

ATTACHMENT 2

WASTE ANALYSIS PLAN

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1.0 Background and Scope

- 1.1** This Waste Analysis Plan (WAP) addresses the Treatment Storage and Disposal Facility (TSDF) requirements of Utah Administrative Code (UAC) R315-264-13 (a) through (c) applicable to the Hazardous Waste Storage Facility (HWSF). Hill Air Force Base (Hill AFB) generates hazardous waste from its industrial, maintenance, and base support operations.

Due to the wide variety of activities conducted at Hill AFB, the HWSF has the potential for receiving most types of waste classified as a hazardous waste by the U.S. Environmental Protection Agency (EPA) and the State of Utah. The HWSF is designed for waste storage only. The HWSF does not treat wastes to meet the Land Disposal Restrictions (LDR) standards.

- 1.2** This Waste Analysis Plan encompasses the requirements of both Hill AFB and the HWSF as generator of the waste and storage facility, respectively. Therefore, this WAP:

- 1.2.1** Describes the types of hazardous wastes that may be stored at the Hill AFB hazardous waste storage facility (HWSF);

- 1.2.1.1** This WAP lists hazardous wastes (by waste code) that are permitted to be stored at the HWSF (Table 2-1). The designation of hazardous waste codes is based upon the known characteristics of the waste, such as ignitability, reactivity, corrosivity, and toxicity. For listed wastes (F-, K-, P-, or U-listed codes) the hazardous waste designation is based upon the criteria established in R315-261-31, R315-261-32, and R315-261-33 UAC.

- 1.2.2** Describes the procedures used to properly identify, classify, and characterize hazardous wastes generated by Hill AFB industrial, maintenance, and base support activities;

- 1.2.3** Describes how HWSF staff identify and evaluate hazardous wastes as they are received for storage;

- 1.2.4** Describes how hazardous wastes are properly characterized through a combination of process knowledge and sample analysis to ensure safe storage, designation of appropriate RCRA waste codes, and determination of proper treatment and disposal; and

- 1.2.5** In accordance with R315-264-13(b) UAC, specifies for each hazardous waste to be managed at the HWSF the following information:

- 1.2.5.1** The analytical parameters utilized to characterize each waste and the rationale for their selection;

- 1.2.5.2** The test methods which are used to test for these parameters;

- 1.2.5.3** The sampling methods (and equipment) used to obtain a representative sample of the waste to be analyzed;
- 1.2.5.4** The frequency with which analysis of the waste will be reviewed and repeated to ensure it is accurate and up to date;
- 1.2.5.5** Waste knowledge documentation or test methods used to comply with R315-264-17 UAC (General Requirements for Ignitable, Reactive, or Incompatible Wastes); and
- 1.2.5.6** Analytical methods used to comply with R315-268-7 UAC (Land Disposal Restrictions - Testing, Tracking, and Recordkeeping Requirements).

2.0 Waste Analysis Requirements for TSDFs (R315-264-13 UAC)

- 2.1** As required by R315-264-13(a) UAC, before wastes generated at Hill AFB are received for storage at the HWSF, they will be properly characterized through the use of generator/process knowledge, through a detailed physical and chemical analysis of a representative sample of the waste, or a combination of both requirements.
 - 2.1.1** Knowledge based characterization may be based on documented knowledge of the process generating the waste, product information (e.g. safety data sheets), known chemical composition and physical properties of the waste, existing published or documented data on the hazardous waste or on hazardous waste generated from similar processes or other documented reliable or relevant information pertaining to the waste.
 - 2.1.2** Waste streams managed at the HWSF are reviewed at least annually to determine whether they have changed based on the process of generation. Chemical/physical analysis is repeated at a minimum of every three years, or when the facility operators are notified by the waste generators, or have reason to believe, that the process or operation generating the waste has changed.
 - 2.1.3** Waste stream characterization is also reviewed, including applicable process knowledge and analytical test results: when the waste acceptance inspection required in Section 5.0 below indicates that the hazardous waste received at the facility does not match the waste profile for that waste stream; or when an off-site TSDF receiving waste shipped from the Hill AFB HWSF finds a discrepancy between the received waste and shipping document/profile.
 - 2.1.4** As described in Section 5 of this attachment, HWSF operators inspect each hazardous waste container received at the facility to determine whether it matches the identity of the waste as specified in the applicable waste stream profile.

3.0 Waste Determination Requirements, Generator (R315-262-11 UAC)

The following hazardous waste determination requirements are included in this waste analysis plan as a reference to illustrate the steps which are required for Hill AFB to make waste determinations as the generator of hazardous wastes.

3.1 Solid wastes, as defined in R315-261-2 UAC, which are generated through the industrial and maintenance operations at Hill AFB are evaluated as to whether they are hazardous in order to ensure wastes are properly managed according to applicable regulations. This waste determination is made using the steps outlined in R315-262-11(a)-(d), as follows:

3.1.1 The hazardous waste determination for each solid waste is made at the point of generation, before any dilution, mixing, or other alteration of the waste occurs, and at any time in the course of its management that it has, or may have, changed its properties as a result of exposure to the environment or other factors that may change the properties of the waste such that the hazardous classifications of the waste may change.

3.1.2 The initial determination is made whether the solid waste is excluded from regulation under R315-261-4 UAC.

3.1.3 If the waste is not excluded under R315-261-4 UAC, knowledge of the waste is used to determine whether the waste meets any of the listing descriptions in R315-261-30 through R315-261-35 UAC.

As stated in R315-262-11(c), Acceptable knowledge that may be used in making an accurate determination as to whether the waste is listed may include waste origin, composition, the process producing the waste, feedstock, and other reliable and relevant information.

3.1.4 Also, a determination is made as to whether the waste exhibits one or more hazardous characteristics as identified in R315-261-20 through R315-261-24 UAC by one of the following procedures, or a combination of both.

3.1.4.1 Application of knowledge of the hazard characteristic of the waste based on the materials or the processes used to generate the waste. This may include any of the following:

3.1.4.1.1 Process knowledge, for example, information about chemical feed stocks and other inputs to the production process; knowledge of products, by-products, and intermediates produced by the manufacturing process; chemical or physical characterization of wastes; information regarding the chemical and physical properties of the chemicals used or produced by the process or otherwise contained in the waste; testing which illustrates the properties of the waste; or other reliable and relevant information about the properties of the waste or its constituents.

3.1.4.1.2 A test other than a test method set forth in R315-261-20 through R315-261-24 UAC, or an equivalent test method approved by the Director under R315-260-21 UAC, may be used as part of the generator's knowledge to determine whether a

solid waste exhibits a characteristic of hazardous waste. However, such tests do not, by themselves, provide definitive results.

- 3.1.4.2** When available knowledge is inadequate to make an accurate determination, the waste will be tested according to the applicable methods set forth in R315-261-20 through R315-261-24 UAC or according to an equivalent method approved by the Director under R315-260-21 UAC and in accordance with the following:
 - 3.1.4.2.1** Where a test method is specified in R315-261-20 through R315-261-24, the results of the regulatory test, when properly performed, are definitive for determining the regulatory status of the waste.
 - 3.1.4.2.2** Hill AFB (as the generator) shall obtain a representative sample of the waste for the testing, as defined in R315-260-10 UAC when testing the waste is required for waste determination.
- 3.1.5** Analytical test data used for waste determination shall be obtained using quality assurance and control procedures which ensure that laboratory data are scientifically valid, defensible, and of known and acceptable accuracy and precision.
 - 3.1.5.1** The majority of Hill AFB waste samples are analyzed at the Hill AFB Science and Analytical Laboratory that is National Environmental Laboratory Accreditation Program (NELAP) certified and Utah State Department of Health certified (Utah Certified) and which maintains a quality assurance program designed to satisfy the above criteria. This quality assurance program is detailed in the Hill AFB Science and Analytical Laboratory Quality Assurance Manual.¹
 - 3.1.5.2** The following are some of the records related to waste sample testing that are maintained by the Hill AFB Science and Analytical Laboratory for a minimum of five years as part of its quality assurance program:
 - 3.1.5.2.1** Training records,
 - 3.1.5.2.2** Raw data records,
 - 3.1.5.2.3** Personnel records,
 - 3.1.5.2.4** Internal audit records,
 - 3.1.5.2.5** Corrective action records,
 - 3.1.5.2.6** Chain of custody records,
 - 3.1.5.2.7** Proficiency testing records,
 - 3.1.5.2.8** Limit of Quantitation (LOQ) records,
 - 3.1.5.2.9** Method detection limit records,
 - 3.1.5.2.10** Equipment calibration and maintenance records,
 - 3.1.5.2.11** Standards and reagents records.

¹ Hill AFB 809th Maintenance Support Squadron, Chemical Analysis Flight, Quality Manual, current revision.

- 4.0 HWSF Waste Analysis Plan - General Requirements [R315-264-13, R315-262-11 UAC]**
- 4.1** Hill AFB shall make an accurate determination at the point of generation for each solid waste generated as to whether it is a hazardous waste, and that it is accurately characterized to ensure wastes are properly managed as specified in R315-262-11 UAC.
- 4.1.1** Hill AFB shall make such determination through use of knowledge of the waste generation process(es) or direct analysis of a representative sample (or a combination of these methods) as specified in R315-262-11(b), (c), and (d) UAC.
- 4.1.2** Safety Data Sheets (SDSs) may be used for waste determination in instances where waste generation processes do not significantly alter the hazardous characteristics of the original material. (For example, if a spent solvent's SDS indicates content of more than 10 percent of a combination of xylene and acetone prior to use, the spent solvent would be an F003 waste).
- 4.2** Wastes which cannot be adequately characterized based solely on waste composition, origin, or knowledge of their process of generation, will require periodic chemical and/or physical analysis of a representative sample.
- 4.3** If a waste is routinely generated in the same manner (i.e. by the same process), a full analysis of each container will not be required. Instead, a statistical sampling of the containers of the waste will be performed on a periodic basis. Periodic verification samples will be used to confirm that the waste from the specific generation activity remains consistent with the initial characterization.
- 4.4 Operating Record (R315-264-73 UAC):**
- An operating record will be maintained at the HWSF in accordance with R315-264-73 to document waste characterization and management decision information. The Operating Record for the HWSF shall include the following documents/records:
- 4.4.1** A copy of this WAP kept at the HWSF in accordance with R315-264-13(b) UAC
 - 4.4.2** A waste tracking database
 - 4.4.3** Waste analysis/characterization records
 - 4.4.4** Manifests and Shipping Documents
 - 4.4.5** Training Records
 - 4.4.6** Inspection Records
 - 4.4.7** Daily Inventory Records
 - 4.4.8** Compliance Records
 - 4.4.9** Orders, Directives, and Authorizations by the Permittee (Hill AFB Commander)
 - 4.4.10** Waste Acceptance/Non-Acceptance Records
 - 4.4.11** Other pertinent records

5.0 Waste Acceptance Criteria at HWSF [R315-264-13(a)(4) UAC]

5.1 The HWSF may hold received waste for up to 10 days to allow for evaluation (fingerprint and inspection) prior to waste acceptance. The following information shall be inspected and recorded in the operating record for waste held in the waste receiving area of the HWSF:

5.1.1 Container control number

5.1.2 Container label information

5.1.3 Count of container and type

5.1.4 Damaged, leaking, or open containers

5.1.5 Waste outside of the container

5.1.6 Compatibility of container with waste

5.1.7 Conditions posing an imminent threat to human health or the environment

5.1.8 Containers of incompatible wastes are properly segregated from each other either by separation at a minimum distance of 10 feet or storage on separate spill containment pallet(s).

5.2 The HWSF staff shall also document the following in the Operating Record:

A visual inspection of the received waste (100% of containers); a comparison of the waste container label information with the waste tracking database, waste description records, and profile information; and applicable results of the fingerprint parameter testing performed (as listed in Table 2-2).

5.3 The HWSF shall document in the Operating Record the acceptance/non-acceptance of hazardous waste containers received for storage at the HWSF.

5.3.1 The HWSF shall not accept waste for storage if there are significant discrepancies between the waste acceptance criteria in Section 5.2 of this attachment and the waste tracking database profile records which cannot be resolved within the 10-day timeframe.

5.3.1.1 If a discrepancy cannot be resolved within the 10-day calendar period (by additional analysis, re-profiling, consultation with the generator, etc.), and the container(s) are rejected, the waste will be returned to the generator or forwarded to an appropriate treatment, storage or disposal facility, based on the waste profile. The discrepancy resolution or the decision to reject container(s) will be documented in the Operating Record.

5.3.2 The HWSF may hold containers of waste pending acceptance in the building 888 staging area for a maximum of 10 calendar days while the following conditions are met:

5.3.2.1 The schedule defined in section 5.4 is completed/followed;

5.3.2.2 Daily inspection of the waste containers is completed; and

5.3.2.3 Signage/labelling (including start date for storage at the HWSF) indicating the waste receiving status associated with each container.

5.4 The Permittee shall complete waste acceptance, including fingerprint/verification analysis, within 10 days after arrival at the HWSF or reject the waste for management at the HWSF. The Permittee may request, in writing to the Director, an extension of up to an additional 20 days, when requested prior to the end of the 10-day limit.

6.0 Waste Characterization [R315-262-11, R315-264-13(a) and (b) UAC]

Wastes received at the HWSF are from onsite sources (i.e., generated at Hill AFB) and encompass the full range of wastes generated from industrial, maintenance, and base support activities at Hill AFB.

Hill AFB and the HWSF operate within a common management structure such that generation, characterization, and management of hazardous waste is accomplished through coordination between HW generators (unit environmental representatives, process engineers, process operators, maintenance personnel, etc.) and operators of the HWSF and HW management personnel. The industrial, maintenance, and base support facilities at Hill AFB, who are the waste generators, have the ultimate responsibility for characterization and classification of their own hazardous wastes.

6.1 Waste Identification & Characterization

As required by R315-262-11 UAC, it is the generator's responsibility to accurately identify their waste in sufficient detail to properly classify the waste stream, to assign EPA waste codes, to determine proper segregation of ignitable, reactive and incompatible wastes, and to determine land disposal restriction (LDR) treatment/disposal requirements and concentrations of underlying hazardous constituents (UHCs) as applicable. Hazardous wastes generated from Hill AFB operations/processes are identified and characterized using the following methods and are ultimately HAFB's responsibility for proper management and disposal:

6.1.1 Use of Generator/Process Knowledge

Knowledge of the materials of composition, process feed materials, and/or processes which generate a hazardous waste may be used for waste characterization. Using available generator/process knowledge, HW management personnel will assign a waste stream number (to facilitate waste identification and tracking within the electronic database) and input waste profile information. EPA Hazardous Waste identification number(s) (waste codes) are also assigned to the waste. This information is also used to properly segregate and store the waste at the HWSF. A discussion of generator/process knowledge applicable to each waste stream category is found in Section 7.

6.1.1.1 Semi-Volatile Organic Waste Constituents (SVOCs)

Hill AFB authorizes, issues, and tracks all hazardous materials (HM) using the official Air Force HM database, EESOH-MIS. Information from this system, such as HM issued to shops/processes on base (i.e. chemical feedstocks/inputs to the production process) and their specific waste constituents (e.g. SVOCs), may be utilized as generator knowledge in the characterization of wastes in lieu of direct chemical analysis. This process knowledge may also be used to identify wastes which require SVOC analysis for proper characterization and assessment of underlying hazardous constituents.

6.1.2 Characterization through Waste Analysis

When generator/process knowledge is unavailable or inadequate to provide the necessary information to make an accurate waste determination, the generator will use analysis of a representative sample of the waste. A representative sample of the waste will be collected and submitted to a Utah Certified Laboratory, and analyses will be selected based upon knowledge of the waste generation process and this Permit.

Methods and equipment used for obtaining representative waste samples are based on factors such as waste type (solid, liquid, or sludge), composition (uniform, layered, composite), viscosity, container type, etc. Waste analysis and sampling methods specific to each waste stream category are discussed in Section 7.

6.1.2.1 The generator shall use proper sample collection procedures as well as quality control and assurance measures in obtaining a representative sample. Sampling shall be conducted using the equipment listed in Table 2-3, Waste Stream Categories, Characteristics, and Analytical Parameters and the Hill Air Force Base Hazardous Waste Sample Collection Standard Operating Procedures (Hill AFB HW Sample Collection SOP). The Utah Certified Laboratory contracted to perform analyses shall provide certified clean sample containers and be compatible with the waste being sampled. Each sample shall be placed in the appropriate container, preserved, and analyzed within the timeframes specified in the analytical method.

6.1.2.2 Analytical data used for hazardous waste determination and characterization specified in this WAP shall be provided by one of the following:

6.1.2.2.1 A Utah Certified Laboratory, certified for methods used including but not limited to preparation and cleanup methods.

6.1.2.2.2 Other suitable laboratories with approval from the Director.

6.1.3 Characterization of Routinely Generated Wastes

Waste characterization information determined from generator/process knowledge and/or sample analysis will be applied to all wastes from the same process (i.e., same waste stream) at a specific hazardous waste generating site.

When physical/chemical analysis is conducted on a waste sample, the results of this analysis will serve as the basis of waste characterization for the sampled waste stream. If the analytical results contradict previous results for the subject waste stream, the waste stream profile will be re-evaluated and modified as necessary.

Waste analysis will be repeated when changes occur in the waste generation process, when an analysis performed by a TSD facility (which receives the waste) indicates an incorrect waste characterization, or, at a minimum, once every three years². An annual review of each waste stream will be conducted to verify correct waste characterization, describe any process changes, and verify the most recent analysis date³.

6.1.4 Characterization of Non-routinely or Newly Generated Wastes

Waste not previously generated or characterized must be evaluated to determine whether the waste meets the definition of a hazardous waste and, if so, whether they are classified as listed and/or characteristic hazardous waste. Non-routine or newly generated wastes may be characterized through use of documented knowledge of the process of generation (if such knowledge is available), through analysis of a sample of the waste, or a combination of both.

Where analytical testing is required to characterize newly generated wastes, a representative sample of the waste will be submitted to a Utah Certified Laboratory and analyses requested will be based on knowledge of the waste generation process. A waste profile will be initiated based on known waste composition and physical properties, process of generation, and the results of the waste analysis. The waste will be segregated based on known information or preliminary testing (e.g., onsite pH or flammability tests) while further analysis is pending.

In cases where waste is generated from a new or modified process, more frequent analysis may initially be necessary until adequate characterization data has been accumulated to create a waste profile and/or characterize the waste for shipment/storage at the HWSF and ultimate disposal at an offsite permitted TSDF.

6.2 Waste Profiles

Each waste is characterized based on waste analysis and/or generator knowledge as described above. Based on this information, a waste profile is entered into the waste tracking database. This profile contains waste specific data such as physical properties (color, liquid/solid content, layering, pH, flashpoint, etc.), chemical composition data (based on testing and/or knowledge), applicable EPA

² In accordance with: Permit Condition II.E.4.

³ In accordance with: Permit Condition II.E.5.

waste codes, DOT shipping information, and disposal information (i.e., LDR information and UHC composition, as applicable). All wastes received at the HWSF will undergo an acceptance inspection (as described in Section 5) to verify that the received waste is consistent with the accompanying waste profile.

7.0 Sampling and Analysis Requirements for Specific Waste Categories

The HWSF has the capability to store a wide variety of waste classifications which are generated from the industrial process, maintenance, and base support activities conducted at Hill AFB.

The following sections describe the major waste stream categories, some examples of the processes from which they are generated, how they are evaluated (generator/process knowledge vs. sample analysis/statistics), sampling methods and frequency, analytical parameters and test methods. Table 2-3 provides a summary of this information and lists a range of potential EPA waste codes applicable to each waste stream category.

Additionally, waste analysis results are tracked over time and a statistical analysis of these results is used to assist in ensuring accurate characterization of each waste stream.

Collection of waste samples which are representative of a particular waste to be characterized is necessary for the accuracy and usefulness of analytical results. Waste samples will be collected in accordance with the Hill AFB HW Sample Collection SOP. Sampling methods and equipment for each waste stream category are listed in Table 2-3. Sampling equipment for specific wastes will be selected based on knowledge of the properties of each waste and the best method to collect a representative sample.

7.1 Spent Plating Solutions and Corrosion Control Liquid Wastes

This waste category is comprised of liquid wastes generated from metal aircraft component electroplating, cleaning, corrosion removal, corrosion control, and thin-film coating processes. They are non-ignitable, aqueous, the majority are corrosive ($\text{pH} < 2$ or ≥ 12.5), and many contain elevated levels (above toxicity characteristic (TC) concentration limits) of cadmium, chromium and lead. These wastes are characterized based on a combination of process knowledge and analysis of samples taken at tank change outs (or at a minimum of once every three years for non-plating bath wastes). Waste samples are typically analyzed for pH and TCLP metals.

A subset of plating solutions and plating bath residues generated from cadmium plating processes may contain cyanide compounds and are identified as EPA listed wastes: F007 (spent cyanide electroplating plating bath solutions), F008 (cyanide plating bath residue/sludge), and F009 (stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process). These are also corrosive ($\text{pH} \geq 12.5$) and typically contain cadmium and

chromium. These wastes are analyzed for pH and TCLP metals on a per batch basis (i.e. tank change out).

Samples of plating bath solutions will be taken directly from the tank using a clean tank dipper attached to a pole. If the sample is drawn from a container, a COLIWASA⁴, or drum thief will be used. Sludge and solid samples (from cyanide/cadmium plating process tanks) will be sampled using a clean scoop or dipper attached to an access pole. Other appropriate sampling tools may be used to obtain a representative sample of the waste stream.

7.2 Blast Media Residues

The spent blast media waste category is comprised of various types of materials (plastic, glass, garnet, aluminum oxide, wheat starch, corn starch, steel shot, etc.) used in corrosion removal, paint removal, etching and other surface preparation performed prior to plating, surface coating, and painting of aircraft, ground equipment and missile components.

Spent blast media wastes are normally homogeneous granular solids which may contain elevated levels (above TC concentration limits) of cadmium, chromium, and lead due to the surface material removal process. Spent cornstarch blast media may contain cadmium and chromium above TC concentration limits. Spent cornstarch blast media is recycled in accordance with R315-261-2(e)(1)(ii) or managed at hazardous waste. Spent blast media waste streams are analyzed for TCLP metals every three years, at a minimum, or if there is a known or suspected change in waste composition. Sampling spent blast media from storage bags or drums is accomplished using a grain sampler (concentric tube thief). Other appropriate sampling tools may be used to obtain a representative sample of the waste stream.

7.3 Sludge (solid, semi-solid, slurries, solid-liquid suspensions)

This sludge, semi-solid waste category represents a wide range of wastes generated from a variety of industrial processes. Some examples of these include: dried-solid sludge from the on-site industrial wastewater treatment plant (IWTP); granular activated carbon (GAC) from the IWTP; sludge and residue from (non-cyanide) plating tanks; oil/water separator and floor drain cleanout residues from various process areas; sludge and residue from de-greasers, machine cutting operations, parts washers, milling/lapping machines, etc.

The IWTP GAC waste and final dried sludge are F006 listed (based on process) and the dry sludge may contain low levels of barium, cadmium, chromium and lead which are typically less than the TC concentration limits. Plating tank sludge/residue may be corrosive ($\text{pH} < 2$ or ≥ 12.5) and may contain concentrations of barium, cadmium, chromium, and lead at greater than TC limits. Other wastes in the sludge category may contain concentrations of metals and

⁴ COLIWASA is a 'composite liquid waste sampler' designed for sampling of containerized waste liquids (especially if they may be stratified).

chlorinated VOCs at greater than TC limits and contain spent solvents (as listed waste F001, F002, F003, and F005).

Due to the varied nature of this category, knowledge of waste generation processes will be used to determine the appropriate sampling methods, analytical methods, assignment of waste codes, and appropriate management for individual waste streams. Granular or powdery semi- dry solids (e.g. IWTP dried sludge and GAC waste) are sampled with a scoop; wet and/or sticky, viscous solids are sampled with a scoop or trier; high free liquid sludge waste with COLIWASA, drum thief, or tank dipper. For oil/water separator/floor drain sludge clean-out a settable solids sampler (e.g. sludge judge) may be used. Other appropriate sampling tools may be used to obtain a representative sample of the waste stream.

A combination of analyses (pH, TCLP metals, and TCLP volatile organic compounds (VOCs)) and generator/process knowledge of the waste are used to properly characterize each waste stream in the sludge category. Waste analysis is repeated at a minimum of every three years or if the waste composition is known or suspected to have changed.

7.4 Solid Debris, Machine Cuttings, other solids

This waste category includes wastes (solids and debris) generated from milling, metal parts machining, discarded alodine application equipment, small arms maintenance, and other maintenance of aircraft, ground support equipment and missile maintenance. Also included are discarded or unusable solid articles such as aircraft electrical components, circuit boards containing lead solder, transmitters, and mask filters containing whetlerized activated carbon.

The wastes in this category typically contain TC metals and some contain spent solvents/VOCs (e.g. alodine application). Some can be characterized via knowledge of the waste alone (e.g. whetlerized carbon filters which contain chromium), others are characterized through a combination of process knowledge and waste sample analysis.

Wastes in this category that require testing are typically analyzed for TCLP metals and TCLP VOCs every three years, at a minimum, or if there is a known or suspected change in waste composition. Solid grab samples are collected using scoop, sheers, trier, or other appropriate sampling tools. Other appropriate sampling tools may be used to obtain a representative sample of the waste stream.

7.5 Spent Degreasers, Solvents, Cleaners, and Strippers

This waste category consists of liquid wastes generated from a wide variety of industrial processes and maintenance operations for aircraft, missile and ground support equipment. Some of these include spent degreasing, descaling, paint removal, strippers, cleaners, and solvents from parts washers used in the cleaning of electronic equipment and the repair and overhaul avionics and instrumentation components.

These wastes typically contain elevated levels of TC metals cadmium, chromium and lead, and some of the strippers and degreasers can be corrosive ($\text{pH} \geq 12.5$). many of these wastes may contain (F-listed) halogenated and/or non-halogenated solvents and contain TC organic constituents at elevated levels. A subset of these solvents and parts cleaners are may be ignitable (flash point $< 140^\circ\text{F}$).

Wastes in this category which require testing are typically analyzed for TCLP metals and TCLP VOCs every three years, at a minimum, or if there is a known or suspected change in waste composition. Based on knowledge of composition and process, wastes may also be tested for pH and flash point. Samples are collected using a COLIWASA (preferred) or drum thief (tube sampler). Other appropriate sampling tools may be used to obtain a representative sample of the waste stream.

7.6 Liquid Paint Wastes

Liquid paint waste category includes paints, primers, solvents (used for painting), and other paint liquids used in the maintenance of aircraft components, missile systems, and ground support equipment. Also included are specialized chemical agent resistant coating paints used for camouflaged painting of portable shelters and recyclable silver paint used specifically for F-22 maintenance. Paint wastes are typically viscous liquids with varying amounts of suspended solids or paint solid sediment. These wastes can be ignitable (flash point $< 140^\circ\text{F}$), may contain TC metals, volatile organic compounds (VOCs), and F-listed solvents. Some wastes in this category which are unusable or expired commercial products may be managed as lab-packs.

Wastes in this category are typically analyzed for TCLP metals and ignitability. The organic contents are usually determined based on generator knowledge (safety data sheets, product information) due to the concentrated nature of the waste.

Analysis of liquid paint wastes is conducted every three years, at a minimum, or if there is a known or suspected change in waste composition. Samples are collected using a COLIWASA (preferred), drum thief (tube), or other appropriate sampling tool to obtain a representative sample of the waste.

7.7 Dry Paint Wastes, Maskants, Debris

This waste category consists of dried paints, sealants, adhesives, and solid paint application debris from aircraft maintenance, painting, and corrosion control processes; masking/de-masking and sealing aircraft components; debris items (no free liquids) from the pour-down process - cans, bottles, paper, plastic spoons, stir sticks, cups, gloves, syringes; chemical stripper residue (semi-solid), dry items contaminated with paint stripper such as PPE, maskant, rags, and brushes. Also included are recyclable silver and gold paint waste (solids) used for F-22 and F-35 maintenance.

These wastes are typically heterogeneous dry solids which are contaminated with, or contain varying amounts, of TC metals (cadmium and chromium), some may

contain barium or silver. They may also contain small amounts of VOCs and F-listed solvent constituents. Wastes in this category which are unusable or expired commercial products may be managed as lab-packs.

Waste streams within this category are typically analyzed for TCLP metals and TCLP VOCs every three years, at a minimum, or if there is a known or suspected change in waste composition. Solid grab samples are collected using scoop, sheers, trier, or other appropriate sampling tools. Other appropriate sampling tools may be used to obtain a representative sample of the waste stream.

7.8 Discarded/Spent Sealants, Adhesives & Varnishes

This waste category consists of unusable, expired electronic insulating varnish or enamel; out of date, unused and partially used containers of aircraft structural adhesives and fillers used for composite materials bonding operations; spent/expired solder flux from repair and overhaul of avionics and instrumentation components/parts for aircraft systems and ground support equipment. Wastes are typically viscous liquids with varying amounts of solids. They are typically ignitable (Flashpoint < 140 °F), most contain TC metals and organic components and may contain F-listed solvents.

Many of the wastes in this category are unusable or expired commercial products which may be managed as lab-packs and are characterized and managed based on product information (e.g. safety data sheets).

Wastes in this category which are not managed as lab packs are analyzed every three years, at a minimum, or if there is a known or suspected change in waste composition. Many can be characterized based solely on knowledge (safety data sheets or product information). Wastes that are sampled and analyzed are tested for TCLP metals, TCLP VOCs, and flash point. Liquids are sampled using COLIWASA or drum thief; solids are sampled using scoop or trier. Other appropriate sampling tools may be used to obtain a representative sample of the waste stream.

7.9 Rags, Sorbents, PPE, other solids

This waste category consists of absorbent solids, absorbent pads, pillows, rags, filters from cleaning and cleanup of aircraft maintenance processes. Also included are solid adsorbents contaminated with hydraulic fluid, fuel, oil; and used gaskets, rags and other sorbents which may be contaminated with spent solvents including IPA, MEK.

These wastes are heterogeneous solids which may be contaminated with or may contain varying amounts of TC metals (cadmium, chromium, and lead) and small amounts of VOCs and F-listed solvent constituents.

Waste streams within this category are typically analyzed for TCLP metals and TCLP VOCs every three years, at a minimum, or if there is a known or suspected change in waste composition. Solid grab samples are be collected using scoop,

sheers, trier, or other appropriate sampling tools used to obtain a representative sample of the waste stream.

7.10 Off-specification/Waste Fuels

This waste category consists of motor vehicle fuel, primarily waste or off-spec gasoline (may contain some diesel fuel) from maintenance of government vehicles and airfield ground support equipment. Off-specification aviation fuels (Jet-A, JP-10, JP-8) and diesel fuel are blended with off-specification used oil and recycled for energy recovery.

Waste fuel (gasoline) is ignitable (D001) and contains varying concentrations of fuel component organic compounds (such as: benzene, xylenes, ethylbenzene, toluene, etc.).

Waste fuels are analyzed for flash point, TCLP metals and TCLP VOCs every three years, at a minimum, or if there is a known or suspected change in waste composition. Samples are collected using a COLIWASA (preferred) or drum thief (tube). Other appropriate sampling tools may be used to obtain a representative sample of the waste stream.

7.11 Fuel, Oil, Hydraulic Fluid Filters (non-recyclable)

This waste category consists of non-recyclable fuel and oil filters (paper) removed during maintenance/overhaul of ground support equipment and refueling trucks (diesel and Jet-A fuel filters). Also included are non-recyclable filters from vehicle and locomotive maintenance, from missile transport vehicle/equipment maintenance, and from hydraulic systems and hydrocarbon solvent filtration.

These wastes typically do not contain free liquids and are typically non-RCRA regulated, however some may contain characteristic levels of TC metals such as cadmium or lead. They may also contain concentrations of VOCs which are normally less than TC limits. In some applications (e.g. hydrocarbon solvent filtration), filter wastes may contain some free liquid and require testing for ignitability. They may also contain listed solvent constituents.

Waste fuel/oil filters are typically analyzed for TCLP metals and TCLP VOCs every three years, at a minimum, or if there is a known or suspected change in waste composition. Solid grab samples are collected using a scoop, sheers, or other appropriate sampling tool to obtain a representative sample of the waste stream.

7.12 Spent Oils, Lubricants, Coolants (non-recyclable)

This waste category consists of a variety of waste types some examples include: used machine lubricant coolant, tramp oil, and used machining coolant contaminated with various metals; oils removed from holding sumps associated with machining operations and equipment; petroleum based waste not managed as

used oil; waste oils from test stands and flight controls; oil/water separator cleanout (liquids); and cutting/milling oil contaminated with metals, abrasives.

Wastes in this category are typically non-ignitable liquids which may contain varying amounts of suspended solids, may contain cadmium and lead or other TC metals, may contain chlorinated and non-chlorinated VOCs, and some may contain spent solvents.

Wastes in this category are typically tested for TCLP metals and TCLP VOCs, some may be tested for ignitability. Sample analysis is repeated every three years, at a minimum, or if there is a known or suspected change in waste composition. Some wastes can be characterized solely on the basis of documented process knowledge. Liquid samples are collected using a COLIWASA (preferred) or drum thief (tube). Solid samples are collected using a scoop, trier or other appropriate sampling tool to obtain a representative sample of the waste stream.

7.13 Medical and Dental Wastes

This waste category consists of wastes generated at the Hill AFB medical and dental clinic. These wastes are specific and their composition is normally well known. Pharmaceutical waste may contain Coumadin® (P001 listed) and the dental amalgam waste contains mercury (D009). Other wastes from the clinic include hand sanitizer (ignitable) and hematology machine cleaning solvent (ignitable, TC chromium, F003 solvent constituents). (Note: if applicable, certain pharmaceutical wastes may be eligible for management through reverse distribution in accordance with R315-266-500 through 510).

Medical and dental waste analysis is conducted every three years, at a minimum, or if there is a known or suspected change in waste composition. The dental waste is tested for TCLP metals, the medical clinic waste is tested for ignitability, TCLP metals and TCLP VOCs, and pharmacy wastes are characterized based exclusively on knowledge. Liquid samples are collected using a COLIWASA (preferred) or drum thief (tube). Solid samples are collected using a scoop or other appropriate sampling device to obtain a representative sample of the waste stream.

7.14 Lab Wastes (liquids & solids)

This waste category consists of liquids and solids generated from preparation and analysis of samples at the Hill AFB testing laboratory, liquids (solvents) from preparation of samples at the propellant testing lab, and waste from sampling at the HWSF and Bldg. 514 (liquids, solid residues, PPE, disposable sampling equipment, etc.).

The liquid lab wastes are typically ignitable, contain elevated levels of TC metals (cadmium and chromium), contain several VOCs at greater than TC concentration limits, and/or halogenated and/or non-halogenated spent solvents (F002, F003, F005). Solid lab wastes are typically solid items and sample residues which may

contain or be contaminated with TC metals (cadmium and chromium) and VOCs (TC organics and/or F-listed spent solvents).

Both solid and liquid lab waste streams are analyzed once every three years, at a minimum, or if there is a known or suspected change in waste composition or newly generated waste is produced. Liquids will typically be tested for ignitability, TCLP metals and TCLP VOCs. Solids will be tested for TCLP metals and TCLP VOCs. Liquid samples are collected using a COLIWASA (preferred) or drum thief (tube). Solid samples are collected using a scoop, sheers or other appropriate sampling equipment to obtain a representative sample of the waste stream.

7.15 Installation Restoration Program (IRP) Wastes (liquids & solids)

This category consists of various liquid and solid, RCRA regulated and non-regulated, wastes generated from Hill AFB restoration program activities. Characterization, management and disposal of these wastes is accomplished by various IRP contractors and wastes are not typically stored at the HWSF (they are shipped directly to an off-site TSDF). In the event that IRP wastes are stored at the HWSF, they are subject to all of the management requirements of this permit.

IRP solids, sludge, and soil are composed of wastes such as monitoring well construction drill cuttings, vault/sump sludge & sediment clean-out, bag/fabric filters from monitoring wells. Most of these waste solids are non-RCRA regulated. Some may contain elevated levels of TC metals and/or organic solvent constituents.

IRP liquids (monitoring wells - contaminated purge & sample water). Contaminated liquids may contain fuels and/or ignitable solvents, TC metals and VOCs, and F-listed solvent constituents.

All IRP wastes are managed by the installation restoration program, and waste sampling and analysis is conducted by IRP contractors.

7.16 Universal Hazardous Wastes [R315-273 UAC]

The universal wastes category consists of several waste types which are designated and managed in accordance with UAC R315-273 UAC (such as antifreeze, batteries (lithium, nickel-cadmium, etc.), mercury containing equipment, fluorescent lamps, and aerosol spray cans). Universal hazardous wastes are typically accumulated at the HWSF or Bldg. 514 until they can be sent for recycling. They are typically of known composition and do not require additional characterization.

7.17 Off-specification Used Oil (Recycled) [R315-15 UAC]

Off-specification used oils consist of various mixtures of used lubricating, hydraulic fluids, synthetic oils that are non-halogenated. They are generated through government vehicle and ground support equipment maintenance, tramp

oils from machining equipment, jet engine testing, and missile transport vehicle/equipment maintenance. (Additionally, off-specification aviation and diesel fuel are blended with bulk used oil prior to shipment to an off-site recycler. Flash point of blended fuel/oil mixture is verified to be > 140 °F and the halogen content <1000 ppm or rebuttable presumption documented).

Used oil is not managed as RCRA hazardous waste and is shipped to an off-site processor/ recycler. Bulk used oil is tested on-site for flash point to verify it is not ignitable. Each off-site shipment of used oil is also tested for total halogens and is documented to be <1000 ppm or rebuttable presumption documented. Samples are collected using a reusable dip ladle (dedicated, used oil only), COLIWASA, or a drum thief as necessary to obtain a representative sample.

7.18 Lab Packs

A variety of out-of-date, off specification, discarded commercial chemicals and products in small containers are managed as 'lab-packs'. The hazardous waste disposal contractor packs compatible items of the same hazard class into larger over-pack containers with enclosed inert sorbent materials at the site of product storage/generation (hazmat chemical lockers, etc.). The waste container (lab-pack) contents are known based on SDS and product information. This information is used to determine proper waste codes, segregation (by hazard), shipment and disposal. Lab packs are shipped directly off-site for treatment/disposal within 90 days. If lab pack(s) cannot be shipped off-site within 90 day, they may be stored at the HWSF.

TABLE 2-1

Wastes Permitted for Storage at the HWSF

(listed by waste code, see UAC R315-261-21 thru 261-34 [40 CFR 261.21-261.34] for alphabetical listing)

Characteristic Wastes

D001, D002, D003, D004, D005, D006, D007, D008, D009, D010, D011, D012, D013, D014, D015, D016, D017, D018, D019, D020, D021, D022, D023, D024, D025, D026, D027, D028, D029, D030, D031, D032, D033, D034, D035, D036, D037, D038, D039, D040, D041, D042, D043

F Listed Wastes

F001, F002, F003, F004, F005, F006, F007, F008, F009, F012, F019, F027, F034, F035

P Listed Wastes

P001, P004, P006, P012, P015, P020, P021, P029, P031, P037, P042, P050, P108, P113, P121, P122, P059, P098, P104, P106

U Listed Wastes

U001, U002, U003, U004, U005, U006, U007, U008, U009, U010, U011, U012, U014, U015, U016, U017, U018, U019, U020, U021, U022, U023, U024, U025, U026, U027, U028, U029, U030, U031, U032, U033, U034, U035, U036, U037, U038, U039, U041, U042, U043, U044, U045, U046, U047, U048, U049, U050, U051, U052, U053, U055, U056, U057, U058, U059, U060, U061, U062, U063, U064, U066, U067, U068, U069, U070, U071, U072, U073, U074, U075, U076, U077, U078, U079, U080, U081, U082, U083, U084, U085, U086, U087, U088, U089, U090, U091, U092, U093, U094, U095, U096, U097, U098, U099, U101, U102, U103, U105, U106, U107, U108, U109, U110, U111, U112, U113, U114, U115, U116, U117, U118, U119, U120, U121, U122, U123, U124, U125, U126, U127, U128, U129, U130, U131, U132, U133, U134, U135, U136, U137, U138, U140, U141, U142, U143, U144, U145, U146, U147, U148, U149, U150, U151, U152, U153, U154, U155, U156, U157, U158, U159, U160, U161, U162, U163, U164, U165, U166, U167, U168, U169, U170, U171, U172, U173, U174, U176, U177, U178, U179, U180, U181, U182, U183, U184, U185, U186, U187, U188, U189, U190, U191, U192, U193, U194, U196, U 197, U200, U201, U202, U203, U204, U205, U206, U207, U208, U209, U210, U211, U213, U214, U215, U216, U217, U218, U219, U220, U221, U222, U223, U225, U226, U227, U228, U234, U235, U236, U237, U238, U239, U240, U243, U244, U246, U247, U248, U249, U271, U278, U279, U280, U328, U353, U359, U364, U367, U372, U373, U387, U389, U394, U395, U404, U409, U410, U411

TABLE 2-2

Fingerprint Parameters

Parameter	Requirement	Method
Color	Specify main and secondary colors	Visual Observation
Free Liquids	Determine whether present (yes/no)	Visual Observation or Paint Filter Liquids Test 9095B (if determination cannot be made solely by visual observation)
Multi-phase	Determine solid-liquid layers	Visual Observation
pH	Determine aqueous pH	pH meter measurement

Table 2-3
Waste Stream Categories, Characteristics, and Analytical Parameters

Waste Stream (category) ¹			EPA waste codes (potential)	Characterization Method(s)	Analysis Frequency (per waste stream)	Sample Type/ equipment	Analytical Parameters	Analytical Method SW-846 ³
No.	Name	Process/Waste Description(s)						
001	Spent plating liquids/ solutions and corrosion control solutions	Aircraft component metal plating shop process tanks – spent solutions and tank clean-outs. Including plating, corrosion removal, stripping, cleaning solutions. Alodine conversion coating wastes.	D002, D006, D007, D008	Process Knowledge/ Analysis	Every three years (minimum) /Batch	Tank dipper COLIWASA, drum thief	pH TCLP Metals	9040C 1311 6010
		Spent plating tank liquids and sludge which may contain cyanide (from cadmium plating processes): spent plating bath solutions (F007); sludge, filters, debris from tank change-out (F008); cleaning and strip solutions (F009)	D002, D003, D006, D007, F007, F008, F009	Process Knowledge/ Analysis	Every three years (minimum) /Batch	COLIWASA, Tank dipper Dipper, Scoop (sludge)	pH TCLP Metals Total & Amenable Cyanides	9040C 1311 6010 9010C (or) 9012B
002	Blast media residues	Aircraft/ aircraft, missile, ground equip. components de-painting, plating surface prep, corrosion removal, etching. Types: plastic, glass, garnet, aluminum oxide, wheat starch, corn starch, silica carbide, stainless steel-shot.	D006 D007 D008	Process Knowledge/ Analysis	Every three years (minimum)	Grab grain sampler (concentric tube thief) or Scoop	TCLP metals	1311 6010
003	Sludge and semi-solids	IWTP - sludge/ dried sludge/spent GAC (granular activated carbon). Sludge from plating tanks (non-cyanide). Sludge and solids from floor drain cleanout, oil/water separator cleanout, de-greasers, machine cutting ops, parts washers, milling/ lapping machines, etc.	IWTP-F006 D002, D006, D007, D008, D029, D039, D043, F001, F002, F003, F005	Process Knowledge/ Analysis	Every three years (minimum) / (batch – tank cleanouts)	Grab Scoop/ dipper/ Sludge-judge/ COLIWASA, Dipper	pH TCLP metals TCLP VOCs SVOCs ²	9040C 1110A 1311 6010 8260 8270

Waste Stream (category) ¹			EPA waste codes (potential)	Characterization Method(s)	Analysis Frequency (per waste stream)	Sample Type/ equipment	Analytical Parameters	Analytical Method SW-846 ³
No.	Name	Process/Waste Description(s)						
004	Solid Debris, Machine cuttings, misc. solids	Solid waste from milling operations (Dirt, plastic, metal shavings) from milling and machining B-2, A-10 and F-22 structural components. Solid debris from small arms maintenance. Alodine application debris. Also, discarded solid articles (aircraft electrical, circuit boards, etc.) Mask filters containing whetlerized activated carbon	D006, D007, D008, D035, F005	Process Knowledge/ Analysis	Every three years (minimum)	Grab Scoop, sheers, or trier	TCLP metals TCLP VOCs SVOCs ²	1311 6010 8260 8270
005	Degreasers, Solvents, Cleaners, Strippers, and other liquids.	Aircraft and ground support equipment maintenance. Degreasing, descaling, paint removal, strippers, cleaners, solvents from parts washers, solvents used to clean electronic equipment, overhaul of avionics and other aircraft components. (includes Fluosolv and solvent recycle still bottoms/sludge)	D001, D002, D006, D007, D008, D010, D018, D019, D022, D027, D028, D029, D033, D035, D038, D039, D040, D043, F001, F003, F002, F005	Process Knowledge/ Analysis	Every three years (minimum)	COLIWASA, Drum thief	Ignitability pH TCLP metals TCLP VOCs SVOCs ²	1010B [§] 9040C 1311 6010 8260 8270
006	Liquid Paint Wastes	Aircraft corrosion prevention, paint preparation, Aircraft Paint, touch up, and detailing. Painting, cleaning, sealing aircraft components. Recyclable silver paint waste from F-22 maintenance	D001, D006, D007, D011, D018, D029, D035, D038, D040, F002, F003, F005	Process Knowledge/ Analysis	Every three years (minimum)	COLIWASA, Drum thief	Ignitability TCLP metals	1010 1311 6010

Waste Stream (category) ¹			EPA waste codes (potential)	Characterization Method(s)	Analysis Frequency (per waste stream)	Sample Type/ equipment	Analytical Parameters	Analytical Method SW-846 ³
No.	Name	Process/Waste Description(s)						
007	Dry Paint Wastes, Debris, Maskants, Dry sealant and adhesive & residues	Consolidated waste streams (solids) from aircraft maintenance, painting, and corrosion control processes; painting and cleaning, masking/de-masking, sealing aircraft components; debris items (no free liquids) from the pour-down process - cans, bottles, paper, plastic spoons, stir sticks, cups, gloves, syringes; chemical stripper residue (semi-solid), dry items contaminated with paint stripper such as PPE, maskant, rags, and brushes. Recyclable silver paint waste (solids) from F-22 maintenance; recyclable gold paint waste (solids) from F-35 maintenance	D005, D006, D007, D035, D039, F002, F003, F005	Process Knowledge/ Analysis	Every three years (minimum)	Grab/ Scoop, shears, Trier	TCLP metals TCLP VOCs	1311 6010 8260
008	Sealants, Adhesives, Varnishes	Unusable, expired electronic insulating varnish or enamel; out of date, unused and partially used containers of aircraft structural adhesives and fillers used for composite materials bonding operations; spent/expired solder flux from repair and overhaul of avionics and instrumentation components/parts for aircraft systems and ground support equipment. (many of the unusable, expired items may be managed as lab-packs)	D001, D007, D008, D011, D018, D019, D028, D035, D040, D043, F003, F005	Process Knowledge (SDS)/ Sample Analysis	Every three years (minimum)	COLIWASA/ drum thief (liquids) Grab/ scoop/ trier (solids)	Ignitability TCLP metals TCLP VOCs	1010 1311 6010 8260
009	Rags, sorbents, PPE	Bulked solids: absorbent pads, pillows, rags, filters from cleaning and cleanup of aircraft maintenance processes; solid adsorbents contaminated with hydraulic fluid, fuel, oil; used gaskets, rags contaminated with spent solvents including IPA, MEK.	D006, D007, D008, D035, F002, F003, F005	Process Knowledge/ Analysis	Every three years (minimum)	Grab/ scoop/ shears	TCLP metals TCLP VOCs	1311 6010 8260

Waste Stream (category) ¹			EPA waste codes (potential)	Characterization Method(s)	Analysis Frequency (per waste stream)	Sample Type/ equipment	Analytical Parameters	Analytical Method SW-846 ³
No.	Name	Process/Waste Description(s)						
010	Off-specification fuels	Vehicle fuel, primarily waste or off-spec gasoline (some diesel fuel), primarily from draining fuel filters.	D001, D018, D019, D022, D027, D028, D029, D039, D040, D043	Process Knowledge/ Analysis	Every three years (minimum)	COLIWASA, Drum thief	Ignitability TCLP metals TCLP VOCs	1010 1311 6010 8260
011	Off-spec. fuel filters, oil filters, hydraulic fluid or solvent filters (non-metal)	Filters removed from ground support equipment and airfield refueling trucks to facilitate maintenance/overhaul; (diesel and Jet-A fuel); from vehicle and locomotive maintenance; filters from missile transport vehicle/equipment maintenance.	None/ D006	Process Knowledge/ Analysis	Every three years (minimum)	Grab/ scoop/ shears	TCLP metals TCLP VOCs	1311 6010 8260
012	Oils, lubricants, coolants (non-recyclable)	Bulking of used machine lubricant coolant, tramp oil, and used machining coolant contaminated with various metals. Oils removed from holding sumps associated with machining operations and equipment. Petroleum based waste not managed as used oil. Waste oils from test stands and flight controls; oil/water separator cleanout liquids. Cutting/ milling oil contaminated with metals. Abrasives	D006, D008, D018, D019, D022, D028, D029, D035, D039, D040, D043, F005	Process Knowledge/ Analysis	Every three years (minimum)	COLIWASA, drum thief (solid/sludge) Scoop/ trier	Ignitability TCLP metals TCLP VOCs	1010 1311 6010 8260
013	Medical, dental wastes	Medical clinic wastes. (e.g. hand sanitizer, hematology analyzer waste) dental clinic (dental amalgam waste) pharmaceutical waste ^e (e.g. Coumadin®)	D001, D007, F003 D009 P001	Analysis / Process knowledge (SDS)	Every three years (minimum)	COLIWASA, drum thief Grab/ Scoop (solids)	Ignitability TCLP metals TCLP VOCs	1010 1311 6010 8260

^e note: If applicable, certain pharmaceutical wastes may be eligible for management through reverse distribution in accordance with R315-266-500 through 510 UAC.

Waste Stream (category) ¹			EPA waste codes (potential)	Characterization Method(s)	Analysis Frequency (per waste stream)	Sample Type/ equipment	Analytical Parameters	Analytical Method SW-846 ³
No.	Name	Process/Waste Description(s)						
014	Lab waste, liquid	Sample preparation and analyses of liquid samples (at HAFB lab) & liquid lab waste from the propellant testing lab. Also, waste from sampling at bldg. 514.	D001, D006, D007, D018, D019, D022, D027, D028, D029, D035, D039, D040, D043, F002, F003, F005	Sample Analysis	Every three years (minimum)	COLIWASA, drum thief	Ignitability TCLP metals TCLP VOCs	1010 1311 6010 8260
015	Lab waste, solid	Solid hazardous waste residue from sample preparation and analyses. Also, PPE and disposable sampling equipment used during sampling and inspection of containers at the HWSF and at Bldg. 514.	D006, D007, D035, F005	Sample Analysis	Every three years (minimum)	Grab/ Scoop, shears	TCLP metals TCLP VOCs	1311 6010 8260
016	IRP solids, soils, sludge, bag filters	Solids, soil cuttings from IRP (installation restoration program) contractor drilling operations and vault cleanups. Decanted sludge and sediment consisting of organic and inorganic buildup that forms within treatment systems, sumps, and piping. Also bag filters from contaminated wells.	D004, D005, D006, D007, D008, D019, D027, D035, D039, D040, F001, F002, F003, F005	Analytical data and waste characterization information provided by IRP contractor(s)		Project specific	Project specific	Project specific
017	IRP liquids water, fuels, solvents	Water, petroleum products, JP4, jet fuel, solvents, TCE, MEK, DCE, and arsenic. Purging contaminated monitoring wells, sampling of (CERCLA) hazardous waste site ground water; drilling through operable units (OUs).	D001, D004, D005, D006, D007, D008, D009, D010, D018, D039, D040, F001, F002, F003, F005	Analytical data and waste characterization information provided by IRP contractor(s)		Project specific	Project specific	Project specific
018	Universal Wastes	Universal wastes managed under R315-273 (antifreeze, batteries, mercury containing equipment, fluorescent lamps, aerosol spray cans)	n/a (UW)					

Waste Stream (category) ¹			EPA waste codes (potential)	Characterization Method(s)	Analysis Frequency (per waste stream)	Sample Type/ equipment	Analytical Parameters	Analytical Method SW-846 ³
No.	Name	Process/Waste Description(s)						
019	Used oil (recycled)	Mixture of used lubricating, hydraulic fluids, synthetic oils that are non-halogenated. Government and ground support equipment vehicle maintenance, tramp oils from machining equipment. Jet engine testing. Missile transport vehicle/ equipment maintenance. Off-spec diesel fuel (vehicle) and off-spec aviation fuel generated from maintenance of aircraft & refueling operations (Jet-A, JP-10, JP-8 is blended with bulk used oil prior to shipment to off-site recycler. Flash point of blended fuel/oil mix is verified to be > 140 F)	None (recycled) IAW 40 CFR 279 / R315-15	Process knowledge sample analysis	Batch/tank (prior to shipment)	Reusable dip ladle, COLIWASA, drum thief,	Flash point Total halogens	1010 9077 or 9076
020	Lab Packs	Packed and shipped by HW disposal contractor (flammable, corrosive, toxic, reactive, non-hazardous) [typically not stored at HWSF]	D001, D002, D003, D004-43, U-codes, P-codes	Knowledge (SDS)	n/a	n/a	n/a	n/a

¹ Hill AFB maintains over 230 active waste streams tracked in the HW database (EESOH-MIS) and over 1200 separate waste profiles. The categories listed in this table encompass waste streams which are generated at Hill AFB and which (with the exception of propellant wastes) are authorized to be stored at the HWSF.

² SVOC analysis will be conducted on generated waste when generator knowledge indicates that analysis for SVOCs is required.

³ Analytical method revision will be the most current for which the laboratory has been certified by the Utah State Dept. of Health.

§ -Or other equivalent method approved by the Director.

TABLE 2-4

Analytical Methods^{1,2} used to determine Hazardous Waste Characteristics (Hill AFB)

<u>EPA Waste No.</u>	<u>Parameter to be Analyzed</u>	<u>SW-846 Method Number</u>³
D001	Ignitability (flash point)	1010B
D002	Corrosivity (pH) ⁴	9040C
<u>TCLP-Toxicity Characteristic Leaching Procedure - Metals</u>		1311 (TCLP-metals)
D004	Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver	6010 or 6020
- through -		
D011	Mercury	7470/7471
<u>TCLP-Toxicity Characteristic Leaching Procedure - VOCs</u>		1311 (TCLP-VOCs)
D018	Benzene	8260
D019	Carbon Tetrachloride	8260
D021	Chlorobenzene	8260
D022	Chloroform	8260
D027	1,4-Dichlorobenzene	8260
D028	1,2-Dichloroethane	8260
D029	1,1-Dichloroethylene	8260
D033	Hexachlorobutadiene	8260
D034	Hexachloroethane	8260
D035	Methyl Ethyl Ketone	8260
D038	Pyridine	8260
D039	Tetrachloroethylene	8260
D040	Trichloroethylene	8260
D043	Vinyl Chloride	8260
Determination of Semi-volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)		8270

Notes:

¹ The analytical methods (for metals and VOCs) are used to determine concentrations of constituents in the leachate after the waste has been subject to the Toxicity Characteristic Leaching Procedure (TCLP), EPA Method 1311.

² Additional test methods used for waste characterization and management are listed in Table 2-3.

³ Analytical method revision will be the most current for which the laboratory has been certified by the Utah State Dept. of Health.

⁴ pH, the electrometric measurement performed by HWSF operations personnel is a waste acceptance screening method (fingerprint), results may be used as part of knowledge-based waste characterization data. Where determinative analysis is required, testing must be completed by a Utah Certified Laboratory.