

Waste Isolation Pilot Plant  
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ATTACHMENT B2		
Section	Change	Explanation of Change
Attachment B2	Changed EPA hazardous waste "code" to EPA hazardous waste "number."	Modified for consistency with NMAC language.
Attachment B2	Provided corrected references throughout due to formatting changes.	Corrected formatting.
Table of Contents for Attachment B2	Modified section numbers and figure title. Deleted sections and table.	Corrected formatting to reflect modifications made in the revised PMR.

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Attachment B2 Introduction	<p>The Permittees shall require generator/storage sites (<b>sites</b>) to use the following statistical methods for sampling and analysis of TRU mixed waste which is managed, stored; or disposed at WIPP, <u>unless determined unnecessary by the New Mexico Environmental Department (NMED) as a result of an Acceptable Knowledge (AK) Sufficiency Determination.</u> These statistical methods include methods for <del>selecting waste containers for visual inspection,</del> selecting retrievably stored waste containers for totals analysis, <u>selecting waste containers for headspace gas sampling and analysis, and</u> setting the upper confidence limit, <del>and control charting for newly generated waste stream sampling.</del></p>	<p>Modified language to clarify that approval of the AK Sufficiency Determination by the NMED exempts the generator/storage sites from performing sampling and analysis, per Permit Attachment B2, of TRU mixed waste. The justification to this change is provided in Section 1.2.1.2 of the revised PMR and Appendix I of the Section 311 NOD Comment/Response Matrix.</p> <p>Removed information specific to radiography and VE methods for waste analysis. The generator/storage sites are no longer required to examine all containers through radiography or VE to identify physical form and verify the absence of prohibited items, unless AK does not clearly substantiate the physical form of the waste and the absence of prohibited items. The justification for this change is provided in Sections 1.2.1 and 1.2.2 of the revised PMR and Appendix I of the Section 311 NOD Comment/Response Matrix.</p> <p>Editorial (deleted “retrievably stored” and “and control charting for newly generated waste stream sampling”) to account for all types of waste containers destined to the WIPP and selected using methods as depicted in the revised Figure B2-1 if the AK information is insufficient. The revised sampling approach is suitable for both newly generated and retrievably stored waste. The justification for this change is provided in Section 1.2.1.2 of the revised PMR.</p> <p>Editorial to clarify that waste containers must be selected using methods described in Permit Attachment B2 for HSGSA if the AK information is insufficient.</p>

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Section	Change	Explanation of Change
B2-1	<del>B2-1 Approach for Statistically Selecting Waste Containers for Visual Examination</del>	Removed requirement for statistical selection of containers for visual examination because the generator/storage sites are no longer required to perform radiography, and the resulting VE as a QC check on radiography, under methods in the HWFP. Therefore, the requirement to statistically select containers for VE is no longer applicable. The Permittees will, subject to NMED inspection, examine a statistically representative subpopulation of the waste by means of radiography, VE, or examination of VE records under the rigor of Permit Attachment B7, The justification for this change is provided in Sections 1.2.1. and 1.2.2. of the revised PMR.
B2-1	<del>As a Quality Control check on the radiographic examination of waste containers, a statistically selected portion of the certified waste containers must be opened and visually examined. The data from visual examination shall be used to verify the matrix parameter category, waste material parameter weights, and absence of prohibited items as identified in Attachment B, Section B-1C, as determined by radiography.</del>	Removed requirement for statistical selection of containers for visual examination because the generator/storage sites are no longer required to perform radiography, and the resulting VE as a QC check on radiography, under methods in the HWFP. Therefore, the requirement to statistically select containers for VE is no longer applicable. The Permittees will, subject to NMED inspection, examine a statistically representative subpopulation of the waste by means of radiography, VE, or examination of VE records under the rigor of Permit Attachment B7, The justification for this change is provided in Sections 1.2.1. and 1.2.2. of the revised PMR.
B2-1	<del>The data obtained from the visual examination shall also be used to determine, with acceptable confidence, the percentage of miscertified waste containers from the radiographic examination. Miscertified containers are those that radiography indicates meet the Waste Isolation Pilot Plant Waste Acceptance Criteria and Transuranic Package Transporter-H Authorized Methods for Payload Control but visual examination indicates do not meet these criteria.</del>	Removed requirement for statistical selection of containers for visual examination because the generator/storage sites are no longer required to perform radiography, and the resulting VE as a QC check on radiography, under methods in the HWFP. Therefore, the requirement to statistically select containers for VE is no longer applicable. The Permittees will, subject to NMED inspection, examine a statistically representative subpopulation of the waste by means of radiography, VE, or examination of VE records under the rigor of Permit Attachment B7, The justification for this change is provided in Sections 1.2.1. and 1.2.2. of the revised PMR.

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B2-1	<p><del>Participating sites shall initially use an eleven-percent (11%) miscertification rate to calculate the number of waste containers that shall be visually examined until a site-specific miscertification rate has been established. Sites may establish a site-specific miscertification rate by characterizing a lot of no less than fifty containers in a single Summary Category Group at the initial 11% miscertification rate. The results of this initial characterization shall then serve as the site-specific miscertification rate until reassessed annually as described below.</del></p>	<p>Removed requirement for statistical selection of containers for visual examination because the generator/storage sites are no longer required to perform radiography, and the resulting VE as a QC check on radiography, under methods in the HWFP. Therefore, the requirement to statistically select containers for VE is no longer applicable. The Permittees will, subject to NMED inspection, examine a statistically representative subpopulation of the waste by means of radiography, VE, or examination of VE records under the rigor of Permit Attachment B7, The justification for this change is provided in Sections 1.2.1. and 1.2.2. of the revised PMR.</p>
B2-1	<p><del>Participating sites shall initially use an eleven-percent (11%) miscertification rate to calculate the number of waste containers that shall be visually examined until a site-specific miscertification rate has been established. Sites may establish a site-specific miscertification rate by characterizing a lot of no less than fifty containers in a single Summary Category Group at the initial 11% miscertification rate. The results of this initial characterization shall then serve as the site-specific miscertification rate until reassessed annually as described below.</del></p>	<p>Removed requirement for statistical selection of containers for visual examination because the generator/storage sites are no longer required to perform radiography, and the resulting VE as a QC check on radiography, under methods in the HWFP. Therefore, the requirement to statistically select containers for VE is no longer applicable. The Permittees will, subject to NMED inspection, examine a statistically representative subpopulation of the waste by means of radiography, VE, or examination of VE records under the rigor of Permit Attachment B7, The justification for this change is provided in Sections 1.2.1. and 1.2.2. of the revised PMR.</p>
B2-1	<p><del>Group that shall be visually examined for various miscertification rates and waste container population sizes using a hypergeometric sampling approach. Sites shall use a miscertification rate of 1% for any Summary Category Group-specific miscertification rate calculated to be less than 1%.</del></p> <p><del>The site-specific miscertification rate shall be reassessed annually by calculating a drum-weighted average of all historic Summary Category Group-specific miscertification rates. Each Summary Category Group-specific miscertification rate shall be rounded off to the nearest integer value before being used to calculate the new site-specific miscertification rate. Sites shall use a miscertification rate of 1% for any site-specific miscertification rate calculated to be less than 1%.</del></p>	<p>Removed requirement for statistical selection of containers for visual examination because the generator/storage sites are no longer required to perform radiography, and the resulting VE as a QC check on radiography, under methods in the HWFP. Therefore, the requirement to statistically select containers for VE is no longer applicable. The Permittees will, subject to NMED inspection, examine a statistically representative subpopulation of the waste by means of radiography, VE, or examination of VE records under the rigor of Permit Attachment B7, The justification for this change is provided in Sections 1.2.1. and 1.2.2. of the revised PMR.</p>

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B2-1	<p><del>The site-specific miscertification rate shall be reassessed annually by calculating a drum-weighted average of all historic Summary Category Group-specific miscertification rates. Each Summary Category Group-specific miscertification rate shall be rounded off to the nearest integer value before being used to calculate the new site-specific miscertification rate.</del></p>	<p>Removed requirement for statistical selection of containers for visual examination because the generator/storage sites are no longer required to perform radiography, and the resulting VE as a QC check on radiography, under methods in the HWFP. Therefore, the requirement to statistically select containers for VE is no longer applicable. The Permittees will, subject to NMED inspection, examine a statistically representative subpopulation of the waste by means of radiography, VE, or examination of VE records under the rigor of Permit Attachment B7, The justification for this change is provided in Sections 1.2.1. and 1.2.2. of the revised PMR.</p>
B2-1	<p><del>Sites shall use a miscertification rate of 1% for any Summary Category Group-specific miscertification rate calculated to be less than 1%.</del></p> <p><del>The site-specific miscertification rate shall be reassessed annually by calculating a drum-weighted average of all historic Summary Category Group-specific miscertification rates. Each Summary Category Group-specific miscertification rate shall be rounded off to the nearest integer value before being used to calculate the new site-specific miscertification rate. Sites shall use a miscertification rate of 1% for any site-specific miscertification rate calculated to be less than 1%.</del></p>	<p>Removed requirement for statistical selection of containers for visual examination because the generator/storage sites are no longer required to perform radiography, and the resulting VE as a QC check on radiography, under methods in the HWFP. Therefore, the requirement to statistically select containers for VE is no longer applicable. The Permittees will, subject to NMED inspection, examine a statistically representative subpopulation of the waste by means of radiography, VE, or examination of VE records under the rigor of Permit Attachment B7, The justification for this change is provided in Sections 1.2.1. and 1.2.2. of the revised PMR.</p>
B2-1	<p><del>Table B2-1 has been developed with the use of an EG&amp;G Idaho, Inc. engineering design file (EG&amp;G 1994). The number of waste containers requiring visual examination is based on a 90 percent confidence that the actual miscertification rate (for the population) is less than the 90 percent upper confidence level (UCL), and also an 80 percent confidence that the UCL will be less than 14 percent if the actual miscertification rate is the same as the targeted percent of miscertified waste containers (column heading of Table B2-1). Thus, there is only a 10 percent probability that the UCL will be below 14 percent in the case where the actual miscertification rate is 14 percent or greater. Also, there is only a 20 percent probability that the UCL will be above 14 percent in the case where the actual miscertification rate is the same as the targeted percent.</del></p>	<p>Removed requirement for statistical selection of containers for visual examination because the generator/storage sites are no longer required to perform radiography, and the resulting VE as a QC check on radiography, under methods in the HWFP. Therefore, the requirement to statistically select containers for VE is no longer applicable. The Permittees will, subject to NMED inspection, examine a statistically representative subpopulation of the waste by means of radiography, VE, or examination of VE records under the rigor of Permit Attachment B7, The justification for this change is provided in Sections 1.2.1. and 1.2.2. of the revised PMR.</p>

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B2-1	<p>Table B2-1 has been developed with the use of an EG&amp;G Idaho, Inc. engineering design file (EG&amp;G 1994). The number of waste containers requiring visual examination is based on a 90 percent confidence that the actual miscertification rate (for the population) is less than the 90 percent upper confidence level (UCL), and also an 80 percent confidence that the UCL will be less than 14 percent if the actual miscertification rate is the same as the targeted percent of miscertified waste containers (column heading of Table B2-1). Thus, there is only a 10 percent probability that the UCL will be below 14 percent in the case where the actual miscertification rate is 14 percent or greater. Also, there is only a 20 percent probability that the UCL will be above 14 percent in the case where the actual miscertification rate is the same as the targeted percent.</p>	<p>Removed requirement for statistical selection of containers for visual examination because the generator/storage sites are no longer required to perform radiography, and the resulting VE as a QC check on radiography, under methods in the HWFP. Therefore, the requirement to statistically select containers for VE is no longer applicable. The Permittees will, subject to NMED inspection, examine a statistically representative subpopulation of the waste by means of radiography, VE, or examination of VE records under the rigor of Permit Attachment B7, The justification for this change is provided in Sections 1.2.1. and 1.2.2. of the revised PMR.</p>
B2-1	<p>The hypergeometric approach to determining the number of containers to be visually examined is dependant upon the defined estimate of the allowable proportion of containers that were miscertified and information on previous percentages of containers that were miscertified. The rationale and details of this methodology are discussed below:</p>	<p>Removed requirement for statistical selection of containers for visual examination because the generator/storage sites are no longer required to perform radiography, and the resulting VE as a QC check on radiography, under methods in the HWFP. Therefore, the requirement to statistically select containers for VE is no longer applicable. The Permittees will, subject to NMED inspection, examine a statistically representative subpopulation of the waste by means of radiography, VE, or examination of VE records under the rigor of Permit Attachment B7, The justification for this change is provided in Sections 1.2.1. and 1.2.2. of the revised PMR.</p>
B2-1	<p>In a population of size <math>N</math>, there are <math>M</math> miscertified containers, so the true proportion of the miscertified containers in the population is <math>M/N = p_{true}</math>. Since <math>p_{true}</math> (or <math>M</math>) is not known, <math>p_{true}</math> shall be estimated by randomly sampling some of the containers. If in a sample of <math>n</math> containers, <math>x</math> are found to be miscertified, the sample estimate (<math>\hat{p}</math>) of the true population proportion <math>p_{true}</math> is:</p> <p style="text-align: right;">(B2-1)</p>	<p>Removed requirement for statistical selection of containers for visual examination because the generator/storage sites are no longer required to perform radiography, and the resulting VE as a QC check on radiography, under methods in the HWFP. Therefore, the requirement to statistically select containers for VE is no longer applicable. The Permittees will, subject to NMED inspection, examine a statistically representative subpopulation of the waste by means of radiography, VE, or examination of VE records under the rigor of Permit Attachment B7, The justification for this change is provided in Sections 1.2.1. and 1.2.2. of the revised PMR.</p>

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B2-1	<p><del>This value is only an estimate, and as a result has some uncertainty associated with it. This uncertainty shall be quantified by calculating the upper one-sided (1-<math>\alpha</math>) percent confidence limit for <math>p</math>, defined as <math>p_{UCL}</math>. This confidence limit gives the largest value the true proportion could take on and still have a “reasonable” chance (e.g., an <math>\alpha = 0.10</math> probability) of producing <math>x</math> miscertified containers in a sample of <math>n</math> out of <math>N</math>. This upper confidence limit is calculated as:</del></p> <p style="text-align: right;"><del>_____ (B2-2)</del></p>	<p>Removed requirement for statistical selection of containers for visual examination because the generator/storage sites are no longer required to perform radiography, and the resulting VE as a QC check on radiography, under methods in the HWFP. Therefore, the requirement to statistically select containers for VE is no longer applicable. The Permittees will, subject to NMED inspection, examine a statistically representative subpopulation of the waste by means of radiography, VE, or examination of VE records under the rigor of Permit Attachment B7, The justification for this change is provided in Sections 1.2.1. and 1.2.2. of the revised PMR.</p>
B2-1	<p><del>where <math>M_{UCL}</math> is the smallest value of <math>M</math> such that the probability of observing <math>x</math> or fewer miscertified containers in a sample of size <math>n</math> is less than or equal to <math>\alpha</math>. That is, it is the smallest value of <math>M</math> such that the following inequality is true:</del></p> <p style="text-align: right;"><del>_____ (B2-3)</del></p> <p><del>where each term in parentheses has the usual combinatorial interpretation. For example:</del></p> <p style="text-align: right;"><del>_____ (B2-4)</del></p>	<p>Removed requirement for statistical selection of containers for visual examination because the generator/storage sites are no longer required to perform radiography, and the resulting VE as a QC check on radiography, under methods in the HWFP. Therefore, the requirement to statistically select containers for VE is no longer applicable. The Permittees will, subject to NMED inspection, examine a statistically representative subpopulation of the waste by means of radiography, VE, or examination of VE records under the rigor of Permit Attachment B7, The justification for this change is provided in Sections 1.2.1. and 1.2.2. of the revised PMR.</p>

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B2-1	<p><del>Each term in the sum in Equation B2-3 is the hypergeometric probability of observing k miscertified containers in a sample size n from a population of size N in which there are M miscertified containers (and hence the population proportion of miscertified containers is <math>p = M/N</math>). The value <math>M_{\text{UCL}}</math> is obtained by substituting different values for M into Equation B2-3 until the largest value satisfying the inequality is found.</del></p>	<p>Removed requirement for statistical selection of containers for visual examination because the generator/storage sites are no longer required to perform radiography, and the resulting VE as a QC check on radiography, under methods in the HWFP. Therefore, the requirement to statistically select containers for VE is no longer applicable. The Permittees will, subject to NMED inspection, examine a statistically representative subpopulation of the waste by means of radiography, VE, or examination of VE records under the rigor of Permit Attachment B7, The justification for this change is provided in Sections 1.2.1. and 1.2.2. of the revised PMR.</p>
B2-1	<p><del>Note that in Equation B2-3, the upper confidence limit is dependent on x, the number of miscertifications observed in the sample, as well as on n, the sample size. To obtain the required sample size, the values of x that are likely to be seen shall also need to be considered. Sample size that shall be visually examined shall be determined by setting a desired upper confidence limit value and then manipulating x and n in Equation B2-3.</del></p>	<p>Removed requirement for statistical selection of containers for visual examination because the generator/storage sites are no longer required to perform radiography, and the resulting VE as a QC check on radiography, under methods in the HWFP. Therefore, the requirement to statistically select containers for VE is no longer applicable. The Permittees will, subject to NMED inspection, examine a statistically representative subpopulation of the waste by means of radiography, VE, or examination of VE records under the rigor of Permit Attachment B7, The justification for this change is provided in Sections 1.2.1. and 1.2.2. of the revised PMR.</p>

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B2-1a	<p>The statistical approach for <del>characterizing</del> <u>analyzing</u> retrievably stored <u>and newly generated</u> homogeneous solids (<u>S3000</u>) and soil/gravel waste (<u>S4000</u>) and repackaged or treated S3000 waste <del>that the generator/storage site demonstrates is not suitable for control charting using sampling and analysis</del> relies on using acceptable knowledge to segregate waste containers into relatively homogeneous waste streams.</p>	<p>Modified (“characterizing” to “analyzing”) for consistency with NMAC language in 20.4.1.500 NMAC (incorporating 40 CFR §264.13).</p> <p>Editorial to clarify the summary category groups of homogenous solids and soil/gravel waste.</p> <p>Deleted text related to the control charting method because all types of waste containers destined to the WIPP are now selected using methods as depicted in the revised Figure B2-1 if the AK information is insufficient. The revised sampling approach is suitable for both newly generated and retrievably stored waste. The justification for this change is provided in Section 1.2.1.2 of the revised PMR and Appendix I of the Section 311 NOD Comment/Response Matrix.</p>
B2-1a	<p>Individual waste containers serve as convenient units for <del>characterizing</del> <u>analyzing</u> the combined mass of waste from the waste stream of interest.</p>	<p>Modified for consistency with NMAC language in 20.4.1.500 NMAC (incorporating 40 CFR §264.13).</p>
B2-1a	<p>An end use of analytical results for retrievably stored homogeneous solids and soil/gravel is for assigning the Environmental Protection Agency hazardous waste <u>numbers associated with toxicity characteristic waste (D-codes numbers)</u> that apply to each mixed waste stream <del>and to confirm acceptable knowledge</del>. The <u>toxicity characteristic D-codes numbers</u> are indicators that the waste exhibits the toxicity characteristic for specific contaminants under the Resource Conservation and Recovery Act (<b>RCRA</b>).</p>	<p>Editorial to clarify that the D-<u>codes numbers</u> suggested here have hazardous waste numbers associated with toxicity characteristic waste.</p>

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B2-1a	<p>The preliminary estimates will be made by obtaining a preliminary number of samples from the waste stream or from previous sampling from the waste stream. Preliminary estimates will be based on <u>five</u> samples <u>selected randomly</u> from <u>the waste stream. If the entire waste stream is not available for sampling then five preliminary samples will be selected randomly from the available population. As the rest of the waste stream is retrieved or generated, additional selected containers will be sampled as provided below and the analytical results will be reported to the Permittees. a minimum of 5 waste containers.</u> Samples collected to establish preliminary estimates that are selected, sampled, and analyzed using <u>a Permittee approved laboratory</u> in accordance with applicable provisions of the WAP may be used as part of the required number of samples to be collected.</p>	<p>Modified language to make the preliminary sampling protocol for total analysis consistent with the proposed approach as outlined in the revised Figure B2-1. <u>The revised sampling approach is suitable for both newly generated and retrievably stored waste.</u> The justification for this change is provided in Section 1.2.1.2 of the revised PMR and Appendix I of the Section 311 NOD Comment/Response Matrix.</p> <p>To designate certain laboratories as “Permittee approved laboratories” which would be audited annually by the Permittees in accordance with Permit Attachment B6. The justification to this change is provided in Section <u>1.2.1 and 1.2.3</u> of the revised PMR.</p>
B2-1a	<p>The calculated total number of required waste containers will then be randomly sampled and analyzed <u>using a Permittee approved laboratory.</u></p>	<p>To designate certain laboratories as “Permittee approved laboratories” which would be audited annually by the Permittees in accordance with Permit Attachment B6. The justification to this change is provided in Section <u>1.2.1 and 1.2.3</u> of the revised PMR.</p>
B2-1a	<p><u>If only a portion of a waste stream is available for sampling (e.g., the remainder of the waste stream will be recovered from storage at the generator/storage site, or only a portion of the waste stream has been repackaged, treated, or generated), the calculated number of samples will be randomly selected from the available portion of the waste stream. A minimum of five randomly selected samples will be obtained and analyzed from the available portion of the waste stream. The Permittees may approve the WSPF and authorize the generator/storage site to begin shipping the waste stream to WIPP once the analytical data for the randomly selected samples from the available portion of the waste stream have been obtained. The generator/storage site will also randomly select the calculated number of sample locations from the waste stream as a whole, both the available and unavailable portions. A minimum of five randomly selected sample locations will be selected from the waste stream as a whole. As those randomly selected locations (e.g., buried or newly generated waste containers) become available for sampling, samples will be obtained and analyzed.</u></p>	<p>Added language to describe the statistical selection for total analysis consistent with the approach as outlined in the revised Figure B2-1 and to clarify that, if an entire waste stream is not available for sampling, samples will be obtained and analyzed as those unavailable locations become available. <u>The revised sampling approach is suitable for both newly generated and retrievably stored waste.</u> The justification for this change is provided in Section 1.2.1.2 of the revised PMR and Appendix I of the Section 311 NOD Comment/Response Matrix.</p>

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B2-1a	<p><u>The generator/storage site will use the data to update the UCL<sub>90</sub> values for the waste stream as described in Section B2-2a and assign EPA hazardous waste numbers as appropriate. The generator/storage sites will submit the analytical data from subsequent sampling to the Permittees for inclusion in the WIPP facility operating record. If changes to EPA hazardous waste numbers are required as a result of subsequent sampling, the generator/storage site will notify the Permittees and shipments of the affected waste stream shall be suspended until the Permittees approve a revised WSPF for the affected waste stream.</u></p>	<p>Added language to clarify that the generator/storage sites are responsible to update UCL<sub>90</sub> values, assign EPA hazardous waste numbers as appropriate, and update the WIPP facility operating record when results of subsequent sampling and analysis become available. The justification for this change is provided in Section 1.2.1.2 of the revised PMR and Appendix I of the Section 311 NOD Comment/Response Matrix.</p>
B2-1a	<p>Upon collection and analysis of the preliminary samples, or at any time after the preliminary samples have been analyzed, the generator/storage site may <u>presumptively</u> assign hazardous waste <del>codes</del> <u>numbers</u> to a waste stream <u>even if the calculated number of required samples is greater than the preliminary number of samples collected.</u></p>	<p>Modified (“codes” to “numbers”) for consistency with NMAC language.</p> <p>Added language to clarify that the generator/storage sites may assign HWNs to a waste stream prior to obtaining analytical data from the preliminary sampling and analysis although the calculated number of required samples is greater than the preliminary number of samples collected. The justification for this change is provided in Section 1.2.1.2 of the revised PMR and Appendix I of the Section 311 NOD Comment/Response Matrix.</p>
B2-1b	<p><del>If a waste stream meets the conditions for representative headspace gas sampling in Permit Attachment B, Section B-3a(1), h</del> <u>Headspace</u> gas sampling of <del>that a</del> waste stream may be done on a randomly selected portion of containers in the waste stream.</p>	<p>Text was deleted because specific sampling requirements for homogenous solids and soil/gravel waste streams with no VOC-related HWNs, thermally treated waste streams, and LANL sealed sources waste streams have been eliminated. In the revised PMR, HSGSA is required for all debris waste streams and SSA is required for all homogenous solids or soil/gravel waste streams to resolve assignment of EPA HWNs when AK is determined insufficient. In the revised PMR, it is also no longer necessary to derive a VOC source term because the disposal rooms are going to be monitored directly for VOCs. The justification of this change is provided in Sections 1.2.1 and 1.3 of the revised PMR and Appendix I of the Section 311 NOD Comment/Response Matrix.</p> <p>Editorial change.</p>

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B2-1b	These samples are analyzed for all the target analytes <u>using a Permittee approved laboratory.</u>	To designate certain laboratories as “Permittee approved laboratories” which would be audited annually by the Permittees in accordance with Permit Attachment B6. The justification to this change is provided in Section 1.2.1 and 1.2.3 of the revised PMR.
B2-1b	<u>All calculations should be rounded up to the nearest integer. A minimum of ten containers shall be sampled and analyzed in each waste stream. If there are fewer than the minimum or required number of containers in a waste stream, then each container should be sampled once.</u> <u>The calculated total number of required waste containers will then be randomly sampled and analyzed.</u>	Added language to make the sampling protocol for HSG consistent with the proposed approach as outlined in the revised Figure B2-1. The justification for this change is provided in Section 1.2.1.2 of the revised PMR and Appendix I of the Section 311 NOD Comment/Response Matrix.
B2-1b	<u>If only a portion of a waste stream is available for sampling (e.g., the remainder of the waste stream will be recovered from storage at the generator/storage site or only a portion of the waste stream has been repackaged or treated), the calculated number of samples will be randomly selected from the available portion of the waste stream. A minimum of ten randomly selected samples will be obtained and analyzed from the available portion of the waste stream. The Permittees may approve the WSPF and authorize the generator/storage site to begin shipping the waste stream to WIPP once the analytical data for the randomly selected samples from the available portion of the waste stream has been obtained. The generator/storage site will also randomly select the calculated number of sample locations from the waste stream as a whole, both the available and unavailable portions. A minimum of ten randomly selected sample locations will be selected from the waste stream as a whole. As those randomly selected locations (e.g., buried or newly generated waste containers) become available for sampling, samples will be obtained and analyzed.</u>	Added language to describe the statistical selection for HSGSA consistent with the approach as outlined in the revised Figure B2-1 and to clarify that, if an entire waste stream is not available for sampling, samples will be obtained and analyzed as those unavailable locations become available. <b>The revised sampling approach is suitable for both newly generated and retrievably stored waste.</b> The justification for this change is provided in Section 1.2.1.2 of the revised PMR and Appendix I of the Section 311 NOD Comment/Response Matrix.
B2-1b	<u>The generator/storage site will use the data to update the UCL<sub>90</sub> values for the waste stream as described in Section B2-2b and assign EPA hazardous waste numbers as appropriate. The generator/storage sites will submit the analytical data from subsequent sampling to the Permittees for inclusion in the WIPP facility operating record. If changes to EPA hazardous waste numbers are required as a result of subsequent sampling, the generator/storage site will notify the Permittees, and shipments of the affected waste stream shall be suspended until the Permittees approve a revised WSPF for the affected waste stream.</u>	Added language to clarify that the generator/storage sites are responsible to update UCL <sub>90</sub> values, assign EPA hazardous waste numbers as appropriate, and update the WIPP facility operating record when results of subsequent sampling and analysis become available. The justification for this change is provided in Section 1.2.1.2 of the revised PMR and Appendix I of the Section 311 NOD Comment/Response Matrix.

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Section	Change	Explanation of Change
B2-1b	Upon collection and analysis of the preliminary samples, or at any time after the preliminary samples have been analyzed, the generator/storage site may <u>presumptively</u> assign hazardous waste <u>numbers</u> to a waste stream <u>even if the calculated number of required samples is greater than the preliminary number of samples collected.</u>	Modified (“codes” to “numbers”) for consistency with NMAC language.  Added language to clarify that the generator/storage sites may assign HWNs to a waste stream based on analytical data obtained from the preliminary sampling and analysis. Justification for this change is provided in Section 1.2.1.2 of the revised PMR and Appendix I of the Section 311 NOD Comment/Response Matrix.
B2-2a	Once sufficient sampling and analysis has occurred, the waste <del>characterization</del> <u>analysis</u> will proceed.	Modified for consistency with NMAC language in 20.4.1.500 NMAC (incorporating 40 CFR §264.13).
B2-2b	<del>If a waste stream meets the conditions for representative headspace gas sampling in Attachment B; Section B-3a(1); a <u>UCL<sub>90</sub></u> concentration for each of the headspace gas VOCs must be calculated from the sample data collected.</del>	Text was deleted because specific sampling requirements for homogenous solids and soil/gravel waste streams with no VOC-related HWNs, thermally treated waste streams, and LANL sealed sources waste streams have been eliminated. In the revised PMR, HSGSA is required for all debris waste streams and SSA is required for all homogenous solids or soil/gravel waste streams to resolve assignment of EPA HWNs when AK is determined insufficient. In the revised PMR, it is also no longer necessary to derive a VOC source term because the disposal rooms are going to be monitored directly for VOCs. The justification of this change is provided in Sections 1.2.1 and 1.3 of the revised PMR and Appendix I of the Section 311 NOD Comment/Response Matrix.
B2-2b	<del>The calculated <u>UCL<sub>90</sub></u> 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 <u>UCL<sub>90</sub></u> concentration is less than the applicable MDL, the MDL for the VOC will be assigned to each <u>unsampled container</u> instead of the <u>UCL<sub>90</sub></u> concentration.</del>	Deleted language relative to calculating the UCL <sub>90</sub> concentration for each headspace gas VOC in thermally treated TRU mixed waste. In the revised PMR, all TRU mixed waste streams are subject to representative sampling and analysis to resolve assignment of EPA hazardous waste numbers when AK is not sufficient. The justification of this change is provided in Section 1.2.1 of the revised PMR and Appendix I of the Section 311 NOD Comment/Response Matrix.
<b>Section Renumbering</b>	All sections of B2 subsequent to section B2-4 have been renumbered.	Required due to the deletion of section B2-4

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Section	Change	Explanation of Change
B2-4	<p><del>B2-4 Control Charting for Newly Generated Waste Stream Sampling</del></p> <p><del>For newly generated waste streams that the generator characterizes using control charts, 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 exceeded for any toxicity characteristic parameter, the waste stream shall be recharacterized, and the characterization shall be performed according to procedures required in the WAP.</del></p> <p><del>A Shewhart control chart (Gilbert, 1987) is a control chart for means that can be used for checking whether current data are consistent with past data and whether shifts or trends in means have occurred. The control chart for means is constructed of a center line and upper and lower control limits that are based on the mean and standard deviation of historical data for the process. If a current sample mean from the process lies within the limits, the process is said to be "in control", or consistent with historical data. If the current mean exceeds the limits, the process has likely changed from historical periods.</del></p>	<p>Deleted section related to the control charting method because all types of waste containers destined to the WIPP are now selected using methods as depicted in the revised Figure B2-1 if the AK information is insufficient. The revised sampling approach is suitable for both newly generated and retrievably stored waste. The justification for this change is provided in Section 1.2.1.2 of the revised PMR and Appendix I of the Section 311 NOD Comment/Response Matrix.</p>

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Section	Change	Explanation of Change
B2-4	<p><del>Logical sets of historical data to be used for the construction of limits in this application are the data from the initial characterization of the waste stream, if available, from characterization of a different lot of the waste stream, or from a retrievably stored waste stream of the same type from the same process. At a minimum, the logical set shall include ten representative sample values collected and analyzed from the newly generated waste stream. The data used for construction of the limits shall be justified. The underlying assumptions for control charts are that the data are independent and normally distributed with constant mean <math>\mu</math> and constant variance <math>\sigma^2</math>. The statistical tests for normality shall be conducted and data transformation to normality performed, if necessary. Transformations shall take place prior to any calculations that use the data.</del></p> <p>Each limit will be constructed such that there is a 90 percent confidence that the true mean does not exceed a limit. One-sided control limits are used because once a waste stream has been determined to be RCRA-hazardous, the limit exceedance of interest is on the lower side; that is when the process may become nonhazardous. Likewise, once a waste stream has been determined not to be RCRA-hazardous, the limit exceedance of interest is on the upper side; that is when the process may become RCRA-hazardous. Whether or not exceeding the limit would result in a change in the RCRA-hazardous nature of the waste stream depends on how close the observed control limits are to RCRA limits.</p>	<p>Deleted section related to the control charting method because all types of waste containers destined to the WIPP are now selected using methods as depicted in the revised Figure B2-1 if the AK information is insufficient. The revised sampling approach is suitable for both newly generated and retrievably stored waste. The justification for this change is provided in Section 1.2.1.2 of the revised PMR and Appendix I of the Section 311 NOD Comment/Response Matrix.</p>
B2-4	<p><del>Periodically it will be necessary to update the control limit for a process. An update is performed that includes all historical data if there is no evidence of a trend in the process or a shift in the mean for the process. If there has been a shift in the mean, only more recent data that reflects the shift is used. Control limits shall be based on at least ten data points that are representative of the process and do not exhibit outliers or a trend with time.</del></p>	<p>Deleted section related to the control charting method because all types of waste containers destined to the WIPP are now selected using methods as depicted in the revised Figure B2-1 if the AK information is insufficient. The revised sampling approach is suitable for both newly generated and retrievably stored waste. The justification for this change is provided in Section 1.2.1.2 of the revised PMR and Appendix I of the Section 311 NOD Comment/Response Matrix.</p>

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Section	Change	Explanation of Change
Table B2-1	Delete entire Table B2-1	Removed requirement for statistical selection of containers for visual examination because the generator/storage sites are no longer required to perform radiography, and the resulting VE as a QC check on radiography, under methods in the HWFP. Therefore, the requirement to statistically select containers for VE is no longer applicable. The Permittees will, subject to NMED inspection, examine a statistically representative subpopulation of the waste by means of radiography, VE, or examination of VE records under the rigor of Permit Attachment B7, The justification for this change is provided in Sections 1.2.1. and 1.2.2. of the revised PMR.
<u>Figure B2-1</u>	<del>Statistical Approach to for Solid and Headspace Gas Sampling and Analysis of Waste Streams of Retrievably Stored Homogeneous Solids and Solid/Gravel to Obtain Supplemental Waste Analysis Information</del>	Modified to reflect sampling and analysis scenario in modified PMR.
<u>Figure B2-1</u>	<u>Figure B2-1</u>	<u>The title of the figure has been modified and a new figure has been inserted.</u>