or mean) plus two standard deviations, or the maximum, for Btu, and three standard deviations, or the maximum, for each of the other incineration parameters in Table 4, and the application of this set of values to each type of consumer product / pharmaceutical received by the facility. Using the process outlined below, the facility will develop a matrix that provides a unique set of incineration parameters for each type of consumer product / pharmaceutical that is received. The type of consumer product / pharmaceutical received will be based upon the DOT hazard class code.

For each consumer product / pharmaceutical DOT hazard class code, Aragonite will randomly select fifty (50) consumer product / pharmaceutical containers. Each type of material (shampoo, pills, liquid medicine, etc.) in the consumer product / pharmaceutical container will be identified and a relative percentage of the material in each of the containers determined. To develop the incineration parameters for each material, special homogenizing and blending methods, such as cryogenic shredding, will be used to generate analytical data from samples of each type of material. The incineration parameters may also be determined from the description of the material, generating process, generator knowledge, literature searches, good engineering judgment, and valid data generated by the facility on similar waste streams. If the consumer product / pharmaceutical container holds containers that contain more than four ounces of a material for which a representative sample can be obtained and analyzed, a representative sample of the material in the inner containers will be collected and analyzed for the parameters on Table 4.

Using the analytical data for each of the materials in the sampled container and the relative percentage of the material in the container, the values of the incineration parameters for that

container will be determined. The average and two standard deviations, or the maximum, for Btu, and three standard deviations, or the maximum, for each of the other incineration parameters in Table 4, for the individual sampled consumer product / pharmaceutical containers will then be determined and will represent the incineration parameters for that consumer product / pharmaceutical classification. This process will be repeated for each consolidation container DOT hazard class. Subsequently, whenever a consumer product / pharmaceutical container is incinerated, it will be assigned the incineration parameters of the applicable consumer product / pharmaceutical hazard class.

The evaluation process will be repeated, and the incineration parameters updated annually with a minimum of 10 containers from each DOT hazard class to ensure that it reflects the current mix of materials held within a consumer product / pharmaceutical container. This new data will be added to the current data and a new average plus two standard deviations, or the maximum, for Btu, and three standard deviations, or the maximum, for each of the other incineration parameters in Table 4, calculated. Further, the process will be conducted, and the incineration parameters updated whenever the facility has information that the current mix within the consumer product / pharmaceutical containers being received is not representative of that class of consumer product / pharmaceuticals.

Records of supporting analyses and calculations used to determine incineration parameters for consumer products and pharmaceuticals will be maintained in the facility operating record.

For gas cylinders, each rack of cylinders will be fed to the incinerator as a single job with the incineration chemistry being the same for all cylinders in a rack, using the worst-case chemistries from the cylinders on the rack. Alternatively, Aragonite may feed each cylinder separately using its own incineration chemistry.

3.3.6 Controlled Substances

In compliance with DEA regulations, individual containers of controlled substances are not sampled or analyzed at the Aragonite facility. A predetermined controlled substances matrix, located in Table 6, shall be used for all DEA-regulated materials received at the Aragonite facility. However, if the profile and/or packing list (e.g., form 41) indicate that there are chemicals or compounds in addition to DEA wastes that could affect the incineration chemistry, these chemicals or compounds will be factored into the incineration chemistry.

3.3.7 Infectious Wastes

Individual containers of infectious waste are not opened for purposes of inspecting, sampling, or analyzing at the Aragonite facility. Reusable primary containers packed with sealed inner containers or sharps may be opened for purposes of repackaging the sealed inner containers or sharps into containers destined for incineration via drum dump or direct feed. The facility will not, at any time, open any of the sealed inner containers being repackaged. The process for determining the incineration parameters for infectious wastes relies on the use of the matrix that is found in Table 5. The incineration parameters provided in Table 5 were determined from

literature information, historic generator profile information, generator analysis, and limited facility testing.

Infectious wastes will be subcategorized into Hi-merc or Low-merc subcategories based on the presence or absence of mercury disinfectants and / or cleaners in the profile and the concentration of mercury in the waste. For the determination of incineration parameters, infectious wastes will be subcategorized into Hi-Merc and Low-Merc depending upon the concentration of mercury in the waste. Low-Merc infectious waste will be considered any infectious waste with a mercury concentration <300 ppm. Hi-Merc infectious waste will be considered any infectious waste with a mercury concentration >300 ppm up to 2,500 ppm. For burn chemistry planning, Low-Merc waste will assume the container has 300 ppm mercury and High-Merc waste will assume the container has 2,500 ppm mercury. Any infectious waste container profiled with >2500 ppm mercury can be approved for management, but incineration parameters will be based on the profiled mercury concentration.

3.3.8 APHIS Wastes

The facility will follow all APHIS permit and regulatory requirements to ensure noxious seeds, weeds or pests do not escape the feed tanks and equipment. Once the APHIS waste is completely processed, any tanks and equipment used in the material transfer will be decontaminated using a disinfecting solution. Used solution will be containerized and burned in the incinerator as in-house waste. The incineration parameters for APHIS waste will be determined from the analysis of the sample collected. Alternatively, if a sample is not required as described in Section 3.2.8, the determination of the incineration parameters for the wastes relies on the use of information provided by the generator on the waste profile. Aragonite will document how the incineration parameters for these specific wastes are calculated from the profile.

3.3.9 Explosives

Explosive wastes are not sampled or analyzed at the Aragonite facility. Incineration chemistry for those applicable parameters in Table 4 will be created for each profile received based upon the description of the material, generating process, generator knowledge, literature searches, and good engineering judgment. The incineration chemistry for each profile will be kept in the facility operating record with justification to show how the values for those parameters were determined.

Table 3 Storage and Acceptance (Fingerprint) Analyses	
Parameter	**Rationale for Selection**
Physical Description	Used to determine the general characteristics of the waste stream. Also used to ensure correct grouping of wastes for sampling. Also used to detect discrepancies in waste types. Also used to determine which waste characterization procedure will be used. Also used to determine the percentages of the various material types in debris-like wastes.
pH	Used to determine the corrosivity of the waste to ensure proper storage of the waste.
Water Reactivity	Used to determine whether the waste has a potential to react with water to generate heat, flammable gases, or other products. It is also used to help identify prohibited wastes.
Reactive Sulfides Screen	Used to indicate whether the waste produces hydrogen sulfide upon acidification. This information is necessary in order to avoid storage and mixing incompatibilities.
Ignitability	Indicates the susceptibility of the waste to be ignited. This information is necessary in order to avoid placement or storage of the waste in inappropriate areas.
Reactive Cyanides Screen	Used to indicate whether the waste produces hydrogen cyanide upon acidification. This information is necessary in order to avoid storage and mixing incompatibilities.
Oxidizer Screen	A general qualitative test used to determine if a waste is an oxidizer. Oxidizers have the potential to react with a wide range of waste streams and therefore often need to be segregated.
Radioactivity Screen	Used to help identify prohibited wastes.

Table 4 Incineration Analyses	
Parameter	**Rationale for Selection**
Viscosity	Needed to determine the pumpability of the waste stream. Only applies to liquids and sludges.
Specific Gravity	Required to convert values from volume to mass units. Only required for bulk liquids and sludges.
Btu Content	Determines the need for supplemental fuel during the combustion process. Also used to ensure compliance with heat content requirements and limitations (e.g., total Btu/hr, maximum Btu/container, etc.).
Total Halogens	Measures the amount of equivalent acid expected to be generated per unit amount of waste incinerated. Used to calculate the amount of neutralizing agent needed to meet the incinerator's acid emission requirement, and to maintain compliance with feed rate limitations.
Metals (As, Cd, Cr, Pb, Hg, Be)	Analysis of these metals is required in order to maintain compliance with metals feed rate limitations.
PCBs	PCB concentration is required in order to maintain compliance with the TSCA feed rate limitations.

Specific Organic Analysis	Gas chromatography and gas chromatography/mass spectrometry may be used to identify and quantify specific organic compounds when the generator is unaware of waste stream's composition.

Table 5
Infectious Waste Matrix

	Low Mercury Infectious Waste (Low-Merc)	High Mercury Infectious Waste (Hi-Merc)
Arsenic (ppm)	30	30
Beryllium (ppm)	15	15
Cadmium (ppm)	6	6
Chromium (ppm)	30	30
Lead (ppm)	30	30
Mercury (ppm)	300	2,500
Fluoride (ppm)	60	60
PCB (ppm)	0	0
Halogen (ppm)	10,000	10,000
BTU (Btu/lb)	8263	8263
Specific Gravity	1.5	1.5
Bulk Density (lb/ft^3)	104.1	104.1

The matrix provided in here has been developed using historic information available to the facility. It will be modified as needed to reflect new information or to add specific constituents that have been identified on customer profiles.

Table 6
Controlled Substances Matrix

Arsenic (ppm)	10
Beryllium (ppm)	9
Cadmium (ppm)	8
Chromium (ppm)	28
Lead (ppm)	219
Mercury (ppm)	.31
Fluoride (ppm)	480

PCB (ppm)	0
Halogen (ppm)	9908
BTU (Btu/lb)	10752
Specific Gravity	1.8

4.0 Waste Sampling

4.1 Sampling Locations

Containers are sampled in the container storage buildings.

Bulk loads are sampled in a bermed area or in the thaw shed in the event of inclement weather.

Truck parking is on the east and south side of the facility. For rolloffs containing residue to be disposed off-site, the area south of bulk solids and the kiln train can be used to store these rolloffs. The area around the east container building and the area between the container buildings can also be used for truck parking. Another location south of Main Street may be used on a temporary basis only after receiving oral approval from UDWMRC.

4.2 Sampling Methods

The methods and equipment used for sampling vary with the form and consistency of the waste to be sampled. The appropriate representative sampling techniques, devices, and containers are selected from the EPA document, "Test Methods for Evaluating Solid Wastes" (SW-846) or "American Society for Testing and Materials" (ASTM) methods.

In order to determine the physical and chemical characteristics of a waste, a representative sample is needed. A representative sample is defined as a sample exhibiting average properties of the whole waste.

Sampling accuracy (the closeness of a sample value to its true value) and sampling precision (the closeness of repeated sample values) are the issues of importance. Thus, from both regulatory and scientific perspectives, the primary objectives of a sampling plan are to collect samples that allow accurate and precise measurements of the physical and chemical properties of the waste. If the chemical measurements are sufficiently accurate and precise, they are considered reliable estimates of the chemical properties of the waste. Statistical techniques for obtaining accurate and precise samples are relatively simple and easy to implement. Sampling accuracy is usually achieved by some form of random sampling. In random sampling, every unit in the population has a theoretically equal chance of being sampled and measured. Consequently, statistics generated by the sample are unbiased (accurate) estimators of true population parameters. In other words, the sample is representative of the population.

4.3 Traceability

Aragonite follows sample traceability for all internal sampling and analysis. This involves the documentation of procedures so that a set of data can be traced back through the analyst, to the person performing the sampling, and then to the waste itself. All samples receive a unique sample identification number to facilitate this process.

4.4 Sampling Personnel

Sampling is performed by specially trained laboratory technicians or operations personnel. The laboratory manager or designee trains sampling personnel and observes their techniques periodically to ensure a thorough understanding of sample collection, storage, and transportation practices.

4.5 Sample Labeling

Samples will be labeled to provide identification of samples. The sample labels are filled out at the time of collection. Sample label information may also be written on the lid of the sample container. Sample labeling must contain the following information:

- sample identification
- place of collection
- date and time of collection
- person sampling

Bar code labels may be used as an alternative to, or in conjunction with, the labeling indicated above. The bar code will directly tie the collected sample with the waste stream that was received and may be used to track the sample through waste analysis.

4.6 Logbook

All information pertaining to sampling is recorded in a logbook, inspection or receiving report, or electronically. This record includes the following information:

- location of sampling point
- volume of sample taken
- date and time of collection
- sample identification number
- person sampling
- comments or observations
- sampling methodology
- number of samples and disposition

Sampling situations can vary widely; however, sufficient information is recorded to allow someone to reconstruct the sampling conditions without reliance on the collector's memory.

4.7 Sample Preservation

All samples are preserved in accordance with the parameter to be measured, as specified by the analytical method for that parameter. For sample preservation, specific procedures are found in the Aragonite Quality Assurance Plan.

4.8 Sampling of Containers

The term "container" refers to receptacles designed for transporting materials, e.g., drums and other small receptacles as opposed to stationary tanks. This section addresses sampling of containers that are of a size that could be stored in the container storage building. Sampling of bulk materials in large containers such as rolloffs, tank trucks, etc. is addressed in section 4.11. COLIWASAs, tubes, shovels, drum thieves, and triers are the devices used to sample containers.

A random sampling strategy is employed to sample incoming shipments of containerized waste. Samples from containers holding the same type of waste may be composited. The following procedure will be used to determine how many containers will be sampled and which samples will be composited. Each container will be opened and visually inspected. Wastes on a single load that have the same profile number and DOT description (excluding waste codes) and appear to be of the same waste type will be grouped together. Ten percent (rounded up) of the containers in each of these groups will be sampled as described below. The samples within each separate group may be composited for analysis.

A unique tracking number is assigned to each container.

Samples are taken from locations displaced both vertically and horizontally throughout the waste. For liquids (or liquids with precipitated solids), the sampling person uses a COLIWASA or equivalent. The sampling device is inserted into the container from the top and is pushed down slowly until the bottom of the container is reached. The device is sealed to retain the contents. The contents of the sampling device are then transferred to a polyethylene or glass bottle, which is labeled with waste identification information. The sampling device may also be stoppered at both ends, wiped dry with a disposable cloth, and then transferred to the lab for analysis.

A trier or thief is used to sample containers that are solid in nature. These containers are generally filled with dirt and sludges. Several areas from the container are sampled and composited into a jar in order to ensure a representative sample. The sampling person removes a sample that uniformly represents the waste composition of the container, i.e., all layers and phases are represented in the sample.

4.9 Sampling of Tanks

Liquid and sludge storage and blend tanks at Aragonite are agitated. Either a propeller-type mixer or recirculation agitates the tanks. The agitation capabilities of the tanks make it possible to obtain a representative sample via a sampling valve. The tanks are agitated prior to drawing a sample. The waste is sampled from a valve on the side or bottom of each tank.

Bulk solids that have been mixed in the bulk solids storage tanks are sampled at a minimum of six locations in the tank. A scoop is taken with the backhoe, or equivalent, from as deep a cross section as possible at each location. A trier, thief or shovel is used in order to collect a sample

from each backhoe scoop. The samples are composited together so that there is one sample that represents that particular mix of bulk solids.

4.10 Sampling of Bulk Materials

Where sampling of bulk loads is required, each bulk container of each load will be sampled as described below.

Bulk solids in rolloffs or end dumps are sampled at two locations in the waste container. A trier, thief or shovel is used in order to draw a sample from as deep a cross section as possible at each location. The samples are composited together so that there is one sample that represents that particular bulk solids shipment.

Bulk liquids are sampled by using a COLIWASA or similar device that can sample vertical anomalies. Bulk sludges are sampled with a device appropriate for the consistency of the material. That may be a COLIWASA, trier, dip tube, or thief, etc. Each compartment of tanker trucks is sampled. Compartment samples from the same generator and waste stream may be composited prior to analysis.

Tank trucks without man-ways are sampled through the valve. The valve is flushed prior to the sample actually being drawn.

An exception to the requirement for sampling each load of bulk load shipments is where a rail car of liquids or visibly similar solids is divided into multiple bulk tanker or truck loads for final shipment to Aragonite. This will only occur at the Bulk Solids Rail/Truck Transfer facility, Unit 255, and the Bulk Liquids Rail/Truck Transfer Bay, Unit 535, at the Clive facility. In such cases, a representative sample will be taken from each rail car and that sample may be used as the incoming load sample for each of the individual truck or tanker loads from that rail car. For bulk solids, the sample from the rail car will consist of at least six sub-samples taken from equal areas in the rail car at depths of at least one foot. Alternatively, the sample could be collected by compositing at least three grab samples from the backhoe bucket while the waste is being transferred from the rail car to the end dumps or rolloff boxes. For liquids, a representative sample will be taken with a COLIWASA from the hatch of the rail car. Samples will follow chain-of-custody procedures for transport to Aragonite.

Additionally, analyses of samples taken at the Clive facility by Aragonite personnel and analyzed according to the methods specified in the Waste Analysis Plan (Attachment 1) may be used for acceptance and management at Aragonite. This is the only case in which the incoming load sample may be collected off-site.

4.11 Frozen Waste

Aragonite will not sample waste that is frozen. The truck will park in the truck unloading building or thaw shed until the waste can be sampled. Alternatively, containers may be placed on the receiving floor until thawed. A sample will then be collected as outlined in this section.

5.0 Test Methods

The test methods to measure the parameters discussed throughout this document are identified in Table 5. Whenever possible Aragonite uses established methods from Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition, US EPA, 1986 and its updates. However, SW-846 does not have methods for all the parameters specified. In these particular cases, Aragonite uses other established methods, including American Society for Testing and Materials (ASTM); EPA 600/4-79-020, Methods for Chemical Analysis of Water and Wastes; Standard Methods for Examination of Water and Wastewater, Latest Edition; EPA 40 CFR §136, Appendix A Methods; and EPA Contract Laboratory Program, Inorganic SOW and Organic SOW Methods. Where other practical methods are not available, methods have been developed by Aragonite. These methods are described at the end of this section.

When Aragonite, or an off-site laboratory, performs analysis using a method found in SW-846 and the method is one that is certifiable by the State of Utah, the laboratory performing the analysis shall be certified for that method.

The letter following a method number indicates the SW-846 revision of that method. When new method revisions are promulgated by EPA, they will be implemented within six months of promulgation. Thus, listed method numbers will remain constant, but suffixes (A, B, C, etc.) will depend on the latest EPA revision. Table 7 will be updated as soon as practical to include the latest promulgated method revisions. Utah certified laboratories used by Aragonite may have the prior revision designation on their certification as long as the method number reflects that listed in Table 7, analyses are actually performed and reported according to the latest revision, and the lab has applied for, and provided all necessary information to obtain certification for the new revision. If a lab has not yet implemented the update within the six months and it is necessary to use that laboratory, Aragonite may provide justification for using that lab and request a variance from the Director.

TABLE 7
ANALYTICAL PARAMETERS AND ASSOCIATED METHODS

PARAMETER	METHOD NUMBER	REFERENCE
Acid Digestion of Sediments, Sludges, and Soils	3050B	(1)
Acid Digestion of Aqueous Samples and Extracts for Total Metals for Analysis by Flame Atomic Absorption Spectroscopy or Inductively Coupled Plasma Spectroscopy	3010A-MOD	(1)
*Alumina Column Cleanup	3610B	(1)
Aluminum (ICP) (ICPMS)	6010B, 6010C, 6010D, 6020A, 6020B	(1)
Antimony (ICP) (ICPMS)	6010B, 6010C, 6010D, 6020A, 6020B	(1)
Arsenic (ICP) (ICPMS)	6010B, 6010C, 6010D, 6020A, 6020B	(1)
Ash	D482-07	(2)
Barium (ICP) (ICPMS)	6010B, 6010C, 6010D, 6020A, 6020B	(1)
Beryllium (ICP) (ICPMS)	6010B, 6010C, 6010D, 6020A, 6020B	(1)
Bromide	9056A	(1)
Cadmium (ICP) (ICPMS)	6010B, 6010C, 6010D, 6020A, 6020B	(1)
Calcium (ICP) (ICPMS)	6010B, 6010C, 6010D, 6020A, 6020B	(1)
*Carbamate pesticides (LCMS)	8321	(1)
Chloride	9252A, 9253	(1)
Chloride (Ion Chromatography)	9056A	(1)
Chlorinated Herbicides	8150B, 8151A, 8150B/8151-MOD	(1) (1)
Chromium (ICP) (ICPMS)	6010B, 6010C, 6010D, 6020A, 6020B	(1)
Cobalt (ICP) (ICPMS)	6010B, 6010C, 6010D, 6020A, 6020B	(1)
Copper (ICP) (ICPMS)	6010B, 6010C, 6010D, 6020A, 6020B	(1)
*Continuous Liquid-Liquid Extraction	3520C	(1)
Fluoride (Ion Chromatography)	9056A	(1)

TABLE 7 ANALYTICAL PARAMETERS AND ASSOCIATED METHODS		
PARAMETER	**METHOD NUMBER**	**REFERENCE**
Fluoride (Potentiometric, Ion Specific Electrode)	340.2 5050	(3) (1)
Florisil Column Cleanup	3620C	(1)
Gas Chromatography	8000C	(1)
Gas Chromatography/Mass Spectrometry for Volatile Organics	8260B, 8260C, 8620D	(1)
Gas Chromatography/Mass Spectrometry for Semi-volatile Organics	8270C, 8270D, 8270E	(1)
*Gel-Permeation Cleanup (GPC)	3640A	(1)
Headspace	3810	(1)
Heat of Combustion (BTU)	D240-09	(2)
Ion Chromatography	9056A	(1)
Ignitability Liquid, actual flashpoint, no suspended solids	1020B-MOD, 1010	(1)
Ignitability Liquid, at 140°F, no suspended solids	1020B-MOD	(1)
Ignitability Liquid, room temperature	D4982-95	(2)
Ignitability Liquid, actual flashpoint, suspended solids (sludge)	1010, 1020B-MOD	(1)
Ignitability Sludge, at 140°F	8b, 1020B-MOD	(4)(1)
Ignitability Solids, room temperature	D4982-95	(2)
Ignitability Solids, at 140°F	1020B-MOD	(1)
Iron (ICP) (ICPMS)	6010B, 6010C, 6010D, 6020A, 6020B	(1)
Lead (ICP) (ICPMS)	6010B, 6010C, 6010D, 6020A, 6020B	(1)
LEL	14	(4)
Liquids, Sludge Compatibility (see note 3)	D5058-90 Test Method A	(2)
Magnesium (ICP) (ICPMS)	6010B, 6010C, 6010D, 6020A, 6020B	(1)
Manganese (ICP) (ICPMS)	6010B, 6010C, 6010D, 6020A, 6020B	(1)
Mercury Cold Vapor (AA)	7470A, 7471B	(1)
Microwave Assisted Acid Digestion of Aqueous Samples and Extracts	3015A	(1)
Microwave Assisted Acid Digestion of Sediments, Sludges, Soils and Oils	3051A	(1)

TABLE 7
ANALYTICAL PARAMETERS AND ASSOCIATED METHODS

PARAMETER	METHOD NUMBER	REFERENCE
Moisture (organic liquids)	D1533	(2)
Moisture (Inorganics)	2540B	(5)
Molybdenum (ICP) (ICPMS)	6010B, 6010C, 6010D, 6020A, 6020B	(1)
Nickel (ICP) (ICPMS)	6010B, 6010C, 6010D, 6020A, 6020B	(1)
Nitrate/Nitrite Ion Chromatography	9056B	(1)
Nitrogen, Total	7.025-7.031	(7)
Nonhalogenated Volatile Organics	8015B	(1)
Organic Extraction and Sample Preparation	3500C	(1)
Organochlorine Pesticides	8080A, 8081A	(1)
*Organophosphorus Compounds by Capillary Column GC	8141A	(1)
Oxidizer Screen	D4981-89	(2)
Paint Filter	9095B	(1)
*PCDD	8280, 8290	(1)
*PCDF	8280, 8290	(1)
PCBs	8082A	(1)
*PCB and Pesticides (GC/MS)	680	(6)
PCB Wipes	8082A	(1)
pH Electrometric	9040C	(1)
pH Paper	9041A	(1)
pH Waste	9045D	(1)
pH Solids	9045D	(1)
Physical Description	D4979-89	(2)
Potassium (ICP) (ICPMS)	6010B, 6010C, 6010D, 6020A, 6020B	(1)
Purge-and-Trap	5030B, 5030C	(1)
Radioactivity Screen	6	(4)
Reactive Cyanide Screen (Spot Test) Confirmation (see note 2)	D5049-90 Test Method C	(2)

TABLE 7 ANALYTICAL PARAMETERS AND ASSOCIATED METHODS		
PARAMETER	**METHOD NUMBER**	**REFERENCE**
Reactive Cyanide Screen (Dräger) Prime (see note 2)	D5049-90 Test Method D	(2)
Reactive Sulfide Screen (Spot Test) Confirmation (see note 2)	D4978-89 Test Method A	(2)
Reactive Sulfide Screen (Dräger) Prime (see note 2)	D4978-89 Test Method B	(2)
Cyanide (Releasable)	Chapter 7, Sec. 7.3.3.2	(1)
Sulfide (Releasable)	Chapter 7, Sec. 7.3.4.2	(1)
Selenium (ICP) (ICPMS)	6010B, 6010C, 6010D, 6020A, 6020B	(1)
Separatory Funnel Liquid-Liquid Extraction	3510C	(1)
Silica Gel Cleanup	3630C	(1)
Silver (ICP) (ICPMS)	6010B, 6010C, 6010D, 6020A, 6020B	(1)
Sodium (ICP) (ICPMS)	6010B, 6010C, 6010D, 6020A, 6020B	(1)
Solids Compatibility	N/A	(8)
Ultrasonic Extraction	3550B, 3550C	(1)
Soxhlet Extraction	3540B, 3540C	(1)
Specific conductance	120.1	(3)
Specific Gravity	D1429-86-MOD	(2)
*Sulfides	9030A, 9030B, 9031	(1)
Sulfate Ion Chromatography	9056B	(1)
*Sulfur (ICP) (ICPMS)	6010B, 6010C, 6010D, 6020A, 6020B	(1)
Sulfur Cleanup	3660A, 3660B	(1)
Sulfuric Acid Cleanup	3665A	(1)
Thallium (ICP) (ICPMS)	6010B, 6010C, 6010D, 6020A, 6020B	(1)
Tin (ICP) (ICPMS)	6010B, 6010C, 6010D, 6020A, 6020B	(1)
TCLP	1311	(1)
Total and Amenable Cyanide (Colorimetric, Manual)	9010C, 9014	(1)
*Total and Amenable Cyanide (Colorimetric, Automated UV)	9012	(1)

TABLE 7 ANALYTICAL PARAMETERS AND ASSOCIATED METHODS		
PARAMETER	**METHOD NUMBER**	**REFERENCE**
Total Organic Carbon	9060A	(1)
Total Halogen	5050, 9253	(1)
Vanadium (ICP) (ICPMS)	6010B, 6010C, 6010D, 6020A, 6020B	(1)
Viscosity	D2983-87	(2)
Waste Dilution	3580A	(1)
Water Reactivity Screen (see note 1)	D5058-90 Test Method C	(2)
Zinc (ICP) (ICPMS)	6010B, 6010C, 6010D, 6020A, 6020B	(1)
** Off-site laboratory only*		

TABLE 7
ANALYTICAL PARAMETERS AND ASSOCIATED METHODS

(1) Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, EPA Publication SW-846 [3rd Edition (November 1986), with current updates]

(2) American Society for Testing and Materials

(3) Methods for Chemical Analysis of Water and Wastes, EPA 600/4-79-020

(4) Aragonite Methods

(5) Standard Methods for the Examination of Water and Wastewater, Latest Edition, APHA, WEF

(6) Alford-Steven, A.; Eichelberger, J.W. and Budde W.L. Method 680. Determination of Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry. Physical and Chemical Methods Branch. Environmental Monitoring and Support Laboratory Office of Research and Development. U.S. EPA, Cincinnati, Ohio 45268. November 1985.

(7) Association of Official Analytical Chemists, 14th Edition

(8) A Method for Determining the Compatibility of Hazardous Wastes, EPA-600/2-80-076, April 1980

NOTES:

1. A significant temperature change as called out in paragraph 24.8 of ASTM method D5058-90 is defined as ≥15°C. The test does not apply to wastes already in contact with excess water, nor is a wastewater reactive if the heat generation is due solely to a strong acid/base reaction as verified by pH analysis. Occurrence of the reactions listed in paragraph 24.4 of ASTM method D5058-90 result in failure of the water reactivity test, except that formations of precipitates or emulsions are considered failures only if the ability to mix and pump the resulting liquids is impaired.

2. The test is not required for wastes with pH <6.

3. A temperature rise as called out in paragraph 11.8 of ASTM method D5058-90 is defined as ≥15°C. Occurrence of the reactions listed in paragraph 11.7 of ASTM method D5058-90 result in failure of the compatibility test, except that formations of layers, precipitation, emulsification, or increases in viscosity are considered failures only if the ability to mix and pump the resulting liquids is impaired.

Aragonite Methods

Radioactivity Screen (Aragonite-6)

All incoming waste shipments will be monitored for radioactivity using a count rate meter with a Geiger-Mueller (GM) detector. The detector window shall have at least a 2.54 centimeters diameter opening utilizing window material of approximately 1.7 milligrams per square centimeter. The detector shall be operated in accordance with the manufacturer's recommended procedures. Detectors shall be calibrated at least annually and after repair.

The detector window shall be placed within one (1) inch (but not in contact) of the sample surface of bulk materials until a steady, time weighted count rate is obtained. Three (3) measurements shall be taken of each sample and recorded.

Results of surveys are to be recorded in terms of counts per minute or microroentgen per hour. Any waste found to have a count rate exceeding background by three (3) times or greater for any measurement shall not be accepted without receiving authorization from the UDWMRC. A background reading shall be taken for each sampling day prior to each sample event and the measurement recorded.

Ignitability Screen for Sludges (Aragonite-8b)

The ignitability screen for sludges is determined using a modified version of EPA SW-846 Method 1020B. Instead of an actual flash point determination as outlined in the 1020B, the sludge is heated in the test cup to 140°F. When the temperature in the cup reaches 140°F, the flame is applied to the sample. A flash/no-flash measurement is determined and recorded as positive or negative.

LEL (Aragonite 14)

This method is used for the determination of the presence of explosive vapors dissipating from a waste. A quantitative result in % LEL is indicated on the instrument.

Containers of waste are opened enough to insert the probe. The instrument pulls any vapors above the waste into the detectors. Sufficient time must be allowed to clear the air from the sample line. The container is sampled immediately after opening. The probe inlet is placed close to, but not touching, the waste in the container. The result in % LEL is recorded in the logbook. Care must be exercised to ensure that drafts are avoided in the area that is being sampled as this can cause an erroneous result. The test is not to be run on materials that will poison the detector.

The instrument will be calibrated according to the procedures and at the frequency specified by the manufacturer. It will be operated according to the instructions provided by the manufacturer. Daily sensitivity checks and continuing sensitivity checks every twentieth sample will be conducted. The test will not be run with an instrument that is not functioning correctly.

6.0 Waste Code Tracking and Residue Disposition

This section of the Waste Analysis Plan addresses how waste codes are tracked from arrival on site, through storage, through incineration, and through characterization to meet land disposal restrictions in R315-268 for final placement in a landfill. The discussion follows chronologically from receipt to the outbound manifest.

6.1 Waste Code Assignment

The Generator is responsible for assigning waste codes. At the profile step, the Generator includes the waste codes that accompany the waste. Waste Acceptance personnel check the codes to make certain that the waste codes assigned are complete. This step is done by checking the "process generating the waste" against the listed waste codes.

When the truck arrives, the waste codes on the shipping papers/manifest are checked against the waste codes on the profile. The codes on the shipping papers/manifest are the codes assigned to the load once it is accepted for storage, provided that the codes are either identical or a subset of the waste codes on the profile.

6.2 Waste Codes for Containers and Tanks

Waste codes for containers are those contained on the line item of the manifest. Production can elect to track by line item on a manifest or use all the waste codes on the profile or the subset on the manifest.

For tanks, the waste codes on the entire profile or the subset on the manifest are used.

Liquid blend tanks carry all the codes assigned to any storage tank that was pumped to the blend tank. For example, if T-301 and T-304 are pumped to T-321, then T-321 carries all the waste codes in T-301 and T-304.

6.3 Waste Code Removal from Tanks

To remove a waste code from a tank, the tank must be emptied. For liquid and sludge tanks, since they are bottom fed tanks, the waste codes are removed once the material cannot be pumped from the tank. For bulk solids tank, the codes are removed when the clam shell can no longer remove waste. The intent is to remove as much loose material as mechanically possible. P-listed waste codes and PCBs are carried until the tank is triple rinsed with an appropriate solvent.

6.4 Tracking Codes through Incineration

Waste codes are tracked on a daily basis, midnight to midnight. Incineration gives the burn rate per orifice to Production Planning and then Production assigns the waste codes for the day. The Laboratory determines what analysis is needed depending on the codes incinerated that day. Once the analytical results are complete, the laboratory checks to see if LDR standards were met. If the standards were met, the analytical is used as backup for an outbound manifest per rolloff. If the standards are not met, the Laboratory can do an investigation to determine if the results were biased by laboratory contamination. If contamination is suspected, the rolloff will be sampled and analyzed again. If the LDR standards were not met and no contamination is suspected, then the rolloff is slotted to bulk solids for re-incineration. Re-incinerated material will be discussed later.

6.5 Sampling

Samples of slag, spray dryer residue, and baghouse dust are collected to determine if LDR treatment standards are met. For slag, grab samples are taken as each rolloff is filled. For spray dryer residue, grab samples may be taken as each rolloff is filled or a sample may be taken once every four hours. Sampling logs indicate which protocol is being used on a particular day. For baghouse dust, a sample is taken once every four hours. Alternatively, samples of the slag, spray dryer residue, and baghouse dust may be taken from the rolloff in accordance with the procedures for sampling bulk solids in section 4.11.

6.6 Compositing Samples

All samples are transferred to the laboratory. Composites are prepared using equal portions of the individual grab samples (±10% by weight). Slag samples are composited on either a daily basis or a rolloff basis. The laboratory work order form indicates whether to composite daily or by rolloff. Equal portions of each grab sample, either from the entire day or each container, are combined and mixed to generate a composite for LDR testing.

Spray dryer and baghouse samples may be combined to form a "residue" composite, or each stream may be composited and analyzed separately. The rationale for combining the residue stream is that they are essentially the same stream with the exception that the spray dryer has more moisture. For either residue compositing strategy (composites of both streams or composites of each stream) the compositing may be done on a daily basis or on a rolloff basis. These composites are prepared as discussed above for slag. If the composite is of both waste streams, it shall be proportional by weight of the two residues.

6.7 Analyzing the Samples

The slag and residue composites are analyzed by the Aragonite laboratory or other labs as specified in Section 5. Analytical results are reviewed by on-site lab personnel to determine, based on the waste codes incinerated, whether the applicable LDR treatment standards were achieved.

The frequency of compositing and analysis of slag and residue varies with the parameters to be

analyzed. This is described below.

Composite samples are analyzed daily for PCBs to demonstrate TSCA compliance.

Metals analyses may be performed to determine stabilization requirements prior to landfill disposal. If metals analyses are not completed on a daily basis, it will be assumed that the LDR standards for those days have not been met.

The other parameters in the slag and residue may be analyzed on a daily basis or on a weekly basis. If on a weekly basis, it will be done by compositing the daily composites for the entire week and analyzing this sample for the applicable parameters. If any of these parameters are detected above the treatment standards, the slag or residue must be managed as outlined in Section 6.9. For weekly composite samples, holding times for analysis will begin the day the last daily sample for the weekly composite is collected.

6.8 Re-sampling

Should re-sampling be required because of contamination, sample holding time expiration, etc., then each rolloff is sampled individually. Six sample points will be selected using the ASTM guidelines. Three of the sample points can be from the surface and three must be within one foot from the bottom of each rolloff.

6.9 Re-incineration and Re-analysis

Should slag or residue not meet LDR standards for organics, it will be either re-incinerated or shipped off site to a permitted treatment/disposal facility. If it is re-incinerated, the waste code daily assignment sheet will be completed as though the residue/slag is original with one exception. The re-incinerated residue does not need to be tested for the waste codes for which LDR standards were met. However, all waste codes associated with any wastes being incinerated for the first time will also be applied to the laboratory analysis.

Slag or residue that fails only for inorganics shall not be re-incinerated but must be shipped off site. Slag that meets LDR standards for both organics and inorganics may be placed in the bulk solids tanks and fed to the incinerator for the purpose of improving the slag conditions in the kiln.

6.10 Outbound Manifests

Once it has been determined that the slag/residue will be shipped off-site for further treatment and/or disposal, the outbound manifest will be prepared. All analytical data indicating that applicable LDR standards have been met will be attached. For slag/residue that fails treatment standards for specific organics and/or inorganics, a statement by Aragonite that further treatment is necessary is required prior to land disposal. Also, generator certifications will be attached as appropriate to each outbound manifest.

APPENDIX 1 – QUALITY ASSURANCE PLAN