RENEWAL APPLICATION
CHAPTER B

WASTE ANALYSIS PLAN

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WASTE ANALYSIS PLAN

B-0 Introduction and Chapter Highlights

This waste analysis plan (**WAP**) has been prepared for management, storage, or disposal activities to be conducted at the Waste Isolation Pilot Plant (**WIPP**) facility to meet requirements set forth in 20.4.1.500 New Mexico Administrative Code (**NMAC**) (incorporating 40 Code of Federal Regulations (**CFR**) §264.13). Guidance in the most recent U.S. Environmental Protection Agency (**EPA**) manual on waste analysis has been incorporated into the preparation of this WAP (EPA, 1994). This WAP includes test methods, details of planned waste sampling and analysis for complying with the general waste analysis requirements of 20.4.1.500 NMAC (incorporating 40 CFR §264.13), a description of the waste shipment screening and verification process, and a description of the quality assurance (**QA**)/quality control (**QC**) program. Before the Permittees manage, store, or dispose transuranic (**TRU**) mixed waste from a U.S. Department of Energy (**DOE**) TRU waste site or DOE contract TRU waste site (TRU waste site) ~~generator/storage site (**site**)~~, the Permittees shall require ~~that site~~ the Carlsbad Field Office (**CBFO**) certified waste characterization program (certified characterization program) established at the TRU waste site to implement the applicable requirements of this WAP. Certified characterization programs are limited to the Central Characterization Project characterizing TRU mixed waste (after receiving certification at that site) and the Advanced Mixed Waste Treatment Project characterizing TRU mixed waste at the Idaho National Laboratory.

The TRU mixed waste that may be stored or disposed at WIPP is ~~are~~ or was ~~were~~ generated at TRU waste ~~DOE generator/storage~~ sites by various specific processes and activities. Examples of the major types of operations that generate this waste include:

- Production of Nuclear Products—Production of nuclear products includes reactor operation, radionuclide separation/finishing, and weapons fabrication and manufacturing. The majority of the TRU mixed waste was generated by weapons fabrication and radionuclide separation/finishing processes. More specifically, wastes consist of residues from chemical processes, air and liquid filtration, casting, machining, cleaning, product quality sampling, analytical activities, and maintenance and refurbishment of equipment and facilities.

- Plutonium Recovery—Plutonium recovery wastes are residues from the recovery of plutonium-contaminated molds, metals, glass, plastics, rags, salts used in electrorefining, precipitates, firebrick, soot, and filters.

- Research and Development (**R&D**)—R&D projects include a variety of hot cell or glovebox activities that often simulate full-scale operations described above, producing similar TRU mixed wastes. Other types of R&D projects include metallurgical research,

actinide separations, process demonstrations, and chemical and physical properties determinations.

- Decontamination and Decommissioning—Facilities and equipment that are no longer needed or usable are decontaminated and decommissioned, resulting in TRU mixed wastes consisting of scrap materials, cleaning agents, tools, piping, filters, Plexiglas™, gloveboxes, concrete rubble, asphalt, cinder blocks, and other building materials. These materials are expected to be the largest category by volume of TRU mixed waste to be generated in the future.

The TRU mixed waste contains both TRU radioactive and hazardous components, as defined in 20.4.1.~~800~~700 NMAC (incorporating 40 CFR, §~~268.35(d)~~266.210), and in the Federal Facility Compliance Act, Public Law 102-386, Title 1, §3021(d). It is designated and separately packaged as either contact-handled (**CH**) or remote-handled (**RH**), based on the radiological dose rate at the surface of the waste container.

The hazardous components of the TRU mixed waste to be managed at the WIPP facility are designated in Table B-~~9~~1. Some of the waste may also be identified by unique state hazardous waste codes or numbers. These wastes are acceptable at WIPP as long as the Treatment, Storage, and Disposal Facility Waste Acceptance Criteria (**TSDF-WAC**) in Section B-1c ~~Module II~~ are met. This WAP describes the measures that will be taken to ensure that the TRU mixed wastes received at the WIPP facility are within the scope of Table B-~~9~~1 as established by 20.4.1.500 NMAC (incorporating 40 CFR §264), and that they comply with unit-specific requirements of 20.4.1.500 NMAC (incorporating 40 CFR §264.600), Miscellaneous Units.

~~Some TRU mixed waste is retrievably stored at the DOE generator/storage sites. Additional TRU mixed waste will be generated and packaged into containers at these generator/storage sites in the future. TRU mixed waste will be retrieved from storage areas at a DOE generator/storage site. Retrievably stored waste is defined as TRU mixed waste generated after 1970 and before the New Mexico Environment Department (**NMED**) notifies the Permittees, by approval of the final audit report, that the characterization requirements of the WAP at a generator/storage site have been implemented. Newly generated waste is defined as TRU mixed waste generated after NMED approves the final audit report for a generator/storage site. Acceptable knowledge (**AK**) information is assembled for both retrievably stored and newly generated waste. Waste characterization of retrievably stored TRU mixed waste will be performed on an ongoing basis, as the waste is retrieved. Waste characterization of newly generated TRU mixed waste is typically performed as it is generated, although some characterization occurs post-generation. Waste characterization requirements for newly generated and retrievably stored TRU mixed wastes differ, as discussed in Sections B-3d(1) and B-3d(2).~~

Waste characterization is ~~defined in Module I~~ performed through implementing the requirements of this WAP by a certified characterization program ~~as the activities performed by the waste generator~~ to satisfy the general waste analysis requirements of 20.4.1.500 NMAC (incorporating 40 CFR §264.13(a)). The applicable waste characterization activities are completed before waste containers ~~have been~~are certified for disposal at WIPP. The characterization process for WIPP

waste is presented in Figure B-~~2~~1. Prior to receiving CBFO certification, a ~~Generator site~~ waste characterization program~~s are~~ is first audited by the Permittees, with the New Mexico Environment Department (**NMED**) approving the final audit report. ~~After this, generator sites~~ The certified characterization program determines whether Acceptable Knowledge (**AK**) ~~**AK**~~ alone is sufficient for characterization, or whether a sampling and analysis program in conjunction with AK is necessary to adequately characterize wastes. If an ~~AK~~ Acceptable Knowledge Sufficiency Determination (**AKSD**) is sought, information is provided to the Permittees for their review and provisional approval; NMED determination of adequacy of the AK information is required before final approval by the Permittees. If the sampling and analysis route is chosen, ~~sites~~ the certified characterization program proceeds to sample and analyze waste in conjunction with AK and in accordance with this WAP. Once an ~~AK Sufficiency Determination~~ AKSD is obtained, or when required sampling and analysis data are obtained, ~~sites~~ the certified characterization program would then prepare and submit the Waste Stream Profile Form (**WSPF**) (Figure B-2) for the Permittees' approval. Once the WSPF is approved, ~~a site~~ the WIPP may receive waste from the certified characterization program ~~may ship waste to WIPP~~. The Permittees will perform waste confirmation prior to ~~shipment~~receipt of the waste from the ~~generator/storage~~ TRU waste site ~~to~~ at WIPP as specified in Renewal Application Appendix B7, (Permittee Level TRU Waste Confirmation Processes) by performing radiography or visual examination (**VE**) of a representative subpopulation of certified waste containers, to ensure that the wastes meet the applicable requirements of the TSDF-WAC. Waste confirmation will not be performed by the Permittees when a Scenario 1 or Scenario 2 AKSD has been approved for the waste stream. An approved Scenario 1 and Scenario 2 AKSD addresses that the waste is not ignitable, corrosive, or reactive and only those EPA hazardous waste numbers authorized for storage and disposal at WIPP apply to the waste (see Section B-0b and Renewal Application Chapter B, Appendix B4, TRU Mixed Waste Characterization Using Acceptable Knowledge, Section B4-3d). Approved Waste Stream Profile Forms document assigned EPA hazardous waste numbers (see Section B-0c).

B-0a Waste Characterization

Characterization requirements for individual containers of TRU mixed waste are specified on a waste stream basis. A waste stream is defined as waste material generated from a single process or from an activity that is similar in material, physical form, and hazardous constituents. Waste streams are grouped by Waste Matrix Code Groups related to the physical and chemical properties of the waste. ~~Generator/storage~~The certified characterization programs ~~sites~~ shall use the characterization techniques described in this WAP to assign appropriate Waste Matrix Code Groups to waste streams for WIPP disposal. The Waste Matrix Code Groups are solidified inorganics, solidified organics, salt waste, soils, lead/cadmium metal, inorganic nonmetal waste, combustible waste, graphite, filters, heterogeneous debris waste, and uncategorized metal. Waste Matrix Code Groups ~~can be~~ are grouped into three Summary Category groups: Homogeneous Solids (Summary Category S3000), Soils/Gravel (Summary Category S4000), and Debris Waste (Summary Category S5000).

The TRU mixed wastes are initially categorized into the three broad Summary Category Groups that are related to the final physical form of the wastes. Waste characterization requirements for

these groups are specified separately in Section B-2 of this WAP. Each of the three groups is described below.

S3000 - Homogeneous Solids

Homogeneous solids are defined as solid materials, excluding soil, that do not meet the NMED criteria for classification as debris (20.4.1.800 NMAC (incorporating 40 CFR §268.2(~~[~~g~~]~~) and (~~[~~h~~]~~)). Included in the series of homogeneous solids are inorganic process residues, inorganic sludges, salt waste, and pyrochemical salt waste. Other waste streams are included in this Summary Category Group based on the specific waste stream types and final waste form. This Summary Category Group is expected to contain toxic metals and spent solvents. This category includes wastes that are at least 50 percent by volume homogeneous solids.

S4000 - Soils/Gravel

This Summary Category Group includes S4000 waste streams that are at least 50 percent by volume soils/gravel. This Summary Category Group is expected to contain toxic metals.

S5000 - Debris Wastes

This Summary Category Group includes heterogeneous waste that is at least 50 percent by volume materials that meet the criteria specified in 20.4.1.800 NMAC (incorporating 40 CFR §268.2 (g)). Debris means solid material exceeding a 2.36 inch (in.) (60 millimeter) particle size that is intended for disposal and that is:

1. a manufactured object, or
2. plant or animal matter, or
3. natural geologic material.

Particles smaller than 2.36 inches (60 millimeters) in size may be considered debris if the debris is a manufactured object and if it is not a particle of S3000 or S4000 material.

If a waste does not include at least 50 percent of any given Summary Category Group by volume, characterization shall be performed using the waste characterization process required for the summary category group constituting the greatest volume of waste for that waste stream (~~see~~ Section B-3d).

The most common hazardous constituents in the TRU mixed waste to be managed in the WIPP facility consist of the following:

Metals

Some of the TRU mixed waste to be emplaced in the WIPP facility contains metals for which 20.4.1.200 NMAC (incorporating 40 CFR §261.24), toxicity characteristics (**TCs**) were established (EPA hazardous waste numbers D004 through D011). Arsenic, barium, ~~C~~cadmium, chromium, lead, mercury, selenium, and silver are present in discarded tools

and equipment, solidified sludges, cemented laboratory liquids, and waste from decontamination and decommissioning activities. A large percentage of the waste consists of lead-lined gloveboxes, leaded rubber gloves and aprons, lead bricks and piping, lead tape, and other lead items. Lead, because of its radiation-shielding applications, is the most prevalent ~~toxicity characteristic~~ TC metal present.

Halogenated Volatile Organic Compounds

Some of the TRU mixed waste to be emplaced in the WIPP facility contains spent halogenated volatile organic compound (**VOC**) solvents identified in 20.4.1.200 NMAC (incorporating 40 CFR, §261.31) (EPA hazardous waste numbers F001 through F005). Tetrachloroethylene; trichloroethylene; methylene chloride; carbon tetrachloride; 1,1,1-trichloroethane; and 1,1,2-trichloro-1,2,2-trifluoroethane (EPA hazardous waste numbers F001 and F002) are the most prevalent halogenated organic compounds identified in TRU mixed waste ~~that may be managed at the WIPP facility during the Disposal Phase~~. These compounds are commonly used to clean metal surfaces prior to plating, polishing, or fabrication; to dissolve other compounds; or as coolants. Because they are highly volatile, only small amounts typically remain on equipment after cleaning or, in the case of treated wastewaters, in the sludges after clarification and flocculation. ~~Radiolysis may also generate halogenated volatile organic compounds.~~

Nonhalogenated Volatile Organic Compounds

Xylene, methanol, and n-butanol are the most prevalent nonhalogenated VOCs (EPA hazardous waste numbers F003 through F005) in TRU mixed waste ~~that may be managed at the WIPP facility during the Disposal Phase~~. Like the halogenated VOCs, they are used as degreasers and solvents and are similarly volatile. The same analytical methods that are used for halogenated VOCs are used to detect the presence of nonhalogenated VOCs. ~~Radiolysis may also generate non-halogenated volatile organic compounds.~~

The ~~generator/storage sites~~ certified characterization program shall characterize ~~their~~ waste in accordance with this WAP and associated Renewal Application Appendices, and ensure that waste proposed for storage and disposal at WIPP meets the applicable requirements of the TSDF-WAC ~~in Module II~~. The ~~generator/storage site~~ certified characterization program shall assemble the AK ~~Acceptable Knowledge (**AK**)~~ information into an auditable record~~*~~ for the waste stream as described in Renewal Application Appendix B4 (TRU Mixed Waste Characterization Using Acceptable Knowledge). For those waste streams with an approved Scenario 1 or Scenario 3 AKSD ~~Sufficiency Determination~~ (see below), sampling and analysis per the methods described in Renewal Application Appendices B1 (Waste Characterization Sampling Methods) and B2 (Statistical Methods Used in Sampling and Analysis) are not required.

~~* "Auditable records" mean those records which allow the Permittees to conduct a systematic assessment, analysis, and evaluation of the Permittees' compliance with the WAP and this Permit.~~

All waste characterization activities specified in this WAP and associated Renewal Application Appendices shall be carried out ~~at generator/storage sites~~ by certified characterization programs and Permittee approved laboratories in accordance with this WAP. The Permittees will audit ~~generator/storage site waste~~ characterization programs and activities as described in Section B-3. Waste characterization activities ~~at the generator/storage sites~~ performed by the certified characterization programs at the TRU waste sites include the following, although not all these techniques will be used on each container, as discussed in Section B-3:

- Radiography, which is an x-ray technique to determine physical contents of containers
- Visual examination of opened containers ~~as an alternative way~~ to determine their physical contents
- Headspace-gas **(HSG)** sampling to determine VOC content of gases in the void volume of the containers
- Sampling and analysis of waste forms that are homogeneous and can be representatively sampled to determine ~~concentrations of hazardous waste constituents and~~ TC ~~toxicity characteristic~~ contaminants of waste in containers
- Compilation of AK documentation into an auditable record

B-0b Acceptable Knowledge ~~AK~~ Sufficiency Determination

~~Generator/storage sites~~ Certified characterization programs may submit a request to the Permittees for an AKSD ~~AK Sufficiency Determination~~ **~~(Determination Request)~~** to meet all or part of the waste characterization requirements. The contents of the ~~Determination Request~~ AKSD request are specified in Renewal Application Appendix B4, Section B4-3d. The ~~Determination Request~~ AKSD request may take one of the following forms:

Scenario 1	Radiography or ~~visual examination~~ ~~(~~VE~~)~~ of the waste stream is not required, and chemical sampling and analysis is not required;
Scenario 2	Radiography or VE of the waste stream is not required, but chemical sampling and analysis of a representative sample of the waste stream is required; or
Scenario 3	Chemical sampling and analysis is not required, but radiography or VE of 100~~%~~ percent of the containers in the waste stream is required.

The Permittees shall evaluate the ~~Determination Request~~ AKSD request for completeness and technical adequacy. This evaluation shall include, but not be limited to whether the ~~Determination Request~~ AKSD request is technically sufficient for the following:

- The ~~Determination Request~~ AKSD request must include all relevant information specified in Renewal Application Appendix B4, Section B4-3d.
- The AK Summary must identify relevant hazardous constituents, and must correctly identify ~~all~~ applicable TC ~~toxicity characteristic~~ and listed EPA hazardous waste numbers.
- All hazardous waste number assignments must be substantiated by supporting data and, if not, whether this lack of substantiation compromises the interpretation.
- Resolution of data discrepancies between different AK sources must be technically correct and documented.
- The Scenario 1 and Scenario 2 AKSD AK Summary must include all the identification of waste material parameter weight~~s~~ estimates by percentage of the material in the waste stream, and determinations must be technically correct.
- All prohibited items specified in the TSDF-WAC should be addressed, and conclusions drawn must be technically adequate and substantiated by supporting information.
- If the AK record includes process control information specified in Renewal Application Appendix B4, Section B4-3b, the information should include procedures, waste manifests, or other documentation demonstrating that the controls were adequate and sufficient.
- The ~~site~~certified characterization program must provide the supporting information necessary to substantiate technical conclusions within the ~~Determination Request~~ AKSD request, and this information must be correctly interpreted.

The Permittees will review the ~~Determination Request~~ AKSD Request for technical adequacy and compliance with the requirements of the WIPP Hazardous Waste Facility Permit **(Permit)**, using trained and qualified individuals in accordance with standard operating procedures **(SOPs)** that shall, at a minimum, address all of the technical and procedural requirements listed above. The Permittees shall resolve comments with the ~~generator/storage site~~certified characterization program, and the Permittees may change the scope of the ~~Determination Request~~ AKSD Request to one of the three scenarios. If the Permittees determine that the AK is sufficient, they will provisionally approve the ~~Determination Request~~ AKSD request and forward it along with all relevant information submitted with the ~~Determination Request~~ AKSD request to NMED for an evaluation that the provisional approval made by the Permittees is adequate. Within five ~~(5)~~ days of submitting an ~~Determination Request~~ AKSD request to NMED, the Permittees will post a link to the transmittal letter to NMED on the WIPP Home Page and inform those on the

e-mail* notification list. Based on the results of NMED's evaluation, the Permittees will notify the ~~generator/storage sites~~certified characterization program whether the AK information is sufficient and the ~~Determination Request~~ AKSD request is approved. The Permittees will not approve an ~~Determination Request~~ AKSD request that NMED has determined to be inadequate unless the ~~generator/storage site~~certified characterization program resolves the inadequacies and provides the resolution to the Permittees for submittal to NMED for evaluation of adequacy. Should the inadequacies not be resolved to NMED's satisfaction, the Permittees shall not submit an ~~Determination Request~~ AKSD request for the same waste stream at a later date.

In the event the Permittees disagree, in whole or in part, with an evaluation performed by NMED resulting in a determination by NMED that the Permittees' provisional approval for a particular waste stream is inadequate, the Permittees may seek dispute resolution. The dispute resolution process is described in Addendum B3 ~~specified in Module I~~.

If a ~~generator/storage site~~ certified characterization program does not submit an ~~Determination Request~~ AKSD request, or if the Permittees do not approve an ~~Determination Request~~ AKSD request, or if NMED finds that the Permittees' provisional approval of an ~~Determination Request~~ AKSD request is inadequate and the Permittees either do not seek dispute resolution or are unsuccessful in the dispute resolution process, the ~~generator/storage site~~certified characterization program shall perform radiography or VE on 100~~%~~ percent of the containers in a waste stream and chemical sampling and analysis on a representative sample of the waste stream using ~~headspace gas~~ HSG sampling and analysis (for debris waste) or solids sampling and analysis (for homogeneous solids or soils/gravel waste) as specified in Renewal Application Appendices B1 and B2.

If a ~~generator/storage site~~certified characterization program submits an ~~Determination Request~~ AKSD request, the Permittees provisionally approve the ~~Determination Request~~ AKSD request as Scenario 1, and NMED finds that the Permittees' provisional approval is adequate, neither radiography or VE nor chemical sampling and analysis of the waste stream is required.

If a ~~generator/storage site~~certified characterization program submits an ~~Determination Request~~ AKSD request, the Permittees provisionally approve the ~~Determination Request~~ AKSD request as Scenario 2, and NMED finds that the Permittees' provisional approval is adequate, chemical sampling and analysis of a representative sample of the waste stream is required, but radiography or VE is not required.

If a ~~generator/storage site~~certified characterization program submits an ~~Determination Request~~ AKSD request, the Permittees provisionally approve the ~~Determination Request~~ AKSD request as Scenario 3, and NMED finds that the Permittees' provisional approval is adequate,

* The Permittees will develop and maintain an e-mail list to notify members of the public concerning actions identified in this Permit requiring e-mail notification. The Permittees will provide a link on the WIPP Home Page <http://www.wipp.energy.gov> whereby members of the public may review the actions requiring e-mail notification and submit a request to be placed on this list.

radiography or VE of 100~~%~~ percent of the containers in the waste stream is required, but chemical sampling and analysis is not required.

B-0c Waste Stream Profile Form Completion

After a complete AK record has been compiled and either an ~~Determination Request~~ AKSD request has been approved by the Permittees or the ~~generator/storage site~~certified characterization program has completed the applicable representative sampling and analysis requirements specified in Renewal Application Appendices B1 and B2, the ~~generator/storage site~~certified characterization program will complete a ~~Waste Stream Profile Form (**WSPF**)~~WSPF and a Characterization Information Summary (**CIS**). The requirements for the completion of a WSPF and a CIS are specified in Renewal Application Appendix B3, Sections B3-12b(1) and B3-12b(2) respectively.

The WSPF and the CIS for the waste stream resulting from waste characterization activities shall be transmitted to the Permittees, reviewed for completeness, and screened for acceptance ~~prior to loading any TRU mixed waste into the Contact-Handled or Remote-Handled Packaging at the generator facility,~~ as described in Section B-4. The review and approval process will ensure that the submitted waste analysis information is sufficient to meet the Data Quality Objectives (**DQOs**) for AK in Section B-4a(1) and allow the Permittees to demonstrate compliance with the requirements of this WAP. Only TRU mixed waste and TRU waste that has been characterized in accordance with this WAP and that meets the TSDF-WAC specified in ~~this~~ the Permit will be accepted at the WIPP facility for disposal in a permitted Underground Hazardous Waste Disposal Unit (~~**HWDU**~~). The Permittees will provide NMED with copies of the approved WSPF and accompanying CIS prior to waste receipt at the WIPP ~~stream shipment~~. Upon notification of approval of the WSPF by the Permittees, the ~~generator/storage site~~certified characterization program and the TRU waste site may be authorized to ship waste from the waste stream to WIPP.

In the event the Permittees request detailed information on a waste stream, the ~~site~~ certified characterization program Site Project Manager will provide ~~a~~ the ~~W~~waste ~~S~~stream ~~C~~characterization information ~~Package~~ (Renewal Application Appendix B3, Section B3-12b(~~2~~3)). ~~For each waste stream, this package will include the WSPF, the CIS, and the complete AK summary. The Waste Stream Characterization Package will also include specific Batch Data Reports (**BDRs**) and raw analytical data associated with waste container characterization as requested by the Permittees.~~

B-0d Waste Confirmation

The Permittees will perform waste confirmation on a representative subpopulation of each waste stream shipment after certification and prior to ~~shipment~~ receipt as described in Renewal Application Appendix B7. The Permittees will use radiography, review of radiography audio/video recordings, ~~**VE**~~VE, or review of VE records (e.g., VE data sheets or packaging records ~~logs~~) to examine at least ~~7~~ seven percent of each waste stream shipment to confirm that the waste does not contain ignitable, corrosive, or reactive waste. Waste confirmation will be

performed by the Permittees prior to receipt ~~shipment~~ of the waste at the WIPP ~~from the generator/storage site to WIPP~~.

B-1 Identification of Transuranic ~~TRU~~ Mixed Waste to be Managed at the Waste Isolation Pilot Plant ~~WIPP~~ Facility

B-1a Waste Stream Identification

The TRU mixed waste destined for disposal at WIPP will be characterized on a waste stream basis. ~~Generator/storage sites~~ Certified characterization programs will delineate waste streams using ~~acceptable knowledge~~ AK. Required ~~acceptable knowledge~~ AK is specified in Section B-3a~~b~~ and Renewal Application Appendix B4.

All of the waste within a waste stream may not be accessible for sampling and analysis at one time. Renewal Application Appendix B2 (Statistical Methods Used in Sampling and Analysis) addresses the requirements for selecting waste containers used for characterization of waste streams ~~as they are generated or retrieved~~.

B-1b Waste Summary Category Groups and Hazardous Waste Accepted at the Waste Isolation Pilot Plant ~~WIPP~~ Facility

Once a waste stream has been delineated, certified characterization programs~~generator/storage sites~~ will assign a Waste Matrix Code to the waste stream based on the physical form of the waste. Waste streams are then assigned to one of three broad Summary Category Groups; S3000-Homogeneous Solids, S4000-Soils/Gravel, and S5000-Debris Wastes. These Summary Category Groups are used to determine further characterization requirements.

The Permittees will only allow ~~generators~~ certified characterization programs and TRU waste sites to ship those TRU mixed waste streams with EPA hazardous waste numbers listed in Table B-~~9~~1. Some of the waste may also be identified by unique state hazardous waste codes or numbers. These wastes are acceptable at WIPP as long as the TSDF-WAC ~~are~~is met. The certified characterization program ~~Permittees~~ will perform characterization of all waste streams as required by this WAP. If during the characterization process, ~~new~~ EPA hazardous waste numbers not listed in Table B-1 are ~~identified~~assigned to a waste stream, ~~those~~the wastes streams will be prohibited for disposal at the WIPP facility until a permit modification has been submitted to and approved by NMED to include the additional ~~for these new~~ EPA hazardous waste numbers in the Permit. Similar approved waste streams at other ~~generator/storage~~ TRU waste sites will be examined by ~~the~~ certified characterization programs at the direction of the Permittees to ensure that the newly identified EPA hazardous waste numbers do not apply to those similar waste streams. ~~If the other waste streams also require new EPA hazardous waste numbers, shipment of these similar waste streams will also be prohibited for disposal until a permit modification has been submitted to and approved by NMED.~~

B-1c Waste Prohibited at the Waste Isolation Pilot Plant ~~WIPP~~ Facility

The following TRU mixed waste are prohibited at the WIPP facility:

- ~~l~~Liquid waste ~~(waste shall contain as little residual liquid as is reasonably achievable by pouring, pumping and/or aspirating, and internal containers shall contain less than 1 inch or 2.5 centimeters of liquid in the bottom of the container. Total residual liquid in any payload container (e.g., 55 gallon drum or standard waste box) may not exceed 1 percent volume of that container. Payload containers with U134 waste shall have no detectable liquid)~~

  For purposes of demonstrating compliance with the liquid waste prohibition, the following conditions shall apply when using the radiography and/or VE waste characterization methods:

  "Free-standing liquid" is the observable liquid fraction of S3000 or S4000 waste. The observable free-standing liquid fraction of TRU mixed waste in an internal container shall be no more than one percent of the internal container volume.

  "Residual liquid" is the observable quantity of liquid allowed to remain in an otherwise empty internal container and the residual liquid shall be no more than that reasonably expected after all wastes have been removed that can be removed using the practices commonly employed to remove material from that type of container (e.g., pouring, pumping, and aspirating), **and** after emptying, no more than one inch or 2.5 centimeters of residual liquid remains in the bottom of the container. Total residual liquid in any payload container (e.g., 55 gallon drum or standard waste box (**SWB**)) shall be no more than one percent volume of that container.

  The observable free-standing liquid and total residual liquid inside a payload container shall be no more than one percent of the payload container volume. The no more than one percent volume limit shall be based upon quantities of free-standing liquid observed inside and outside of the container liner (when present), free-standing liquid in internal containers, and residual liquids remaining in internal containers (including bag confinement layers). Liquid observed within debris items such as tubing, hoses, folds in plastic sheeting, and on the exterior surface of bags, etc. are not prohibited provided the liquid volume is included in the total volume calculation and the summed result is no more than one percent of the payload container volume.

  Payload containers with hazardous waste number U134 assigned shall have no observable liquid.

When using a container identified in Renewal Application Appendix M1, Section M1-1b as an overpack payload container the following shall apply:

1. Containers are considered overpacked and not direct loaded regardless of the presence or absence of the container lid; and

2. The observable free-standing liquid fraction of TRU mixed waste in any internal container, inside the overpacked container, shall be no more than one percent of the internal container volume; and

3. Only residual quantities of liquid shall remain in an otherwise empty internal container inside the overpacked container; and

4. All observable liquid shall be included in the overpacked container total volume calculation and the result shall not exceed one percent of the overpacked container volume.

The overpack payload container total limit is the sum of the one percent total volume limit for each overpacked container.

- ~~n~~Non-radionuclide pyrophoric materials, such as elemental potassium
- ~~h~~Hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)
- ~~w~~Wastes incompatible with backfill, seal and panel closures~~s~~ materials, container and packaging materials, shipping container materials, or other wastes
- ~~w~~Wastes containing explosives or compressed gases
- ~~w~~Wastes with polychlorinated biphenyls (**PCBs**) not authorized under an EPA PCB waste disposal authorization
- ~~w~~Wastes exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)
- ~~w~~Waste that has ever been managed as high-level waste and waste from tanks specified in Table B-~~8~~2, unless specifically approved through a Class 3 permit modification
- ~~a~~Any waste container from a waste stream (or waste stream lot) which has not undergone either ~~radiographic~~ radiography or ~~visual examination~~ VE of a statistically representative subpopulation of the waste stream in each shipment, as described in Renewal Application Appendix B7, unless a Scenario 1 or Scenario 2 AKSD has been approved for the waste stream

- ~~a~~Any waste container from a waste stream which has not been preceded by an appropriate, certified WSPF (~~see~~ Section B-1d).

Before accepting a container holding TRU mixed waste, the Permittees will perform waste confirmation activities on each waste stream shipment to confirm that the waste does not contain ignitable, corrosive, or reactive waste and the assigned EPA hazardous waste numbers are allowed for storage and disposal by ~~this~~the Permit. Waste confirmation activities will be performed on at least ~~7~~seven percent of each waste stream shipped, equating to examination of at least one of fourteen containers in each waste stream shipment. If a waste stream shipment contains fewer than ~~fourteen~~14 containers, at least one container will be examined to satisfy waste confirmation requirements. ~~Section B-4 and~~ Renewal Application Appendix B7 includes ~~descriptions of~~ the waste confirmation processes ~~that~~ the Permittees will conduct prior to receiving a shipment at the WIPP facility.

~~Containers are vented through filters, allowing any gases that are generated by radiolytic and microbial processes within a waste container to escape, thereby preventing over pressurization or development of conditions within the container that would lead to the development of ignitable, corrosive, reactive, or other characteristic wastes.~~

To ensure the integrity of the WIPP facility, waste streams identified to contain incompatible materials or materials incompatible with waste containers cannot be ~~shipped to~~ received at WIPP unless they are treated to remove the incompatibility. Each waste container shall be vented through filters, allowing any gases that are generated by radiolytic and microbial processes to escape, thereby preventing over pressurization. Only ~~those~~ waste containers from waste streams that are vented and compatible or have been treated to remove incompatibilities will be ~~shipped to~~ received at WIPP.

B-1d Control of Waste Acceptance

Every waste stream ~~shipped to~~ received at WIPP shall be preceded by a WSPF (Figure B-~~1~~2) and a CIS. The required WSPF information and the CIS elements are found in Renewal Application Appendix B3, Section B3-12b(1) and Section B3-12b(2).

~~Generator/storage sites~~Certified characterization programs will provide the WSPF and the CIS to the Permittees for each waste stream from a TRU waste site prior to its acceptance for disposal at WIPP. ~~The WSPF and the CIS will be transmitted to the Permittees for each waste stream from a generator/storage site.~~ If continued waste characterization reveals discrepancies that identify different EPA hazardous waste numbers or indicates that the waste belongs to a different waste stream, a revised WSPF will be submitted, or alternatively, the waste will be redefined to a separate waste stream and a new WSPF submitted.

The Permittees are responsible for the review of WSPFs and CISs to verify compliance with the restrictions on TRU mixed wastes for WIPP disposal. The Permittees will submit completed WSPFs to NMED prior to waste stream receipt at the WIPP~~shipment~~. The Permittees will also be responsible for the review of shipping records (Section B-5) to confirm that each waste

container has been prepared and characterized in accordance with applicable provisions of this WAP. Waste characterization data shall ensure the absence of waste prohibited at the WIPP facility as~~items~~ specified in Section B-1c.

As stated in the Introduction of this WAP, any time the Permittees request additional information concerning a waste stream, the ~~generator/storage site~~ certified characterization program will provide ~~a~~ the requested ~~W~~waste ~~S~~stream ~~C~~characterization information ~~Package~~ (Renewal Application Appendix B3, Section B3-12b(~~2~~3)). The option for the Permittees to request additional information ensures that the waste being offered for disposal is adequately characterized and accurately described on the WSPF.

B-1e Waste Generating Processes at the Waste Isolation Pilot Plant ~~WIPP~~ Facility

Waste generated as a result of the waste containers~~s~~ handling and processing activities at the WIPP facility is termed "derived" waste. Because derived wastes can contain only those Resource Conservation and Recovery Act (**RCRA**) regulated materials present in the waste from which they were derived, no additional characterization of the derived waste is required for disposal purposes. In other words, the ~~generator/storage site's~~ certified characterization program's characterization data and knowledge of the processes at the WIPP facility will be used to identify and characterize hazardous waste and hazardous constituents in derived waste. The management of derived waste is addressed in Renewal Application Appendix M1.

B-2 Waste Characterization Program Requirements and Waste Characterization Parameters

The Permittees shall require the ~~sites~~certified characterization program to develop the procedure(s) ~~which~~ that specify their programmatic waste characterization requirements. The Permittees will evaluate the procedures during audits conducted under the Permittees' Audit and Surveillance Program (Section B-5a(3)) and may also evaluate the procedures as part of the review and approval of the WSPF. ~~Sites~~Certified characterization programs must notify the Permittees and obtain approval prior to making data-affecting modifications to procedures (Renewal Application Appendix B3, Section B3-15). Program procedures shall address the following minimum elements:

- Waste characterization and certification procedures for TRU mixed ~~retrievably stored and newly generated~~ wastes to be sent to the WIPP facility.

- Methods used to ensure prohibited items are documented and managed. These will include procedures for performing radiography, VE, or treatment, if these methods are used to ensure prohibited items are not present in the waste prior to ~~shipment of~~ offering the waste ~~to~~ for disposal at WIPP.

- Procedures used to verify packaging configurations to determine the correct drum age criteria (**DAC**) if ~~headspace gas~~ HSG sampling and analysis is used to collect waste characterization information per Renewal Application Appendix B1, Section B1-1a(1) ~~of the WAP~~.

- Identify ~~the organization(s) responsible~~ responsibilities for compliance with waste characterization and certification procedures.

- Identify the oversight procedures and frequency of actions to verify compliance with waste characterization and certification procedures.

- Develop training specific to waste characterization and certification procedures.

- Ensure that personnel may stop work if noncompliance with waste characterization or certification procedures is identified.

- Develop a nonconformance process that complies with the requirements in Renewal Application Appendix B3 ~~of the WAP~~ to document and establish corrective actions.

- As part of the corrective action process, assess the potential time frame of the noncompliance, the potentially affected waste population(s), and the reassessment and recertification of those wastes.

- A listing of all approved EPA hazardous waste numbers which are acceptable at WIPP are included in Table B-~~9~~1.

~~For those waste streams or containers that are not amenable to radiography (e.g., RH TRU mixed waste, direct loaded ten-drum overpacks (**TDOPs**)) for waste confirmation by the Permittees as described in Renewal Application Appendix B7, generator/storage site VE data may be used for waste acceptance. In those cases, the Permittees will review the generator/storage site VE procedures to ensure that data sufficient for the Permittees' waste acceptance activities as described in Renewal Application Appendix B7 will be obtained and the procedures meet the minimum requirements for visual examination specified in Renewal Application Appendix B1, Section B1-3.~~

The following waste characterization parameters shall be obtained from the ~~generator/storage sites~~ certified characterization programs:

- Determination whether TRU mixed waste streams comply with the applicable provisions of the TSDF-WAC

- Determination whether TRU mixed wastes exhibit a hazardous characteristic (20.4.1.200 NMAC, incorporating 40 CFR §261 Subpart C)

- Determination whether TRU mixed wastes are listed (20.4.1.200 NMAC, incorporating 40 CFR §261 Subpart D)

- Estimation of waste material parameter weights per container through the performance of radiography or VE, or estimates for the waste stream in the AK for the waste with approved Scenario 1 or Scenario 2 AKSD.

Tables B-13, B-24, B-35 and B-46 provide the parameters of interest for the various constituent groupings and analytical methodologies. The following sections provide a description of the acceptable methods to evaluate these parameters for each waste Summary Category Group.

~~B-3 Generator Waste Characterization Methods~~

~~The characterization techniques used by generator/storage sites includes acceptable knowledge and may also include, as necessary, headspace gas sampling and analysis, radiography, visual examination, and homogeneous waste sampling and analysis. All characterization activities are performed in accordance with the WAP. Table B-5 provides a summary of the characterization requirements for TRU mixed waste.~~

~~B-3a Sampling and Analytical Methods~~

~~B-3a(1) Headspace Gas Sampling and Analysis~~

~~Representative headspace gas sampling and analysis shall be used by generator/storage sites to determine the types and concentrations of VOCs in the void volume of randomly selected waste containers in order to resolve the assignment of EPA hazardous waste numbers for those debris waste streams for which an AK Sufficiency Determination Request has not been approved by the Permittees. In addition, VOC constituents will be compared to those assigned by acceptable knowledge, which may include an analysis of radiolytically derived VOCs. The generator/storage sites may also consider radiolysis and packaging materials when assessing the presence of hazardous constituents in the headspace gas results, and whether radiolysis would generate wastes which exhibit the toxicity characteristic. Refer to Renewal Application Appendix B4 for additional clarification regarding hazardous waste number assignment and headspace gas results. The methods for random selection of containers for headspace gas sampling and analysis are specified in Renewal Application Appendix B2. Headspace gas sampling and analysis shall be subject to the Permittees' Audit and Surveillance Program (Permit Attachment B6).~~

~~In accordance with EPA convention, identification of hazardous constituents detected by gas chromatography/mass spectrometry methods that are not on the list of target analytes shall be reported. These compounds are reported as tentatively identified compounds (**TICs**) in the analytical BDR and shall be added to the target analyte list if detected in a given waste stream, if they appear in the 20.4.1.200 NMAC (incorporating 40 CFR §261) Appendix VIII, and if they are reported in 25% of the waste containers sampled from a given waste stream. The headspace gas analysis method Quality Assurance Objectives (**QAOs**) are specified in Renewal Application Appendix B3.~~

~~B-3a(2) Homogeneous and Soil/Gravel Waste Sampling and Analysis~~

~~Representative homogeneous and soil/gravel waste sampling and analysis shall be used by generator/storage sites to resolve the assignment of EPA hazardous waste numbers for homogeneous and soil/gravel waste streams for which an AK Sufficiency Determination Request has not been approved by the Permittees. Sampling of homogeneous and soil/gravel wastes shall~~

result in the collection of a sample that is used to resolve the assignment of hazardous waste numbers. Sampling is accomplished through coring or other EPA approved sampling, which is described in Renewal Application Appendix B1. For those waste streams defined as Summary Category Groups S3000 or S4000 on page B-3, debris that may also be present within these wastes need not be sampled. The waste containers for sampling and analysis are to be selected randomly from the population of containers for the waste stream. The random selection methodology is specified in Renewal Application Appendix B2. Homogeneous and soil/gravel sampling and analysis shall be subject to the Permittees' Audit and Surveillance Program (Renewal Application Appendix B6).

Totals or TCLP analyses for VOCs, and RCRA-regulated metals are used to determine waste parameters in soils/gravels and solids that may be important to the performance within the disposal system (Tables B-3 and B-4). To determine if a waste exhibits a toxicity characteristic for compounds specified in 20.4.1.200 NMAC (incorporating 40 CFR §261, Subpart C), TCLP may be used instead of total analyses. The generator will use the results from these analyses to determine if a waste exhibits a toxicity characteristic. The mean concentration of toxicity characteristic contaminants are calculated for each waste stream such that it can be reported with an upper 90 percent confidence limit (**UCL_{90}**). The UCL_{90} values for the mean measured contaminant concentrations in a waste stream will be compared to the specified regulatory levels in 20.4.1.200 NMAC (incorporating 40 CFR §261 Subpart C), expressed as total/TCLP values, to determine if the waste stream exhibits a toxicity characteristic. A comparison of total analyses and TCLP analyses is presented in Appendix C3 of the WIPP RCRA Part B Permit Application (DOE, 1997), and a discussion of the UCL_{90} is included in Renewal Application Appendix B2. If toxicity characteristic (**TC**) wastes are identified, these will be compared to those determined by acceptable knowledge and TC waste numbers will be revised, as warranted. Refer to Renewal Application Appendix B4 for additional clarification regarding hazardous waste number assignment and homogeneous solid and soil/gravel analytical results.

B-3a(3) Laboratory Qualification

The Permittees will ensure that generator/storage sites conduct analyses using laboratories that are qualified through participation in the Performance Demonstration Program (**PDP**) (DOE, 2003, 2005). Required QAOs are specified in Renewal Application Appendix B3. In addition, methods and supporting performance data demonstrating QAO compliance shall be ensured by the Permittees during the annual certification audit of the laboratories.

Analytical methods used by the laboratories shall: 1) satisfy all of the appropriate QAOs, and 2) be implemented through laboratory-documented SOPs standard operating procedures. These analytical QAOs are discussed in detail in Renewal Application Appendix B3.

B-3b Acceptable Knowledge

Acceptable knowledge (**AK**) is used in TRU mixed waste characterization activities in five ways:

- ~~To delineate TRU mixed waste streams~~
- ~~To assess whether TRU mixed wastes comply with the TSDF-WAC~~
- ~~To assess whether TRU mixed wastes exhibit a hazardous characteristic (20.4.1.200 NMAC, incorporating 40 CFR §261 Subpart C)~~
- ~~To assess whether TRU mixed wastes are listed (20.4.1.200 NMAC, incorporating 40 CFR §261 Subpart D)~~
- ~~To estimate waste material parameter weights~~

~~Acceptable knowledge is discussed in detail in Renewal Application Appendix B4, which outlines the minimum set of requirements and DQOs which shall be met by the generator/storage sites in order to use acceptable knowledge. In addition, Section B-5a(3) of this Renewal Application Appendix describes the assessment of acceptable knowledge through the Permittees' Audit and Surveillance Program.~~

~~B-3c~~ ~~Radiography and Visual Examination~~

~~Radiography is a nondestructive qualitative and quantitative technique that involves X-ray scanning of waste containers to identify and verify waste container contents. Visual examination (**VE**) constitutes opening a container and physically examining its contents. Generator/storage sites shall perform radiography or VE of 100 percent of CH TRU mixed waste containers in waste streams except for those waste streams for which the Permittees approve a Scenario 1 or Scenario 2 Determination Request. No RH TRU mixed waste will be shipped to WIPP for storage or disposal without documentation of radiography or VE of 100 percent of the containers as specified in Renewal Application Appendix B1.~~

~~Radiography and/or visual examination will be used, when necessary, to examine a waste container to verify its physical form. These techniques can detect liquid wastes and containerized gases, which are prohibited for WIPP disposal. The prohibition of liquids and containerized gases prevents the shipment of corrosive, ignitable, or reactive wastes. Radiography and/or VE are also able to confirm that the physical form of the waste matches its waste stream description (i.e. Homogeneous Solids, Soil/Gravel, or Debris Waste [including uncategorized metals]. If the physical form does not match the waste stream description, the waste will be designated as another waste stream and assigned the preliminary hazardous waste numbers associated with that new waste stream assignment. That is, if radiography and/or VE indicates that the waste does not match the waste stream description arrived at by acceptable knowledge characterization, a non-conformance report will be completed and the inconsistency will be resolved as specified in Renewal Application Appendix B4. The proper waste stream assignment will be determined (including preparation of a new WSPF), the correct hazardous waste codes will be assigned, and the resolution will be documented. Refer to Renewal Application Appendix B4 for a discussion of acceptable knowledge and its verification process.~~

~~Generator/storage sites may conduct visual examination of waste containers in lieu of radiography. For generator/storage sites that choose to use visual examination in lieu of radiography, the detection of any liquid waste in non-transparent inner containers, detected from shaking the container, will be handled by assuming that the container is filled with liquid and adding this volume to the total liquid in the payload container (e.g., 55-gallon drum or SWB). The payload container would be rejected and/or repackaged to exclude the container if it is over the TSDF-WAC limits. When radiography is used, or visual examination of transparent containers is performed, if any liquid in inner containers is detected, the volume of liquid shall be added to the total for the payload container. Radiography, or the equivalent, will be used as necessary on the existing/stored waste containers to verify the physical characteristics of the TRU mixed waste correspond with its waste stream identification/waste stream Waste Matrix Code and to identify prohibited items. Radiographic examination protocols and QA/QC methods are provided in Permit Appendix B1. Radiography and VE shall be subject to the Permittees' Audit and Surveillance Program (Permit Attachment B6).~~

~~B-3d Characterization Techniques and Frequency for Newly Generated and Retrievably Stored Waste~~

~~Generator/storage sites will use acceptable knowledge to delineate all TRU mixed waste containers into waste streams for the purposes of grouping waste for further characterization. The analyses performed may differ based on the waste stream and the physical form of the waste (i.e., heterogeneous debris waste cannot be sampled for totals analyses). Both retrievably stored and newly generated wastes will be delineated in this fashion, though the types of acceptable knowledge used may differ. Section B-3b discusses the use of acceptable knowledge, sampling, and analysis in more detail. Acceptable knowledge is discussed more completely in Renewal Application Appendix B4. Every TRU mixed waste stream will be assigned hazardous waste numbers based upon acceptable knowledge, and the generator/storage sites may resolve the assignment of hazardous waste numbers using headspace gas (Summary Category Group S5000 only) and solid sampling and analysis (Summary Category Groups S3000 and S4000 only). In the CIS for each waste stream, the generator/storage site will be required to document their methods, and the findings from those methods, for determining the physical form of the waste and the presence or absence of prohibited items for both retrievably stored and newly generated waste. Radiography and/or VE may be used to verify the physical form of retrievably stored TRU mixed waste. For newly generated waste, physical form and prohibited items may either be documented during packaging (using the VE technique) or verified after packaging using radiography (or VE in lieu of radiography).~~

~~For debris waste streams that do not have an AK Sufficiency Determination approved by the Permittees, containers selected in accordance with Renewal Application Appendix B2 from those waste streams must be sampled and analyzed for VOCs in the headspace gas. Likewise, a statistically selected portion of homogeneous solids and soil/gravel waste streams must be sampled and analyzed for RCRA-regulated total VOCs, SVOCs, and metals when those waste streams do not have an AK Sufficiency Determination approved by the Permittees. Sampling and analysis methods used for waste characterization are discussed in Section B-3a.~~

~~In the process of performing organic headspace and solid sample analyses, nontarget compounds may be identified. These compounds will be reported as TICs. TICs reported in 25% of the samples and listed in 20.4.1.200 NMAC (incorporating 40 CFR §261) Appendix VIII, will be compared with acceptable knowledge data to determine if the TIC is in a listed hazardous waste in the waste stream. TICs identified through headspace gas analyses that meet the Appendix VIII list criteria and the 25 percent reporting criteria for a waste stream will be added to the headspace gas waste stream target list, regardless of the hazardous waste listing associated with the waste stream. TICs subject to inclusion on the target analyte list that are toxicity characteristic parameters shall be added to the target analyte list regardless of origin because the hazardous waste designation for these numbers is not based on source. However, for toxicity characteristic and non-toxic F003 constituents, the site may take concentration into account when assessing whether to add a hazardous waste number. TICs reported from the Totals VOC or SVOC analyses may be excluded from the target analyte list for a waste stream if the TIC is a constituent in an F-listed waste whose presence is attributable to waste packaging materials or radiolytic degradation from acceptable knowledge documentation. If the TIC associated with a total VOC or SVOC analysis cannot be identified as a component of waste packaging materials or as a product of radiolysis, the generator/storage site will add these TICs to the list of hazardous constituents for the waste stream (and assign additional EPA listed hazardous waste numbers, if appropriate). A permit modification will be submitted to NMED for their approval to add these constituents (and waste numbers), if necessary. For toxicity characteristic compounds and non-toxic F003 constituents, the generator/storage site may consider waste concentration when determining whether to change a hazardous waste number. Refer to Renewal Application Appendix B3 for additional information on TIC identification.~~

~~Waste characterization solid sampling and analysis activities may differ for retrievably stored waste and newly generated waste. The waste characterization processes used by the generator/storage sites for both retrievably stored and newly generated waste streams will be evaluated during the Permittees' audit of the site. The typical waste characterization data collection design used by the generator/storage sites for each type of waste is described in the following sections. Table B-1 provides a summary of headspace gas and solids sample analyses hazardous waste characterization requirements for all TRU mixed waste by waste characterization parameters.~~

~~Table B-5 summarizes the parameters, methods, and rationales for stored and newly generated CH TRU mixed wastes according to their waste forms.~~

~~WIPP may accept TRU mixed waste that has been repackaged or treated. Treated waste shall retain the original waste stream's listed hazardous waste number designation.~~

~~B-3d(1)~~ ~~Newly Generated Waste~~

~~The RCRA-regulated constituents in newly generated wastes will typically be documented at the time of generation based on acceptable knowledge for the waste stream. Newly generated TRU mixed waste characterization typically begins with verification that processes generating the waste have operated within established written procedures. Waste containers are delineated into~~

~~waste streams using acceptable knowledge. The Permittees will require that the generator/storage sites document the methods used to delineate waste streams in the acceptable knowledge record and Acceptable Knowledge Summary Report. Determination that the physical form of the waste (Summary Category Group) corresponds to the physical form of the assigned waste stream may be accomplished either during packaging or by performing radiography as specified in Permit Appendix B1, Section B1-3 for retrievably stored waste. Instead of using a video/audio tape as required with VE in lieu of radiography, the VE method for newly generated waste (or repackaged retrievably stored waste) uses a second operator, who is equally trained to the requirements stipulated in Permit Appendix B1, to provide additional verification by reviewing the contents of the waste container to ensure correct reporting. If the second operator cannot provide concurrence, corrective actions* will be taken as specified in Permit Appendix B3. The subsequent waste characterization activities depend on the assigned Summary Category Group, since waste within the Homogeneous Solids and Soils/Gravel Summary Category Groups may be characterized using different techniques than the waste in the Debris Waste Summary Category Group. The packaging configuration, type and number of filters, and rigid liner vent hole presence and diameter necessary to determine the appropriate drum age criteria (**DAC**) in accordance with Permit Appendix B1, Section B1-1, may be documented as part of the characterization information collected during the packaging of newly generated waste or repackaging of retrievably stored waste for those containers of debris waste that will undergo headspace gas sampling and analysis.~~

~~B-3d(1)(a)~~ ~~Sampling of Newly Generated Homogeneous Solids and Soil/Gravel~~

~~When a Determination Request has not been approved by the Permittees, sampling and analysis of newly generated homogeneous solid and soil/gravel waste streams shall be conducted in accordance with the requirements specified in Renewal Application Appendix B1, Section B1-2. The number of newly generated homogeneous solid and soil/gravel waste containers to be sampled will be determined using the procedure specified in Renewal Application Appendix B2, Section B2-1, wherein a statistically selected portion of the waste will be sampled.~~

~~B-3d(2)~~ ~~Retrievably Stored Waste~~

~~All retrievably stored waste containers will first be delineated into waste streams using acceptable knowledge. The Permittees will require that the generator/storage sites document the methods used to delineate waste streams in the acceptable knowledge record and Acceptable Knowledge Summary Report. Retrievably stored waste containers may be examined using radiography or VE to determine the physical waste form (Summary Category Group), the absence of prohibited items, and additional waste characterization techniques that may be used based on the Summary Category Groups (i.e., S3000, S4000, S5000).~~

~~* "Corrective action" as used in this WAP and its attachments does not mean corrective action as defined under HWA, RCRA, and their implementing regulations.~~

~~The headspace gas sampling method provided in Permit Appendix B1 will be used, when necessary, to resolve the assignment of EPA hazardous waste numbers to debris waste streams, as specified in Permit Appendix B4.~~

~~A statistically selected portion of retrievably stored homogeneous solids and soil/gravel wastes will be sampled and analyzed for total VOCs, SVOCs, and metals, when necessary. The sample location selection method is described in Permit Appendix B2. The sampling methods for these wastes are provided in Permit Appendix B1.~~

~~The toxicity characteristic of retrievably stored homogeneous solids and soil/gravel wastes will be determined using total analysis of toxicity characteristic parameters or TCLP. To determine if a waste exhibits a toxicity characteristic for compounds specified in 20.4.1.200 NMAC (incorporating 40 CFR §261, Subpart C), TCLP may be used instead of total analyses. Appendix C3 of the WIPP RCRA Part B Permit Application (DOE, 1997) discusses comparability of totals analytical results to those of the TCLP method.~~

~~Representativeness of containers selected for headspace gas sampling and waste subjected to homogeneous solids and soil/gravel sampling and analysis will be validated by the generator/storage site and by the Permittees during an audit (Permit Appendix B6) via examination of documentation that shows that random samples were collected. (Because representativeness is a quality characteristic that expresses the degree to which a sample or group of samples represent the population being studied, the random sampling of waste streams ensures representativeness.)~~

B-3 Waste Characterization Methods for Certified Characterization Programs

The characterization techniques used by certified characterization programs include acceptable knowledge (**AK**) and may also include, as necessary, radiography and/or VE, headspace-gas sampling and analysis, and homogeneous solids and soils/gravel waste sampling and analysis. These characterization techniques shall be performed, as applicable, in accordance with this WAP. Table B-7 provides a summary of the characterization requirements for TRU mixed waste.

B-3a Acceptable Knowledge

Acceptable knowledge is used in TRU mixed waste characterization activities in five ways:

- To delineate TRU mixed waste streams
- To assess whether TRU mixed wastes comply with the TSDF-WAC
- To assess whether TRU mixed wastes exhibit a hazardous characteristic (20.4.1.200 NMAC, incorporating 40 CFR §261 Subpart C)

- To assess whether TRU mixed wastes are listed (20.4.1.200 NMAC, incorporating 40 CFR §261 Subpart D)

- To estimate waste material parameter weights when seeking a Scenario 1 or a Scenario 2 AKSD

Acceptable knowledge is discussed in detail in Renewal Application Appendix B4, which outlines the minimum set of requirements which shall be met by the certified characterization programs in order to use AK. In addition, Section B-5a(3) of this Renewal Application describes the assessment of AK through the Permittees' Audit and Surveillance Program.

B-3b Radiography and Visual Examination

Radiography is a nondestructive qualitative and quantitative technique that involves X-ray scanning of waste containers to identify and verify waste container contents. Visual examination constitutes opening a container and physically examining its contents. Certified characterization programs shall perform radiography or VE of 100 percent of TRU mixed waste containers in waste streams except for those waste streams for which the Permittees approve a Scenario 1 or Scenario 2 AKSD Request.

Radiography and/or VE will be used, when necessary, to examine a waste container to verify its physical form. These techniques can detect liquid wastes and containerized gases, which are prohibited for receipt at WIPP. The prohibition of liquids and containerized gases prevents the disposal of corrosive, ignitable, or reactive wastes. Radiography and/or VE are also able to confirm that the physical form of the waste matches its waste stream description (i.e., Homogeneous Solids, Soils/Gravel, or Debris Waste). If the physical form does not match the waste stream description, the waste will be designated as another waste stream and assigned the preliminary EPA hazardous waste numbers associated with that new waste stream assignment. That is, if radiography and/or VE indicate that the waste does not match the waste stream description arrived at by AK characterization, a non-conformance report will be completed and the inconsistency will be resolved as specified in Renewal Application Appendix B4. The proper waste stream assignment will be determined (including preparation of a new WSPF, if necessary), the correct EPA hazardous waste numbers will be assigned, and the resolution will be documented. Refer to Renewal Application Appendix B4 for a discussion of AK and its verification process. Radiographic examination protocols and QA/QC methods are provided in Renewal Application Appendix B1. Radiography and VE shall be subject to the Permittees' Audit and Surveillance Program (Renewal Application Appendix B6).

B-3c Headspace Gas Sampling and Analysis

Representative headspace gas sampling and analysis shall be used by certified characterization programs to resolve the assignment of EPA hazardous waste numbers for debris waste streams for which a Scenario 1 or Scenario 3 AKSD Request has not been approved by the Permittees.

The waste containers for sampling and analysis are to be selected randomly from the population of containers for the waste stream. The random selection methodology is specified in Renewal Application Appendix B2. Representativeness of containers selected for waste subjected to headspace gas sampling and analysis will be validated by the certified characterization program and by the Permittees during an audit (Renewal Application Appendix B6) via examination of documentation that shows that random samples were collected.

The HSG sampling method provided in Renewal Application Appendix B1 will be used by certified characterization programs to resolve the assignment of TC EPA hazardous waste numbers on the VOCs in the void volume of randomly selected waste containers. The certified characterization programs may consider packaging materials when assessing the presence of hazardous constituents in the HSG results. Refer to Renewal Application Appendix B4 for additional clarification regarding hazardous waste number assignment and HSG results.

B-3d Homogeneous Solids and Soils/Gravel Waste Sampling and Analysis

Representative homogeneous solids and soils/gravel waste sampling and analysis shall be used by certified characterization programs to resolve the assignment of EPA hazardous waste numbers for homogeneous solids and soils/gravel waste streams for which a Scenario 1 or Scenario 3 AKSD Request has not been approved by the Permittees. Sampling is accomplished through coring or other EPA approved sampling, which is described in Renewal Application Appendix B1. Debris that may also be present within these wastes need not be sampled.

The waste containers for sampling and analysis are to be selected randomly from the population of containers for the waste stream. The random selection methodology is specified in Renewal Application Appendix B2. Representativeness of containers selected for waste subjected to homogeneous solids and soils/gravel sampling and analysis will be validated by the certified characterization program and by the Permittees during an audit (Renewal Application Appendix B6) via examination of documentation that shows that random samples were collected.

Totals or Toxicity Characteristic Leaching Procedure (**TCLP**) analyses for VOCs, semi-volatile organic compounds (**SVOCs**), and RCRA-related metals are used to resolve the assignment of TC EPA hazardous waste numbers in homogeneous solids and soils/gravel (Tables B-5 and B-6). To determine if a waste exhibits a TC for compounds specified in 20.4.1.200 NMAC (incorporating 40 CFR §261, Subpart C). The certified characterization program will use the results from these analyses to determine if a waste exhibits a TC. The mean concentration of TC contaminants is calculated for each waste stream such that it can be reported with an upper 90 percent confidence limit (**UCL_{90}**). The UCL_{90} values for the mean measured contaminant concentrations in a waste stream will be compared to the specified regulatory levels in 20.4.1.200 NMAC (incorporating 40 CFR §261 Subpart C), expressed as totals/TCLP values, to determine if the waste stream exhibits a TC. A comparison of total analyses and TCLP analyses is presented in Renewal Application Addendum B1, and a discussion of the UCL_{90} is included in Renewal Application Appendix B2. If TC wastes are identified, these will be compared to those determined by AK and TC waste numbers will be revised, as warranted. Refer to Renewal

Application Appendix B4 for additional clarification regarding hazardous waste number assignment and homogeneous solids and soils/gravel analytical results.

B-3e Laboratory Qualification

The Permittees will ensure that certified characterization programs conduct analyses using laboratories that are qualified through participation in a written performance demonstration program (**PDP**) (e.g., *Performance Demonstration Program Plans for Analysis of Solid Waste Forms*). Required Quality Assurance Objectives (**QAOs**) are specified in Renewal Application Appendix B3. In addition, methods and supporting performance data demonstrating QAO compliance shall be ensured by the Permittees during the annual certification audit of the laboratories.

Analytical methods used by the laboratories shall: 1) satisfy all of the applicable QAOs, and 2) be implemented through laboratory-documented SOPs. These analytical QAOs are discussed in detail in Renewal Application Appendix B3.

B-3f Characterization Techniques and Frequency for Transuranic Mixed Waste

Certified characterization programs will use AK to delineate TRU mixed waste containers into waste streams for the purposes of grouping waste for further characterization. The analyses performed may differ based on the waste stream and the physical form of the waste (i.e., heterogeneous debris waste cannot be sampled for totals or TCLP analyses). Section B-3a discusses the use of AK in more detail. Acceptable knowledge is discussed more completely in Renewal Application Appendix B4. Waste streams will be assigned EPA hazardous waste numbers based upon AK and the certified characterization programs may resolve the assignment of EPA hazardous waste numbers using HSG (Summary Category Group S5000 only) or solid sampling and analysis (Summary Category Groups S3000 and S4000 only).

For debris waste streams that do not have a Scenario 1 or Scenario 3 AKSD approved by the Permittees, containers selected in accordance with Renewal Application Appendix B2 from those waste streams must be sampled and analyzed for VOCs in the HSG. A statistically selected portion of homogeneous solids and soils/gravel waste streams must be sampled and analyzed for RCRA-regulated total VOCs, SVOCs, and metals when those waste streams do not have a Scenario 1 or Scenario 3 AKSD approved by the Permittees. Sampling and analysis methods used for waste characterization are discussed in Section B-3c and Section B-3d.

The typical waste characterization data collection design used by the certified characterization programs for TRU mixed waste is described in the following sections. Table B-3 provides a summary of HSG and homogeneous solids and soils/gravel sample analyses requirements for TRU mixed waste by waste Summary Category Group. Table B-7 summarizes the parameters, methods, and rationales for CH TRU mixed wastes according to their waste forms.

For TC constituents, the certified characterization program may take concentration into account when assessing whether to add a hazardous waste number. Some listed hazardous wastes are

listed solely because they exhibit the characteristic of ignitability, corrosivity, and/or reactivity. These F, K, P, and U wastes do not retain the associated listed hazardous waste number if the wastes no longer exhibit the characteristics of ignitability, corrosivity, and/or reactivity. The WIPP may accept TRU mixed waste that has been treated as long as the assigned EPA hazardous waste numbers are approved for disposal at WIPP (Table B-1).

B-3g Transuranic Mixed Waste

Waste containers are delineated into waste streams using AK. The Permittees will require that the certified characterization programs document the methods used to delineate waste streams in the AK record and Acceptable Knowledge Summary Report.

Radiography and/or VE will be performed as specified in Renewal Application Appendix B1, Sections B1-3 and/or B1-4 to determine that the physical form of the waste (Summary Category Group) corresponds to the physical form of the assigned waste stream, Waste Matrix Code, waste material parameters, and the absence of prohibited items. The data are then used to identify additional waste characterization techniques that may be used based on the Summary Category Groups since waste within the Homogeneous Solids and Soils/Gravel Summary Category Groups are characterized using different techniques than the waste in the Debris Waste Summary Category Group. The packaging configuration, type and number of filters, and rigid liner vent hole presence and diameter necessary to determine the appropriate DAC in accordance with Renewal Application Appendix B1, Section B1-1, may be documented as part of the characterization information collected during packaging, radiography, and/or VE for those containers of debris waste that will undergo HSG sampling and analysis.

Visual examination activities shall be documented on video/audio media or by using a second operator, who is equally trained to the requirements stipulated in Renewal Application Appendix B1, to provide additional verification by reviewing the contents of the waste container to ensure correct reporting. If the second operator cannot provide concurrence, corrective actions* will be taken as specified in Renewal Application Appendix B3.

B-3g(1) Sampling of Homogeneous Solids and Soils/Gravel

When a Scenario 1 or Scenario 3 AKSD Request has not been approved by the Permittees, sampling and analysis of homogeneous solids and soils/gravel waste streams shall be conducted in accordance with the requirements specified in Renewal Application Appendix B1, Section B1-2. The number of homogeneous solids and soils/gravel waste containers to be sampled will be determined using the procedure specified in Section B2-1, wherein a statistically selected portion of the waste will be sampled.

* "Corrective action" as used in this WAP and its appendices does not mean corrective action as defined under Hazardous Waste Act, RCRA, and their implementing regulations.

B-4 Data Verification and Quality Assurance

The Permittees will ensure that applicable waste characterization processes performed by ~~generator/storage sites~~ certified characterization programs sending TRU mixed waste to the WIPP for disposal meet~~s~~ WAP requirements through data validation, usability and reporting controls. Verification occurs at three levels: 1) the data generation level, 2) the project level, and 3) the Permittee level. The validation and verification process and requirements at each level are described in Renewal Application Appendix B3, Section B3-10. The validation and verification process at the Permittee Level is ~~also~~ described in Section B-5.

B-4a Data Generation and Project Level Verification Requirements

B-4a(1) Data Quality Objectives

The waste characterization data obtained through WAP implementation will be used to ensure that the Permittees meet regulatory requirements with regard to both regulatory compliance and to ensure that all TRU mixed wastes are properly managed during the Disposal Phase. To satisfy the RCRA regulatory compliance requirements, the following DQOs are established by this WAP:

- Acceptable Knowledge
  - To delineate TRU mixed waste streams.
  - To assess whether TRU mixed wastes comply with the applicable requirements of the TSDF-WAC.
  - To assess whether TRU mixed wastes exhibit a hazardous characteristic (20.4.1.200 NMAC, incorporating 40 CFR §261 Subpart C).
  - To assess whether TRU mixed wastes are listed (20.4.1.200 NMAC, incorporating 40 CFR §261, Subpart D).
  - To estimate waste material parameter weights when seeking a Scenario 1 or a Scenario 2 AKSD.
- Headspace-Gas Sampling and Analysis
  - To identify VOCs and quantify the concentrations of VOC constituents in debris waste containers to resolve the assignment of EPA hazardous waste numbers
- Homogeneous Solids and Soils/Gravel Waste Sampling and Analysis
  - To compare ~~UCL90~~ UCL_{90} values for the mean measured contaminant concentrations in a homogeneous solids or soils/gravel waste stream with specified TC ~~toxicity characteristic~~ levels in 20.4.1.200 NMAC (incorporating 40

CFR §261), to determine if the waste is hazardous, and to resolve the assignment of TC EPA hazardous waste numbers.

- Radiography
  - To determine the physical waste form, the absence of prohibited items, and additional waste characterization techniques that may be used based on the Summary Category Groups (i.e., S3000, S4000, S5000).
- Visual Examination
  - To determine the physical waste form, the absence of prohibited items, and additional waste characterization techniques that may be used based on the Summary Category Groups (i.e., S3000, S4000, S5000).

Reconciliation of these DQOs by the ~~Generator/Storage~~ certified characterization program Site Project Manager or the Permittee approved laboratories, as applicable, is addressed in Renewal Application Appendix B3. Reconciliation requires determining whether sufficient type, quality, and quantity of data have been collected to ensure the ~~DQO's~~ DQOs cited above can be achieved.

B-4a(2) Quality Assurance Objectives

The ~~generator/storage site~~certified characterization programs or the Permittee approved laboratories, as applicable, shall demonstrate compliance with each QAO associated with the various characterization methods as presented in Renewal Application Appendix B3. ~~Generator/Storage Site Project Managers or the Permittee approved laboratories, as applicable, are further required to perform a reconciliation of the data with the DQOs established in this WAP. The Generator/Storage Site Project Manager or the Permittee approved laboratories, as applicable, shall conclude that all of the DQOs have been met for the characterization of the waste stream prior to submitting a WSPF to the Permittees for approval (Renewal Application Appendix B3).~~ The following QAO elements shall be considered for each technique, as a minimum:

- Precision
  - Precision is a measure of the mutual agreement among multiple measurements.
- Accuracy
  - Accuracy is the degree of agreement between a measurement result and the true or known value.
- Completeness

  - Completeness is a measure of the amount of valid data obtained from a method compared to the total amount of data obtained that is expressed as a percentage.

- Comparability
  - Comparability is the degree to which one data set can be compared to another.

- Representativeness
  - Representativeness expresses the degree to which data represent characteristics of a population.

A more detailed discussion of the QAOs, including ~~a mathematical representation~~qualitative or quantitative acceptance criteria, where appropriate, can be found in Renewal Application Appendix B3, which describes the QAOs associated with each characterization method ~~of sampling and analysis~~.

B-4a(3) Sample Control

The ~~generator/storage sites~~certified characterization programs and Permittee approved laboratories, as applicable, will implement a sample handling and control program that will include the maintenance of field documentation records, proper labeling, and a chain-of-custody (**COC**) record. The ~~generator/storage sites~~certified characterization programs' and Permittee approved laboratories', as applicable, Quality Assurance Project Plan (**QAPjP**) or procedures referenced in the QAPjP will document this program and include COC forms to control the sample from the point of origin to the final analysis result reporting. The Permittees will review and approve the QAPjP, including their determination that the sample control program is adequate. The ~~approved~~ QAPjP and subsequent revisions will be provided to NMED upon approval by the Permittees ~~prior to shipment of TRU mixed waste and before the generator/storage sites audit~~, as specified in Renewal Application Appendix B5 (Quality Assurance Project Plan Requirements). Details of this sample control program are provided in Renewal Application Appendix B1 and are summarized below to include:

- Field Documentation of samples including: point of origin, date of sample, container identification (**ID**), sample type, analysis requested, and COC number.

- Labeling and/or tagging including: sample numbering, sample ID, sample date, sampling conditions, and analysis requested.

- A COC control including: name of sample relinquisher, sample receiver, and the date and time of the sample transfer.

- Proper sample handling and preservation.

B-4a(4) Data Generation

The BDRs, in a format approved by the Permittees, will be used by each ~~generator/storage site~~certified characterization program and Permittee approved laboratory ~~laboratories~~, as applicable, for reporting waste characterization data. This format will be included in the ~~generator/storage site~~certified characterization program and Permittee approved laboratories, as applicable, QAPjP, controlled electronic databases, or procedures referenced in the QAPjP (Renewal Application Appendix B5) and will include all of the elements required by this WAP for BDRs (Renewal Application Appendix B3).

The Permittees shall perform audits of the ~~generator/storage site waste~~ certified characterization programs and Permittee approved laboratories, as implemented ~~by the~~ ~~generator/storage site~~ in accordance with the certified characterization program or laboratory QAPjP, to verify compliance with the WAP and the DQOs ~~in this WAP~~ (See Renewal Application Appendix B6 for a discussion of the content of the audit program). ~~The primary functions of these audits are to review generator/storage sites' adherence to the requirements of this WAP and ensure adherence to the WAP characterization program. The Permittees shall provide the results of each audit to NMED. If audit results indicate that a generator/storage site is not in compliance with the requirements of this WAP, the Permittees will take appropriate action as specified in Renewal Application Appendix B6.~~

~~The Permittees shall perform audits of the Permittee approved laboratory's programs, as implemented by the laboratory's QAPjP (See Renewal Application Appendix B6 for a discussion of the content of the audit program). The primary functions of these audits are to review the Permittee approved laboratory's adherence to the requirements of this WAP. The Permittees shall provide the results of each audit to NMED. If audit results indicate that a Permittee approved laboratory is not in compliance with the requirements of this WAP, the Permittees will take appropriate action as specified in Renewal Application Appendix B6.~~

The Permittees shall further require all Permittee approved laboratories or certified characterization program laboratories analyzing WIPP waste samples ~~for the~~ ~~generator/storage sites~~ to have established, documented QA/QC programs. The Permittees annually evaluate these laboratories and their QA/QC programs as part of their participation in the Permittees' PDP laboratory performance program. The Permittees' audits cover the requirements of the lab's QA/QC program, as well as compliance with this WAP. Continued compliance with these parameters will be verified by ongoing audits by the Permittees ~~at the generator/storage sites~~of the certified characterization programs and these laboratories as specified in Renewal Application Appendix B6. The Permittees' audits of the ~~generator/storage sites~~ certified characterization programs will verify that the laboratories analyzing the ~~sites'~~ wastes have been properly audited by the ~~generator/storage sites~~ certified characterization programs. The laboratory's QA/QC program shall include the following:

- Facility organization
- A list of equipment/instrumentation
- Operating procedures

- Laboratory QA/QC procedures
- Quality assurance review
- Laboratory records management

B-4a(5) Data Verification

The BDRs will document the testing, sampling, and analytical results from the required characterization activities, and document required QA/QC activities. Data validation and verification at both the data-generation level and the project level will be performed as required by ~~this~~ the Permit before the required data are transmitted to the Permittees (Renewal Application Appendix B3). The NMED may request, through the Permittees, copies of any BDR, and/or the raw data validated by the ~~generator/storage sites~~certified characterization programs, to check the Permittees' audit of the validation process.

B-4a(6) Data Transmittal

Batch Data Reports~~BDRs~~ will include the information required by Renewal Application Appendix B3, Section B3-10 and will be transmitted by hard copy or electronically (provided a hard copy is available on demand) from the data generation level to the project level.

The ~~generator/storage site~~ certified characterization program will transmit waste container information electronically via the WIPP Waste Information System (**WWIS**). Data will be entered into the WWIS in the exact format required by the database. Refer to Section B-5a(1) for WWIS reporting requirements and Table B-8 ~~the *WIPP Waste Information System User's Manual for Use by Shippers/Generators* (DOE, 2001)~~ for the WWIS data fields ~~and format requirements~~.

Once a waste stream is characterized, the certified characterization program Site Project Manager will also submit to the Permittees a WSPF (Figure B-~~1~~2) accompanied by the CIS for that waste stream which includes reconciliation with DQOs (Renewal Application Appendix B3, Sections B3-12b(1) and B3-12b(2)). The WSPF, the CIS, and information from the WWIS will be used as the basis for acceptance of waste characterization information on TRU mixed wastes to be disposed of at the WIPP.

~~B-4a(7) Records Management~~

~~Records related to waste characterization activities performed by the generator/storage sites will be maintained in the testing, sampling, or analytical facility files or generator/storage site project files, or at the the WIPP Records Archive facility. Permittee approved laboratories will forward testing, sampling, and analytical records along with BDRs, to the generator/storage site project office for inclusion in the generator/storage site's project files and to the Permittees for inclusion in the WIPP facility operating record. Raw data obtained by testing, sampling, and analyzing TRU mixed waste in support of this WAP will be identifiable, legible, and provide documentary evidence of quality. TRU mixed waste characterization records submitted to the Permittees shall be maintained in the WIPP facility operating record and be available for inspection by NMED.~~

~~Records inventory and disposition schedule (**RIDS**) or an equivalent system shall be prepared and approved by generator/storage site personnel. All records relevant to an enforcement action under this Permit, regardless of disposition, shall be maintained at the generator/storage site until NMED determines they are no longer needed for enforcement action, and then dispositioned as specified in the approved RIDS. All waste characterization data and related QA/QC records for TRU mixed waste to be shipped to the WIPP facility are designated as either Lifetime Records or Non-Permanent Records.~~

~~Records that are designated as Lifetime Records shall be maintained for the life of the waste characterization program at a participating generator/storage the TRU waste site plus six years or transferred for permanent archival storage to the WIPP Records Archive facility.~~

~~Waste characterization records designated as Non-Permanent Records shall be maintained for ten years from the date of (record) generation at the participating generator/storage TRU waste site or at the WIPP Records Archive facility and then dispositioned according to their approved RIDS. If a generator/storage site ceases to operate, all records shall be transferred before closeout to the Permittees for management at the WIPP Records Archive facility. Table B-6 is a listing of records designated as Lifetime Records and Non-Permanent Records. Classified information will not be transferred to WIPP. Notations will be provided to the Permittees indicating the absence of classified information. The approved generator/storage site RIDS will identify appropriate disposition of classified information. Nothing in this Permit is intended to, nor should it be interpreted to, require the disclosure of any U.S. Department of Energy classified information to persons without appropriate clearance to view such information.~~

B-5 Permittee Level Waste Screening and Verification of Transuranic ~~TRU~~ Mixed Waste

Permittee waste screening is a two-phased process. Phase I will occur prior to certification of TRU mixed waste for disposal at WIPP~~configuring shipments of TRU mixed waste~~. Phase II will occur after certification of TRU mixed waste for disposal ~~configuration of shipments of TRU mixed waste~~ but before it is disposed at the WIPP facility. Figure B-3 presents Phase I and a portion of Phase II of the TRU mixed waste screening process. Renewal Application Appendix B7 presents the Permittees' TRU mixed waste confirmation portion of Phase II activities.

B-5a Phase I Waste Stream Screening and Verification

~~The first phase of the waste screening and verification process will occur before TRU mixed waste is shipped to the WIPP facility.~~ Before the Permittees begin the process of accepting TRU mixed waste from a ~~generator/storage site~~ TRU waste site, an initial audit of ~~that~~ the ~~generator/storage site~~ characterization program at that site will be conducted as part of the Permittees' Audit and Surveillance Program (Renewal Application Appendix B6). The ~~RCRA portion of the~~ ~~generator/storage site~~ characterization program audit ~~program~~ will provide ~~on-site~~ verification of characterization procedures; BDR preparation; and recordkeeping to ensure that all applicable provisions of the WAP requirements are met. Another portion of the Phase I

verification is the WSPF approval process. ~~At the WIPP facility,~~ t~~T~~his process includes verification that all of the required elements of the WSPF and the CIS are present (Renewal Application Appendix B3) and that the waste characterization information meet acceptance criteria required for compliance with the WAP (Renewal Application Appendix B3, Section B3-12b(1) and Section B3-12b(2)).

A ~~generator/storage site~~ characterization program must first prepare a QAPjP, which includes applicable WAP requirements, and submit it to the Permittees for review and approval (Renewal Application Appendix B5). Once approved, a copy of the QAPjP is provided to NMED ~~for examination~~. The ~~generator/storage site~~ characterization program will implement the specific parameters of the QAPjP after it is approved. An initial audit will be performed after QAPjP implementation and prior to the ~~generator/storage site~~ characterization program being certified by CBFO ~~for shipment of waste to WIPP~~. Additional audits, focusing on the results of waste characterization, will be performed at least annually. The Permittees have the right to conduct unannounced audits and to examine any records that are related to the scope of the audit. See Section B-5a(3) and Renewal Application Appendix B6 for further information regarding audits.

When the required waste stream characterization data have been collected by a ~~generator/storage site~~ characterization program and the initial ~~generator/storage site~~ characterization program certification audit has been successfully completed and certification granted by CBFO, the ~~generator/storage~~ Site Project Manager will verify that waste stream characterization meets the applicable WAP requirements as a part of the project level reconciliation~~verification~~ (Renewal Application B3, Section B3-11~~10b~~). ~~If the waste characterization does not meet the applicable requirements of the WAP, the mixed waste stream cannot be managed, stored, or disposed at WIPP until those requirements are met.~~ The certified characterization program Site Project Manager will then complete a WSPF and submit it to the Permittees, along with the accompanying CIS for that waste stream (Renewal Application B3, Section B3-12b(1) and Section B3-12b(2)). All data necessary to check the accuracy of the WSPF will be transmitted to the Permittees for verification. This provides notification that the ~~generator/storage site~~ certified characterization program considers that the waste stream ~~(identified by the waste stream identification number)~~ has been adequately characterized for disposal ~~prior to shipment to~~ at WIPP. The Permittees will compare ~~headspace gas~~ HSG, ~~radiographic~~radiography, ~~visual examination~~ VE and solid sampling/analysis data obtained ~~subsequent to submittal~~prior to approval of the WSPF ~~(and prior to submittal)~~ with characterization information presented on ~~this~~ the WSPF ~~form~~. If the Permittees determine (through the data comparison) that the characterization information is adequate, the WSPF will be approved. Prior to the first ~~shipment~~ receipt of containers from the approved waste stream, the approved WSPF and accompanying CIS will be provided to NMED. If the data comparison indicates that analyzed containers have hazardous wastes not present on the WSPF, or a different Waste Matrix Code applies, the WSPF is in error and shall be resubmitted. Ongoing WSPF examination is discussed in detail in Section B-5a(2).

Audits of ~~generator/storage sites~~ certified characterization programs will be conducted as part of the Permittees' Audit and Surveillance Program (Renewal Application Appendix B6). The ~~RCRA portion of the~~ ~~generator/storage site~~ certified characterization program audit ~~program~~ will

provide ~~on-site~~ verification of waste characterization procedures; BDR preparation; and record keeping to ensure that all applicable provisions of the WAP requirements are met. As part of the waste characterization data submittal, the ~~generator/storage site~~ certified characterization program will also transmit the data on a container basis via the WWIS. This data submittal can occur at any time as the data are being collected, but will be complete for each container prior to ~~shipment of~~ certifying the waste for disposal in the WWIS ~~that container~~. The WWIS will conduct internal edit/limit checks as the data are entered, and the data will be available to the Permittees as supporting information for WSPF review. ~~NMED will have read-only access to the WWIS as necessary to determine compliance with the WAP.~~ The initial WSPF check performed by the Permittees will include WWIS data submitted by the ~~generator/storage site~~ certified characterization program for each waste container and the CIS. The Permittees will compare ongoing sampling/analysis characterization data obtained and submitted via the WWIS to the approved WSPF. If this comparison shows that containers have hazardous wastes not reported on the WSPF, or a different Waste Matrix Code applies, the data are rejected. ~~and the waste containers are not accepted for shipment until~~ The data shall be corrected and a new or revised WSPF ~~is~~ will be submitted ~~to and approved~~ for review by the Permittees.

If discrepancies regarding hazardous waste number assignment or Waste Matrix Code designation arise as a result of the Phase I review, the ~~generator/storage sites~~ certified characterization programs will be contacted by the Permittees and required to provide the necessary additional information to resolve the discrepancy before that waste stream is approved for disposal at the WIPP facility. If the discrepancy is not resolved, the waste stream will not be approved. ~~The Permittees will notify NMED in writing of any discrepancies identified during WSPF review and the resulting discrepancy resolution prior to waste shipment. The Permittees will not manage, store, or dispose the waste stream until this discrepancy is resolved in accordance with this WAP.~~

B-5a(1) Waste Isolation Pilot Plant Waste Information System ~~WWIS~~ Description

All ~~generator/storage sites~~certified characterization programs ~~planning to ship TRU mixed waste to WIPP~~ will supply the required data to the WWIS. The WWIS Data Dictionary includes all of the data fields, the field format and the limits associated with the data as established by this WAP. These data will be subjected to edit and limit checks that are performed automatically by the database~~, as defined in the *WIPP Waste Information System User's Manual for Use by Shippers/Generators* (DOE, 2001)~~.

The Permittees will coordinate the data transmission with each ~~generator/storage site~~certified characterization program. Actual data transmission will use appropriate technology to ensure the integrity of the data transmissions. The Permittees will require ~~sites~~ certified characterization programs with large waste inventories and large databases to populate a data structure provided by the Permittees that contains the required data dictionary fields that are appropriate for the waste stream (or waste streams) at that TRU waste site. For example, totals analysis data will not be requested from ~~sites~~ certified characterization programs that do not have homogeneous solids or soils/gravel waste. The Permittees will access these data via the Internet to ensure an efficient transfer of ~~this~~ these data. ~~Small-quantity sites will be given a similar data structure by~~

~~the Permittees that is tailored to their types of waste. Sites with very small quantities of waste will be provided with the ability to assemble the data interactively to this data structure on the WWIS.~~

The Permittees will use the WWIS to verify that all of the supplied data meet the edit and limit checks ~~prior to the shipment of any TRU mixed waste to WIPP~~. The WWIS automatically will notify the ~~generator/storage site~~ certified characterization program if any of the supplied data fail~~s~~ to meet the requirements of the edit and limit checks via an appropriate error message. The ~~generator/storage site~~ certified characterization program will be required to correct the discrepancy with the waste or the waste data and re-transmit the corrected data prior to acceptance of the data by the WWIS. ~~The Permittees will review data reported for each container of each shipment prior to providing notification to the shipping generator/storage site that the shipment is acceptable. Read-only access to the WWIS will be provided to NMED.~~ Table B-~~7~~8 contains a listing of the data fields contained in the WWIS that are ~~required~~ relevant ~~as part of~~ to this Renewal Application.

The WWIS will generate the following:

- Waste Emplacement Report

  This report will be added to the operating record to track the quantities of waste, date of emplacement, and location of authorized containers or container assemblies in the repository. The Permittees will document the specific panel room or drift that an individual waste container is placed in as well as the row/column/height coordinates location of the container or containers assembly. This report will be generated on a weekly basis. Locations of containers or container assemblies will also be placed on a map separate from the WWIS. Reports and maps that are included as part of the operating record will be retained at the WIPP site, for the life of the facility.

- Shipment Summary Report

  This report will contain the container ~~identification numbers~~ ~~(~~IDs~~)~~ of every container in the shipment, listed by Shipping Package number and by assembly number when applicable ~~(for seven-packs, four-packs, and three-packs)~~, for every assembly in the Shipping Package. This report is used by the Permittees to verify containers in a shipment and will be generated on a shipment basis.

- Waste Container Data Report

  This report will be generated on a waste stream basis and will be used by the Permittees during the WSPF review and approval process. This report will include ~~contain~~ the applicable container specific information ~~the data~~ from Table B-8 ~~listed in the Characterization Module on Table B-7~~. This report will be generated and attached to the WSPF for inclusion in the facility operating record and will be kept for the life of the facility.

- Reports of Change Log

  This will consist of a short report that lists the user ID and the fields changed. The report will also include a reason for the change. A longer report will list the information provided on the short report and include a before and after ~~image of the~~ record for each change, a before-record for each deletion, and the new information for added records. These reports will provide an auditable trail for the data in the database.

Access to the WWIS will be controlled by the Permittees' Data Administrator (**DA**) who will control the WWIS users based on approval from management personnel.

The TRU mixed waste ~~generator/storage sites~~ certified characterization programs will only have access to data that they have supplied, and only until the data have been formally accepted by the Permittees. After the data have been accepted, ~~the~~ these data will be protected from indiscriminate change and can only be changed by ~~a~~ an authorized DA.

The WWIS has a Change Log that requires a reason for the change from the DA prior to accepting the change. The data change information, the user ID of the authorized DA making the change, and the date of the change will be recorded in the data change log automatically. The data change log cannot be revised by any user, including the DA. The data change log will be subject to internal and external audits and will provide an auditable trail for all changes made to previously approved data.

The Permittees will provide NMED direct access via the internet to permit required information in the WWIS.

B-5a(2) Examination of the Waste Stream Profile Form and Container Data Checks

The Permittees will be responsible for the verification of completeness and accuracy of the WSPF ~~Waste Stream Profile Form~~ (Renewal Application B3, Section B3-12b(1)). Figure B-~~2~~1 includes the waste characterization and Permittees' waste stream approval process. The assignment of the waste stream description, ~~Waste Matrix Code Group,~~ and Summary Category Groups; the results of waste analyses, as applicable; the ~~acceptable knowledge~~ AK summation ~~summary documentation~~; the methods used for characterization; the ~~Carlsbad Field Office (~~CBFO~~)~~ certification, and appropriate designation of EPA hazardous waste number(s) will be examined. If the WSPF is inaccurate~~, efforts will be made to resolve~~ discrepancies will be resolved before approval by contacting the ~~generator/storage site~~ certified characterization program in order for the waste stream to be eligible for ~~shipment to~~ receipt at the WIPP facility. If discrepancies in the waste stream are detected by the certified characterization program after the approval of the WSPF ~~at the generator/storage site~~, the ~~generator/storage site~~ certified characterization program will ~~implement~~ utilize the ~~a~~ non-conformance program to identify, document, and report discrepancies (Renewal Application Appendix B3).

The WSPF shall pass all verification checks by the Permittees in order for the waste stream to be approved for ~~shipment to~~ receipt at the WIPP facility. The WSPF check against waste container data will occur during the initial WSPF approval process (Section B-5a).

The EPA hazardous waste numbers for the wastes that appear on the WSPF ~~Waste Stream Profile Form~~ will be compared to those in Table B-~~9~~1 to ensure that only approved wastes are accepted for management, storage, or disposal at WIPP. Some of the waste may also be identified by unique state hazardous waste codes or numbers. These wastes are acceptable at WIPP as long as the TSDF-WAC are met. The CIS will be reviewed by the Permittees to verify that the waste has been classified correctly with respect to the assigned EPA hazardous waste numbers. Any analytical method used will be compared to those listed in Tables B-~~2~~4, B-~~3~~5, and B-~~4~~6 to ensure that only approved analytical methods were used for analysis of the waste. The Permittees will verify that the applicable requirements of the TSDF-WAC have been met by the ~~generator/storage site~~ certified characterization program.

Waste data transferred via the WWIS after WSPF approval will be compared with the approved WSPF. Any container from an approved hazardous waste stream with a description different from its WSPF will not be managed, stored, or disposed at WIPP.

The Permittees will also verify that three different types of data specified below are available for every container holding TRU mixed waste before that waste is managed, stored, or disposed at WIPP: 1) an assignment of the waste stream's waste description (by Waste Matrix Codes) ~~and Waste Matrix Code Group~~; 2) a determination of ignitability, reactivity, and corrosivity; and 3) a determination of compatibility. The verification of waste stream description will be performed by reviewing the WWIS for consistency in the waste stream description and WSPF. The CIS will indicate if the waste has been checked for the characteristics of ignitability, corrosivity, and reactivity. The final verification of waste compatibility will be performed using Addendum B2 ~~Appendix C1 of the WIPP RCRA Part B Permit Application (DOE, 1997), the compatibility study~~.

Any container with unresolved discrepancies associated with hazardous waste characterization will not be managed, stored, or disposed at the WIPP facility until the discrepancies are resolved. If the discrepancies cannot be resolved, the Permittees will revoke the approval status of the waste stream, suspend shipments of the waste stream, and notify NMED. Waste stream approval will not be reinstated until the ~~generator/storage site~~ certified characterization program demonstrates all corrective actions have been implemented and the ~~generator/storage site waste~~ certified characterization program is reassessed by the Permittees.

B-5a(3) Permittees' Audit and Surveillance Program

An important part of the Permittees' verification process is the Permittees' Audit and Surveillance Program. The focus of this audit program is compliance with ~~this~~ the WAP ~~and the Permit~~. This audit program addresses all AK implementation and waste sampling and analysis activities, from waste stream classification assignment through waste container certification, and ensures compliance with SOPs and the WAP. Audits will ensure that containers and their

associated documentation are adequately tracked throughout the waste handling process. Operator qualifications will be verified, and implementation of QA/QC procedures will be surveyed. A final report that includes ~~generator/storage site~~ certified characterization program or Permittee approved laboratory audit results and applicable WAP-related corrective action report ~~(**CAR**)~~ resolution will be provided to NMED for approval, and will be kept in the WIPP facility operating record until closure of the WIPP facility.

An initial audit will be performed ~~at~~ of each ~~generator/storage site~~ characterization program performing waste characterization activities prior to the formal acceptance of the WSPFs and/or any waste characterization data supplied by the ~~generator/storage sites~~ characterization program. Audits will be performed at least annually thereafter, including the possibility of unannounced audits (i.e., not a regularly scheduled audit). These audits will allow NMED to verify that the Permittees have implemented the WAP and that ~~generator/storage sites~~ certified characterization programs have implemented a QA program for the characterization of waste and meet applicable WAP requirements. The Permittees will also audit annually the Permittee approved laboratories performing waste sampling and/or analysis. The accuracy of physical waste description and waste stream assignment provided by the ~~generator/storage site~~ certified characterization program will be verified by review of the radiography results, and ~~visual examination~~ VE of data records and radiography images (as necessary) during audits conducted by the Permittees. More detail on this audit process is provided in Renewal Application Appendix B6.

B-5b Phase II Waste Shipment Screening and Verification

As presented in Figure B-3, Phase II of the waste shipment screening and verification process begins with confirmation of the waste as required by Renewal Application Appendix B7 after waste shipments are configured. After the waste shipment has arrived, the Permittees will screen the shipments to determine the completeness and accuracy of the EPA Hazardous Waste Manifest and the land disposal restriction notice completeness. The Permittees will verify there are no waste shipment irregularities and the waste containers are in good condition. Only those waste containers that are from shipments that have been confirmed as required by Renewal Application Appendix B7 and that pass all Phase II waste screening and verification determinations will be emplaced at WIPP. For each container received~~shipped~~, the Permittees shall ensure that the ~~generator/storage sites~~ certified characterization programs have provided the following information:

Hazardous Waste Manifest Information:

- ~~Generator/storage site name and EPA~~ Item 1, Generator's U.S. EPA ID Number
- Generator/storage Item 5, Generator's name and mailing address, site contact name and phone number
- Item 9b, Listing of each Shipping Package ID number
- Item 11, Total Quantity of waste

- Item 13, List of up to six state and/or federal EPA hazardous waste numbers in each line item
- Listing of all shipping container IDs (Shipping Package serial number)
- Item 15, Signature of authorized generator (i.e., TRU waste site) representative

Specific Waste Container information:

- Waste Stream Identification Number
- List of EPA Hazardous Waste Numbers per Container
- Certification Data
- Shipping Data ~~(Assembly numbers, ship date, shipping category, etc.)~~

This information shall also be supplied electronically to the WWIS. The container-specific information will be supplied electronically as described in Section B-5a(1), and shall be supplied prior to the Permittees' management, storage, or disposal of the waste.

The Permittees will verify each approved shipment upon receipt at WIPP against the data on the WWIS shipment summary report to ensure containers have the required information. A Waste Receipt Checklist will be used to document the verification.

B-5b(1) Examination of the Environmental Protection Agency ~~EPA~~ Uniform Hazardous Waste Manifest and Associated Waste Tracking Information

Upon receipt of a TRU mixed waste shipment, the Permittees will make a determination of EPA Uniform Hazardous Waste Manifest completeness and sign the manifest to allow the driver to depart. For CH TRU mixed waste, the Permittees will then make a determination of waste shipment completeness by checking the unique, bar-coded identification number found on each container holding TRU mixed waste against the WWIS database after opening the Shipping Package.

The WWIS links the bar-coded identification numbers of all containers in a specific waste shipment to the waste assembly ~~(for 7-packs, 4-packs, 3-packs and 5-drum carriages)~~ and to the shipment identification number, which is also written on the EPA Uniform Hazardous Waste Manifest.

Certified characterization programs electronically transmit the waste shipment information to the WWIS before the TRU mixed waste shipment is transported. Once a TRU mixed waste shipment arrives, the Permittees verify the identity of each shipping package or cask. The Permittees will verify the identity of each container (or one container in an assembly) after the package is unloaded using the data in the WWIS.

~~For shipments in the RH-TRU 72B cask, the identification number of the single payload container is read during cask-to-cask transfer in the Transfer Cell and then checked against the~~

~~WWIS database. For shipments in the CNS 10-160B cask, the Permittees will make a determination of waste shipment completeness by checking the unique identification number found on each container holding TRU mixed waste in the Hot Cell against the WWIS database after unloading the cask.~~

~~Generators electronically transmit the waste shipment information to the WWIS before the TRU mixed waste shipment is transported. Once a TRU mixed waste shipment arrives, the Permittees verify the identity of each cask or container (or one container in a bound 7-pack, 4-pack, or 3-pack) using the data already in the WWIS.~~

The WWIS will maintain waste container receipt and emplacement information provided by the Permittees. It will include, among other items, the following information associated with each container of TRU mixed waste:

- Package inner containment vessel or shipping cask closure date
- Overpack identification number (if appropriate)
- ~~Package (container or canister)~~ Container emplacement date
- ~~Package (container or canister)~~ Container emplacement location

Manifest discrepancies will be identified during manifest examination and container bar-code WWIS data comparison. A manifest discrepancy is a difference between the quantity or type of hazardous waste designated on the manifest and the quantity or type of hazardous waste the WIPP facility actually receives. The ~~generator/storage site technical contact~~ generator site (as listed on ~~the~~ manifest Item 5) will be contacted to resolve the discrepancy. If the discrepancy is identified prior to the containers being removed from the package or shipping cask, the waste will be retained in the parking area. If the discrepancy is identified after the waste containers are removed from the package or cask, the waste will be retained in the Waste Handling Building (**WHB**) until the discrepancy is resolved. Errors on the manifest can be corrected by the WIPP facility with a verbal (followed by a mandatory written) concurrence by the ~~generator/storage site technical contact~~ generator site (as listed on manifest Item 5). All discrepancies that are unresolved within ~~fifteen (~~15~~)~~ days of receiving the waste will be immediately reported to NMED in writing. Notifications to NMED will consist of a letter describing the discrepancies, discrepancy resolution, and a copy of the manifest. If the manifest discrepancies have not been resolved within ~~thirty (~~30~~)~~ days of waste receipt, the shipment will be returned to the ~~generator/storage facility~~ TRU waste site. If it becomes necessary to return waste containers to the ~~generator/storage~~ TRU waste site, a new EPA Uniform Hazardous Waste Manifest may be prepared by the Permittees.

Documentation of the returned containers will be recorded in the WWIS. Changes will be made to the WWIS data to indicate the current status of the container(s). The reason for the WWIS data change and the record of the WWIS data change will be maintained in the change log of the WWIS, which will provide an auditable record of the returned shipment.

The Permittees will be responsible for the resolution of discrepancies, notification of NMED, as well as returning the ~~original~~ copy of the manifest to the ~~generator/storage~~ TRU waste site (as specified on the manifest).

B-5b(2) Examination of the Land Disposal Restriction ~~(**LDR**)~~ Notice

The TRU mixed waste designated by the Secretary of Energy for disposal at WIPP is exempt from the Land Disposal Restrictions (**LDRs**) by the WIPP Land Withdrawal Act Amendment (Public Law 104-201). This amendment states that WIPP "Waste is exempted from treatment standards promulgated pursuant to section 3004(m) of the Solid Waste Disposal Act (42 U.S. C. 6924(m)) and shall not be subjected to the Land Disposal prohibitions in section 3004(d), (e), (f), and (g) of the Solid Waste Disposal Act." Therefore, with the initial shipment of a TRU mixed waste stream, the ~~generator~~certified characterization program shall provide the Permittees with a one time written notice. The notice must include the information listed below~~:~~.

Land Disposal Restriction Notice Information:

- EPA Hazardous Waste Number(s) and Manifest Numbers of first shipment of a mixed waste stream
- Statement: this waste is not prohibited from land disposal
- Date the waste is subject to prohibition

This information is the applicable information taken from column "268.7(a)(4)" of the "Generator Paperwork Requirements Table" in 20.4.1.800 NMAC (incorporating 40 CFR §268.7(a)(4)). Note that item "5" from the "Generator Paperwork Requirements Table" is not applicable since waste analysis data are provided electronically via the WWIS and item "7" is not applicable since waste designated by the Secretary of Energy for disposal at WIPP is exempted from the treatment standards.

The Permittees will review the LDR notice for accuracy and completeness. The ~~generator~~ certified characterization program will prepare this notice in accordance with the applicable requirements of 20.4.1.800 NMAC (incorporating 40 CFR §268.7(a)(4)).

B-5b(3) Verification

The Permittees will make a determination of TRU mixed waste shipment irregularities. The following items will be inspected for each TRU mixed waste shipment arriving at the WIPP facility:

- Whether the number and type of containers holding TRU mixed waste match the information in the WWIS
- Whether the containers are in good condition

The Permittees will verify that the containers (as identified by their container ID numbers) are the containers for which accepted data already exists in the WWIS. A check will be performed by the Permittees comparing the data on the WWIS Shipment Summary Report for the shipment to the actual shipping papers (including the EPA Hazardous Waste Manifest). ~~This check also verifies that the containers included in the shipment are those for which approved shipping data already exist in the WWIS Transportation Data Module (Table B-7).~~ For ~~standard waste boxes (**SWBs**)~~ SWBs and ten drum overpacks ~~(**TDOPs**)~~, this check will include comparing the barcode on the container with the container number on the shipping papers and the data on the WWIS Shipment Summary Report. For ~~7-pack~~ assemblies, one of the ~~seven~~ container barcodes will be read by the ~~barcode reader~~ Permittees and compared to the assembly information for this container on the WWIS Shipment Summary Report. This will automatically identify the remaining ~~six~~ containers in the assembly. For shipments in the RH-TRU 72B cask, the identification number of the single payload container is read during cask-to-cask transfer in the Transfer Cell and then checked against the WWIS database. For shipments in the CNS 10-160B cask, the Permittees will make a determination of waste shipment completeness by checking the unique identification number found on each container holding TRU mixed waste in the Hot Cell against the WWIS database after unloading the cask.

This process enables the Permittees to identify all of the containers in the assembly with minimum radiological exposure. If all of the container IDs and the information on the shipping papers agree with the WWIS Shipment Summary Report, and the shipment was subject to waste confirmation by the Permittees prior to ~~shipment to~~receipt at WIPP as specified in Renewal Application Appendix B7, the containers will be approved for storage and disposal at the WIPP facility.

B-6 Permittees' Waste Shipment Screening Quality Assurance/Quality Control ~~QA/QC~~

Waste shipment screening QA/QC ensures that TRU mixed waste received is that which has been approved for shipment during the Phase I and Phase II screening. This is accomplished by maintaining QA/QC control of the waste shipment screening process. The screening process will be controlled by administrative processes which will generate records documenting waste receipt that will become part of the waste receipt record. The waste receipt record documents that container identifications correspond to shipping information and approved TRU mixed waste streams. The Permittees will extend QA/QC practices to the management of ~~all~~ records associated with waste shipment screening determinations.

B-7 Records Management and Reporting

Waste characterization records will be maintained in the certified characterization program site project files or the WIPP Records Archive facility until the closure of the WIPP facility. This includes testing, sampling, and analytical records along with BDRs, obtained from Permittee approved laboratories. This also includes those records identified as Lifetime Records in Table B-9. Raw data obtained by testing, sampling, and analyzing TRU mixed waste in support of this WAP will be identifiable, legible, and provide documentary evidence of quality.

The following records will be maintained for waste characterization and waste confirmation purposes as part of the WIPP facility operating record in accordance with 20.4.1.501 NMAC (incorporating 40 CFR § 264.73):

- Completed WIPP WSPFs and accompanying CIS, including individual container data as transferred on the WWIS (or received as hard-copy) and any discrepancy-related documentation as specified in Section B-5a

- Radiography and ~~visual examination~~ VE records (data sheets, packaging logs, and video and audio recordings) of waste confirmation activities

- Completed Waste Receipt Checklists and discrepancy-related documentation as specified in Section B-5b

- WIPP WWIS Waste Emplacement Report as specified in Section B-5a(1)

- Audit reports and corrective action reports from the Permittees' Audit and Surveillance Program audits as specified in Section B-5a(3) and Renewal Application Appendix B6

- CARs and closure information for corrective actions taken due to nonconforming waste being identified during waste confirmation by the Permittees

These records will be maintained for all TRU mixed waste managed at the WIPP facility.

Records containing classified information will not be transferred to WIPP. Notations will be provided to the Permittees indicating instances when the classified information has been excluded from the records. The Permittees will identify the appropriate disposition of classified information. Nothing in this Renewal Application is intended to, nor should it be interpreted to, require the disclosure of any DOE classified information to persons without appropriate clearance to view such information.

Waste characterization and waste confirmation data and documents related to waste characterization that are part of the WIPP facility operating record are managed in accordance with the following guidelines:

B-7a General Requirements

- Records shall be legible

- Corrections shall be made with a single line through the incorrect information, and the date and initial of the person making the correction shall be added

- Black ink is encouraged, unless a copy test has been conducted to ensure the other color ink will copy

- Use of highlighters on records is discouraged

- Records shall be reviewed for completeness
- Records shall be validated ~~by the cognizant manager or designee~~

B-7b Records Storage

- Active records shall be stored when not in use
- Validated ~~Q~~quality records shall be kept in a one-hour (certified) fire-rated container or a copy of a record shall be stored separately (sufficiently remote from the original) in order to prevent destruction of both copies as a result of a single event such as fire or natural disaster
- Unauthorized access to the validated records is controlled by locking the storage container or controlling personnel access to the storage area

B-8 Reporting

The Permittees will provide a biennial report in accordance with 20.4.1.500 NMAC (incorporating 40 CFR §264.75) to NMED that includes information on actual volume and waste descriptions received for disposal during the time period covered by the report.

~~B-9 List of~~ References

~~U.S. Department of Energy (DOE), 2001, "WIPP Waste Information System User's Manual for Use by Shippers/Generators", DOE/CAO 97-2273, U.S. Department of Energy.~~

~~U.S. Department of Energy (DOE), 1997, "Resource Conservation and Recovery Act Part B Permit Application for the Waste Isolation Pilot Plant", Revision 6.5, U.S. Department of Energy.~~

~~U.S. Department of Energy (DOE), 2003, "Performance Demonstration Program Plan for the Analysis of Simulated Headspace Gases for the TRU Waste Characterization Program," CAO-95-1076, Current Revision, Carlsbad, New Mexico, Carlsbad Field Office, U.S. Department of Energy.~~

~~U.S. Department of Energy (DOE), 2005, "Performance Demonstration Program Plans for Analysis of Solid Waste Forms," CAO-95-1077, Current Revision, Carlsbad, New Mexico, Carlsbad Field Office, U.S. Department of Energy.~~

U.S. Environmental Protection Agency (EPA), ~~April~~ 1994, ~~"~~*Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Waste, A Guidance Manual*,~~"~~ OSWER 9938.4-03, Office of Solid Waste and Emergency Response, Washington, D.C.

~~U.S. Environmental Protection Agency (EPA), April 1980. "A Method for Determining the Compatibility of Hazardous Wastes," EPA-600/2-80-076, California Department of Health Services and the U.S. Environmental Protection Agency, Office of Research and Development.~~

U.S. Environmental Protection Agency (EPA), 1996. ~~"~~*Test Methods for Evaluating Solid Waste*,~~"~~ ~~Laboratory Manual~~ *Physical/Chemical Methods*, SW-846, ~~3rd ed.~~Third Edition, ~~U.S. Environmental Protection Agency,~~ Office of Solid Waste and Emergency Response, Washington, D.C.

U.S. Environmental Protection Agency (EPA), 1999. "Compendium Method TO-14A or TO-15, The Determination of Volatile Organic Compounds (VOC) in Ambient Air Using SUMMA® Passivated Canister Sampling and Gas Chromatographic Analysis" in Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air – 2nd Edition (EPA/625/R-96/010b)

WIPP Land Withdrawal Act Amendment (Public Law 104-201)

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1 TABLES

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TABLE B-~~9~~1
LISTING OF PERMITTED EPA HAZARDOUS WASTE NUMBERS

EPA Hazardous Waste Numbers			
F001	D019	D043	U079
F002	D021	P015	U103
F003	D022	P030	U105
F004	D026	P098	U108
F005	D027	P099	U122
F006	D028	P106	U133*
F007	D029	P120	U134*
F009	D030	U002*	U151
D004	D032	U003*	U154*
D005	D033	U019*	U159*
D006	D034	U037	U196
D007	D035	U043	U209
D008	D036	U044	U210
D009	D037	U052	U220
D010	D038	U070	U226
D011	D039	U072	U228
D018	D040	U078	U239*

*** Acceptance of U-numbered wastes listed for reactivity, ignitability, or corrosivity characteristics is contingent upon a demonstration that the wastes no longer exhibit the characteristic of reactivity, ignitability, or corrosivity.**

TABLE B-~~8~~2
WASTE TANKS SUBJECT TO EXCLUSION

Hanford Site - 177~~5~~ Tanks	
A-101 through A-106	C-201 through C-204
AN-101 through AN-107	S-101 through S-112
AP-101 through AP-108	SX-101 through SX-115
AW-101 through AW-106	SY-101 through SY-103
AX-101 through AX-104	T-101 through T-112
AY-101 through AY-102	T-201 through T-204
B-101 through B-112	TX-101 through TX-118
B-201 through B-204	TY-101 through TY-106
BX-101 through BX-112	U-101 through U-112
BY-101 through BY-112	U-201 through U-204
C-101 through C-112	
Savannah River Site - 51 Tanks	
Tank 1 through 51	
Idaho National Engineering and Environmental Laboratory - 15 Tanks	
WM-103 through WM-106	WM-180 through 190

1

TABLE B-~~1~~3
SUMMARY OF HEADSPACE GAS AND SOLIDS SAMPLE ~~HAZARDOUS WASTE CHARACTERIZATION~~ REQUIREMENTS FOR TRANSURANIC MIXED WASTE [a]

~~Parameter~~	~~Techniques and Procedure~~
~~Physical Waste Form~~ ~~Summary Category Names~~ ~~S3000 Homogeneous Solid~~ ~~S4000 Soil/Gravel~~ ~~S5000 Debris Wastes~~	**~~Waste Inspection Procedures~~** ~~Radiography~~ ~~Visual Examination~~ ~~(Permit Attachment B1-3)~~
Headspace Gases – Required for S5000 Debris Waste Only **Volatile Organic Compounds~~~~ Analytes** Benzene ~~Bromoform~~ Carbon tetrachloride Chlorobenzene Chloroform ~~1,1-Dichloroethane~~ 1,2-Dichloroethane 1,1-Dichloroethylene ~~(cis)-1,2-Dichloroethylene~~ ~~(trans)-1,2-Dichloroethylene~~ ~~Ethyl benzene~~ ~~Ethyl ether~~ ~~Methylene chloride~~ ~~1,1,2,2-Tetrachloroethane~~ Tetrachloroethylene ~~Toluene~~ ~~1,1,1-Trichloroethane~~ Trichloroethylene ~~1,1,2-Trichloro-1,2,2-trifluoroethane~~ ~~Xylenes~~ Alcohols and Ketones ~~Acetone~~ ~~Butanol~~ ~~Methanol~~ Methyl ethyl ketone ~~Methyl isobutyl ketone~~	**Gas Analysis** [f] Gas Chromatography /Mass Spectroscopy (**GC/MS**), EPA TO-14A or TO-15, or modified SW-846 8260 ~~(Permit Attachment B3)~~ GC/Flame Ionization Detector (**FID**), for alcohols and ketones, SW-846 8015 ~~(Permit Attachment B3)~~ Fourier Transform Infrared Spectroscopy (**FTIRS**), SW-846
Solids Sample Analysis – Required for S3000 Homogeneous Solids and S4000 Soil/Gravel **Total Volatile Organic Compounds** ~~Acetone~~ Benzene ~~Bromoform~~ ~~Butanol~~ ~~Carbon disulfide~~ Carbon tetrachloride Chlorobenzene Chloroform ~~1,4-Dichlorobenzene~~ [d] ~~1,2-Dichlorobenzene~~ [d] 1,2-Dichloroethane 1,1-Dichloroethylene ~~Ethyl benzene~~ ~~Ethyl ether~~ ~~Formaldehyde~~ [b] ~~Hydrazine~~ [c] ~~Isobutanol~~ ~~Methanol~~ Methyl ethyl ketone ~~Methylene chloride~~ ~~Pyridine~~ [d] ~~1,1,2,2-Tetrachloroethane~~ Tetrachloroethylene ~~Toluene~~ ~~1,1,2-Trichloro-1,2,2-trifluoroethane~~ ~~Trichlorofluoromethane~~ ~~1,1,1-Trichloroethane~~ ~~1,1,2-Trichloroethane~~ Trichloroethylene Vinyl chloride ~~Xylenes~~ ~~(trans)-1,2-Dichloroethylene~~	**Total Volatile Organic Compound Analysis** ~~g~~ [b] TCLP, SW-846 1311 GC/MS, SW-846 8260 or 8240 GC/FID, SW-846 8015 ~~(Permit Attachment B3)~~ High Performance Liquid Chromatography (**HPLC**), SW-846 8315A ~~Acceptable Knowledge for Summary Category S5000 (Debris Wastes)~~

TABLE B-~~1~~3
SUMMARY OF HEADSPACE GAS AND SOLIDS SAMPLE ~~HAZARDOUS WASTE CHARACTERIZATION~~ REQUIREMENTS FOR TRANSURANIC MIXED WASTE [a]

~~Parameter~~	~~Techniques and Procedure~~
Total Semivolatile Organic Compounds Mixed Cresols 1,4-Dichlorobenzene[e] ~~1,2-Dichlorobenzene[e]~~ ~~2,4-Dinitrophenol~~ 2,4-Dinitrotoluene Hexachlorobenzene Hexachlorobutadiene Hexachloroethane Nitrobenzene Pentachlorophenol Pyridine[e]	**Total Semivolatile Organic Compound Analysis** [g~~b~~] TCLP, SW-846 1311 GC/MS, SW-846 8270 ~~(Permit Attachment B3-)~~ ~~Acceptable Knowledge for Summary Category S5000 (Debris Wastes)~~
Total Metals ~~Antimony~~ Arsenic Barium ~~Beryllium~~ Cadmium Chromium Lead Mercury ~~Nickel~~ Selenium Silver ~~Thallium~~ ~~Vanadium~~ ~~Zinc~~	**Total Metals Analysis** [g~~b~~] TCLP, SW-846 1311 Inductively Coupled Plasma – Mass Spectroscopy (**ICP- MS**), SW-846 6020 , ICP Emission Spectroscopy, SW-846 6010 Atomic Absorption Spectroscopy , SW-846 7000 ~~(Permit Attachment B3-)~~ ~~Acceptable Knowledge for Summary Category S5000 (Debris Wastes)~~

~~a Permit Chapter B~~

~~b Required only for homogeneous solids and soil/gravel waste from Savannah River Site to resolve the assignment of EPA hazardous waste numbers.~~

~~c Required only for homogeneous solids and soil/gravel waste from Oak Ridge National Laboratory and Savannah River Site to resolve the assignment of EPA hazardous waste numbers.~~

~~d Can also be analyzed as a semi-volatile organic compound.~~

~~e Can also be analyzed as a volatile organic compound.~~

~~f~~[a] Required only to resolve the assignment of EPA hazardous waste numbers to debris waste streams.

~~g~~[b] Required only to resolve the assignment of EPA hazardous waste numbers to homogeneous solid~~s~~ and soil~~s~~/gravel waste streams.

TABLE B-24
HEADSPACE GAS TARGET ANALYTE LIST AND METHODS [b]a

Parameter	EPA Specified Analytical Method
Benzene ~~Bromoform~~ Carbon tetrachloride Chlorobenzene Chloroform ~~1,1-Dichloroethane~~ 1,2-Dichloroethane 1,1-Dichloroethylene ~~(cis)-1,2-Dichloroethylene~~ ~~(trans)-1,2-Dichloroethylene~~ ~~Ethyl benzene~~ ~~Ethyl ether~~ ~~Methylene chloride~~ ~~1,1,2,2-Tetrachloroethane~~ Tetrachloroethylene ~~Toluene~~ ~~1,1,1-Trichloroethane~~ Trichloroethylene ~~1,1,2-Trichloro-1,2,2-trifluoroethane~~ ~~Xylenes~~	EPA: Modified TO-14A, TO-15[a]b]; Modified 8260 EPA - Approved FTIRS
~~Acetone~~ ~~Butanol~~ ~~Methanol~~ Methyl ethyl ketone ~~Methyl isobutyl ketone~~	EPA: Modified TO-14A, TO-15[a]b]; Modified 8260 Method 8015 EPA - Approved FTIRS

a ~~U.S. Environmental Protection Agency (EPA), 1999, Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air–Second Edition (EPA/625/R-96/010b). The most current revision of the specified methods may be used.~~ Required only for debris waste when required to resolve the assignment of EPA hazardous waste numbers.

b ~~Required only for debris waste when required to resolve the assignment of EPA hazardous waste numbers.~~ U.S. Environmental Protection Agency (EPA), 1999, Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air–Second Edition (EPA/625/R-96/010b).

TABLE B-~~3~~5
REQUIRED ORGANIC ANALYSES AND TEST METHODS
ORGANIZED BY ORGANIC ANALYTICAL GROUPS [~~e~~a]

Organic Analytical Group	Required Organic Analyses	EPA Specified Analytical Method [~~a,d~~b,c]
Nonhalogenated Volatile Organic Compounds (VOCs)	~~Acetone~~ Benzene ~~n-Butanol~~ ~~Carbon disulfide~~ ~~Ethyl benzene~~ ~~Ethyl ether~~ ~~Formaldehyde~~ ~~Hydrazine~~[~~b~~] ~~Isobutanol~~ ~~Methanol~~ Methyl ethyl ketone ~~Toluene~~ ~~Xylenes~~	8015 8260 8315A
Halogenated VOCs	~~Bromoform~~ Carbon tetrachloride Chlorobenzene Chloroform 1,2-Dichloroethane 1,1-Dichloroethylene ~~(trans)-1,2-Dichloroethylene~~ ~~Methylene chloride~~ ~~1,1,2,2-Tetrachloroethane~~ Tetrachloroethylene ~~1,1,2-Trichloroethane~~ ~~1,1,1-Trichloroethane~~ Trichloroethylene ~~Trichlorofluoromethane~~ ~~1,1,2-Trichloro-1,2,2-trifluoroethane~~ Vinyl Chloride	8015 8260
Semivolatile Organic Compounds (SVOCs)	Mixed Cresols (o, m, p) ~~1,2-Dichlorobenzene~~[~~e~~] 1,4-Dichlorobenzene[e] ~~2,4-Dinitrophenol~~ 2,4-Dinitrotoluene Hexachlorobenzene Hexachlorobutadiene Hexachloroethane Nitrobenzene Pentachlorophenol Pyridine[e]	8270

~~**TABLE B-3 (CONTINUED)**~~
~~**REQUIRED ORGANIC ANALYSES AND TEST METHODS**~~
~~**ORGANIZED BY ORGANIC ANALYTICAL GROUPS**~~

a Required only to resolve the assignment of EPA hazardous waste numbers.

~~a~~b U.S. Environmental Protection Agency (EPA), 1996, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, Third Edition.

~~b Generator/Storage Sites will have to develop an analytical method for hydrazine. This method will be submitted to the Permittees for approval.~~

~~c These compounds may also be analyzed as VOCs by SW-846 Method 8260.~~

~~c~~c TCLP (SW-846 1311) may be used to determine if compounds in 20.4.1.200 NMAC (incorporating 40 CFR §261, Subpart C) exhibit a toxicity characteristic.

~~e Required only to resolve the assignment of EPA hazardous waste numbers.~~

TABLE B-46
SUMMARY OF SAMPLE PREPARATION AND ANALYTICAL METHODS FOR METALS

Parameters	EPA-Specified Analytical Methods[a,b,c]
Sample Preparation	3051, or equivalent, as appropriate for analytical method
~~Total Antimony~~	~~6010, 6020, 7000, 7010,7062~~
Total Arsenic	6010, 6020, 7010, 7061, 7062
Total Barium	6010, 6020, 7000, 7010
~~Total Beryllium~~	~~6010, 6020, 7000, 7010~~
Total Cadmium	6010, 6020, 7000,7010
Total Chromium	6010, 6020, 7000, 7010
Total Lead	6010, 6020, 7000, 7010
Total Mercury	7471
~~Total Nickel~~	~~6010, 6020, 7000, 7010~~
Total Selenium	6010, 7010, 7741, 7742
Total Silver	6010, 6020, 7000, 7010
~~Total Thallium~~	~~6010, 6020, 7000, 7010~~
~~Total Vanadium~~	~~6010, 7000, 7010~~
~~Total Zinc~~	~~6010, 6020, 7000, 7010~~

a U.S. Environmental Protection Agency (EPA), 1996. ~~"~~*Test Methods for Evaluating Solid Waste,*~~" Laboratory Manual~~ *Physical/Chemical Methods*, SW-846, ~~3rd ed~~Third Edition, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.

b TCLP (SW-846 1311) may be used to determine if compounds in 20.4.1.200 NMAC (incorporating 40 CFR §261, Subpart C) exhibit a toxicity characteristic.

c Required only for homogeneous solids and soil~~s~~/gravel to resolve the assignment of EPA hazardous waste numbers.

TABLE B-~~5~~7
SUMMARY OF PARAMETERS, CHARACTERIZATION METHODS, AND RATIONALE FOR TRANSURANIC MIXED WASTE WITHOUT ACCEPTABLE KNOWLEDGE SUFFICIENCY DETERMINATION ~~(STORED WASTE)~~

Waste Matrix Code Summary Categories	Waste Matrix Code Groups	Characterization Parameter	Method	Rationale
S3000-Homogeneous Solids	· Solidified inorganics · Salt waste · Solidified organics	Physical waste form	Acceptable knowledge, radiography, and/or visual examination	· Determine waste matrix · Demonstrate compliance with waste acceptance criteria (e.g., no ~~free~~ liquid~~s~~ waste, no incompatible wastes, no compressed gases)
S4000-Soil/Gravel	· Contaminated soil/debris	Hazardous constituents · Listed · Characteristic	Acceptable knowledge~~,~~ ~~or~~ radiography, visual examination, and/or statistical sampling[a] (~~see~~ Tables B-3 and B-4)	· Determine characteristic metals and organics · Resolve the assignment of EPA hazardous waste numbers
S5000–Debris Waste	· Uncategorized metal (metal waste other than lead/cadmium) · Lead/cadmium waste · Inorganic nonmetal waste · Combustible waste · Graphite waste · Heterogeneous debris waste · Composite filter waste	Physical waste form	Acceptable knowledge, radiography, and/or visual examination	· Determine waste matrix · Demonstrate compliance with waste acceptance (e.g., no ~~free~~ liquid~~s~~ waste, no incompatible wastes, no compressed gases)
		Hazardous constituents · ~~Characteristic~~ · Listed · Characteristic	Acceptable knowledge, Statistical gas sampling and analysis[a] (~~see~~ Table B-~~2~~4)	· Determine listed and characteristic metals and organics · Resolve the assignment of EPA hazardous waste numbers
		~~Hazardous constituents~~ ~~· Characteristic~~	~~Acceptable knowledge~~	· ~~Determine characteristic metals and organics~~

TABLE B-5 (CONTINUED)
SUMMARY OF PARAMETERS, CHARACTERIZATION METHODS, AND RATIONALE FOR TRANSURANIC MIXED WASTE (NEWLY GENERATED WASTE)

Waste Matrix Code Summary Categories	Waste Matrix Code Groups	Characterization Parameter	Method	Rationale
S3000-Homogeneous Solids	• Solidified inorganics • Salt waste • Solidified organics	Physical waste form	Acceptable knowledge, radiography, and/or visual examination	• Determine waste matrix • Demonstrate compliance with waste acceptance criteria (e.g., no free liquids, no incompatible wastes, no compressed gases)
S4000-Soil/Gravel	• Contaminated soil/debris	Hazardous constituents • Listed • Characteristic	Statistical sampling[a] (see Tables B-3 and B-4)	• Determine characteristic metals and organics • Resolve the assignment of EPA hazardous waste numbers
S5000-Debris Waste	• Uncategorized metal (metal waste other than lead/cadmium) • Lead/cadmium waste • Inorganic nonmetal waste • Combustible waste • Graphite waste • Heterogeneous debris waste • Composite filter waste	Physical waste form	Acceptable knowledge, radiography, and/or visual examination	• Determine waste matrix • Demonstrate compliance with waste acceptance (e.g., no free liquids, no incompatible wastes, no compressed gases)
		Hazardous constituents • Characteristic • Listed	Statistical gas sampling and analysis[a] (see Table B-2)	• Resolve the assignment of EPA hazardous waste numbers
		Hazardous constituents • Characteristic	Acceptable knowledge	• Determine characteristic metals and organics

a Applies to waste streams that require sampling.

TABLE B-~~7~~8
WIPP WASTE INFORMATION SYSTEM DATA FIELDS[a]

~~Characterization Module Data Fields~~ [b]	
Assembly Number	Package Number
Characterization Method (NDE or VE)	Total VOC Sample Date
Container ID [e]	Total VOC Analysis Date
Container type	Total VOC Analyte Name [d]
Container Weight	Total VOC Analyte Concentration [d]
Contact Dose Rate	Total Metal Sample Date
Container Certification date	Total Metal Analysis Date
Container Closure Date	Total Metal Analyte Name [d]
Disposal Date	Total Metal Analyte Concentration [d]
Disposal Location	Receive Date
Generator EPA ID	Semi-VOC Sample Date
Generator Address	Semi-VOC Analysis Date
Generator Name	Semi-VOC Analyte Name [d]
Generator Contact	Semi-VOC Concentration [d]
Handling Code	Ship Date
Hazardous Code	Transporter EPA ID
Headspace Gas Sample Date	Transporter Name
Headspace Gas Analysis Date	~~Visual Exam Container~~ [e]
ICV Closure Date	Waste Material Parameter [d]
Layers of Packaging	Waste Material Weight [d]
Liner Exists	Waste Matrix Code
Liner Hole Size	~~Waste Matrix Code Group~~
Filter Model	Waste Stream Profile Number
Number of Filters Installed	
Headspace Gas Analyte [d]	
Headspace Gas Concentration [d]	
Headspace Gas Char. Method [d]	
Total VOC Char. Method [d]	
Total Metals Char. Method [d]	
Total Semi-VOC Char. Method [d]	
~~Item Description Code~~	
Haz. Manifest Number	
~~NDE Complete~~ [e]	

~~Certification Module Data Fields~~	
~~Container ID~~ [e]	~~Handling Code~~
~~Container type~~	
~~Container Weight~~	
~~Contact Dose Rate~~	
~~Container Certification date~~	
~~Container Closure Date~~	

TABLE B-~~7~~8
WIPP WASTE INFORMATION SYSTEM DATA FIELDS[a]

~~Transportation Data Module~~	
~~Contact Handled~~ ~~Package Number~~ ~~Assembly Number~~[f] ~~Container IDs~~ [c,d] ~~ICV Closure Date~~	~~Ship Date~~ ~~Receive Date~~
~~Disposal Module Data~~	
~~Container ID~~ [c] ~~Disposal Date~~ ~~Disposal Location~~	

a This is not a complete list of the WWIS data fields.

~~b Some of the fields required for characterization are also required for certification and/or transportation.~~

~~c Container ID is the main relational field in the WWIS Database.~~

~~d This is a multiple-occurring field for each analyte, nuclide, etc.~~

~~e These are logical fields requiring only a yes/no.~~

~~f Required for 7-packs of 55-gal drums, 4-packs of 85-gal drums, or 3-packs of 100-gal drums to tie all of the drums in that assembly together. This facilitates the identification of waste containers in a shipment without need to breakup the assembly.~~

TABLE B-~~6~~9
REQUIRED PROGRAM RECORDS MAINTAINED IN ~~GENERATOR/STORAGE SITE~~ CERTIFIED CHARACTERIZATION PROGRAM SITE-SPECIFIC PROJECT FILES

Lifetime Records • Field sampling data forms • Field and laboratory chain-of-custody forms • Test facility and laboratory batch data reports • ~~Waste Stream Characterization Package~~ • Sampling Plans • Data reduction, validation, and reporting documentation • Acceptable knowledge documentation • Waste Stream Profile Form and Characterization Information Summary
Non-Permanent Records • Nonconformance documentation • ~~Variance documentation~~ • Assessment documentation • Gas canister tags • Methods performance documentation • Performance Demonstration Program documentation • Sampling equipment certifications • Calculations and related software documentation • Training/qualification documentation • QAPjPs (~~generator/storage sites~~ certified characterization program) documentation (all revisions) • Calibration documentation • Analytical raw data • Procurement documentation • QA procedures (all revisions) • Technical implementing procedures (all revisions) • Audio/video recording (radiography, visual, etc.)

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1 FIGURES

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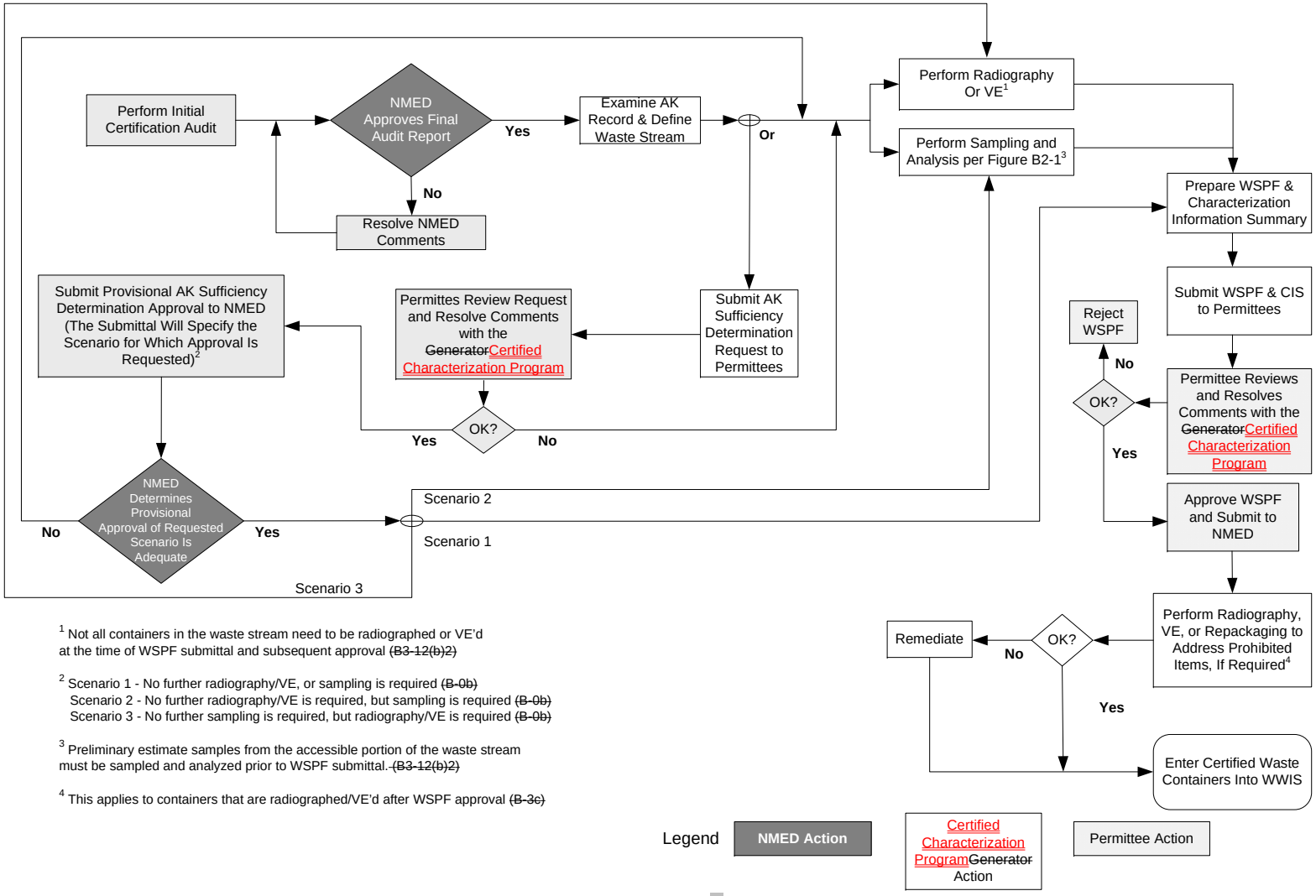

[1] Not all containers in the waste stream need to be radiographed or VE'd at the time of WSPF submittal and subsequent approval ~~(B3-12(b)2)~~

[2] Scenario 1 - No further radiography/VE, or sampling is required ~~(B-0b)~~
Scenario 2 - No further radiography/VE is required, but sampling is required ~~(B-0b)~~
Scenario 3 - No further sampling is required, but radiography/VE is required ~~(B-0b)~~

[3] Preliminary estimate samples from the accessible portion of the waste stream must be sampled and analyzed prior to WSPF submittal. ~~(B3-12(b)2)~~

[4] This applies to containers that are radiographed/VE'd after WSPF approval ~~(B-3c)~~

Figure B-~~2~~1
Waste Characterization Process

WASTE STREAM PROFILE FORM

Waste Stream WIPP ID Profile Number: _____

~~Generator~~TRU Waste Site Name: _____ Technical Contract: _____

~~Generator~~TRU Waste Site EPA ID: _____ Technical Contact Phone Number: _____

Date of audit report approval by NMED: _____

Title, version number and date of documents used for WAP Certification: _____

_____

Did your facility generate this waste? ( )Yes ( )No

If no, provide the name and EPA ID of the original generator: _____

_____

~~WIPP ID:~~ _____ Summary Category Group: _____

Waste Stream Name: _____

Waste Stream Description ~~from the WTWBIR~~: _____

_____

Defense Waste: ( )Yes ( )No Check one: ( )CH ( )RH

Number of SWBs _____ Number of Drums _____ Number of Canisters _____

Batch Data Report numbers supporting this waste stream characterization: _____

List applicable EPA Hazardous Waste Numbers [2] _____

Applicable TRUCON Content Codes ~~Numbers~~: _____

Acceptable Knowledge Information[1]

{For the following, enter supporting documentation used (i.e., references and dates)}

AK Summary Report Title: _____

~~Required Program Information~~

- ~~Map of site:~~ _____
- ~~Facility mission description:~~ _____
- ~~Description of operations that generate waste:~~ _____

_____

- ~~Waste identification/categorization schemes:~~ _____
- ~~Types and quantities of waste generated:~~ _____
- ~~Correlation of waste streams generated from the same building and process, as applicable:~~ _____

_____

- ~~Waste certification procedures:~~ _____

~~Required Waste Stream Information~~

- ~~Area(s) and building(s) from which waste stream was generated:~~ _____
- ~~Waste stream volume and time period of generation:~~ _____
- ~~Waste generating process description for each building:~~ _____
- ~~Waste process flow diagrams:~~ _____

_____

- ~~Material inputs or other information identifying chemical/radionuclide content and physical waste form:~~ _____

_____

- ~~Waste material parameter estimates per unit of waste:~~ _____
- ~~Which Defense Activity generated the waste: (check one)~~

~~( ) Weapons activities including defense inertial confinement fusion~~

~~( ) Naval reactors development~~

~~( ) Verification and control technology~~

~~( ) Defense research and development~~

~~( ) Defense nuclear waste and material by products management~~

~~( ) Defense nuclear material production~~

~~( ) Defense nuclear waste and materials security and safeguards and security investigations~~

~~WASTE STREAM PROFILE FORM~~ Figure B-2

WIPP Waste Stream Profile Form (Example Only)

~~Supplemental Documentation~~
~~Process design documents:~~ _____
~~Standard operating procedures:~~ _____
~~Safety Analysis Reports:~~ _____
~~Waste packaging logs:~~ _____
~~Test plans/research project reports:~~ _____
~~Site data bases:~~ _____
~~Information from site personnel:~~ _____
~~Standard industry documents:~~ _____
~~Previous analytical data:~~ _____
~~Material safety data sheets:~~ _____
~~Sampling and analysis data from comparable/surrogate waste:~~ _____
~~Laboratory notebooks:~~ _____

~~Confirmation Information~~[(2)] Waste characterization procedure(s) used and reference and date of the procedures(s):[1] {For the following, when applicable, enter procedure title(s), number(s), and date(s)}

AK:

Radiography: _____

Visual Examination: _____

Headspace Gas:

Homogeneous Solids or Soils/Gravel Waste Sampling:

~~Waste Stream Profile Form~~ Certification Signature

~~I hereby certify that I have reviewed the information in this Waste Stream Profile Form, and it is complete and accurate to the best of my knowledge. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.~~

_____ _____ _____
Signature of Site Project Manager | Printed Name ~~and Title~~ | Date

NOTE: (1) Use back of sheet or continuation sheets, if required.

~~(2) If, radiography, visual examination were used to confirm EPA Hazardous Waste Numbers, attach signed Characterization Information Summary documenting this determination.~~

Figure B-~~1~~2
WIPP Waste Stream Profile Form (Example Only - Continued)

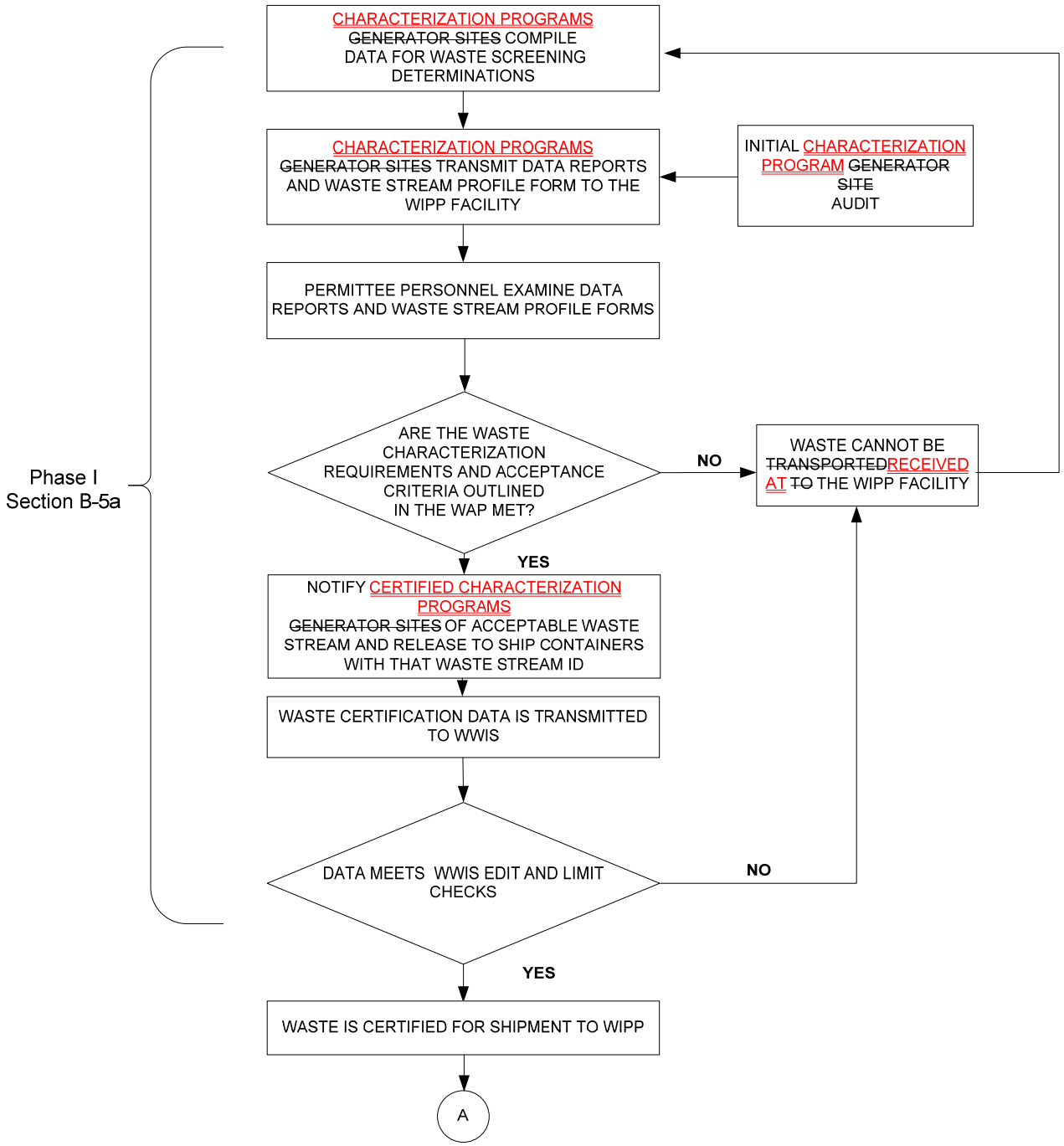

Figure B-3
TRU Mixed Waste Screening and Verification Flow Diagram

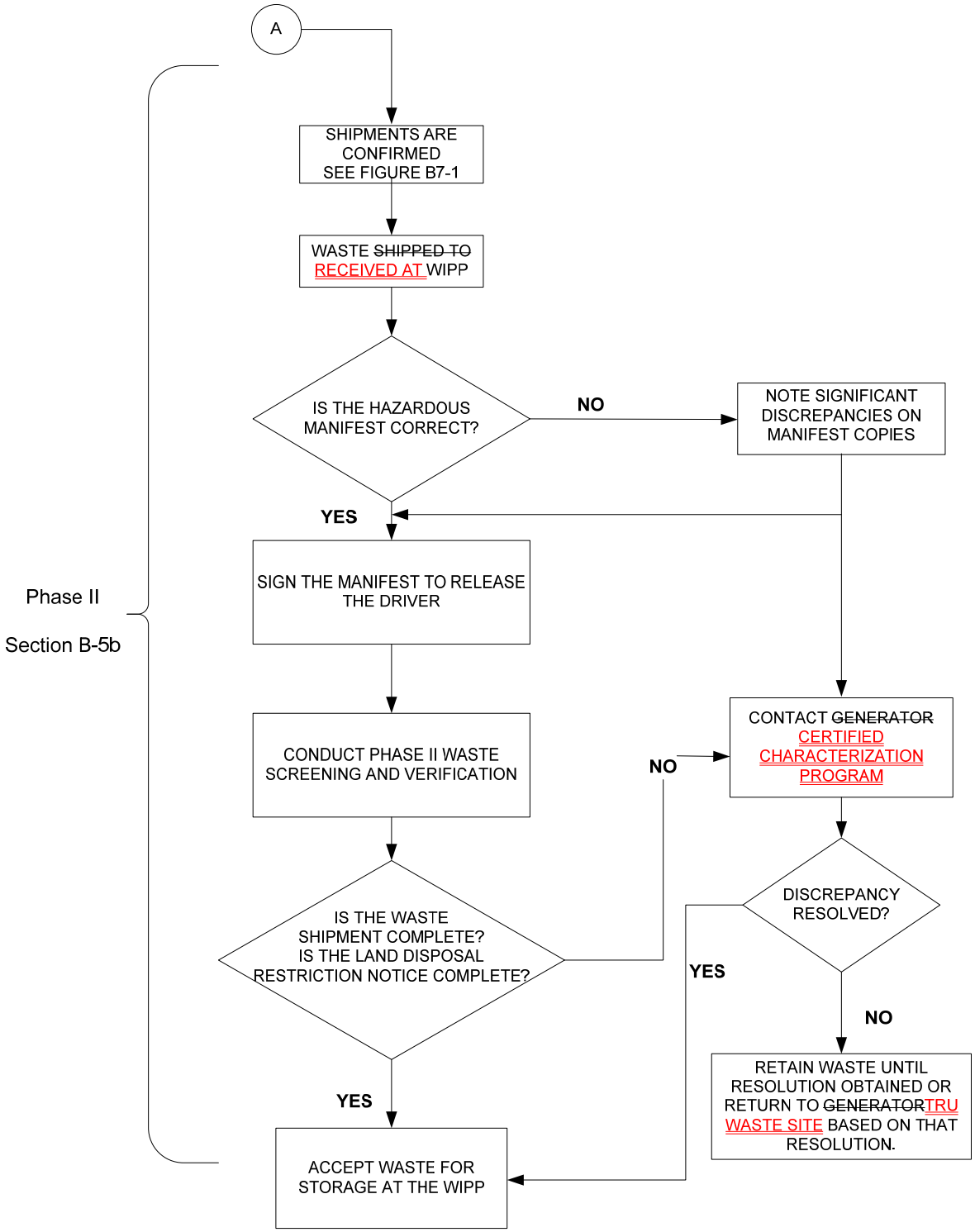

Figure B-3
TRU Mixed Waste Screening and Verification Flow Diagram (continued)