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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

November 27, 2001

Dr. Inés Triay, Manager
Carlsbad Field Office
Department of Energy
P. O. Box 3090
Carlsbad, New Mexico 88221-3090

Mr. John Lee, General Manager
Westinghouse TRU Solutions LLC
P.O. Box 2078
Carlsbad, New Mexico 88221-5608

RE: FINAL DETERMINATION, CLASS 2 MODIFICATION REQUESTS
WIPP HAZARDOUS WASTE FACILITY PERMIT
EPA I.D. NUMBER NM4890139088

Dear Dr. Triay and Mr. Lee:

The New Mexico Environment Department (**NMED**) hereby approves, with changes, certain Class 2 permit modification requests to the WIPP Hazardous Waste Facility Permit as submitted to the Hazardous Waste Bureau (**HWB**) in the following document:

- Request for Class 2 Permit Modifications, Dated 8/28/01, Rec'd 8/29/01

These modifications were processed by NMED in accordance with the requirements specified in 20.4.1.900 NMAC (incorporating 40 CFR §270.42(b)). NMED approves with changes Item 1 (Headspace Gas Compositing) and Item 3 (Sampling Through Existing Filter Vent Holes), and denies Item 2 (Safety Conditions for Visual Examination). The approved modifications are incorporated in the following attachments:

- Attachment 1 lists the modifications made to the WIPP Hazardous Waste Facility Permit, indicating the location of the modifications within the permit and a brief description of the modifications.

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- Attachment 2 contains the redline/strikeout pages of the modified permit to help the reader rapidly identify each modification. Language deleted from the permit is ~~stricken out~~. Language added to the permit is highlighted. Language changed by NMED is further identified by double underline.

A clean replacement version of the entire permit will be provided under separate cover after all outstanding Class 1 modifications have been incorporated.

WIPP is requested to place Attachment 1 in the front of the permit to provide a historical record of other than Class 1 permit modifications. The effective date of the permit modification approval is your date of receipt of this letter.

For purposes of version control, please note that the date of these modified pages and attachments has been established as November 27, 2001.

NMED denied Item 2 (Safety Conditions for Visual Examination) because it was sufficiently vague as to require additional clarification before modifying the permit to incorporate the change. The apparent, and commendable, intent of Item 2 was to offer generator sites certain flexibility with respect to containers undergoing visual examination such that containers deemed "unsafe" would not need to be opened. However, "container safety conditions" was too vaguely defined, and could result in inconsistent interpretation from site to site. Also, the statistical implications of removing drums from the visual examination pool were not adequately explained. While it is often possible to mitigate "unsafe" conditions through physical changes to operations rather than abandoning the container altogether, NMED is concerned that such vague language may result in serious differences of interpretation and potential abuse.

These Class 2 modifications were subject to a sixty (60) day public comment period, which ran from September 4 through November 2, 2001. NMED received written comments from ten individuals and organizations during this time. NMED will provide full response to all public comments within the next several weeks.

If you have any questions regarding this matter, please contact Steve Zappe at (505) 428-2517.

Sincerely,

Gregory J. Lewis
Director
Water and Waste Management Division

GJL/soz

Attachments

cc: Paul Ritzma, NMED
James Bearzi, NMED HWB
John Kieling, NMED HWB
Steve Zappe, NMED HWB
Susan McMichael, NMED OGC
David Neleigh, EPA Region 6
Mary Kruger, EPA ORIA
Connie Walker, TechLaw
File: Red WIPP '01

Attachment 1

LIST OF CLASS 2 MODIFICATIONS MADE TO WASTE ISOLATION PILOT PLANT HAZARDOUS WASTE FACILITY PERMIT

November 27, 2001

Following is a list of Class 2 modifications made to the Waste Isolation Pilot Plant Hazardous Waste Facility Permit during November 2001 by the Hazardous Waste Bureau (**HWB**) of the New Mexico Environment Department (**NMED**). In the permit, modifications are indicated by ~~striking out items to be deleted~~ and shading items to be added. This list will help the reader rapidly identify the current modifications and when they were made. Page and paragraph/line numbers refer to the redline/strikeout version of the permit as modified.

Attachment	Page(s)	Section	Paragraph/Line	Description of Modification
B	B-10	B-3a(1)	17+	**Add:** "If composite samples are used, containers used in the composite sample must be from the same waste stream with no more than 20 containers being included in a single composite sample."
B	B-10	B-3a(1)	22+	**Change:** "These compounds are reported as tentatively identified compounds (**TICs**) in the analytical batch data report 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 ~~detected~~ reported in 25% of the waste containers sampled ~~samples~~ from a given waste stream."
B	B-14	B-3d	15+	**Change:** "TICs ~~found~~ [redacted] 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 ~~identification~~ 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."

B1	B1-i	Table of Contents		**Change:** Title of Section B1-1a3(a)(ii), add Section B1-1a3(a)(iii).
B1	B1-2	B1-1a(1)	17+	**Change:** "The manifold inlet valve will be attached to a changeable filter connected to either a side port needle sampling head (for penetrating a filter) ~~or~~ a drum punch sampling head (capable of punching through the metal lid of a drum while maintaining an airtight seal for sampling through the drum lid), or a sampling head with an airtight seal for sampling through a pipe overpack container filter vent hole. Refer to Section B1-1a(3) for descriptions of these sampling heads."
B1	B1-5, 6	B1-1a(2)	38+	**Change:** "The sampling head(s) must be capable of either punching through the metal lid of the drums while maintaining an airtight seal for sampling through the drum lid, ~~or~~ penetrating a filter or ~~penetrating~~ the septum in the orifice of the self-tapping screw, or maintaining an airtight seal for sampling through a pipe overpack container filter vent hole to obtain the drum headspace samples."

B1	B1-6	B1-1a(2)	28+	**Change:** "These heads shall form a leak-tight connection with the canister and allow sampling through the drum-lid filter, ~~or~~ through the drum lid itself (by use of a punch or self-tapping screw), or using an airtight seal to collect the sample through the ~~existing~~ filter vent hole of a pipe overpack container."
B1	B1-6	B1-1a(3)	35+	**Change:** "~~Two~~ Three methods, sampling through the filter ~~and~~, sampling through the drum lid by drum punching, and sampling through a pipe overpack container filter vent hole, have been developed for collecting a representative sample."
B1	B1-7	B1-1a(3)(ii)	28	**Add:** "…By Drum Punching" to section title.
B1	B1-7	B1-1a(3)(ii)	21+	**Change:** "Sampling through the drum lid at the time of drum punching or ~~shortly~~ thereafter may be performed as an alternative to sampling through the drum's filter if an airtight seal can be maintained. To sample the drum headspace-gas through the drum lid at the time of drum punching or ~~shortly~~ thereafter, the lid shall be breached using an appropriate punch. The punch shall form an airtight seal between the drum lid and the manifold or direct canister sampling equipment."
B1	B1-8	B1-1a(3)(ii)	3+	**Change:** Bullet to read "All components of the ~~drum punch~~ sampling system that come into contact with sample gases

				shall be purged with humidified zero air, nitrogen, or helium prior to sample collection."
B1	B1-8	B1-1a(3)(ii)	9+	**Change:** Bullet to read "Provisions shall be made to relieve ~~potential~~ excessive drum pressure increases during drum-punch operations; potential pressure increases may occur during sealing of the drum punch to the drum lid."
B1	B1-8	B1-1a(3)(ii)	20+	**Change:** Bullet to read "~~A~~ While sampling through the drum lid using manifold sampling, a flow-indicating device or pressure regulator to verify ~~excess~~ flow of ~~QC~~ gases ~~(for system purge)~~ shall be pneumatically connected to the drum punch and operated in the same manner as the flow-indicating device described above in Section B1-1a(1)."
B1	B1-8,9	B1-1a(3)(iii)	27+	**Add:** New section "B1-1a(3)(iii) Sampling Through a Pipe Overpack Container Filter Vent Hole"; additional text as indicated on redline strikeout version, limiting the application of this method to pipe overpack containers.
B1	B1-13	B1-1c(5)	25+	**Change:** "To prevent cross contamination, the needle [redacted], adapters, and filter of the sampling heads shall be cleaned in accordance with the cleaning procedures described in EPA's Compendium Method TO-14 (EPA 1988). After sample collection, a sampling head shall be disposed of or cleaned in accordance with EPA's Compendium Method TO-14 (EPA 1988), prior to reuse. As a further QC measure, the needle [redacted], and

				filter, after cleaning, should be purged with zero air, nitrogen, or helium and capped for storage to prevent sample contamination by VOCs potentially present in ambient air."
B2	B2-8	B2-3	2+	**Add:** "When composite headspace gas sample results are used, the mean, standard deviation and t-statistic are based on the number of composite samples analyzed, rather than the number of drums sampled."
B3	B3-5	B3-1	21+	**Change:** "~~Headspace~~ [redacted] headspace gas, volatile analysis (TCLP/Totals), and semi-volatile (TCLP/Totals) shall be subject to tentatively identified compound (**TIC**) reporting."
B3	B3-5, 6	B3-1	35+	**Add:** Bullet to read "The reference spectra used for identifying TICs shall include, at minimum, all of the available spectra for compounds that appear in the 20.4.1.200 NMAC (incorporating 40 CFR Part 261) Appendix VIII list. The reference spectra may be limited to VOCs when analyzing headspace gas samples."
B3	B3-6	B3-1	5+	**Add:** The following text: "TICs shall be reported as part of the analytical batch data reports for GC/MS Methods in accordance with the following minimum criteria: • a TIC in an individual container headspace gas or solids sample shall be reported in the analytical

batch data report if the TIC meets the SW-846 identification criteria listed above and is present with a minimum of 10% of the area of the nearest internal standard.

• a TIC in a composited headspace gas sample that contains 2 to 5 individual container samples shall be reported in the analytical batch data report if the TIC meets the SW-846 identification criteria listed above and is present with a minimum of 2% of the area of the nearest internal standard.

• a TIC in a composited headspace gas sample that contains 6 to 10 individual container samples shall be reported in the analytical batch data report if the TIC meets the SW-846 identification criteria listed above and is present with a minimum of 1% of the area of the nearest internal standard.

• a TIC in a composited headspace gas sample that contains 11 to 20 individual container samples shall be reported in the analytical batch data report if the TIC meets the SW-846 identification criteria listed above and is present with a minimum of 0.5% of the area of the nearest internal standard."

B3 B3-6 B3-5 23+ **Change:** "TICs that meet the SW-846 identification criteria, are ~~detected~~ [redacted] in 25 percent of all waste containers

~~samples~~ from a given waste stream, and that appear in the 20.4.1.200 NMAC (incorporating 40 CFR §261) Appendix VIII list, will be compared to acceptable knowledge data to determine if the TIC is a listed waste in the waste stream. TICs identified through headspace gas analyses that meet the Appendix VIII list criteria and the 25 percent ~~identification~~ 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."

B3	B3-13	B3-5	29+	**Add:**	"A composited sample is treated as one sample for the purposes of completeness, because only one sample is run through the analytical instrument."
B3	B3-21	B3-10	26+	**Add:**	"Analytical Batch Data Reports or equivalent that contain results for composited headspace gas samples must contain sufficient information to identify the containers that were composited for each composite sample and the sample volume that was taken from each waste container. Because Analytical Batch Data Reports are generated based on the number of samples analyzed, an Analytical Batch Data Report may contain results that are applicable to more than 20 containers depending on how many composite samples are part of the report, but may not exceed a total of 20 samples analyzed."

B3	B3-33	B3-12	2+	**Add:** "If a container was part of a composite headspace gas sample, the analytical results from the composite sample must be assigned as the container headspace gas data results, including associated TICs, for every waste container associated with the composite sample."
B6	B6-17	Table B6-1		**Change:** Item 22, stating, "…and that the TIC will be added to the target headspace gas analyte list if it appears in the 20 NMAC 4.1.200 (incorporating 40 CFR Part 261) Appendix VIII list and if they are ~~detected~~ reported in 25% of the waste containers sampled ~~samples~~ from a given waste stream? (Section B-3a(1))"
B6	B6-30	Table B6-1		**Add:** New item 51a, stating "Are procedures in place to ensure that if a container was part of a composite headspace gas sample, the analytical results from the composite sample are assigned as the container headspace gas data results, including associated TICs, for every waste container associated with the composite sample in the WWIS? (Section B3-12b(3))"
B6	B6-59	Table B6-2		**Change:** Items 126, stating, "Are procedures documented to ensure that Tentatively Identified Compounds shall be added to the target compound list if they are ~~identified~~ [redacted] in 25% of the waste containers sampled ~~samples~~ in accordance with SW-846 criteria for a given waste stream..."

B6	B6-60, 61	Table B6-2	**Add:** New items 126a and 126b, reflecting new criteria for recognizing and reporting TICs for GC/MS for homogeneous solids and soils and gravels specified in Attachment B3, Section B3-1.
B6	B6-92	Table B6-4	**Change:** Item 190, fourth bullet to read "The manifold inlet valve is attached to a changeable filter connected to different sampling heads that are capable of punching through metal lid of the drum while maintaining an airtight seal for sampling through the drum lid ~~or~~, penetrating the ~~carbon-composite~~ filter, or maintaining an airtight seal for sampling through a pipe overpack container filter vent hole"
B6	B6-97	Table B6-4	**Change:** Item 195, second bullet to read "Sampling heads are capable of either punching through the metal lid of the drums while maintaining an airtight seal for sampling through the drum lid, ~~or~~ penetrating a ~~carbon composite~~ filter or the septum in the orifice of a self-tapping screw, or maintaining an airtight seal for sampling through a pipe overpack container filter vent hole."
B6	B6-99	Table B6-4	**Add:** Item 197a, requiring that procedures be in place for sampling through a pipe overpack container filter vent hole specified in Attachment B1, Section B1-1a(1); B1-1a(2); and B1-1c(5).

B6	B6-100 – 101	Table B6-4	**Add:** Items 197b and 197c, reflecting new criteria to be met for sampling through a pipe overpack container filter vent hole specified in Attachment B1, Section B1-1a(3)(iii).
B6	B6-115	Table B6-4	**Change:** Item 220, fourth bullet to read "Laboratory completeness shall be expressed as the number of samples analyzed with valid results as a percent of the total number of samples collected. A composited sample is treated as one sample for the purposes of completeness, because only one sample is run through the analytical instrument"
B6	B6-116	Table B6-4	**Change:** Items 222, stating, "Are procedures in place to ensure that Tentatively Identified Compounds shall be added to the target compound list if they are ~~identified~~ [redacted] in 25% of the waste containers sampled ~~samples~~ in accordance with SW-846 criteria for a given waste stream…"
B6	B6-117, 118	Table B6-4	**Add:** Items 222a and 222b, reflecting new criteria for recognizing and reporting TICs for GC/MS for headspace gas sampling specified in Attachment B3, Section B3-1.

Attachment 2

B-3a Sampling and Analytical Methods

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

Headspace-gas samples are used to determine the types and concentrations of VOCs in the void volume of waste containers. Measured headspace VOC concentrations in waste containers received at the WIPP facility will be compared routinely and in accordance with requirements of Permit Attachment N to ensure that, on an annual basis, there are no associated adverse worker or public-health impacts. In addition, VOC constituents will be compared to those assigned by acceptable knowledge, and the Permittees will assign hazardous waste codes, as warranted. This comparison may include an analysis of radiolytically derived VOCs. The Permittees may also consider radiolysis when assessing the presence of listed waste, and whether radiolysis would generate wastes which exhibit the toxicity characteristic. Refer to Permit Attachment B4 for additional clarification regarding hazardous waste code assignment and headspace gas results.

Every TRU mixed waste container or statistically selected containers from waste streams that meet the conditions for reduced headspace gas sampling listed in this section will be sampled and analyzed to determine the concentrations of VOCs (presented in Table B-3) in headspace gases. If composite samples are used, containers used in the composite sample must be from the same waste stream with no more than 20 containers being included in a single composite sample. Sampling protocols, equipment, and QA/QC methods for headspace-gas sampling are provided in Permit Attachment B1. 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 batch data report 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 ~~detected~~ reported in 25% of the waste containers sampled ~~samples~~ from a given waste stream. The headspace gas analysis method Quality Assurance Objectives (**QAOs**) are specified in Permit Attachment B3.

B-3a(1)(i) Reduced Sampling Requirements for Homogeneous Solid or Soil/Gravel Waste Streams with no VOC-Related Hazardous Waste Codes

Headspace gas sampling of homogeneous solid and soil/gravel wastes that have no VOC-related hazardous waste codes assigned may qualify for reduced headspace sampling if they meet the following criteria:

- The waste stream or waste stream lot must consist of more than 10 containers.
- The waste stream must be a homogeneous solid or soil/gravel waste stream that has no VOC-related hazardous waste codes assigned to it.
- The results of the solid sampling and analysis must confirm that no VOC-related hazardous waste codes should be assigned to the waste stream.

Radiography and/or VE will be used to verify the physical form of retrievably stored TRU mixed waste. For newly generated waste, physical form and prohibited items will be verified during packaging (using the VE technique). Radiography and/or VE will also be used in conjunction with acceptable knowledge to characterize heterogenous debris wastes. Radiography and/or VE, and the associated information compiled from acceptable knowledge (e.g., age of the waste, generating process) will be used to determine the RCRA-regulated constituents present in the waste.

All waste containers (retrievably stored and newly generated) or randomly selected containers from waste streams that meet the conditions for reduced headspace gas sampling listed in Section B-3a(1) are sampled and analyzed for VOCs in the headspace gas. A statistically selected portion of each homogeneous solids and soil/gravel waste stream is sampled and analyzed for RCRA-regulated total VOCs, SVOCs, and metals (see Permit Attachment B2). 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 ~~found~~ 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 ~~identification~~ 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 codes 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 code. 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 Permittees will add these TICs to the list of hazardous constituents for the waste stream (and assign additional EPA listed hazardous waste codes, if appropriate). A permit modification will be submitted to NMED for their approval to add these constituents (and waste codes), if necessary. For toxicity characteristic compounds and non-toxic F003 constituents, the Permittees may consider waste concentration when determining whether to change a hazardous waste code. Refer to Permit Attachment B3 for additional information on TIC identification.

Waste characterization solid sampling and analysis activities will differ for retrievably stored waste and newly generated waste. The waste characterization data collection design for each type of waste is described in the following sections. Table B-1 provides a summary of hazardous waste characterization requirements for all TRU mixed waste by waste characterization parameters.

ATTACHMENT B1

WASTE CHARACTERIZATION SAMPLING METHODS

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integrated holding area interior surface must be demonstrated and documented. Samples are not transported to another location when using on-line integrated sampling/analysis systems; therefore, the sample custody requirements of Section B1-4 and B1-5 do not apply. The same sampling manifold and sampling heads are used with on-line integrated sampling/analysis systems and all of the requirements associated with sampling manifolds and sampling heads must be met. However, when using an on-line integrated sampling/analysis system, the sampling batch and analytical batch quality control (**QC**) samples are combined as on-line batch QC samples as outlined in Section B1-1b.

B1-1a(1) Manifold Headspace Gas Sampling

This headspace-gas sampling protocol employs a multiport manifold capable of collecting multiple simultaneous headspace samples for analysis and QC purposes. The manifold can be used to collect samples in SUMMA® or equivalent canisters or as part of an on-line integrated sampling/analysis system. The sampling equipment will be leak checked and cleaned prior to first use and as needed thereafter. The manifold and sample canisters will be evacuated to 0.0039 inches (in.) (0.10 millimeters [mm]) mercury (**Hg**) prior to sample collection. Cleaned and evacuated sample canisters will be attached to the evacuated manifold before the manifold inlet valve is opened. The manifold inlet valve will be attached to a changeable filter connected to either a side port needle sampling head (for penetrating a filter), ~~or~~ a drum punch sampling head (capable of punching through the metal lid of a drum while maintaining an airtight seal for sampling through the drum lid), or a sampling head with an airtight seal for sampling through a pipe overpack container filter vent hole. Refer to Section B1-1a(3) for descriptions of these sampling heads.

The manifold shall also be equipped with a purge assembly that allows applicable QC samples to be collected through all sampling components that may affect compliance with the QAO's. The Permittees shall require the sites to demonstrate and document the effectiveness of the sampling equipment design in meeting the QAOs. Field blanks shall be samples of room air collected in the sampling area in the immediate vicinity of the waste container to be sampled. If using SUMMA® or equivalent canisters, field blanks shall be collected directly into the canister, without the use of the manifold.

The manifold, the associated sampling heads, and the headspace-gas sample volume requirements shall be designed to ensure that a representative sample is collected. The manifold internal volume must be calculated and documented in a field logbook dedicated to headspace-gas sample collection. The total volume of headspace gases collected during each sampling operation will be determined by adding the combined volume of the canisters attached to the manifold and the internal volume of the manifold. The sample volume should remain small in comparison to the volume of the waste container. When an estimate of the available headspace gas volume in the drum can be made, less than 10 percent of that volume should be withdrawn.

As illustrated in Figure B1-1, the sampling manifold must consist of a sample side and a standard side. The dotted line in Figure B1-1 indicates how the sample side shall be connected to the standard side for cleaning and collecting equipment blanks and field

NOTE: Caution should be exercised to isolate the humidifier during the evacuation of the system to prevent flooding the manifold. In lieu of the humidifier, the compressed gas cylinders (e.g., zero air and field-reference standard gas) may contain water vapor in the concentration range of 1,000 to 10,000 parts per million by volume (**ppmv**).

- A purge assembly that allows the sampling head (sample side) to be connected to the standard side of the manifold. The ability to make this connection is required to transfer gases from the compressed gas cylinders to the canisters or on-line analytical instrument. This connection is also required for system cleaning.

- A flow-indicating device or a pressure regulator that is connected to the purge assembly to monitor the flow rate of gases through the purge assembly. The flow rate or pressure through the purge assembly shall be monitored to assure that excess flow exists during cleaning activities and during QC sample collection. Maintaining excess flow will prevent ambient air from contaminating the QC samples and allow samples of gas from the compressed gas cylinders to be collected near ambient pressure.

In addition to a manifold consisting of a sample side and a standard side, the area in which the manifold is operated shall contain sensors for measuring ambient pressure and ambient temperature, as follows:

- The ambient-pressure sensor must have a sufficient measurement range for the ambient barometric pressures expected at the sampling location. It must be kept in the sampling area during sampling operations. Its resolution shall be 0.039 in. (1.0 mm) Hg or less, and calibration performed by the manufacturer shall be based on National Institute of Standards and Technology (**NIST**), or equivalent, standards.

- The temperature sensor shall have a sufficient measurement range for the ambient temperatures expected at the sampling location. The measurement range of the temperature sensor must be from 18°C to 50°C. The temperature sensor calibration shall be traceable to NIST, or equivalent, standards.

B1-1a(2) Direct Canister Headspace Gas Sampling

This headspace-gas sampling protocol employs a canister-sampling system to collect headspace-gas samples for analysis and QC purposes without the use of the manifold described above. Rather than attaching sampling heads to a manifold, in this method the sampling heads are attached directly to an evacuated sample canister as shown in Figure B1-3.

Canisters shall be evacuated to 0.0039 in. (0.10 mm) Hg prior to use and attached to a changeable filter connected to the appropriate sampling head. The sampling head(s) must be

capable of either punching through the metal lid of the drums while maintaining an airtight seal for sampling through the drum lid ~~or~~ penetrating a filter ~~or penetrating the septum in the~~ orifice of the self-tapping screw, or maintaining an airtight seal for sampling through a pipe overpack container filter vent hole to obtain the drum headspace samples. Field duplicates must be collected at the same time, in the same manner, and using the same type of sampling apparatus as used for headspace-gas sample collection. Field blanks shall be samples of room air collected in the immediate vicinity of the waste-drum sampling area prior to removal of the drum lid. Equipment blanks and field-reference standards must be collected using a purge assembly equivalent to the standard side of the manifold described above. These samples shall be collected from the needle tip through the same components (e.g., needle and filter) that the headspace-gas samples pass through.

The sample canisters, associated sampling heads, and the headspace-sample volume requirements ensure that a representative sample is collected. When an estimate of the available headspace-gas volume of the waste container can be made, less than 10 percent of that volume should be withdrawn. A determination of the sampling head internal volume shall be made and documented. The total volume of headspace gases collected during each headspace gas sampling operation can be determined by adding the volume of the sample canister(s) attached to the sampling head to the internal volume of the sampling head. Every effort shall be made to minimize the internal volume of sampling heads.

Each sample canister used with the direct canister method shall have a pressure/vacuum gauge capable of indicating leaks and sample collection volumes. Canister gauges are intended to be gross leak-detection devices not vacuum-certification devices. If a canister pressure/vacuum gauge indicates an unexpected pressure change, determination of whether the change is a result of ambient temperature and pressure differences or a canister leak shall be made. This gauge shall be helium-leak tested to 1.5×10^{-7} standard cc/s, have all stainless steel construction, and be capable of tolerating temperatures to 125°C.

The SUMMA® or equivalent sample canisters as specified in EPA's Compendium Method TO-14 (EPA 1988) shall be used when sampling each drum. These heads shall form a leak-tight connection with the canister and allow sampling through the drum-lid filter, ~~or~~ through the drum lid itself (by use of a punch or self-tapping screw), or using an airtight seal to collect the sample through the existing filter vent hole of a pipe overpack container. Figure B1-3 illustrates the direct canister-sampling equipment.

B1-1a(3) Sampling Heads

A sample of the headspace gas directly under the drum lid shall be collected from within the drum. ~~Two~~ Three methods, sampling through the filter ~~and~~, sampling through the drum lid by drum punching, and sampling through a pipe overpack container filter vent hole, have been developed for collecting a representative sample. The chosen sampling method shall preserve the integrity of the drum to contain radionuclides (e.g., replace the damaged filter, seal the punched drum lid).

B1-1a(3)(i) Sampling Through the Filter

To sample the drum-headspace gas through the drum's filter, a side-port needle (e.g., a hollow needle sealed at the tip with a small opening on its side close to the tip) shall be pressed through the filter and into the headspace beneath the drum lid. This permits the gas to be drawn into the manifold or directly into the canister(s). To assure that the sample collected is representative, all of the general method requirements, sampling apparatus requirements, and QC requirements described in this section shall be met in addition to the following requirements that are pertinent to drum headspace-gas sampling through the filter:

- The lid of the drum's 90-mil poly liner shall contain a hole for venting to the drum. A representative sample cannot be collected until the poly-liner has been vented to the drum. If headspace-gas samples are collected prior to venting the 90-mil poly liner, the sample is not acceptable and a nonconformance report shall be prepared, submitted, and resolved. Nonconformance procedures are outlined in Permit Attachment B3.

- For sample collection, the drum's filter shall be sealed to prevent outside air from entering the drum and diluting and/or contaminating the sample.

The sampling head for collecting drum headspace by penetrating the filter shall consist of a side-port needle, a filter to prevent particles from contaminating the gas sample, and an adapter to connect the side-port needle to the filter. To prevent cross contamination, the sampling head shall be cleaned or replaced after sample collection, after field-reference standard collection, and after field-blank collection. The following requirements shall also be met:

- The housing of the filter shall allow insertion of the sampling needle through the filter element into the drum headspace.

- The side-port needle shall be used to reduce the potential for plugging.

- The purge assembly shall be modified for compatibility with the side-port needle.

B1-1a(3)(ii) Sampling Through the Drum Lid By Drum Punching

Sampling through the drum lid at the time of drum punching or shortly thereafter may be performed as an alternative to sampling through the drum's filter if an airtight seal can be maintained. To sample the drum headspace-gas through the drum lid at the time of drum punching or shortly thereafter, the lid shall be breached using an appropriate punch. The punch shall form an airtight seal between the drum lid and the manifold or direct canister sampling equipment. To assure that the sample collected is representative, all of the general method requirements, sampling apparatus requirements, and QC requirements specified in EPA's Compendium Method TO-14 (EPA 1988) as appropriate, shall be met in addition to the following requirements:

- The seal between the drum lid and sampling head shall be designed to minimize intrusion of ambient air.

- All components of the ~~drum-punch~~ sampling system that come into contact with sample gases shall be purged with humidified zero air, nitrogen, or helium prior to sample collection.

- Equipment blanks and field reference standards shall be collected through all the components of the punch that contact the headspace-gas sample.

- Pressure shall be applied to the punch until the drum lid has been breached.

- Provisions shall be made to relieve ~~potential~~ excessive drum pressure increases during drum-punch operations; potential pressure increases may occur during sealing of the drum punch to the drum lid.

- The lid of the drum's 90-mil poly liner shall contain a hole for venting to the drum. A representative sample cannot be collected until the poly-liner has been vented to the drum. If headspace-gas samples are collected prior to venting the 90-mil poly liner, the sample is not acceptable and a nonconformance report shall be prepared, submitted, and resolved. Nonconformance procedures are outlined in Permit Attachment B3.

- During sampling, the drum's filter, if present, shall be sealed to prevent outside air from entering the drum.

- ~~A~~ While sampling through the drum lid using manifold sampling, a flow-indicating device or pressure regulator to verify ~~excess~~ flow of ~~QC~~ gases ~~(for system purge)~~ shall be pneumatically connected to the drum punch and operated in the same manner as the flow-indicating device described above in Section B1-1a(1).

- Equipment shall be used to adequately secure the drum-punch sampling system to the drum lid.

~~B1-1a(3)(iii)~~ Sampling Through a Pipe Overpack Container Filter Vent Hole

Sampling through an existing filter vent hole in a pipe overpack container (POC) may be performed as an alternative to sampling through the POC's filter if an airtight seal can be maintained. To sample the container headspace-gas through a POC filter vent hole, an appropriate airtight seal shall be used. The sampling apparatus shall form an airtight seal between the POC surface and the manifold or direct canister sampling equipment. To assure that the sample collected is representative, all of the general method, sampling apparatus, and QC requirements specified in EPA's Compendium Method TO-14 (EPA 1988) as appropriate, shall be met in addition to the following requirements:

- The seal between the POC surface and sampling apparatus shall be designed to minimize intrusion of ambient air.

- The filter shall be replaced as quickly as is practicable with the airtight sampling apparatus to ensure that a representative sample can be taken. Sites must provide documentation demonstrating that the time between removing the filter and installing the airtight sampling device has been established by testing to assure a representative sample.

- All components of the sampling system that come into contact with sample gases shall be cleaned according to requirements for direct canister sampling or manifold sampling, whichever is appropriate, prior to sample collection.

- Equipment blanks and field reference standards shall be collected through all the components of the sampling system that contact the headspace-gas sample.

- The lid of the container's 90-mil poly liner shall contain a hole for venting to the container. A representative sample cannot be collected until the poly-liner has been vented to the container. If headspace-gas samples are collected prior to venting the 90-mil poly liner, the sample is not acceptable and a nonconformance report shall be prepared, submitted, and resolved. Nonconformance procedures are outlined in Permit Attachment B3. Note, as an option, the same airtight seal sampling apparatus may include a needle to penetrate the rigid liner.

- During sampling, openings in the POC shall be sealed to prevent outside air from entering the container.

- A flow-indicating device shall be connected to sampling system and operated according to the direct canister or manifold sampling requirements, as appropriate.

B1-1b Quality Control

For manifold and direct canister sampling systems, field QC samples shall be collected on a per sampling batch basis. A sampling batch is a suite of samples collected consecutively using the same sampling equipment within a specific time period. A sampling batch can be up to 20 samples (excluding QC samples), all of which shall be collected within 14 days of the first sample in the batch. For on-line integrated sampling/analysis systems, QC samples shall be collected and analyzed on a per on-line batch basis. Holding temperatures and container requirements for gas sample containers are provided in Table B1-1. An on-line batch is the number of headspace-gas samples collected within a 12-hour period using the same on-line integrated analysis system. The analytical batch requirements are specified by the analytical method being used in the on-line system. Table B1-2 provides a summary of field QC sample collection requirements. Table B1-3 provides a summary of QC sample acceptance criteria.

VOCs shall be removed from the internal surfaces of the headspace sampling manifold to levels that are less than or equal to three times the MDLs of the analytes listed in Table B3-2 of Permit Attachment B3, as determined by analysis of an equipment blank or through use of an OVA. It is recommended that the headspace sampling manifold be heated to 150° Centigrade and periodically evacuated and flushed with humidified zero air, nitrogen, or helium. When not in use, the manifold shall be demonstrated clean before storage with a positive pressure of high purity gas (i.e., zero air, nitrogen, or helium) in both the standard and sample sides.

Sampling shall be suspended and corrective actions shall be taken when the analysis of an equipment blank indicates that the VOC limits have been exceeded or if a leak test fails. The Permittees shall require the site project manager to ensure that corrective action has been taken prior to resumption of sampling.

B1-1c(4) Manifold Cleaning After Field Reference Standard Collection

The sampling system shall be specially cleaned after a field reference standard has been collected, because the field reference standard gases contaminate the standard side of the headspace sampling manifold when they are regulated through the purge assembly. This cleaning requires the installation of a gas-tight connector in place of the sampling head, between the flexible hose and the purge assembly. This configuration allows both the sample and standard sides of the sampling system to be flushed (evacuated and pressurized) with humidified zero air, nitrogen, or helium which, combined with heating the pneumatic lines, should sweep and adequately clean the system's internal surfaces. After this protocol has been completed and prior to collecting another sample, the routine system cleaning and leak check (see previous section) shall also be performed.

B1-1c(5) Sampling Head Cleaning

To prevent cross contamination, the needle or airtight seal, adapters, and filter of the sampling heads shall be cleaned in accordance with the cleaning procedures described in EPA's Compendium Method TO-14 (EPA 1988). After sample collection, a sampling head shall be disposed of or cleaned in accordance with EPA's Compendium Method TO-14 (EPA 1988), prior to reuse. As a further QC measure, the needle or airtight seal, and filter, after cleaning, should be purged with zero air, nitrogen, or helium and capped for storage to prevent sample contamination by VOCs potentially present in ambient air.

B1-1d Equipment Calibration and Frequency

The manifold pressure sensor shall be certified prior to initial use, then annually, using NIST traceable, or equivalent, standards. If necessary, the pressure indicated by the pressure sensor(s) shall be temperature compensated. The ambient air temperature sensor, if present, shall be certified prior to initial use, then annually, to NIST traceable, or equivalent, temperature standards.

$$UCL_{90} = \bar{x} + \frac{t_{\alpha,n-1}s}{\sqrt{n}} \quad \text{(B2-10)}$$

When composite headspace gas sample results are used, the mean, standard deviation and t-statistic are based on the number of composite samples analyzed, rather than the number of drums sampled. If the UCL_{90} for the mean concentration is less than the regulatory threshold limit, the waste stream will not be assigned the hazardous waste code for this contaminant. If the UCL_{90} is greater than or equal to the regulatory threshold limit, the waste stream will be assigned the hazardous waste code for this contaminant.

B2-3b Upper Confidence Limit for Statistical Headspace Gas Sampling

If a waste stream meets the conditions for representative headspace gas sampling in Attachment B, Section B-3a(1), a UCL_{90} concentration for each of the headspace gas VOCs must be calculated from the sample data collected. The observed sample n^* shall be checked against the estimate for the number of samples (n) to be collected before proceeding, where n* is:

$$n^* = \frac{t^2_{\alpha,n-1}s^2}{E^2} \quad \text{(B2-11)}$$

If the observed sample n^* estimate results in greater than 20 percent more required samples than were originally calculated, then the additional samples required to fulfill the revised sample estimate shall be collected and analyzed. The determination of n^* is an iterative process that continues until the difference between n^* and the previous sample determination is less than 20 percent. Then, the UCL_{90} is calculated using equation B2-10. In this case, UCL_{90} is the 90 percent upper confidence VOC concentration, $\bar{x}$ is the calculated mean VOC concentration and s is the standard deviation. The value of $t_{(\alpha,n-1)}$ is taken from Table 9-2 of Chapter 9 of SW-846. The calculated UCL_{90} concentration for each headspace gas VOC will then be assigned to those containers in the waste stream not selected for headspace gas sampling. If the calculated UCL_{90} concentration is less than the applicable MDL, the MDL for the VOC will be assigned to each unsampled container instead of the UCL_{90} concentration.

B2-4 Control Charting for Newly Generated Waste Stream Sampling

Significant process changes and process fluctuations associated with newly generated waste will be determined using statistical process control (**SPC**) charting techniques; these techniques require historical data for determining limits for indicator species, and subsequent periodic sampling to assess process behavior relative to historical limits. SPC will be performed on waste prior to solidification or packaging for ease of sampling. If the limits are

group of samples represents the population being studied, the random selection of waste containers ensures representativeness on a Program level. The Permittees shall require the site Project Manager to document that the selected waste containers from within a waste stream were randomly selected. Sampling personnel shall verify that proper procedures are followed to ensure that samples are representative of the waste contained in a particular waste container or a waste stream.

Nonconformance to Data Quality Objectives (**DQOs**)

For any non-administrative nonconformance related to applicable requirements specified in this Waste Analysis Plan (**WAP**) which are first identified at the site Project Manager signature release level (i.e., a failure to meet a data quality objective [**DQO**]), the Permittees shall receive written notification within five (5) calendar days of identification and shall also receive a nonconformance report within thirty (30) calendar days of identification of the incident. The Permittees shall require the generator/storage site to implement a corrective action which remedies the nonconformance prior to management, storage, or disposal of the waste at WIPP. The Permittees shall send NMED a monthly summary of nonconformances identified during the previous month, indicating the number of nonconformances received and the generator/storage sites responsible.

Identification of Tentatively Identified Compounds

In accordance with SW-846 convention, identification of compounds detected by gas chromatography/mass spectrometry methods that are not on the list of target analytes shall be reported. ~~Headspace~~ Both composited and individual container headspace gas, volatile analysis (TCLP/Totals), and semi-volatile (TCLP/Totals) shall be subject to tentatively identified compound (**TIC**) reporting. These TICs for GC/MS Methods are identified in accordance with the following SW-846 criteria:

- Relative intensities of major ions in the reference spectrum (ions greater than 10% of the most abundant ion) should be present in the sample spectrum.
- The relative intensities of the major ions should agree within ± 20 percent.
- Molecular ions present in the reference spectrum should be present in the sample spectrum.
- Ions present in the sample spectrum but not in the reference spectrum should be reviewed for possible background contamination or presence of coeluting compounds.
- Ions present in the reference spectrum but not in the sample spectrum should be reviewed for possible subtraction from the sample spectrum because of background contamination or coeluting peaks.
- The reference spectra used for identifying TICs shall include, at minimum, all of the available spectra for compounds that appear in the 20.4.1.200 NMAC

(incorporating 40 CFR Part 261) Appendix VIII list. The reference spectra may be limited to VOCs when analyzing headspace gas samples.

- TICs for headspace gas analyses that are performed through FTIR analyses shall be identified in accordance with the specifications of SW-846 Method 8410.

TICs shall be reported as part of the analytical batch data reports for GC/MS Methods in accordance with the following minimum criteria:

- a TIC in an individual container headspace gas or solids sample shall be reported in the analytical batch data report if the TIC meets the SW-846 identification criteria listed above and is present with a minimum of 10% of the area of the nearest internal standard.

- a TIC in a composited headspace gas sample that contains 2 to 5 individual container samples shall be reported in the analytical batch data report if the TIC meets the SW-846 identification criteria listed above and is present with a minimum of 2% of the area of the nearest internal standard.

- a TIC in a composited headspace gas sample that contains 6 to 10 individual container samples shall be reported in the analytical batch data report if the TIC meets the SW-846 identification criteria listed above and is present with a minimum of 1% of the area of the nearest internal standard.

- a TIC in a composited headspace gas sample that contains 11 to 20 individual container samples shall be reported in the analytical batch data report if the TIC meets the SW-846 identification criteria listed above and is present with a minimum of 0.5% of the area of the nearest internal standard.

TICs that meet the SW-846 identification criteria, are ~~detected~~ reported in 25 percent of all waste containers sampled ~~samples~~ from a given waste stream, and that appear in the 20.4.1.200 NMAC (incorporating 40 CFR §261) Appendix VIII list, will be compared to acceptable knowledge data to determine if the TIC is a listed waste in the waste stream. TICs identified through headspace gas analyses that meet the Appendix VIII list criteria and the 25 percent ~~identification~~ 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 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 a listed waste constituent TIC cannot be attributed to waste packaging materials, radiolysis, or other origins, the constituent will be added to the target analyte list and new hazardous waste codes will be assigned, if appropriate. 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 codes 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

Precision

Precision shall be assessed by analyzing laboratory duplicates and replicate analyses of laboratory-control samples and PDP blind-audit samples. Results from measurements on these samples must be compared to the criteria listed in Table B3-2. These QC measurements will be used to demonstrate acceptable method performance and to trigger corrective action when control limits are exceeded.

Accuracy

Accuracy as %R shall be assessed for the laboratory operations by analyzing PDP blind-audit samples and laboratory-control samples. Results from these measurements must be compared to the criteria listed in Table B3-2. These QC measurements will be used to demonstrate acceptable method performance and to trigger corrective action when control limits are exceeded.

Calibration

GC/MS Tunes, Initial Calibrations, and Continuing Calibration will be performed and evaluated using the procedures and criteria specified in Table B3-3. These criteria will be used to demonstrate acceptable calibration and to trigger corrective action when control limits are exceeded.

Method Detection Limit

MDLs shall be expressed in nanograms for VOCs and must be less than or equal to those listed in Table B3-2. MDLs shall be determined based on the method described in Section B3-1. The detailed procedures for MDL determination shall be included in site SOPs.

Program Required Quantitation Limit

Laboratories must demonstrate the capability to quantitate analytes at or below the PRQLs given in Table B3-2. Laboratories shall set the concentration of at least one calibration standard below the PRQL. The detailed procedures for PRQL demonstration shall be included in laboratory SOPs.

Completeness

Laboratory completeness shall be expressed as the number of samples analyzed with valid results as a percent of the total number of samples submitted for analysis. A composited sample is treated as one sample for the purposes of completeness, because only one sample is run through the analytical instrument. Valid results are defined as results that meet the data useability criteria based on application of the Quality Control Criteria specified in Tables B3-2 and B3-3; and meet the detection limit, calibration representativeness, and comparability criteria within this section. The Permittees shall require that participating laboratories meet the completeness criteria specified in Table B3-2.

documentation must be evaluated through internal assessments by quality assurance organizations and assessments by auditors external to the organization (i.e., the Permittees).

B3-10 Data Review, Validation, and Verification Requirements

Data review, validation, and verification requirements include procedures for the review, validation, and verification of data at the data generation level; the validation and verification of data at the project level; and the verification of data at the Permittees' level. Data review determines if raw data have been properly collected and ensures raw data are properly reduced. Data validation confirms that the data reported satisfy the requirements defined by the user and is accompanied by signature release. Data verification authenticates that data as presented represent the sampling and analysis activities as performed and have been subject to the appropriate levels of data review. The procedures presented in this section ensure that WAP records furnish documentary evidence of quality.

The Permittees shall require the sites to generate the following reports for data validation, verification, and quality assurance activities:

- A Testing Batch Data Report or equivalent includes all data pertaining to radiography and visual examination for up to 20 waste containers without regard to waste matrix. It includes data collection and results, the videotapes of the actual examination, and the appropriate data form.

- A Sampling Batch Data Report or equivalent includes all field data pertaining to a group of no more than 20 samples that were collected for chemical analysis. Sampling Batch Data Reports may include chain of custody documentation and any measurements taken in the field such as temperature, pH, conductivity, as well as field notes, logs, and other field documentation.

- An Analytical Batch Data Report or equivalent includes analytical and on-line data from the sampling and analysis of TRU-mixed waste for an analytical batch of up to 20 samples. Analytical Batch Data Reports or equivalent that contain results for composited headspace gas samples must contain sufficient information to identify the containers that were composited for each composite sample and the sample volume that was taken from each waste container. Because Analytical Batch Data Reports are generated based on the number of samples analyzed, an Analytical Batch Data Report may contain results that are applicable to more than 20 containers depending on how many composite samples are part of the report, but may not exceed a total of 20 samples analyzed. Totals/TCLP analyses results and headspace gas sampling and analyses results are in the Analytical Batch Data Reports, which may also include summarized sample results, summarized QA sample results and recoveries, raw data, dates and times of analysis of all samples, and a case narrative describing any problems encountered or deviations from the approved analytical methods that occurred during the preparation and analysis of all samples.

Facility Waste Acceptance Criteria (**TSDF-WAC**). These data will be subjected to edit and limit checks that are performed automatically by the database. If a container was part of a composite headspace gas sample, the analytical results from the composite sample must be assigned as the container headspace gas data results, including associated TICs, for every waste container associated with the composite sample.

The Permittees will coordinate the data transmission with each generator/storage site. Actual data transmission will use appropriate technology to ensure the integrity of the data transmissions. The Permittees will require sites 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 site. For example, totals analysis data will not be requested from sites that do not have homogeneous solids or soil/gravel waste. The Permittees will access this data via the Internet to ensure an efficient transfer of this 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.

B3-13 Nonconformances

The Permittees shall require the status of work and the WAP activities at participating generator/storage sites to be monitored and controlled by the Site Project Manager and Site Project QA Officer. This monitoring and control shall include nonconformance identification, documentation, and reporting.

The nonconformances and corrective action processes specified in this section describe procedures between the Permittees and the generator/storage sites. The Permittees shall comply with the nonconformance requirements specified in Section B3-1 of this Permit Attachment.

Nonconformances

Nonconformances are uncontrolled and unapproved deviations from an approved plan or procedure. Nonconforming items and activities are those that do not meet the WAP requirements, procurement document criteria, or approved work procedures. Nonconforming items shall be identified by marking, tagging, or segregating, and the affected generator/storage site(s) notified. The Permittees shall require participating sites reconcile and correct nonconforming items as appropriate in accordance with the Permittees' Quality Assurance Program Description (**QAPD**). Disposition of nonconforming items shall be identified and documented. The QAPjPs shall identify the person(s) responsible for evaluating and dispositioning nonconforming items and shall include referenced procedures for handling them.

Management at all levels shall foster a "no-fault" attitude to encourage the identification of nonconforming items and processes. Nonconformances may be detected and identified by anyone performing WAP activities, including

	~~Wap~~ WAP Requirement[1]	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
22	Are procedures in place to ensure that compounds not on the list of target analytes are reported as tentatively identified compounds (TIC) according to SW-846 TIC identification guidance and that the TIC will be added to the target headspace gas analyte list if it appears in the 20 NMAC 4.1.200 (incorporating 40 CFR Part 261) Appendix VIII list and if they are ~~detected~~ reported in 25% of the ~~waste containers sampled~~ samples from a given waste stream? (Section B-3a(1))					
23	Are procedures in place to ensure that a randomly selected set of samples will be collected through core sampling or other EPA approved representative methods from the population of waste containers for homogeneous and soil/gravel waste streams? Are procedures in place that a sufficient number of samples are collected to evaluate the toxicity characteristic of a waste stream at a 90 percent Upper Confidence limit as specified in Attachment B2? (Section B-3a(2))					
24	Are procedures in place to ensure that total analyses or TCLP of PCBs, VOCs, SVOCs, and Metals are performed on all core samples to determine if the waste exhibits a toxicity characteristic? (Section B-3a(2))					
25	Are procedures in place to ensure that Acceptable Knowledge is used in waste characterization activities to delineate TRU waste streams, to assess whether TRU debris waste exhibits a toxicity characteristic, and to assess whether TRU wastes are listed? (Section B-3b)					
26	Are procedures in place to ensure that radiography and/or visual examination are used to: • Examine every waste container to determine the physical form • Identify liquids and containerized gases • Verify the physical form matches the waste stream description (Section B-3c)					

	~~Wap~~ ~~WAP~~ Requirement[1]	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
~~49~~	Are procedures in place to ensure that the data transmitted from Level 1 to Level 2 include the following: • testing data reports for each waste container? • sampling data reports for each waste container sampled? • analytical data reports for each waste container sampled? and • data review checklists (Section B-4a(6))					
~~50~~	Are procedures in place to ensure that the generator/storage site inputs the data into the WWIS manually or electronically? (Section B-4a(6))					
~~51~~	Are procedures in place to ensure that the generator/storage site enters the data into the WWIS in the exact format required by the database? (Section B-4a(6))					
~~51a~~	~~Are procedures in place to ensure that if a container was part of a composite headspace gas sample, the analytical results from the composite sample are assigned as the container headspace gas data results, including associated TICs, for every waste container associated with the composite sample in the WWIS? (Section B3-12b(3))~~					
~~52~~	Are procedures in place to ensure all of the data presented on Table B-8 of the Permit is transmitted to the WWIS? (Table B-8)					
~~53~~	Are procedures in place to ensure that the generator/storage site reports summarize waste characterization information on a waste stream basis, and transmits the summarized data by hard copy or electronically to WIPP Waste Operations when requested? (Section B-4a(6))					

	~~Wap~~ ~~WAP~~ Requirement[1]	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
~~126~~	Are procedures documented to ensure that Tentatively Identified Compounds shall be added to the target compound list if they are ~~identified~~ reported in 25% of the ~~waste containers sampled~~ ~~samples~~ in accordance with SW-846 criteria for a given waste stream, if they are not a listed waste constituent attributable to waste packaging or radiolysis (with the exception of non-toxic F003 constituents), and if they appear in the 20 NMAC 4.1.200 (incorporating 40 CFR §261) Appendix VIII list? (Section B-3a(1))					

	~~Wap~~ ~~WAP~~ Requirement[1]	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
~~126~~	~~Are procedures documented to ensure that the following criteria are met with regard to the recognition and reporting of TICS for GC/MS Methods for homogeneous solids and soils and gravels:~~ ~~• Relative intensities of major ions in the reference spectrum (ions greater than 10% of the most abundant ion) should be present in the sample spectrum.~~ ~~• The relative intensities of the major ions should agree within ± 20 percent.~~ ~~• Molecular ions present in the reference spectrum should be present in the sample spectrum.~~ ~~• Ions present in the sample spectrum but not in the reference spectrum should be reviewed for possible background contamination or presence of coeluting compounds.~~ ~~• Ions present in the reference spectrum but not in the sample spectrum should be reviewed for possible subtraction from the sample spectrum because of background contamination or coeluting peaks.~~ ~~• The reference spectra used for identifying TICs shall include, at minimum, all of the available spectra for compounds that appear in the 20.4.1.200 NMAC (incorporating 40 CFR Part 261) Appendix VIII list. The reference spectra may be limited to VOCs when analyzing headspace gas samples.~~ ~~• TICs for headspace gas analyses that are performed through FTIR analyses shall be identified in accordance with the specifications of SW-846 Method 8410.~~ ~~(Section B3-1)~~					

	~~Wap~~ WAP Requirement[1]	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N(Why?)	Item Reviewed	Adequate? Y/N	
~~126b~~	~~TICs shall be reported as part of the analytical batch data reports for GC/MS Methods in accordance with the following minimum criteria:~~ ~~• a TIC in an individual container headspace gas or solids sample shall be reported in the analytical batch data report if the TIC meets the SW-846 identification criteria listed above and is present with a minimum of 10% of the area of the nearest internal standard.~~ ~~(Section B3-1)~~					
	METALS ANALYSIS OF CORE SAMPLES					

	~~Wap~~ WAP Requirement[1]	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
190	Are procedures, processes, and equipment in place to ensure that the following sampling procedures are implemented: • The sampling equipment is leak checked and cleaned upon first use and as needed • The manifold and sample canisters are evacuated to 0.1 mm Hg prior to sample collection • Cleaned and evacuated sample canisters are attached to the evacuated manifold before the manifold inlet valve is opened • The manifold inlet valve is attached to a changeable filter connected to different sampling heads that are capable of punching through metal lid of the drum while maintaining an airtight seal for sampling through the drum lid ~~or~~, penetrating the ~~carbon composite~~ filter, or maintaining an airtight seal for sampling through a pipe overpack container filter vent hole • Field blanks are collected using samples of room air collected in the sampling area in the immediate vicinity of the waste container. *(Note: field blanks for SUMMA® canisters are collected directly into the canister)* • Manifold equipped with purge assembly that allows QC samples to be collected through all sampling components that affect compliance with QAOs • The manifold internal volume is calculated and documented in a field logbook • The volume of headspace gas collected as calculated by the canister volume and internal manifold volume is less than 10 percent of the available headspace volume when a volume estimate is available (Section B1-1a(1))					

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195	Are procedures, processes, and equipment in place to ensure that the following operating conditions are in place for direct canister sampling: • Canisters are evacuated to 0.1 mm Hg prior to use and attached to a changeable filter connected to the sampling head • Sampling heads are capable of either punching through the metal lid of the drums ~~while maintaining an airtight seal for sampling through the drum lid, or~~ penetrating a ~~carbon composite~~ filter ~~or the septum in the orifice of a self-tapping screw, or maintaining an airtight seal for sampling through a pipe overpack container~~ filter vent hole. • Field duplicates are collected in the same manner and at the same time as the original sample. • Field blanks shall be samples of room air collected in the immediate vicinity of the waste drum sampling area prior to removal of the drum lid. • Equipment blanks and field reference standards shall be collected using a purge assembly equivalent to the standard side of the manifold • Less than 10 percent of the headspace is withdrawn when a headspace estimate is available *(Note: The volume withdrawn is the canister volume and the internal volume of the sampling head)* • Each sample canister is equipped with a pressure/vacuum gauge capable of indicating leaks and sample collection volumes. The gauge shall be helium leak tested to 1.5 X 10^{-7} cc/s, have all stainless steel construction and be capable of tolerating temperatures to 125° C • Summa® canisters or equivalent are used to collect samples (Section B1-1a(2))					

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~~197.~~	~~If sampling through a pipe overpack container filter vent hole with an airtight device is used, are procedures in place to ensure that a sampling head with an airtight seal for sampling through a pipe overpack container filter vent hole are available? (Section B1-1a(1); B1-1a(2); B1-1c(5))~~					

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197b	If sampling through a pipe overpack container filter vent hole is used, are the following criteria met? - The seal between the pipe overpack container surface and sampling apparatus shall be designed to minimize intrusion of ambient air. - The filter shall be replaced as quickly as is practicable with the airtight sampling apparatus to ensure that a representative sample can be taken. - All components of the sampling system that come into contact with sample gases shall be cleaned according to requirements for direct canister sampling or manifold sampling, whichever is appropriate, prior to sample collection. - Equipment blanks and field reference standards shall be collected through all the components of the sampling system that contact the headspace gas sample. - The lid of the container's 90 mil poly liner shall contain a hole for venting to the container. A representative sample cannot be collected until the poly liner has been vented to the container. If headspace gas samples are collected prior to venting the 90 mil poly liner, the sample is not acceptable and a nonconformance report shall be prepared, submitted, and resolved. Nonconformance procedures are outlined in Permit Attachment B3. Note, as an option, the same airtight seal sampling apparatus may include a needle to penetrate the rigid liner. - During sampling, openings in the pipe overpack container shall be sealed to prevent outside air from entering the container. - A flow-indicating device shall be connected to sampling system and operated according to the direct canister or manifold sampling requirements, as appropriate. (Section B1-1a(3)(iii))					

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197c	If sampling through a pipe overpack container filter vent hole is used, are the following criteria met? • The site has documentation that demonstrates that they have determined through testing the appropriate length of time for exchanging the filter with the sampling device to assure representative samples are collected. • The time for completing the exchange is incorporated into appropriate headspace gas sampling procedures. (Section B1-1a(3)(iii))					

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220	Are procedures in place to ensure that all VOC analyses are evaluated using the following criteria: • Precision is assessed through evaluation of laboratory duplicates, Laboratory Control Sample (LCS) replicates, and PDP blind audit samples in comparison to Table B3-3 • Accuracy is assessed through evaluation of LCS samples and blind PDP audit samples in comparison to criteria in Table B3-3 • MDL's are expressed in nanogram/liter • Laboratory completeness shall be expressed as the number of samples analyzed with valid results as a percent of the total number of samples collected. A composited sample is treated as one sample for the purposes of completeness, because only one sample is run through the analytical instrument • Comparability shall be achieved through the use of standardized methods, through the consistent application of data useability criteria, and traceable standards and through successful participation in the PDP program • Representativeness will be achieved through the use of standardized sample collection methods with a demonstrated absence of blank contamination • All method detection limits and program required detection limits shall be less than the Program Required Detection Limits listed in Table B3-2 and the detection limit study procedures shall be documented in laboratory SOPs. In addition, the laboratory shall demonstrate that they are capable of meeting the Program Required Detection Limits by analyzing at least one calibration standard below the PRQL (Section B3-5)					

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221	Are procedures in place to ensure that only laboratories that are qualified through participation in the Performance Demonstration Program are eligible to analyze waste samples? (Section B-3a(3))					
222	Are procedures in place to ensure that Tentatively Identified Compounds shall be added to the target compound list if they are ~~identified~~ reported in 25% of the waste containers sampled ~~samples~~ in accordance with SW-846 criteria for a given waste stream (with the exception of non-toxic F003 constituents) and if they appear in the 20 NMAC 4.1.200 (incorporating 40 CFR §261) Appendix VIII list? (Section B-3a(1))					

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222a	Are procedures documented to ensure that the following criteria are met with regard to the recognition and reporting of TICS for GC/MS Methods for headspace gas sampling: - Relative intensities of major ions in the reference spectrum (ions greater than 10% of the most abundant ion) should be present in the sample spectrum. - The relative intensities of the major ions should agree within ± 20 percent. - Molecular ions present in the reference spectrum should be present in the sample spectrum. - Ions present in the sample spectrum but not in the reference spectrum should be reviewed for possible background contamination or presence of coeluting compounds. - Ions present in the reference spectrum but not in the sample spectrum should be reviewed for possible subtraction from the sample spectrum because of background contamination or coeluting peaks. - The reference spectra used for identifying TICs shall include, at minimum, all of the available spectra for compounds that appear in the 20.4.1.200 NMAC (incorporating 40 CFR Part 261) Appendix VIII list. The reference spectra may be limited to VOCs when analyzing headspace gas samples. - TICs for headspace gas analyses that are performed through FTIR analyses shall be identified in accordance with the specifications of SW-846 Method 8410. (Section B3-1)					

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222b	Are procedures in place to assure that TICs are reported as part of the analytical batch data reports for GC/MS Methods in accordance with the following minimum criteria: • a TIC in an individual container headspace gas or solids sample shall be reported in the analytical batch data report if the TIC meets the SW-846 identification criteria listed above and is present with a minimum of 10% of the area of the nearest internal standard. • a TIC in a composited headspace gas sample that contains 2 to 5 individual container samples shall be reported in the analytical batch data report if the TIC meets the SW-846 identification criteria listed above and is present with a minimum of 2% of the area of the nearest internal standard. • a TIC in a composited headspace gas sample that contains 6 to 10 individual container samples shall be reported in the analytical batch data report if the TIC meets the SW-846 identification criteria listed above and is present with a minimum of 1% of the area of the nearest internal standard. • a TIC in a composited headspace gas sample that contains 11 to 20 individual container samples shall be reported in the analytical batch data report if the TIC meets the SW-846 identification criteria listed above and is present with a minimum of 0.5% of the area of the nearest internal standard. (Section B3.1)					