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**CERTIFIED MAIL - RETURN RECEIPT REQUESTED**

December 30, 2004

Mr. Lloyd L. Piper, Acting Manager
Carlsbad Field Office
Department of Energy
P.O. Box 3090
Carlsbad, New Mexico 88221-3090

Dr. Steven Warren, President
Washington TRU Solutions LLC
P.O. Box 2078
Carlsbad, New Mexico 88221-5608

**RE: NOTICE OF DEFICIENCY (NOD), CLASS 3 PERMIT MODIFICATION REQUEST SUBMITTED IN ACCORDANCE WITH PUB. L. 108-137, SECTION 311**
**WIPP HAZARDOUS WASTE FACILITY PERMIT**
**EPA I.D. NUMBER NM4890139088**

Dear Mr. Piper and Dr. Warren:

The New Mexico Environment Department (**NMED**) Hazardous Waste Bureau (**HWB**) has reviewed the following document submitted by the U.S. Department of Energy (**DOE**) and Washington TRU Solutions LLC (collectively referred to as the **Permittees**) for administrative completeness and technical adequacy:

- Request for Class 3 Permit Modification (Section 311), Letter Dated 1/9/04, Rec'd 1/12/04

This Class 3 permit modification request (**PMR**) is currently being processed by NMED in accordance with the requirements specified in 20.4.1.900 NMAC (incorporating 40 CFR §270.42(c)). This PMR was subject to an initial 60-day public comment period from January 15 until March 15, 2004, which was subsequently extended until March 22, 2004 at the request of the Permittees. At the close of the public comment period, NMED had received comments from 13 individuals and groups totaling approximately 78 pages. NMED also received approximately 1400 yellow post cards from citizens stating opposition to DOE's plans, asking NMED to deny the proposed PMR, and supporting full State authority over WIPP.

NMED has determined that this PMR, submitted by the Permittees pursuant to Section 311(a) of the Energy and Water Development Appropriations Act for Fiscal Year 2004, Public Law 108-137, is administratively complete. The New Mexico Hazardous Waste Fee Regulations require assessment of fees when administrative review of a document is complete, as specified in 20.4.2.301 NMAC. NMED will issue an invoice to you under a separate letter. Payment is due within sixty (60) calendar days from the date that you receive the invoice. NMED also seeks clarification from the Permittees regarding their intent to implement the language in Pub. L. 108-137 that states, "the Secretary of Energy is directed to use $1,000,000 of the funds provided for regulatory and technical assistance to the State of New Mexico, to amend the existing WIPP Hazardous Waste Permit to comply with the provisions of section 310 of this Act."

After reviewing the PMR, NMED has found it to be technically deficient. The attached Notice of Deficiency (**NOD**) comments list the technical deficiencies that must be corrected before NMED will consider preparing a draft permit. The Permittees clearly have not satisfied the regulatory requirements for a Class 3 modification as detailed in 40 CFR §270.42(c). Specifically, 40 CFR §270.42(c)(1)(iii) requires the Permittees to submit a modification request that "Explains why the modification is needed." The NOD comments, therefore, contain requests for specific information regarding the proposed revisions to the waste analysis plan (**WAP**) and the disposal room performance standards.

NMED believes that the Permittees have misconstrued the language from Section 311 of Pub. L. 108-137 to justify the elimination of established waste characterization procedures that were designed to ensure that the WIPP site would not adversely impact human health or the environment over its lifespan. NMED also believes that inaccurate discussions of regulatory and guidance interpretations are used in the PMR to justify the proposed revisions. As a result, the majority of NMED's requests for information and clarification relate to the Permittees' attempted integration of Section 311 with the existing permit, RCRA, and applicable administrative rules and guidance. Issues of concern include, but are not limited to:

- The relationship between "confirmation" as used in Section 311 (which is not defined in RCRA) and the statutory and regulatory RCRA waste characterization requirements administered by NMED under its federal RCRA authorization;
- The asserted link between "confirmation" as used in Section 311 and the Permittees' attempt through the PMR to rely upon acceptable knowledge as the sole means for waste characterization;
- The potential conflict between the PMR's proposed limitation of generator waste characterization responsibility to acceptable knowledge and the regulatory requirements in 40 CFR §262 Subpart A and 40 CFR §264.13; and
- The potential for incomplete or inaccurate waste characterization, and the problems that would result from the receipt and/or disposal of these wastes at WIPP

NMED also rejects the Permittees' interpretation and application of Section 311(b) regarding disposal room performance standards. Section 311(b) ostensibly re-defines disposal room performance standards in the WAP. The Permittees, however, appear to have relied upon this section to propose significant changes in other sections of the permit as well.

performance standards in the WAP. The Permittees, however, appear to have relied upon this section to propose significant changes in other sections of the permit as well.

Lastly, the NOD contains requests for information regarding numerous proposed modifications that appear to be completely unrelated to Section 311.

Please submit a full response to the deficiencies identified in the attachment and a revised permit modification request to NMED within sixty (60) days of receipt of this NOD. To the extent that the Permittees rely on Congressional intent as part of their argument, please provide copies of any records relied upon. We understand that a full response to some of the comments listed in this NOD may require more than 60 days to develop. For this reason, NMED will consider a petition to extend the deadline for portions of the required information if you provide a written justification and expected submittal date for each portion. This petition must also be submitted within 60 days of receipt of the NOD.

If you have any questions regarding this matter, please contact me, or have your staff contact Steve Zappe of my staff at (505) 428-2517.

Sincerely,

James P. Bearzi
Chief
Hazardous Waste Bureau

JPB:soz

Attachment – NMED Notice of Deficiency Comments

cc: Charles Lundstrom, NMED WWMD
John Kieling, NMED HWB
Steve Zappe, NMED HWB
Bryon Pippin, NMED HWB
Tracy Hughes, NMED OGC
Chuck Noble, NMED OGC
Ashley Schannauer, NMED OGC
Laurie King, EPA Region 6
Betsy Forinash, EPA ORIA
Connie Walker, Trinity Engineering Associates
File: Red WIPP '04

**Attachment**

**NMED Notice of Deficiency Comments**

**Section 311 of Pub. L. 108-137**

**NMED NOTICE OF DEFICIENCY COMMENTS**
**ON**
**CLASS 3 PERMIT MODIFICATION REQUEST**
**SUBMITTED IN ACCORDANCE WITH**
**PUB. L. 108-137, SECTION 311**

## 1.0 Introduction

The comments herein reflect the New Mexico Environment Department's (**NMED's**) analysis of the *Waste Isolation Pilot Plant (WIPP) Class 3 Permit Modification Request* (for the Waste Analysis Plan and associated provisions), which was submitted by the U.S. Department of Energy (**DOE**) and Washington TRU Solutions LLC (collectively referred to as the **Permittees**). This analysis has led NMED to conclude that the changes proposed in this Permit Modification Request (**PMR**) would, if implemented, seriously undermine the foundation of the current permit and significantly distort the administrative record upon which the requirements of the permit are clearly based.

The overview of the PMR states that it was submitted as required by Section 311 of the Energy and Water Development Appropriations Act for Fiscal Year 2004 Pub. L. 108-137 (**Section 311**), which states:

> *"(a) The Secretary of Energy is directed to file a permit modification to the Waste Analysis Plan (WAP) and associated provisions contained in the Hazardous Waste Facility Permit for the Waste Isolation Pilot Plant (WIPP). For purposes of determining compliance of the modifications to the WAP with the hazardous waste analysis requirements of the Solid Waste Disposal Act (42 U.S.C. 6901 et seq.), or other applicable laws waste confirmation for all waste received for storage and disposal shall be limited to: (1) confirmation that the waste contains no ignitable, corrosive, or reactive waste through the use of either radiography or visual examination of a statistically representative subpopulation of the waste; and (2) review of the Waste Stream Profile Form to verify that the waste contains no ignitable, corrosive, or reactive waste and that assigned Environmental Protection Agency hazardous waste numbers are allowed for storage and disposal by the WIPP Hazardous Waste Facility Permit.*
>
> *(b) Compliance with the disposal room performance standards of the WAP shall be demonstrated exclusively by monitoring air borne volatile organic compounds in underground disposal rooms in which waste has been emplaced until panel closure."*

NMED recognizes that Section 311 directed the Permittees to submit a PMR regarding the waste analysis plan and associated provisions. NMED strongly disagrees, however, with the Permittees' conclusion that this language eliminates the current permit requirements to characterize wastes through sampling and analysis, a conclusion that is clearly contrary to the statutory and regulatory RCRA waste characterization

requirements administered by NMED under its federal RCRA authorization. Accurate characterization of all wastes that are destined for WIPP is necessary to ensure that the waste will not adversely impact human health or the environment over the disposal facility's lifespan.

### *1.1 Waste Analysis Plan*

The majority of NMED's requests for information and clarification relate to the Permittees' expansive interpretation of Section 311(a). The plain language of the statute does not provide any insight into how the undefined concept of "confirmation" relates to the well-established RCRA concept of waste characterization. The primary objective of the general waste analysis requirements, which are codified in 40 CFR §264.13 (20.4.1.500 NMAC), is to ensure that: "At a minimum, the analysis *must contain all of the information* which must be known to treat, store, or dispose of the waste in accordance with this part…" (emphasis added). The Permittees, however, begin the PMR by distorting the clear language and intent of 40 CFR §264.13 in the *Table of Changes* in the *Overview of the Permit Modification Request.* The PMR provides the following explanation for changing the meaning of the term "characterization" and defining the term "confirmation" in Module II.C.1:

> *"40 CFR §264.13 specifies the general requirements for waste analysis. This includes waste characterization (i.e., providing the information specified in 40 CFR §264.13(a)) and waste confirmation (i.e., completing the verification activities in 40 CFR §264.13(c))…**Characterization** means those activities performed by the generator/storage site to identify the physical and chemical properties of the waste. Characterization for purposes of this WAP is performed through the compilation of acceptable knowledge information. **Confirmation** is performed using radiography or visual examination (VE) on a representative subpopulation of the waste to verify that the waste contains no ignitable, corrosive or reactive waste…"(emphasis in original)*

The PMR's explanation, however, does not correspond to the language in 40 CFR §264.13. NMED also finds no reference to the specific term "confirmation" either in 40 CFR §264.13 or as a general term referenced anywhere in 40 CFR §264.

The PMR also proposes changes that appear unrelated to Section 311(a). For example, the Permittees' propose to limit characterization performed by the generator/storage sites that send TRU waste to WIPP for disposal to "acceptable knowledge" (**AK**). This limitation is not authorized in Section 311. The PMR attempts to bolster its exclusive use of AK by misrepresenting the AK discussion in EPA's 1994 *Waste Analysis: EPA Guidance Manual for Facilities That Generate, Treat, Store and Dispose of Hazardous Waste*. While the PMR is correct in stating that: "Acceptable knowledge, as an alternative to testing, can be used to meet all or part of the waste characterization requirements under RCRA", this selective quote omits EPA's strongly stated preference

in that same guidance manual for "conducting sampling and laboratory analysis because it is more accurate and defensible than other options."

The Permittees then attempt to create a separate "confirmation" step that removes VE, radiography (**RTR**), headspace gas measurement, and solids sampling from the characterization process. The "confirmation" step, which will also be performed at the generator/storage sites, would be limited to using RTR and/or VE on a "statistically representative subpopulation of the waste" to verify that the waste matches the waste stream description as determined by AK. NMED is concerned that this truncated waste characterization approach will likely result in improperly characterized waste being disposed of at WIPP. The PMR does not explain how the enfeebled AK approach proposed in the revised Attachment B4, "TRU Mixed Waste Characterization Using Acceptable Knowledge", would identify wastes that exhibit a toxicity characteristic for metals, other than lead, or for volatile organic compounds (**VOCs**) without sampling and analysis.

The Permittees exaggerate the accuracy of AK in an attempt to justify the proposed elimination of the sampling and analysis from waste characterization. NMED has consistently raised concerns about the reliability of AK accuracy reports. In the June 19, 2002 *NOD for the Class 3 PMR for Centralized Waste Confirmation*, NMED noted that while sites may assemble AK documentation in good faith:

> *"... information observed to date (including the AK accuracy reports) indicates that acquisition of the additional AK sampling information has led to the reassessment of existing waste stream content and even the identification of new waste streams not initially identified by AK... NMED expects that AK accuracy could be significantly reduced in the future as wastes with less documented information are brought on-line, thus reinforcing the need for a full characterization program as currently mandated in the Permit."*

NMED's November 7, 2003, comments on the report entitled *An Analysis of TRU Waste Characterization Accuracy* by Bob Kehrman and Willie Most (September 3, 2003) further elaborate on this concern. For instance, these comments raised the issues of how "troublesome" containers are handled. NMED noted that these:

> *"... containers are often segregated for later disposition, and waste containers are re-assigned to streams that contain the HWNs [Hazardous Waste Numbers]. Actions may not result in removal from the TRU inventory because the waste is still TRU, but obviously actions have been taken to remedy the identification of HWNs via headspace gas sampling that had not been assigned by AK, such that these actions may not "show up" in AK accuracy calculations."*

The Permittees have also proposed to eliminate any distinction between retrievably stored and newly generated wastes. Both NMED and EPA have consistently

differentiated between retrievably stored wastes and to-be-generated wastes because of the inherent uncertainties associated with older, poorly documented waste streams that were generated fifteen to thirty years or more ago (Certification Decision Final Rule, 63 Fed. Reg. 27392, May 18, 1998).

The Permittees have provided no documentation that all of the generator/storage sites have extensive process-based descriptions of historical waste generation activities. As NMED stated previously in the June 19, 2002 *NOD for the Class 3 PMR for Centralized Waste Confirmation*:

> *"To date, no two characterization systems (including AK) have been the same, and each site has demonstrated unique deficiencies that have differentially impacted its ability to adequately characterize wastes, even though all sites are supposed to be implementing exactly the same requirements set forth in the WAP."*

The Permittees' commitment to compiling accurate AK for newly generated wastes is also questionable. Section B-3c, "Confirmation of TRU Mixed Waste", inexplicably deletes current permit requirements for thoroughly documenting waste generation processes. Nothing in Section 311 appears to justify these deletions.

The Permittees' apparent lack of concern about the accuracy of AK is reinforced by the deletion of the current permit requirement for the compilation of AK into an auditable record. It is unclear why the Permittees would choose to delete a requirement to compile "records which allow the Permittees to conduct a systematic assessment, analysis, and evaluation of the Permittees' compliance with the WAP and this Permit."

The PMR does little to define procedures for determining if the AK is inaccurate. Admittedly, the PMR does state in Section B4-2, "Acceptable Knowledge Documentation", that "supplemental information shall be obtained" when the required AK information is not available for a particular waste stream. Unfortunately, the list of potential sources of supplemental information provided in Section B4-2c, "Supplemental Acceptable Knowledge Information", does not include collecting any analytical data for chemical and physical verification.

The Permittees have also failed to demonstrate how the "confirmation" process will ensure that the wastes being sent to WIPP are compliant with RCRA. The current WAP, which is compliant with 40 CFR §264.13, requires full characterization of all waste before it can be managed, stored, or disposed of at WIPP. The PMR proposes that the generator/storage site "confirm" the results of the AK by using RTR or VE on a representative subpopulation of the waste to verify that the waste contains no ignitable, corrosive or reactive waste. The Permittees would then review the Waste Stream Profile Form to verify that the waste contains no ignitable, corrosive, or reactive waste and that assigned EPA hazardous waste numbers are allowed for storage and disposal at WIPP. It

is unclear how this approach would prevent an initial AK error from being perpetuated under the generator/storage site's confirmation step and the Permittees' paperwork examination.

### *1.2 Disposal Room Performance Standards*

NMED's request for information and clarification also relates to the Permittees' proposal to change the VOC monitoring program in the underground disposal areas in response to Section 311(b). The PMR seeks to eliminate many requirements in the Permit, including the collection of headspace gas data for all waste containers, the VOC room-based emission rate limits contained in Module IV of the Permit, and the WWIS reporting as part of the VOC monitoring plan. Additionally, the Permittees seek to eliminate the requirement to monitor VOC emissions from all active and closed Underground HWDUs, and instead limit monitoring to the open active disposal room and the closed room adjacent to the active room. These changes were not supported by a technical explanation for the change, but were instead justified by the Permittees' interpretation of the language of Section 311(b), which states:

> *"Compliance with the disposal room performance standards of the WAP shall be demonstrated exclusively by monitoring airborne volatile organic compounds in underground disposal rooms in which waste has been disposed until panel closure."*

Section 311(b) appears to address the "disposal room performance standards of the WAP" (defined as Attachments B and B1 through B6 of the permit). The plain language of the statute does not provide any insight into why the Permittees propose modifying the VOC monitoring requirements in other parts of the permit, including Attachment N and Module IV, which describes the environmental performance standards for the repository and the details for VOC monitoring. NMED has provided specific comments for the Permittees' response.

## 2.0 Overview of RCRA Waste Characterization Requirements

As stated in the introduction to this NOD, the accurate characterization of all wastes destined for WIPP is necessary to ensure that the waste will not adversely impact human health or the environment over the disposal facility's lifespan. The initial burden for making the determination if a waste is hazardous belongs to the generator. This burden is shared by any off-site disposal facility that accepts the generator's waste. The following is a brief outline of the RCRA and New Mexico Hazardous Waste Management regulations that apply to the TRU mixed wastes destined for disposal at WIPP:

- ***40 CFR §262.11(a) - Is the waste excluded from regulation under 40 CFR §261.4?*** Persons that generate a solid waste must first determine if the waste is excluded from regulation as a hazardous waste under 40 CFR §261.4. If the

generator determines that the waste is not excluded, he or she must conduct a hazardous waste determination in accordance with the process specified in 40 CFR §262.11.

- ***40 CFR §262.11(b) - Is the waste listed?*** Process knowledge is the primary means for determining whether a solid waste is a listed waste. Laboratory analysis alone cannot be used to make this determination. For example, some of the TRU mixed wastes to be emplaced at WIPP that contain spent halogenated volatile organic solvents used to clean metal surfaces prior to plating, polishing, or fabrication are F-listed wastes (i.e., F001-F005).

- ***40 CFR §262.11(c) - Is the waste characteristically hazardous?*** Generators may use analytical testing, AK, or a combination of the two to determine if a waste exhibits one or more of the four characteristics: ignitability, corrosivity, reactivity, and toxicity. Regardless of the methodology chosen by the generator, he or she is legally responsible for accurately characterizing the waste. Generator/storage sites that are sending TRU mixed wastes to WIPP for disposal must first determine if any of the wastes exhibit ignitability, corrosivity, or reactivity because these wastes are prohibited at the WIPP facility.

  Because the Permittees believed test methods could pose analytical difficulties with respect to the radiological content of the waste, alternative test methods, including the option of substituting TCLP with totals constituent waste analysis, was proposed by the Permittees in the original application and was accepted as part of the current Permit. In the case of liquid determination, the permit does not require that the Permittee perform the paint filter test to determine liquid content in wastes. In practice this is performed by examining container liquid contents using visual examination/RTR. If the residual liquid volume does not exceed 1% by volume in any container, the waste is considered to be "non liquid".

  - ***40 CFR §261.21 - Is the waste ignitable?*** 40 CFR §261.21 presents determination of the characteristics of ignitability for solid wastes, including liquid, non liquid, and ignitable compressed gas. Generators use knowledge, testing, or a combination of the two to determine if a waste is ignitable, and must ensure that waste exhibit none of the properties presented in §261.21(a)(1)-(4). A “typical” generator would first assess the physical nature of the waste for which the ignitability determination would be made. If the waste were a solid or semisolid waste, a paint filter test using Method 9095 would be performed to determine if free liquids were present. If the waste was discovered to be or contain a liquid by this test, or if the waste was originally identified as being a liquid, then the EPA has codified two tests that may be performed to determine whether the waste is ignitable: the Penskey-Martens closed-cup tester (Method 1010) and the Setaflash closed-cup tester (Method 1020). If the waste is

not a liquid, then typical sites must also determine that the waste does not exhibit properties presented in §261.21(a)(2)-(4).

The types of wastes generated at DOE generator/storage sites that may exhibit the characteristic of ignitability are generally wastes from decontamination and decommissioning activities and sludges. In the case of WIPP, sites substitute the prescribed liquid testing with RTR and/or VE to determine the presence of liquids. If no free liquids are present, the sites certify that waste is not ignitable under §261.21(a)(1), although wastes must still not be ignitable under §261(a)(2)-(4).

- ***40 CFR §261.22 - Is the waste corrosive?*** 40 CFR §261.22 presents determination of the characteristic of corrosivity. The EPA has codified two analytical methods for determining if a liquid waste is corrosive: testing the pH of aqueous wastes, and measuring the corrosion rate of carbon steel when exposed to a liquid waste (Method 1110). There is no test method presented in 40 CFR §261.22 for evaluating corrosive solids. Under the current Permit, sites use RTR and/or VE for determining the presence of liquids. If no free liquids are present, the sites certify that waste is not corrosive under §261.22(a)(1) and (2).

- ***40 CFR §262.23 - Is the waste reactive?*** 40 CFR §261.23 presents determination of the characteristic of reactivity. This section of the regulations presents no specific EPA approved test for determining if a waste is reactive. Under the current permit, sites are required to determine that wastes do not exhibit any of the properties presented in §261.23(a). This is typically accomplished by using a combination of residual liquid determination using RTR and/or VE and acceptable knowledge to determine whether a waste is reactive, although the AK record can include testing information and data.

- ***40 CFR §262.24 - Is the waste toxic?*** The toxicity characteristic is determined by running a specific extraction test (Method 1311) on a representative waste sample and analyzing the extract for one or more of the 40 constituents listed in Table 1-*Maximum Concentration of Contaminants for the Toxicity Characteristic.* The current permit allows the use of Totals analysis in lieu of TCLP analysis, as per equivalency demonstrations made as part of the original permit application. Typical generator sites may use process knowledge to eliminate the need for perform toxicity testing or to limit the number of constituents analyzed in the waste extract. The current WIPP permit provides for the use of acceptable knowledge for determining the Toxicity Characteristics of heterogeneous wastes and the use of knowledge and sampling and analysis of homogeneous wastes, along with headspace gas sampling and analysis

of all waste forms, for the assignment of toxicity characteristic constituents.

- ***40 CFR §264.13(a) - What are the general waste analysis responsibilities of generators and disposal facilities?*** Before a facility treats, stores, or disposes of any hazardous wastes it must: *"...obtain a detailed chemical and physical analysis of a representative sample of the wastes. At a minimum, the analysis must contain all of the information which must be known to treat, store or dispose of the waste in accordance with this Part and Part 268 of this chapter.*" EPA's 1994 Waste Analysis Guidance expands on this regulatory language as follows: "*wherever feasible, the preferred method to meet the waste analysis requirements is to conduct sampling and laboratory analysis because it is more accurate and defensible than other options*" (40 CFR §264.13(a)). This guidance also states that generators and TSDFs may use AK to meet all or part of the waste analysis requirements.

    - ***Acceptable knowledge.*** EPA's 1994 Waste Analysis Guidance manual broadly defines the term "acceptable knowledge" to include process knowledge, waste analysis data from generators of similar wastes, and facility records of analysis performed before the effective date of RCRA. The WIPP permit identifies sources of AK to include the following required waste stream information elements: areas and buildings from which the waste stream was generated, waste stream volume and period of generation, waste generating process descriptions, process flow diagrams, and material inputs or other information that identify the chemical and radionuclide content of the waste stream. The WIPP permit also identifies other supplemental or supporting sources of AK.

      EPA's 1994 Waste Analysis Guidance lists the following examples of situations where it may be appropriate to apply acceptable knowledge: to identify hazardous constituents in wastes from well documented specific processes (e.g., F and K-listed wastes), to characterize wastes that are discarded unused commercial chemical products, to characterize wastes when sampling and analysis may be limited by health and safety risks to personnel, or to characterize wastes when the physical nature of the waste does not lend itself to taking a laboratory sample. A generator must have sufficient information to make an accurate characterization because if later testing by a regulatory agency or a disposal facility demonstrates that the generator's characterization was incorrect the generator could potentially be subject to enforcement action. There is no "good faith" mistake provision in 40 CFR §264.13.

      For this reason it is important to understand that, whatever sampling and analysis is performed by a generator, storage, or disposal facility, they will

be liable in an enforcement proceeding if the sampling and analysis performed by an enforcement agency indicates the presence of wastes not accurately characterized by the Permittee. This difference is explained in EPA's *RCRA Waste Sampling Draft Technical Guidance: Planning, Implementation and Assessment* (August 2002). A waste handler may need to "prove the negative"; that is, to demonstrate that a constituent concentration will not be exceeded or a characteristic will not be exhibited. EPA has addressed the need for sound sampling designs and proper quality control for waste handlers that are trying to "prove the negative":

> *"The sampling strategy for these situations (proving the negative) should be thorough enough to insure that one does not conclude a waste is non-hazardous when, in fact, it is hazardous. For example, one needs to take enough samples so that one does not miss areas of high concentration in an otherwise clean material."* (55 Fed. Reg. 4440*, Hazardous Waste Management System: Testing and Monitoring Activities,* February 8, 1990)

Conversely, an enforcement official that is conducting a compliance inspection needs to find one exceedance. That is, the agency only needs to "prove the positive".

EPA's 1994 Waste Analysis Guidance also stresses that AK is "*not* an appropriate substitute for fingerprint or spot check procedures" (emphasis in the original) performed by the disposal facility unless the disposal facility is accepting manifested wastes from a site owned by the same company.

Generator/storage sites that plan to send TRU mixed wastes to WIPP currently use a number of other characterization tools to reach a full understanding of their wastes. These facilities use headspace gas sampling to identify if VOCs are present that were not identified in the compilation of the AK record. The headspace gas sampling data is also provided to WIPP to assist the facility in effectively managing the emplacement of wastes. RTR of closed containers is used to determine the physical contents of the containers, such as residual liquids, and verify the waste form. VE of open containers is used to identify the physical contents of containers and to verify RTR results. Solids sampling is used statistically to determine concentrations of hazardous waste constituents and toxicity characteristic contaminants for homogeneous wastes.

- ***Process knowledge.*** Process knowledge refers to knowledge of a waste's characteristics that was derived from information on the materials or

> processes that were used to generate the waste or from detailed information on wastes generated from similar processes. Sources of process knowledge include, but are not limited to, material balances, engineering production data, and material data sheets.

- ***40 CFR §264.13(b) and (c) - What are the requirements for a disposal facility's waste analysis plan?*** Under 40 CFR §264.13(b) a permitted disposal facility must develop and follow a written waste analysis plan, which describes the procedures that will be employed at the facility to comply with 40 CFR §264.13(a). That is, the waste analysis plan must define how all wastes will be fully characterized prior to disposal. Typical private sector treatment, storage and disposal facilities visually inspect every bulk shipment and container to determine if the color, physical state, texture and odor are consistent with the waste description on the manifest. In addition, the TSDF will analyze samples from a representative number of containers for "fingerprint" parameters in accordance with 40 CFR §264.13(c) to evaluate the consistency between the waste on the dock and the manifest.

  With regards to WIPP, the NMED Secretary has specifically determined that sound waste analysis plan characterization procedures, which require full characterization prior to receipt, are necessary to protect human health and the environment:

  > *" The disposal of significant quantities of waste that has not been characterized in accordance with the WAP poses a direct threat to human health and the environment. Indeed, waste characterization is 'the linchpin' of the HWA and RCRA.* RP No.130 (Non-Mixed Waste, pgs 4-5); Tr. 2426-28 (S. Zappe)." HRM 98-04(P), Finding No. 262, Rec. Dec. dated Sept. 9, 1999 as adopted by Final Order of the Secretary dated Oct. 27, 1999.

  Unlike a typical private sector disposal facility, WIPP does not perform fingerprinting or other on-site characterization activities to verify that the waste chemically and physically matches the generator's characterization. Under the current permit the Permittees perform audits at the generator/storage sites rather than performing any on-site characterization at WIPP, which is consistent with the Permittees' "Start Clean-Stay Clean" operating philosophy. Obviously this unique approach to satisfying the Permittees' inspection/analysis requirements under 40 CFR §264.13(c) places additional importance on the veracity of the characterization performed by the generator/storage sites.

- ***Waste characterization under 40 CFR §194.24.*** The complexity of the waste characterization process with regard to the WIPP repository is echoed in the preamble to the May 18, 1998 Certification Decision final rule (63 Fed. Reg.

27389-27393). . Under this regulatory program, the waste characterization process includes: "… *the collection and use of acceptable knowledge; destructive and/or non-destructive techniques for identifying and measuring waste components; and the validation, control, and transmittal to the WIPP Waste Information System Database of waste characterization data in accordance with 40 CFR §194.24(c)(4)*." The AK provides "essential waste content information" that later determines waste stream categories. The AK process then is subject to quality assurance (**QA**) checks. The QA check is followed by measurement techniques to verify the AK data and further define the content of the waste.

Waste characterization for retrievably stored wastes begins with using AK to separate the waste containers into waste streams. All retrievably stored containers are then examined using RTR or VE to verify the waste form, the absence of prohibited items, and to determine the additional waste characterization techniques necessary to complete the characterization. If RTR is used, a statistically selected number of waste containers will be selected for VE to verify the RTR results. The representativeness of containers selected for VE will be validated by reviewing documents that show that true random samples were collected. If the VE verification conflicts with the results of the RTR, the drum and possibly the entire container is reclassified and a higher percentage of future containers will be required to undergo VE. All retrievably stored waste containers also undergo headspace gas sampling and analysis for VOC concentrations and NDA for radioisotopes and their activities.

The waste characterization process for to-be-generated wastes begins with verification that processes generating the waste have operated within established written procedures. First, waste containers are classified into waste streams using AK. VE is used during the packaging of the waste into drums to verify that the physical form of the waste matches the initial AK characterization. RTR is not used because the waste is visually examined during packing. *All to-be-generated waste containers also undergo headspace gas sampling and analysis for VOC concentrations* and NDA for radioisotopes and their activities.

Each DOE generator/storage site that intends to ship waste to WIPP is required to develop and submit to EPA a written waste characterization program. The Department must also send documents that: "*explain the site's system of controls for waste characterization,* ***including the use of acceptable knowledge***…" (emphasis added).

EPA then conducts a baseline inspection of the waste characterization program at the site to verify that an adequate system of controls is in place and properly implemented. This inspection includes a demonstration by DOE regarding the collection and appropriate use of AK. If EPA determines that the site's waste characterization program is acceptable, it will publish a notice in the Federal

Register and solicit public comment. After the public comment is reviewed, EPA's final written compliance decision is conveyed to DOE.

Lastly, EPA will conduct an inspection to confirm the site's continued compliance. If EPA determines that the system of controls used at the site is not adequate to characterize certain waste streams, the site may not dispose of materials form those waste streams at WIPP until EPA's findings have been adequately resolved.

Interestingly, in the summary to the waste characterization discussion EPA states: "*The waste characterization process, if implemented accordingly, provides complete and thorough characterization of the waste.* ***The DOE has committed to implement this process***" (emphasis added). NMED finds no plausible justification for the Permittees' attempt to exenterate the integrity of the RCRA waste analysis plan, which includes many of the same elements that are contained in the 40 CFR §194.24.

As outlined above, the waste characterization requirements under 40 CFR §194 are comprehensive and contain many parallels to the current RCRA permit. DOE's recent mistaken certification of Plutonium Finishing Plant (**PFP**) waste from the Hanford site and the subsequent emplacement of the waste at WIPP demonstrate the potential for error even under a very comprehensive waste characterization program. As described in the November 30, 2004 Federal Register Notice (69 Fed. Reg. 69569-69572) EPA had approved Hanford's TRU debris waste from PFP that had been characterized using the approved systems and processes addressed in EPA's June 2003 Inspection Report. In the August 7, 2003 approval letter to the Carlsbad Field Office, EPA specifically stated: *"EPA has not approved acceptable knowledge for TRU solids, specifically ash and mixed oxides characterized at the PFP facility."* DOE's certification letter to Hanford did not include EPA's disposal prohibition. As a result 600 drums of waste were improperly emplaced at WIPP. Fortunately in this circumstance the generator did not rely on AK for physical and radiological characterization; the site relied on spectroscopic systems to establish isotopic ratios and EPA does not believe that these wastes constitute a threat to human health, the environment or the long-term performance of WIPP.

NMED is concerned that if an error like this can happen under a comprehensive waste characterization program, the Permittees' proposed elimination of the current permit requirements to characterize wastes through sampling and analysis would open the door to more serious disposal mistakes.

## 3.0 Technical Comments

A cursory comparison between the waste characterization outline provided above and the Class 3 modifications proposed by the Permittees clearly demonstrate that the PMR would fundamentally change the foundation upon which the current permit is based. The following technical comments address NMED's concerns regarding the PMR's compliance with RCRA and the New Mexico Hazardous Waste Act. These comments are presented by general topic in the general order in which the topics appear in the PMR.

### *3.1 Differentiation between "confirmation" and "characterization" -- Lack of authority for the Permittees' definition of the term "confirmation"*

The Table of Changes provides the following definitions for the terms "characterization" and "confirmation":

> *"40 CFR §264.13 specifies the general requirements for waste analysis. This includes waste characterization (i.e., providing the information specified in 40 CFR §264.13(a)) and waste confirmation (i.e., completing the verification activities in 40 CFR §264.13(c). Since Section 311(a) …addresses confirmation activities, it is important to use these two terms precisely in the WAP. The following convention is adopted for the WAP.* ***Characterization*** *means those activities performed by the generator/storage site to identify the physical and chemical properties of the waste.* ***Characterization*** *for purposes of this WAP is performed through the compilation of acceptable knowledge.* ***Confirmation*** *is performed using radiography or visual examination (VE) on a representative subpopulation of the Waste Stream Profile Form (WSPF) to verify that the waste contains no ignitable, corrosive, or reactive waste and assigned Environmental Protection Agency (EPA) hazardous waste numbers are allowed for storage and disposal by the WIPP Hazardous Waste Facility Permit (HWFP).* ***Waste analysis*** *is used when referring to the requirements of 40 CFR §264.13 generally…."(emphasis in original).*

NMED agrees with the Permittees' statement in the Table of Changes that: "…it is important to use these two terms (characterization and confirmation) precisely in the WAP." NMED strongly disagrees, however, with the Permittees' anfractuous interpretations of 40 CFR §264.13 and Section 311 that fundamentally change the current waste analysis plan. The Permittees' definitions of "characterization" and "confirmation" are not consistent with 40 CFR §264.13.

The intent of the general waste analysis requirements in 20.4.1.500 NMAC (incorporating 40 CFR §264.13(a)(1)), is unambiguous:

> *"Before an owner or operator treats, stores, or disposes of any hazardous wastes…he must obtain a detailed chemical and physical analysis of a representative sample of the wastes.* ***At a minimum, the analysis must contain***

> ***all of the information which must be known to treat, store, or dispose of the waste in accordance with this part****…" (emphasis added).*

Nothing in this section of the regulations limits the scope of this characterization process to the compilation of acceptable knowledge. NMED finds no language in Section 311(a) related to either characterization or acceptable knowledge.

Subsection (a) of §264.13 describes the general requirements for waste characterization. Subsection (a)(1) includes the fundamental requirement that the owner "obtain a detailed chemical and physical analysis of a representative sample of the wastes." Subsection (a)(2) states that the analysis may include both physical sampling tests and existing data on the wastes. Subsection (a)(3) states that the analysis must be repeated as necessary to ensure that it is accurate and up to date. Subsection (a)(4) states the owner or operator of an off-site facility must inspect and, if necessary, analyze each shipment received at the facility to determine whether it matches the identity of the waste specified on the manifest.

Subsection (b) specifies the minimum requirements in a waste analysis plan. It applies the requirements of subsections (a)(1)-(4). Thus, subsection (b) requires that waste analysis plans specify the parameters for which each waste will be analyzed, the test methods which will be used to test for the parameters, the sampling method which will be used to obtain a representative sample of the waste to be analyzed, and the frequency with which the initial analysis of the waste will be reviewed or repeated to ensure that the analysis is accurate and up to date.

The Permittees' attempt in this PMR to define "confirmation" as a separate waste analysis activity is flawed in a manner similar to the previous attempt to do so in the Class 3 PMR for Centralized Waste Confirmation, which was submitted to NMED on June 5, 2001. As NMED stated in the June 19, 2002 Notice of Deficiency (NOD):

> *"…[I]t is NMED's interpretation and belief that all of the activities used to assess waste as presented in the Permit constitute characterization, and that separation of activities does not accurately reflect the requirements of the regulations, the intent of the original application as submitted by the Permittees, or the intent of the Permit as issued by NMED.*
>
> *Attachments to the Permit clearly indicate that acceptable knowledge (AK), headspace gas (HSG), solid sampling (SS), visual examination (VE), and radiography (RTR) are all considered waste characterization elements."*

NMED's use of the word "confirmation" in the current permit is consistent with the common dictionary definition: the act of assuring the certainty or validity of something, or verification. That is, AK, VE, RTR, headspace gas sampling and solids sampling are tools that are integral to the generator's characterization process. These activities are not, as the Permittees attempt to establish, equivalent to "fingerprinting".

The Permittees point to §264.13(c) as the source of authority for the definition of "confirmation" The wording of 40 CFR §264.13 (c), however, applies only to the verification activities *conducted at an off-site disposal facility* to ensure that the waste received at the disposal facility matches the waste designated on the hazardous waste manifest. It does not refer to the limited measures the Permittees propose to be performed at the generator/storage sites to verify the accuracy of the sites' acceptable knowledge:

> *"For off-site facilities, the waste analysis plan required in paragraph (b) of this section must also specify the procedures which will be used to inspect and, if necessary, analyze each movement of hazardous waste received at the facility* ***to ensure that it matches the identity of the waste designated on the accompanying manifest*** *or shipping paper" (emphasis added).*

Again, nothing in this section of the code mentions anything about "confirmation," and the section does not describe the activities, which the Permittees propose to define as "confirmation".

Since there does not appear to be any other definition of the term "confirmation" in any part of the RCRA regulations, EPA guidance, Section 311, the RCRA statute, or the WIPP RCRA permit, the Permittees must identify the source of authority for their reliance on the terms "characterization" and "confirmation" in the manner used in the PMR:

**3.1.1 Module II, *Section II.C.1 Waste Analysis Plan*, pages II-2 and II-3.** The changes in this subsection regarding the scope of waste characterization under 40 CFR §264.13 do not appear to be related to Section 311. The Permittees must identify the source of authority for these changes or delete the proposed revisions.

**3.1.2 Module II, *Section II.C.3 Treatment, Storage and Disposal Facility Waste Acceptance Criteria*, page II-6, 7th and 8th ¶.** See 3.3.1 above.

**3.1.3 Attachment B, *Introduction and Attachment Highlights*, page B-1, 1st ¶.** See 3.1.1 above.

**3.1.4 Attachment B, *Introduction and Attachment Highlights*, pages B-4 through B-5, including Footnote 1.** See 3.1.1 above. In addition, Permittees must identify the source of authority for proposing to delete the current permit requirement that AK must be compiled into an auditable record.

**3.1.5 Attachment B, *Section B-1a Waste Stream Identification*, pages B-5 and B-6**. See 3.1.1 above.

**3.1.6 Attachment B, *Section B-1b Waste Summary Category Groups and Hazardous Waste Accepted at the WIPP Facility*, page B-6, 2nd ¶.** See 3.1.1 above.

***3.2 Generator/storage site compliance with 40 CFR §262.11, Use of Acceptable Knowledge and Compliance with 40 CFR §264.13(a)***

Section 2.0 above summarizes the basic RCRA waste characterization requirements for all hazardous waste generators under 40 CFR §262.11 and 40 CFR §264.13(a). The generator/storage sites that ship wastes to WIPP are subject to site-specific permit requirements that are enforced by the state where the site is located and/or by EPA. Although this permit cannot directly regulate a generator/storage site in another state, it establishes waste characterization and other requirements that must be met before WIPP may receive TRU mixed wastes from a site. Most TRU wastes proposed for disposal at WIPP consist of items that became contaminated as a result of activities associated with the production of nuclear weapons or the cleanup of nuclear weapon production facilities. The TRU wastes that are contaminated with RCRA regulated hazardous wastes are the wastes that are regulated by NMED under this permit.

These characterization requirements are critical to the safe operation of WIPP because of the unique nature of these wastes. These TRU wastes are unlike hazardous wastes from typical private sector industrial operations, which generally are homogeneous and result from specific manufacturing processes. DOE's defense missions varied by site, and approximately 35% of the waste was generated after the 1970's but before the implementation of the TRU Waste Characterization Quality Assurance Program Plan. Because the reliability of the available historic record on these retrievably stored wastes is inconsistent, NMED does not believe it is possible to craft a "one-size-fits-all" waste analysis program that relies exclusively on AK. Although newly generated wastes are visually examined at the time of generation, VE and AK alone may not be adequate to completely characterize the wastes. For example, without headspace gas analysis, the concentration of VOCs may be underestimated through the use of AK.

As stated previously, the Permittees appear to be attempting to establish AK as the sole characterization requirement necessary for generator/storage sites to qualify their TRU mixed wastes for disposal at WIPP. The proposed changes to Attachment B4 systematically remove any objective analytical means of assessing the accuracy of AK. Not only is this proposed approach at odds with RCRA and immaterial to Section 311, it likely could not be implemented at generator/storage sites like Oak Ridge, which plan to rely extensively on sampling and analysis because of the poor quality of AK.

TSD facilities such as WIPP that accept AK as a source of waste characterization information must remember a fundamental basis common to all AK data sources: process knowledge must be linked to *waste generation*. Often, large quantities of process-related data may be available, but the existence of such data does not necessarily ensure that it

adequately describes the waste itself. In the case of WIPP, literally every AK summary document examined by NMED includes detailed information about what manufacturing process occurred in which room or building – even the dimensions of the rooms – instead of focusing on *waste* generating data. While EPA's 1994 Waste Analysis Guidance states that "similar processes" can be used to define wastes without other sources of adequate AK, it is NMED's direct experience that this argument or analogy has not been successfully used at generator/storage sites to date.

EPA provides guidance for situations that may warrant exclusive use of AK for characterization, including assignment of certain process-related waste numbers, characterization of waste not amenable to sampling, and where worker safety could be compromised. The Permittees have not demonstrated that any of the reasons listed in EPA guidance for *exclusive* use of AK are directly applicable to WIPP wastes. For example, most characteristic hazardous waste numbers cannot generally be accurately determined by assuming that "absence of liquid means absence of characteristic." Also, the current permit clearly includes sampling methods amenable to all TRU mixed waste permitted thus far; therefore, removal of the requirement to sample waste was not required due to the waste not being amenable to sampling. Finally, the Permittees have not provided any documentation to indicate that the current processes in place for waste characterization adversely compromise worker safety.

Relying upon AK alone has known limitations, as there are many instances where AK may not provide the necessary physical and chemical information. Examples include:

- Assignment of characteristic waste codes is difficult in instances where specific concentration requirements within waste must be demonstrated using the TCLP procedures.
- AK data may be inappropriate if the information is outdated.
- AK information must be sufficiently complete to assign all hazardous waste codes. For example, MSDS are only required to list constituents that comprise 1% or more of the material it addresses. This may not be adequate to determine the occurrence and amount of all necessary constituents in the waste.

The current permit includes an AK process that offers a consistent standard by which generator/storage sites can develop AK programs. Unfortunately, NMED's direct experience through the audit process shows that generator/storage sites have not consistently implemented this standard.

It may be logical to assume that the AK program in the revised permit would be strengthened by this current PMR because AK is called for as the sole source of characterization information. This is not the case and, in fact, the PMR would clearly weaken the current AK program. AK changes proposed by the Permittees include, but are not limited to, the following:

- Changing AK-related language so that NMED would be required to accept all generator/storage site hazardous waste determinations, even though regulations clearly allow disposal states to develop their own criteria so long as they are not less stringent than federal law.
- Rendering AK accuracy in the permit meaningless, as it would now be based on confirmatory activities that do not encompass all items in the original waste characterization set.
- Revising Attachment B4 to explicitly remove the inclusion of, for example, headspace gas, in sampling and analysis
- Removing the requirement that waste with poor AK be visually examined.
- Removing AK baseline requirements for identifying hazardous wastes.
- Removing the requirement that container inventories be delineated into waste streams by correlating the container identification to all of the required/ supplemental acceptable knowledge information.
- Removing requirements for when radiographic vs. VE confirmatory activities will occur.
- Allowing disposal of incompletely characterized waste stream at WIPP.
- Removing specific requirements for VE procedures.
- Removing specific requirements associated with re-evaluation of AK if not confirmed by VE/RTR.
- Removing and/or revising (see B3-5) AK data quality objectives.
- Reducing code assignment requirements.
- Eliminating the requirement to maintain an auditable AK record.

The language in 40 CFR §264.13(a) is clear and unambiguous: "*Before an owner or operator…disposes of any hazardous wastes…, he* ***must*** *obtain a detailed chemical and physical analysis of a representative sample of the wastes. At a minimum, the analysis must contain all of the information which must be known to … dispose of the waste in accordance with this part*…" (emphasis added). As discussed in Section 2.2 above, the Permittees' proposal to eliminate waste characterization sampling and analysis and rely on AK may significantly increase the likelihood that inaccurately characterized wastes will be disposed at WIPP, and that both generator/storage sites and the WIPP facility will expose themselves to potential enforcement action under 40 CFR §264.13(a) due to inadequate characterization.

NMED has expressed concern in the past about an over reliance on AK (see the June 19, 2002 *NOD for the Class 3 PMR for Centralized Waste Confirmation*). NMED is not alone, however, in emphasizing the importance of sound waste characterization. On September 15, 2003, the Environmental Evaluation Group (**EEG**) released a report entitled *Contact Handled Transuranic Waste Characterization Requirements at the*

*Waste Isolation Pilot Plant, EEG-86*. In this report, EEG stated in the Executive Summary:

> *"…The current waste characterization requirements [that would be affected by HR 2754, which had not yet been passed by Congress] were not developed ad hoc, but through much technical discussion, reference to accepted standards and codes, and considerable effort by DOE employees, DOE contractors, regulatory agency staff, regulatory agency contractors, the EEG staff, interested organizations, and/or members of the public."*

EEG went on to discuss and endorse the continued use of most characterization methods, stating that AK, headspace gas, RTR, and VE should be retained. EEG also stated:

> *"Any proposed relaxation of waste characterization requirements needs to be evaluated in sufficient detail to convince the regulatory agencies…and others that the modification is justified. Implicit in this approach is the understanding that any changes need to be made in a step-by-step transparent process and through existing regulatory procedures of the NMED…"*

In its 2004 report on improving the TRU waste characterization program entitled *Improving the Characterization Program for Contact-Handled Transuranic Waste Bound for the Waste Isolation Pilot Plant*, the National Academy of Sciences' Board on Radioactive Waste Management concluded that while:

> "*DOE has stated that some characterization activities are too expensive and time consuming and can be modified without increasing risks…, [it] has not presented a systematic analysis to support this argument to the regulators or to the public*."

The Permittees must identify the source of authority for these proposed changes to generator/storage site waste characterization requirements, the exclusive reliance on AK and the proposed changes to compliance with 40 CFR §264.13(a) by generator/storage sites and disposal facilities. The Permittees must also provide a technical justification as to why the proposed changes (which appear to decrease the accuracy of the waste analysis process) will not negatively impact the accuracy of that process and will, instead, be sufficient to accurately characterize wastes destined for WIPP.

> **3.2.1 Module II, Sec*tion II.C.1.b, Waste Analysis Plan, Waste Confirmation Methods*, page II-2.** This PMR section proposes to remove EPA Publication SW-846 from incorporation into the permit by reference. It also proposes to remove the current requirement that the generator/storage sites use analytical methods that conform to SW-846 or alternative methods that have received prior approval from NMED. This change does not appear to be related to Section 311. The Permittees must identify the source of authority for this proposed change or delete this proposed revision.

**3.2.2 Module II, *Section II.C.1.c, Waste Analysis Plan, Container Selection Methods*, pages II-2 and II-3**. The PMR proposes to eliminate the current permit language regarding the statistical methods that are used for sampling and analysis of container contents. The PMR also refers to Attachment B1 for the selecting containers for VE and RTR. Attachment B1, however, does not define any selection methods. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.2.3 Module II, *Section II.C.1.d Waste Analysis Plan, Quality Assurance Objectives*, page II-3, 1st and 2nd ¶.** The PMR proposes to revise this section to remove any requirement for reviewing, validating, and verifying any analytical data that may be used in characterization. This implicitly assumes that the AK record is complete and adequate, and that no supplementary analysis will be needed for retrievably-stored or newly-generated waste. The PMR proposes to remove references to characterization activities from the Quality Assurance Objectives. Additionally, this section proposes to eliminate requirements to identify, document, and report operational variances. The Permittees must clearly identify the source of authority for these proposed revisions or delete the proposed revisions.

**3.2.4 Module II, *Section II.C.3(i) and (j) Treatment, Storage and Disposal Facility Waste Acceptance Criteria (TSDF-WAC),* page II-6.** The PMR proposes to eliminate the current permit requirements that all waste containers must have undergone VOC headspace gas sampling and further characterization by VE or RTR before a generator/storage facility may submit TRU-mixed wastes for storage or emplacement at WIPP. The Permittees must clearly identify the source of authority for these proposed revisions or delete the proposed revisions.

**3.2.5 Attachment B, *Introduction and Attachment Highlights*, page B-3, 4th ¶.** The PMR proposes to remove the criteria that a waste must be comprised of at least 50 percent of the waste in the container. This change does not appear to be related to Section 311. The Permittees must identify the source of authority for this proposed change or delete this proposed revision.

**3.2.6 Attachment B, *Section B-1a, Waste Stream Identification,* page B-5, 4th ¶.** The Permittees propose to eliminate a requirement that waste with an inadequate AK record must be characterized as newly generated waste. In addition, this paragraph proposes to eliminate requirements that waste may be characterized in lots if all containers are not available. This change does not appear to be related to Section 311. The Permittees must identify the source of authority for this proposed change or delete this proposed revision.

**3.2.7 Attachment B, *Section B-1b, Waste Summary Category Groups and Hazardous Waste Accepted at WIPP*, page B-6, 2nd ¶.** The PMR proposes to

delete the use of waste matrix codes, which provide valuable waste characterization and waste management information. This change does not appear to be related to Section 311. The Permittees must identify the source of authority for this proposed change or delete this proposed revision.

**3.2.8 Attachment B, *Section B-2, Waste Parameters,* pages B-8 and B-9.** The Permittees propose to eliminate current permit requirements that a series of chemical and physical analysis characterization activities must be performed on TRU-mixed wastes before they can be accepted at WIPP. This change does not appear to be related to Section 311 and is contrary to RCRA waste characterization requirements. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.2.9 Attachment B, *Section B-3 Waste Analysis Methods*, page B-9, 1st ¶.** See 3.2.8 above.

**3.2.10 Attachment B, Section B-3a, *Sampling and Analytical Methods*, pages B-9 through B-11.** See 3.2.8 above.

**3.2.11 Attachment B, *Section B-3a Acceptable Knowledge*, page B-12.** The Permittees propose to change the intent of the use of AK in the current Section B-3b from using AK as one tool in mixed waste characterization activities to using AK to "document" the results of the generator/storage sites' characterization activities. Also see 3.2.8 above. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.2.12 Attachment B, *Section B-3b Radiography and Visual Examination*, pages B-12 and B-13.** The Permittees propose to limit the way that VE and RTR are currently used in the permit for waste characterization. Although it is occasionally possible to characterize a waste through the use of VE and/or RTR alone (e.g., the discovery of lead batteries in debris waste) these methods cannot be used as the primary characterization methods. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.2.13 Attachment B, *Section B-3c Confirmation of TRU Mixed Waste*, pages B-13 through B-18**. The Permittees propose to change the current *Section B-3c Characterization Techniques and Frequency for Newly Generated and Retrievably- Stored Waste* to *Confirmation of TRU Mixed Waste*. As discussed above, NMED strongly disagrees with the Permittees' conclusion that Section 311 eliminates the current permit requirements to characterize wastes through sampling and analysis. For example, the Permittees do not specifically explain how RTR and VE will be used to verify that wastes are not ignitable, corrosive or reactive. The PMR also proposes to revise the current permit to randomly select a "minimum of ten percent of the waste containers" to be "confirmed" by RTR

and/or VE. In waste streams where only a small fraction of drums contain prohibited items, it is possible that none of the drums with prohibited items will be examined and will, therefore, be disposed of at WIPP. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.2.14 Attachment B, *Section B-3c Confirmation of TRU Mixed Waste*, page B-13, 1st ¶.** NMED's questions related to subpopulation selection and statistical analyses are based on the changes submitted through comment by the Permittees dated March 19, 2004. A written procedure must be prepared for conducting the proposed random confirmation sampling and statistical analysis. The processes must be clearly and completely described, and suitable for application at WIPP or at generator/storage sites. Definitions must be provided for such terms as *waste stream, waste stream lot,* and *consistent with the waste stream description.* The methods proposed to assure compliance with those definitions must also be described. Revise the PMR, either to fully explain and better justify the change(s) or to remove the change(s).

**3.2.15 Attachment B1, *Section B1-2, Visual Examination*, page B1-27.** The Permittees propose to remove the requirement that VE must be used to confirm RTR and that the sites must maintain a site miscertification rate to determine the number of containers that must undergo confirmatory visual examination. In addition, all references to validation methods with respect to sampling and analysis have been removed. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.2.16 Attachment B1, *Section B1-2a: Method Requirements*, page B1-27.** The PMR proposes to allow documented AK to confirm the waste stream description in cases where the contents of inner bags cannot be seen, without the current characterization procedures for when AK is insufficient. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.2.17 Attachment B1, *Section B1-3, Waste Material Parameter Estimation*, page B1-29.** The Permittees have added a new section that proposes to assign waste material parameter weights based upon ratios of the examined drums and the drum waste weight. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions. See also 3.2.5 above.

**3.2.18 Attachment B3, *Section B3-1 Validation Methods*, pages B3-1 through B3-12.** The PMR proposes definitional changes for precision, accuracy, representativeness, comparability, and completeness and the removal of the requirement for notification of non-conformances. These changes do not appear to

be related to Section 311. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.2.19 Attachment B3, *Section B3-2 Radiography*, pages B3-12 and B3-13.** The PMR proposes definitional changes for quality assurance objectives, precision, accuracy, representativeness, completeness and comparability, as these terms relate to RTR. These changes do not appear to be related to Section 311. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.2.20 Attachment B3, *Section B3-3 Visual Examination*, pages B3-13 and B3-14**. The PMR proposes definitional changes for quality assurance objectives, precision, accuracy, representativeness, completeness and comparability, as these terms relate to VE. These changes do not appear to be related to Section 311. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.2.21 Attachment B3, *Deleted Section B3-5 Gas Volatile Organic Compound Analysis*, pages B3-14 through B3-16.** The PMR proposes to delete quality assurance objectives, precision, accuracy, calibration, method detection limit, program required quantification limit, representativeness, completeness and comparability, as these terms relate to gas volatile organic compound analysis. These changes do not appear to be related to Section 311. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.2.22 Attachment B3, *Deleted Section B3-6 Total Volatile Organic Compound Analysis*, pages B3-16 and B3-17.** The PMR proposes to delete quality assurance objectives, precision, accuracy, calibration, method detection limit, program required quantification limit, representativeness, completeness and comparability, as these terms relate to total volatile organic compound analysis. These changes do not appear to be related to Section 311. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.2.23 Attachment B3, *Deleted Section B3-7 Total Semi-Volatile Organic Compound Analysis*, pages B3-18 and B3-19.** The PMR proposes to delete quality assurance objectives, precision, accuracy, calibration, method detection limit, program required quantification limit, representativeness, completeness and comparability, as these terms relate to total semi-volatile organic compound analysis. These changes do not appear to be related to Section 311. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.2.24 Attachment B3, *Deleted Section B3-8 Total Metal Analysis*, pages B3-19 through B3-21.** The PMR proposes to delete quality assurance objectives, precision, accuracy, calibration, method detection limit, program required quantification limit, representativeness, completeness and comparability, as these terms relate to total metal analysis. These changes do not appear to be related to Section 311. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.2.25 Attachment B3, *Proposed Section B3-4, Waste Material Parameter Estimation*, page B3-21.** The Permittees have added a new section that proposes to assign waste material parameter weights based upon ratios of the examined drums and the drum waste weight. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.
See also 3.2.5 and 3.2.17 above.

**3.2.26 Attachment B3, *Section B3-5 Acceptable Knowledge*, pages B3-22 and B3- 23.** The Permittees propose to amend the data quality requirements for AK documentation. These changes do not appear to be related to Section 311. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.2.27 Attachment B3, *Section B3-6 Data Review, Validation and Verification Requirements*, pages B3-23 and B3-24.** See 3.2.8 above.

**3.2.28 Attachment B3, *Section B3-6a, Data Generation Level*, page B3-25**. See 3.2.8 above.

**3.2.29 Attachment B3, *Section B3-6a(1), Independent Technical Review*, pages B3-26 and B3-27.** See 3.2.8 above.

**3.2.30 Attachment B3, *Section B3-6a(2), Technical Supervisor Review*, page B3-27.** See 3.2.8 above.

**3.2.31 Attachment B3, *Section B3-6a(3), QA Officer Review*, page B3-28.** See 3.2.8 above.

**3.2.32 Attachment B3, *Section B3-6b Project Level*, page B3-28.** See 3.2.8 above.

**3.2.33 Attachment B3, *Section B3-6b(1) Site Project QA Officer*, page B3-29**. See 3.2.8 above.

**3.2.34 Attachment B3, *Section B3-6b(2) Site Project Manager*, pages B3-29 and B3-30**. See 3.2.8 above.

**3.2.35 Attachment B3, *Section B3-6b(3) Prepare Site Project QA Officer Summary and Data Validation Summary*, pages B3-30 and B3-31**. See 3.2.8 above.

**3.2.36 Attachment B3, *Section B3-6b(4) Prepare Waste Stream Characterization Package,* page B3-31.** See 3.2.8 above.

**3.2.37 Attachment B3, *Section B3-8b Project Level*, pages B3-35 through B3-38.** See 3.2.8 above.

**3.2.38 Attachment B3, *Section B3-10 Special Training Requirements and Certifications,* page B3-41, *3rd* ¶.** See 3.2.8 above.

**3.2.39 Attachment B4, *Section B4-1, Introduction*, page B4-1.** The PMR proposes to change the clear and explicit language in this section, which shows that headspace gas sampling and homogenous sampling are defined as characterization requirements. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions. Also see 3.2.8 above.

**3.2.40 Attachment B4, *Section B4-2 Acceptable Knowledge Documentation*, page B4-2.** The original intent of the section was to mandate that for waste with poor AK, VE must be performed. The proposed changes eliminate this requirement. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.2.41 Attachment B4, Section B4-3: Acceptable Knowledge Training, Procedures, and other Requirements, page B4-11, 2nd ¶.** See 3.2.8 above.

**3.2.42 Attachment B4, *Section B4-3b Acceptable Knowledge Assembly, Compilation, and Confirmation Procedures and Required Administrative Controls*, pages B4-8 and B4-9.** The Permittees propose to delete specific permit conditions regarding the use and retention of AK information for the assignment of hazardous waste codes. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.2.43 Attachment B4, *Section B4-3c Criteria for Assembling an Acceptable Knowledge Record and Delineating the Waste Stream*, page B4-9.** The Permittees propose to eliminate the current permit requirement to define the generation rate for newly-generated wastes. This proposed deletion is problematic because NMED has found during audits that sites often generate information for a small fraction of the waste in a waste stream without including the entire waste

stream, leading to inaccurate characterization. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.2.44 Attachment B4, *Section B4-3d Requirements for Confirmation of Acceptable Knowledge Information,* pages B4-9 4th ¶ and B4-10, 1st ¶.** NMED used the term "confirmation" in this section of the current permit in its dictionary sense. The Permittees are attempting to treat this section as Section 311 confirmation instead of as waste characterization. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.2.45 Attachment B4, *Section B4-3e Acceptable Knowledge Quality Assurance Objectives,* pages B4-13 and B4-14.** The Permittees propose to essentially delete the former Section *Acceptable Knowledge Data Quality Requirements* with the section referenced above. Data requirements are mandatory language while "objectives" are not. The Permittees also propose to remove the requirement that generator/storage sites share information to ensure data comparability. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions. Also see 3.2.8 above.

**3.2.46 Proposed Deletions of Tables and Figures.** The Permittees propose to modify or delete a number of permit attachments, tables and figures in Attachments B, B1, B2, B3 and B4, which are related to waste characterization. The Permittees must identify the source of authority for deleting the following permit attachments, figures and tables:

- Module II Permit Attachments, pages II-17 and II-18;
- Attachment B, B-5 List of References, page B-34;
- Attachment B, *Table B-1, Summary of Hazardous Waste Characterization Requirements for Transuranic Mixed Waste*, pages B-38 and B-39;
- Attachment B, *Table B-2, Maximum Allowable VOC Room-Averaged Headspace Concentration Limits (PPMV),* page B-40;
- Attachment B, *Table B-3, Headspace Target Analyte List and Methods*, page B-41;
- Attachment B, *Table B-4, Required Organic Analyses and Test Methods Organized by Organic Analytical Groups*, pages B-42 and B-43;
- Attachment B, *Table B-5, Summary of Sample Preparation and Analytical Methods for Metals*, page B-44;
- Attachment B, *Table B-6, Summary of Parameters, Characterization Methods, and Rationale for CH Transuranic Mixed Waste (Stored Waste*), pages B-45 through B-48;
- Attachment B, *Table B-2, WIPP Waste Information System Data Fields*, pages B-50 and B-51;

- Attachment B, *Figure B-2, Data Collection Design for Characterization of Newly Generated Waste*, page B-56
- Attachment B, *Figure B-3, Data Collection Design for Characterization of Retrievably Stored Waste*, page B-57;
- Attachment B, *Figure B-5, TRU Mixed Waste Screening Flow Diagram*, page B-58;
- Attachment B1, B1-6 List of References, page B1-31;
- Attachment B1, *Table B1-1, Gas Sample Requirements*, page B1-34;
- Attachment B1, *Table B1-2, Summary of Drum Field QC Headspace Sample Frequencies*, page B1-35;
- Attachment B1, *Table B1-3, Summary of Sampling Quality Control Sample Acceptance Criteria*, page B1-36;
- Attachment B1, *Table B1-4, Sample Handling Requirements for Homogeneous Solids and Soil/Gravel*, page B1-37;
- Attachment B1, *Table B1-5, Headspace Gas Drum Age Criteria Sampling Scenarios*, page B1-38;
- Attachment B1, *Table B1-6, Scenario 1 Drum Age Criteria (in days) Matrix*, page B1-39;
- Attachment B1, *Table B1-7, Scenario 2 Drum Age Criteria (in days) Matrix*, page B1-40;
- Attachment B1, *Table B1-8, Scenario 3 Packaging Configuration Groups*, pages B1-41 and B1-42;
- Attachment B, *Table B1-9, Scenario 3 Drum Age Criteria (in days) Matrix for S5000 Waste by Packaging Configuration Group*, pages B1-43 and B1-44;
- Attachment B1, *Table B1-10, Scenario 3 Drum Age Criteria (in days) Matrix for S3000 Waste by Packaging Configuration Group*, pages B1-45 and B1-46;
- Attachment B1, *Figure B1-1, Headspace Gas Drum Age Sampling Scenario Selection Process*, page B1-50;
- Attachment B1, *Figure B1-2, Headspace Sampling Manifold*, page B1-51;
- Attachment B1, *Figure B1-3, SUMMA® Canister Components Configuration*, page B1-52;
- Attachment B1, *Figure B1-4, Schematic Diagram of Direct Canister with the Ploy Bag Sampling Head*, page B1-53;
- Attachment B1, *Figure B1-5, Rotational Coring Tool (Light Weight Auger),* page B1-54;
- Attachment B1, *Figure B1-6, Non-Rotational Coring Tool (Thin Walled Sampler),* page B1-55;
- Attachment B1, *Figure B1-7, Overall Programmatic Approach to Visual Examination*, page B1-56;
- Attachment B2, References, page B2-10;

- Attachment B2, *Table B2-1, Number of Waste Containers Requiring Visual Examination*, page B2-12;
- Attachment B2, *Figure B2-1, Statistical Approach to Sampling and Analysis of Waste Streams of Retrievably Stored Homogeneous Solids and Solid/Gravel*, page B2-14;
- Attachment B3, B3-12 List of References, page B3-42;
- Attachment B3, *Table B3-2, Gas Volatile Organic Compounds Target Analyte List and Quality Assurance Objectives*; page B3-47;
- Attachment B3, *Table B3-3, Summary of Laboratory Quality Control Samples and Frequencies for Gas Volatile Organic Compound Analysis*, page B3-48;
- Attachment B3, *Table B3-4, Volatile Organic Compounds Target Analyte List and Quality Assurance Objectives*, page B3-49;
- Attachment B3, *Table B3-5, Summary of Laboratory Quality Control Samples and Frequencies for Volatile Organic Compound Analysis*, pages B3-50 and B3-51;
- Attachment B3, *Table B3-6, Semi-Volatile Organic Compound Target Analyte List and Quality Assurance Objectives*, page B3-52;
- Attachment B3, *Table B3-7, Summary of Laboratory Quality Control Samples and Frequencies for Semi-Volatile Organic Compounds Analysis*, pages B3-53 and B3-54;
- Attachment B3, *Table B3-8, Metals Target Analyte List and Quality Assurance Objectives*, pageB3-55;
- Attachment B3, *Table B3-9, Summary of Laboratory Quality Control Samples and Frequencies for Metal Analysis*, pages B3-56 and B3-57;
- Attachment B3, *Table B3-10, Minimum Training and Qualifications Requirements,* page B3-58;
- Attachment B3, *Table B3-11, Testing Batch Data Report Contents*, pages B3-59 through B3-61;
- Attachment B3, *Table B3-12, Sampling Batch Data Report Contents*, pages B3-62 through B3-64;
- Attachment B3, *Table B3-13, Analytical Batch Data Report Contents*, page B3-65;
- Attachment B3, *Table B3-14, Data Reporting Requirements*, page B3-66;
- Attachment B3, *Figure B3-1, Overall Headspace Gas Sampling Scheme Illustrating Manifold Sampling*, page B3-69;
- Attachment B4, *Figure B4-2, Confirmation of Acceptable Knowledge*, page B4-22; and
- Attachment B6, *Waste Analysis Plan (WAP) General Checklist for Use at DOE's Generator/Storage Sites*, pages B6-12 through B6-115.

***3.3 Differentiation between "retrievably stored" and "newly generated" TRU wastes***

The PMR alleges that there is no longer a need to distinguish between retrievably stored and newly generated wastes because the characterization and confirmation methods are the same for all TRU mixed wastes, regardless of the time of generation. The PMR provides no technical or regulatory justification for this new approach. Both NMED and EPA have consistently differentiated between retrievably stored wastes and newly generated wastes because of the inherent uncertainties in characterizing wastes that were generated before the implementation of the Permittees' TRU Waste Characterization QAPP. NMED is concerned that the PMR's focus on the use of AK for characterization and RTR and VE for "confirmation" for retrievably stored waste may lead to improperly characterized waste being disposed of at WIPP. The Permittees have not demonstrated in their prior submittals any correlation between waste characterization accuracy to date and the "uncertainties associated with older, poorly documented waste streams generated fifteen to thirty years ago that have yet to be characterized, considering the waste emplaced to date reflects newer, better documented waste streams" (NMED Comments on Technical papers Submitted by DOE to NAS WIPP Committee "Optimizing the Characterization and Transportation of Transuranic Waste Destined for the Waste Isolation Pilot Plant" Project Identification Number: BRWM-U-02-01-A (November 7, 2003 letter from Sandra Martin, Acting Bureau Chief, Hazardous Waste Bureau to Dr. Kevin Crowley, Director, Board on Radioactive Waste Management, the National Academy of Science)).

EPA has raised similar concerns during the rulemaking processes for the original and alternative provision criteria for the certification of WIPP's compliance with the disposal regulations (63 Fed. Reg.27389-27393 (May 18, 1998), 67 Fed. Reg. 51930-51946 (August 9, 2002) and 69 Fed. Reg. 42571-42583 (July 16, 2004)). For example, in the preamble to the proposed alternative certification rule, EPA stressed the importance of good waste characterization "in the early stages of disposal when DOE is characterizing waste that TRU waste sites packaged years before the establishment of the WIPP Compliance Criteria" (67 Fed. Reg. 51935, August 9, 2002). Conversely, when discussing to-be-generated wastes in the original certification rule preamble EPA stated that: "Hazardous and radioactive constituents in to-be-generated wastes will be documented and verified at the time of generation to provide acceptable knowledge for the waste stream" (63 Fed. Reg. 27392, May 18, 1998).

The Permittees must resolve the inconsistencies between the current permit's differentiation between "retrievably stored" and "newly generated" TRU wastes and the PMR. The Permittees must also cite the authority for the proposed changes.

**3.3.1 Attachment B, *Introduction and Attachment Highlights,* page B-2, 3rd ¶.** The PMR proposed to revise the permit to remove the discussion of the differences between newly generated TRU mixed wastes and retrievably stored TRU mixed wastes. This change does not appear to be related to Section 311. The

Permittees must identify the source of authority for this proposed change or delete this proposed revision.

**3.3.2 Attachment B, *B-1a Waste Stream Identification*, page B-5, 1st ¶.** The PMR proposes to revise the permit to remove the requirement that "[i]f acceptable knowledge for retrievably stored waste does not comply with these requirements (e.g., heterogeneous Debris Waste in Summary Category S5000), the Permittees will reexamine (and characterize) the waste in the same manner as newly generated waste." This change does not appear to be related to Section 311, and would have the effect of removing the requirement that containers with poor AK must be visually examined. The Permittees must identify the source of authority for this proposed change or delete this proposed revision.

**3.3.3 Attachment B, *B-3c Confirmation of TRU Mixed Waste* pages B-13 through B-18.** The PMR proposes elimination of retrievably stored/newly generated waste distinctions and also indicates that hazardous waste determinations will be completed by the generator/storage sites. This change does not appear to be related to Section 311. The Permittees must identify the source of authority for this proposed change or delete this proposed revision.

**3.3.4 Attachment B4, *Section B4-3d Requirements for Confirmation of Acceptable Knowledge Information*, B4-9 through B4-13**. The PMR proposes to revise the permit to remove the distinction between newly generated TRU mixed wastes and retrievably stored TRU mixed wastes. This change does not appear to be related to Section 311. The Permittees must identify the source of authority for this proposed change or delete this proposed revision.

***3.4 Permittees' Compliance with 40 CFR §264.13***

The Permittees' responsibilities under 40 CFR §264.13 are also clear and unambiguous. Although the Permittees allege that Section 311 limits their responsibilities under these subparts to reviewing the "confirmation" activities performed by the generator/storage sites, there is no language in 40 CFR §264.13 that supports this claim. Federal and state laws make it clear that the burden is on the off-site disposal facility to ensure that the waste is acceptable for disposal. Since the Permittees historically claimed in their permit application that on-site characterization at WIPP was neither feasible nor desirable, the audit process was incorporated in the current permit as an alternative methodology to allow the Permittees to meet their regulatory obligations.

The PMR does not include or reassess the need for any on-site "fingerprinting" of waste content (40 CFR §264.14(c)). If the audits are considered a replacement for fingerprinting and, under the Permittees' interpretation of Section 311, the auditors would be limited to examining only "paperwork" and cannot request chemical

sampling/analysis, there would appear to be no functional safeguards in place to prevent prohibited wastes from being shipped to and/or emplaced in WIPP.

NMED has identified AK issues during observations of numerous generator/storage site audits that highlight the potential for characterization error. Recent examples of AK issues include but are not limited to:

- Audit A-02-15, Nevada Test Site (**NTS**) – 1) The NTS AK Summary report had several deficiencies which should be addressed; 2) The NTS AK Container Inventory Database, which appears to be an excellent source of AK information, is not included as an AK source document; 3) The narrative supporting the Waste Stream Profile Form, NTLLNL-S5400-332.01A, is not consistent with the AK Summary Report.

- Audit A-03-03, Rocky Flats Environmental Technology Site (**RFETS**) – 1) The RFETS AK data assembly, review, compilation, and verification steps could be improved; 2) The AK Accuracy Report could be improved by specifying the time period that each characterization element discussed in the report "covers" and if a consistent reporting period were used.

- Audit A-03-05, Advanced Mixed Waste Treatment Project (**AMWTP**) – 1) An Observer Inquiry presented by NMED at an earlier AMWTP audit dealing with the appropriateness of the solid sampling program sample selection was being examined but had not been resolved, and this, too, was recognized by DOE representatives; 2) Low-level waste should be better presented in the AK summary; 3) AK procedure 8.13 includes requirements that are sometimes not adequately reflected in the resulting AK Summary or related documents; 4) The AK Summary should be a stand alone document in that technical information should be adequately presented; 5) Waste should be [better] tracked to ensure that the waste streams are adequately identified and subsequently characterized.

- Audit A-03-14, Hanford Recertification Audit – 1) The site sought to inappropriately apply RFETS data to a Hanford waste stream; 2) AK Accuracy calculations were of question: with respect to AK Accuracy, the site does not report VE/RTR; 3) AK Summaries should be examined to ensure that technical information is adequately presented; 4) Procedure 7.1.9, Section 4.3, requires only that general physical form information (presence/absence) be collected, but it would be more appropriate if this procedure required collection of waste matrix code determinations; 5) Traceability analysis was complicated by lack of AK-specific data in a centralized location, and lack of a database that tracks drum status with respect to the TRU WIPP characterization process (i.e., like TRIPS, WEMS, etc); 6) Outstanding issues identified in Audit A-2-23 had not been resolved, including questions pertaining to assignment of hazardous waste codes; 7) Assignment of a large number of containers to a very general waste matrix

code to minimize the number of waste streams, even though container-specific information is available that would allow differentiation of waste streams; 8) Revision of procedure 7.1.9 to include specific trigger points whereby WMC data is assessed was not performed.

- Audit A-03-25, Hanford/ Central Characterization Project (**CCP**) – 1) The AK Summary report does not include sufficient supplemental AK references to support conclusions drawn in the document and to satisfy the requirements; 2) The defense waste determination requires better justification; 3) Data limitations should be recognized within the AK summary where these limitations impact the use of the AK information; 4) As required for other sites, the site should track waste matrix code outliers; 5) AK Accuracy determinations for the CCP program are not commensurate with the use of the AK information, and therefore do not adequately track AK accuracy with respect to how the data are being used.

- Audit A-04-01, Savannah River Site/CCP – 1) There were several errors and inconsistencies in the AK Summary Report, CCP-AK-SRS-4; 2) Attachment 5, entitled Hazardous Constituents for waste stream SR-W027-221H-HET was not consistent with the Tables in the AK Summary Report regarding PCBs in the waste.

- Audit A-04-05, Los Alamos National Laboratory (**LANL**)/CCP – 1) Additional information should be included in the AK Summary Report to address information that is to be reported in accordance with the WAP, and the reports need refinement to ensure correct interpretation of data presented; 2) The AK Summaries should better address and justify waste stream determinations; 3) Waste Matrix Code assignments should be better justified; 4) CBFO addressed issues dealing with misidentification of summary waste category groups using RTR, identification of "out of waste stream" items, project level validation/ verification, and Batch Data Reports that are examined for the AK traceability analysis – observers had also identified these issues and concur with the determination.

- Audit A-04-22, AMWTP – 1) The Acceptable Knowledge Summary is most useful when it is more of a "stand alone" document than as presented during the audit; 2) AK procedure 8.13 still does not require collection of information presented in the AK Summary; 3) the AK Accuracy Report requires clarification; 3) How prohibited items (i.e., liquids) are presented in the AK Summary is of question; 4) The AK Summaries do not include adequate references to supporting information; 5) Implementation of a better waste tracking system would appear mandatory to ensure that errors in drum tracking, such as those which precipitated in the site-shut down currently underway, are mitigated; 6) Communication [of data] between generator/storage sites is imperative, particularly since sites such as

RFETS are closing and INEEL is beginning to ship waste sourced from closing sites.

- Audit A-05-02, NTS – 1) Additional information is required to ensure that the current S5400 waste stream has been adequately identified; 2) Multiple drum identifiers could lead to future problems with respect to use of appropriate characterization and shipment of approved wastes; 3) AK Accuracy is not performed on a regular basis.

The Permittees must identify the source of authority for these proposed changes to the Permittees' obligations under 40 CFR §264.13 and describe how these proposed revisions would work to ensure that no improperly characterized wastes are stored or disposed of at WIPP.

**3.4.1 Attachment B, *Introduction and Attachment Highlights*, page B-5, 3rd ¶.** The Permittees propose to remove the requirements that batch data reports and raw analytical data associated with batch data reports must be submitted to the Permittees upon request for characterization activities. This change does not appear to be related to Section 311. The Permittees must identify the source of authority for this proposed change or delete this proposed revision.

**3.4.2 Attachment B, Section B-1c: *Waste Prohibited at the WIPP Facility*, page B-7, 1st ¶.** The Permittees propose to change the Permittee-level data review requirement for radiographic data records from at least one percent of *all* containers received at WIPP to at least 1 percent of the *radiographed* containers received at WIPP, thereby reducing the number of reviewed containers from one percent of the received containers to roughly 0.1 percent of the received containers. This change does not appear to be related to Section 311. The Permittees must identify the source of authority for this proposed change or delete this proposed revision.

**3.4.3 Attachment B, Section B-4a(1) , *Data Quality Objectives*, page B-19, 2nd ¶.** The Permittees have proposed to modify the Data Quality Objectives for RTR and VE regarding making a determination that a waste is not ignitable, corrosive, or reactive, and verifying that the waste matches the waste stream description. This change does not appear to be related to Section 311. The Permittees must identify the source of authority for this proposed change or delete this proposed revision.

**3.4.5 Attachment B, Section B-4a(2): *Quality Assurance Objectives*, page B-21, 2nd ¶.** The Permittees propose to include "representativeness" as a quality assurance objective because of their proposed reduction of the use of VE and RTR. This change does not appear to be related to Section 311. The Permittees

must identify the source of authority for this proposed change or delete this proposed revision.

**3.4.6 Attachment B, *Section B-4a(3), Data Generation*, pages B-21 and B-22, 2nd ¶.** The Permittees propose to replace the current permit requirement for audits of the generator/storage sites' waste characterization programs with audits of waste "confirmation" programs. This change does not appear to be related to Section 311. The Permittees must identify the source of authority for this proposed change or delete this proposed revision.

***3.5 Confirmatory volatile organic compound monitoring program***

As discussed in Section 1.2 above, the Permittees seek to eliminate the requirement to monitor VOC emissions from all active and closed Underground HWDUs, and instead limit monitoring to the open active disposal room and the single closed room adjacent to the active room. These proposed changes were justified by the Permittees' interpretation of the language of Section 311(b), which states:

> *"Compliance with the disposal room performance standards of the WAP shall be demonstrated exclusively by monitoring airborne volatile organic compounds in underground disposal rooms in which waste has been disposed until panel closure".*

The plain language of this subsection does not provide any insight into why the Permittees propose to modify the VOC monitoring requirements in other parts of the permit, including Attachment N and Module IV, which describe the environmental performance standards for the repository and the details for VOC monitoring.

- Performance Standards

Module IV and Attachment N describe the VOC monitoring program and requirements currently in the permit. Although Module IV does not specifically identify "disposal room performance standards" it does present two important VOC concentration limits that must be met at the WIPP facility: 1) VOC room-based concentration limits, which are the maximum allowable concentrations in a disposal room determined from risk-based calculations, and 2) room-based emission rate limits, which are the maximum allowable mole/room/year VOC emissions. Headspace gas data, which is currently obtained during waste characterization activities, is used to calculate the concentration and emission rate limits on an "as disposed of", real-time basis, thus providing key early warning of potential room-based concentration limit violations.

The PMR proposes to eliminate the VOC room-based emission rate limits that are contained in Module IV of the Permit, presumably because other sections of the PMR propose to eliminate the headspace gas sampling. Instead, the Permittees seek to

eliminate the current permit requirement to preemptively monitor VOCs in rooms as they are being loaded, by proposing to monitor the open active disposal room and the single closed room adjacent to the active room. The VOC room-based concentration and emission rate limits were established to ensure that health-based limits would not be exceeded. This proposed approach not only raises significant technical and regulatory compliance issues, it conflicts with Section 311(b), which states that *all* disposal rooms in the underground must be monitored until panel closure.

- Technical Issues

NMED has identified a number of technical issues of concern associated with the Permittees' proposed disposal room performance standards, including, but not limited to, the following:

  - Construction design documentation is not provided and other details related to the proposed open-room and closed-room monitoring approaches are incomplete.
  - In the absence of headspace gas or other VOC waste characterization results, the Permittees must justify why a more comprehensive monitoring list was not proposed in the permit modification request. Risk analysis that was performed to support RCRA Subpart X standards resulted in the identification of nine target analytes that must be monitored to ensure compliance, but this risk analysis was predicated on a waste characterization strategy in which headspace gas sampling and analysis results would be available for every disposed container. The headspace gas sampling and analysis is currently performed for 30 compounds as indicated in Table B3-2, with significant tentatively identified compounds (**TICs**) (Section B3-1) also requiring reporting. The Permittees did not provide technical analysis or justification that the VOC monitoring list is adequate in the absence of headspace gas sampling and analysis data.
  - Attachment N, Section N-3b, states that the Permittees' proposed analytical method will allow for the investigation and identification of other TICs beyond the nine target analytes referenced above. There is no mention of what, if anything, the Permittees would do if the Permittees detected any other compounds in the room air or how such a detection could affect the quality of the original risk analysis.
  - Implementation of the proposed monitoring approach would require abandonment of an open active room if monitoring of a closed room indicated that room-based VOC limits have been exceeded. This could pose serious disruption in the waste management activities including, but not limited to, delays in waste shipment and closure of a room before design capacity is met. If an active room may require abandonment because the adjacent room exceeded the PMR's proposed disposal standards, continued monitoring or revision of the room closure mechanism must be addressed to ensure that the

continued build-up within the closed room does not pose unforeseen threats to human health and the environment.

- The Permittees provided a report (WRES, 2003) that they believed justified the technical approach to VOC monitoring proposed in the PMR. In this report, the Permittees compare the head space gas VOC concentrations in a 1995 data set of 930 drums to a new data set composed of the 1995 data set, WWIS data from March 1999 to May 2003, head space gas data from drums from a hydrogen-getters poisoning study, and head space gas data from 103 drums of waste at INEEL that were analyzed for shipment to WIPP. The author's comparison of the two data sets indicated that the new data set had lower average headspace gas VOC concentrations, from which the author concluded that VOC concentrations in WIPP waste will be lower than previously projected. It is unclear, however, whether these data are truly representative of wastes currently emplaced or intended for future emplacement at WIPP. Technical questions raised during NMED's review of this report include, but are not limited to, the following:

    - A reference in the WRES report (McCulla and Van Soest, 2003, Section 3.1, last paragraph) indicates that analytical data were eliminated from the supporting data sets if the corresponding blanks were contaminated. This practice needs full technical justification to document that this approach did not eliminate VOCs that should have been considered.
    - The report states in Section 3.1.2 that solidified organics from INEEL and RFETS represent an upper bound on headspace gas concentrations from VOCs. This claim is not supportable because other sites (e.g., LANL and Hanford) may also generate solidified organics.
    - In the fourth paragraph of Section 3.1.3, the author states "…the room-based limit can not be reached even if all the problem VOC waste from solidified organics were to be emplaced in a single room (*Ref #9-Statistical Analysis of VOC Levels in the TRU Waste Inventory)*." Review of reference #9 (page 16) does not indicate that a quantitative evaluation was carried out to substantiate this assertion. If such an evaluation has been performed, information regarding the methods and results of this investigation must be provided.
    - Section 4.3 describes the proposed action levels for the closed-room monitoring system. Although monitoring results obtained in Room 7 of Panel 1 were used to establish action levels and response time, no information was provided to demonstrate that the waste in this room adequately represents all wastes that will be placed in WIPP. An analysis should be performed to demonstrate that these action levels and response times will be adequate under all possible circumstances (e.g., in a room with a greater percentage of high-VOC wastes).

- The PMR removes all reporting requirements pertinent to the WWIS without providing equivalent alternative reporting for the proposed monitoring.

- Compliance with RCRA

The Permittees' proposed VOC monitoring plan significantly reduces the level of monitoring in the HWDUs based on headspace gas data and prevents the Permittees or NMED from assessing whether the waste containers are being disposed of in a manner that will be protective of human health and the environment, consistent with 40 CFR §264 Subpart X.

40 CFR §264.17(b) identifies a series of precautions for the disposal of ignitable and reactive wastes; and the mixing of incompatible wastes that include:

- Preventing the production of uncontrolled flammable fumes or gases of sufficient quantities to pose a risk of fire or explosion
- Preventing damage to the structural integrity of the facility

40 CFR §264.17(c) indicates that compliance must be documented based on references to scientific literature, trial tests, or waste analyses. Elimination of the waste analysis option for preemptively knowing the gaseous/chemical content of wastes through actual sampling appears to severely limit the options available to the Permittees to ensure that the above precautions are addressed. For example, without the availability of headspace gas data, it is unclear how the Permittees will ensure that the VOCs in the closed rooms will be under explosive limits as specified in §264.17 (b)(3). The Technical Evaluation Report for Room-Based VOC Monitoring (WRES, 2003), which was provided by the Permittees in an attempt to support applicability of the 95% action level as an equivalent method to monitor on-going VOC emission rates, does not completely address NMED's concerns.

- **Specific Citations**

NMED has identified the following PMR-specific comments:

**3.5.1 Module IV, *Section IV.D.1, Room-Based Limits*, page IV-5, Table IV.D.1** The Permittees propose to eliminate VOC room-based emission rate limits from Table IV.D.1, but applicability of this change with respect to Section 311(b) is of question. The Permittees must identify the source of authority for this proposed change or delete this proposed revision.

**3.5.2 Module IV- *Section IV.F.2.g, Notification Requirements for Disposal Room Monitoring*, page IV-10, 5th ¶.** The Permittees propose to notify the Secretary within five (5) working days of obtaining validated analytical results

that indicate any VOC concentrations have exceeded the room based VOC concentration limits found in Table IV.F.2.g. However, allowable sample/ analytical report and analytical report/validation turnaround times are not addressed. Revise the PMR to indicate time frames for all data submittals to ensure that the Secretary is made aware of any elevated concentrations in a timely manner.

**3.5.3 Module IV- Table IV.F.2.g, *Notification Requirements for Disposal Room Monitoring*, page IV-10, 5th ¶**. The Permittees provided VOC Room Action Level concentrations in Table IV.F.2.g that are 95% of the VOC room based limits found in Table IV.D.1, and imply that the report entitled *Technical Evaluation Report for WIPP Room-Based VOC Monitoring* addressed this decision. However, technical viability of the 95% Room Action Level requires additional explanation, as the rate at which the VOC room concentration increases will be influenced by factors such as the VOC concentrations of the most recently emplaced drums, amount of gas generated within the containers based on the waste material parameters, the percentage of the room that is filled, and the location of the VOC room monitor in relation to populations of high VOC concentration drums. These issues must be addressed to ensure that the proposed 95% value is appropriate.

**3.5.4 Module IV- Section IV.F.2.h, *Remedial Action for Disposal Room Monitoring*, page IV-11, 1st ¶.** The Permittees propose to obtain a second confirmatory air sample in the event the concentration of any monitoring compound exceeds the applicable action level concentration. The Permittees did not, however, indicate the time frame between collection of the first sample and the second confirmatory sample. Ideally, the second sample should be collected as soon as practicable to prevent room concentration limits from exceeding the VOC room based limit. The Permittees must revise the PMR to indicate the allowable time frame between the first sample and a second confirmatory sample and indicate how this time frame will prevent exceedance of VOC room limits.

**3.5.8 Attachment B, *Section B-1c, Prohibited Wastes at the WIPP Facility*, page B-7 7th ¶.** The Permittees propose to delete text stating that room based emission rates will be obtained from headspace gas data. See 3.5.1 above.

**3.5.9 Attachment N, *Section N-3d(2), Sampling Schedule for Disposal Room VOC Monitoring*, page N-6, 6th ¶.** The proposed disposal room air monitoring sample frequencies of once every two weeks or weekly once the concentration of any one constituent reaches 50% or more of the documented action level were not technically justified or supported by the Permittees. Revise the PMR to better justify this determination.

**3.5.10 Attachment N, Section N-3e(2), Data Evaluation and Reporting for Disposal Room VOC Monitoring, page N-8, 5th ¶.** The Permittees propose to use validated data to determine whether the VOC concentrations in the closed disposal room adjacent to the active disposal room have exceeded action levels. However, the Permittees must address whether the current requirements in the Permit, based upon availability of headspace gas data, must be improved upon because the reliability of the disposal room monitoring sampling and analysis becomes far more critical in ensuring that room disposal limits are not exceeded. For example, the current requirement for internal standard accuracy is ± 40%. A low internal standard bias for samples slightly below the action level would present a strong likelihood that the actual room concentration may exceed the action levels. Also, because of the now more critical nature of the monitoring sample, the completeness percentage should be revised to ensure a much higher value. Revise the PMR to address these concerns pertaining to reevaluation of the data evaluation criteria.

### *3.6 Additional Concerns Regarding Proposed Permit Modifications*

The Permittees include numerous additional revisions in the PMR that do not appear to be related to Section 311. These proposed revisions include, but are not limited to, the following:

- Removal of operational variance reporting requirements from *Module II - General Facility Conditions, Quality Assurance Objectives*, II.C.1.d (page II-3);
- Elimination of waste matrix code assignments;
- Removal of the requirements pertaining to Summary Waste Category Groups (**SWCGs**) (e.g. last ¶ on page B-2);
- Removal of the requirement that a waste stream be comprised of 50% of the assigned SWCG;
- Allowance for shipping waste prior to full review and approval by the Permittees (page B-5, B-7).
- Inclusion of "additional sampling" without adequate explanation (page B-6).
- Removal of the miscertification rate calculation.
- Modification of RTR/VE processes (e.g., on-the-job training).
- Revision of data generation/reporting requirements in *Attachment B3, Quality Assurance Objectives and Data Validation Techniques for Waste Characterization Confirmation Methods*.

The Permittees must identify the source of authority for the following proposed changes or delete them:

**3.6.1 Attachment B1, *Section B1-1b Quality Control*, page B1-24.** The PMR proposes to change the RTR training requirements by deleting the requirement for training to identify "waste material parameters expected to be found in each

Waste Matrix Code Group" and specifying only training to site-specific waste material parameters. This change could limit the radiographer's ability to compare a container's contents with the waste stream description. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.6.2 Attachment B1, *Section B1-1b(1), Formal Training,* page B1-25.** The PMR proposes to change the RTR training requirements by deleting the requirement for training to "waste material parameters expected to be found in each Waste Matrix Code Group" and specifying only training to site-specific waste material parameters. This change could limit the radiographer's ability to compare a container's contents with the waste stream description. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.6.3 Attachment B1, *Section B1-1b(2), On-the Job Training*, page B1-25.** The PMR proposes to change the training requirement for identifying prohibited items to include only identification of liquids and compressed gasses, without adequate justification. Operators must be capable of identifying all prohibited items in the waste. Additionally, the PMR indicates that the RTR process must confirm that the waste is not reactive, explosive, or corrosive. The Permittees have failed to adequately link the specific parameter or parameters in waste that would allow identification of ignitable, reactive and corrosive wastes by x-ray examination in many cases. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.6.4 Attachment B1, *Section B1-2*, *Visual Examination*, page B1-27.** The PMR proposes to remove the requirement that video/audio tapes must be unalterable. Digital media is alterable and should not be used to document RTR/VE characterization results. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions

**3.6.5 Attachment B1, *Section B1-2b(2), On-the Job Training*, pages B1-28 and B1-29.** The Permittees propose to change the training requirement for identifying prohibited items to include only the identification of liquids and compressed gasses. Operators must be capable of identifying all prohibited items in the waste. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.6.6 Attachment B3, *Section B3-1 Validation Methods* (all).** The PMR proposes definitional related to precision, accuracy, representativeness, comparability, and completeness that do not appear to be related to the language in Section 311. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.6.7 Attachment B3, *Section B3-4 Precision*, page B3-12.** The PMR proposes to revise the QAO for precision of RTR by eliminating the statement "the precision of radiography is verified prior to use by tuning precisely enough to demonstrate compliance with QAOs through viewing an image test pattern." This proposed wording reduces the precision requirements for RTR. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.6.8 Attachment B3, *Section B3-4 Accuracy*, pages B3-12 and B3-13.** The PMR proposes a wording change that would eliminate the requirements for the Site Project QA Officer to calculate a miscertification rate for waste matrix codes, or to identify the rate at which containers are found to contain prohibited items during VE comparison with RTR. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.6.9 Attachment B3, *Section B3-4, Waste Material Parameter Estimation*, page B3-21.** The Permittees propose to use waste stream ratios developed on a waste-stream-wide basis to estimating weights or volumes of each waste material parameter in individual containers. The term "waste stream ratio", however, was not completely defined and specific requirements as to how these ratios are to be developed were not included. NMED is concerned that basing individual container contents on waste-stream-wide averages may not provide sufficient accuracy. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.6.10 Attachment B3, *Section B3-6 Data Review, Validation, and Verification Requirements*, pages B3-23 and B3-24.** The PMR proposes to remove a number of paragraphs pertaining to data review, validation, and verification, presumably based on the assumption there will be no cases where these batch data reports could be needed. This assumption does not appear to be justified by the Section 311 language, and the basis for this assumption has been questioned in numerous comments made both by the public and in this NOD. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.6.11 Attachment B3, *Section B3-6a*, *Data Generation Level*, page B3-25, Bulleted List.** The proposed deletions to this list of the minimum requirements for raw data collection and management do not appear to be related to Section 311. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions

**3.6.12 Attachment B3, Section *B3-6b(2), Site Project Manager,* page B3-30, Bullet 5.** The Permittees propose to replace "QAO" with "DQO" in this portion

of the proposed PMR, without providing the rationale for the change. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.6.13 Attachment B3, Section B3-6b(3), *Prepare Site Project QA Officer Summary and Data Validation Summary*, pages B3-30 and B3-31.** The Permittees propose to delete the current process for eliminating samples based upon the presumption that no data will be collected that requires validation summarization. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.6.14 Attachment B3, *Section B3-7a, Reconciliation at the Project Level,* page B3-32.** The PMR proposes to eliminate the current requirement that evaluation of statistically driven decisions as well as the completeness rate of characterization activities will be verified by the Site Project Manager. The PMR also proposes to delete several reconciliation elements in addition to those directly related to characterization including:

- Determination of the waste matrix code
- Determination that the waste contains TRU radioactive waste
- Determination of potential flammability of the waste
- Determination of the hazardous/non-hazardous status of the waste

NMED believes that the above elements are required to be known as part of the overall waste management strategy in the Permit. The Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.

**3.6.15 Attachment B3, Table B3-11, *Testing Batch Data Report Contents*, pages B3-59 through B3-61.** The PMR proposes to remove several testing batch data report elements that NMED believes to be critical elements of RTR/VE results, including:

- Indication of sealed containers >4L
- Documentation of free liquid quantities in waste containers
- Container gross weight and empty weight
- Limit documentation of prohibited items to liquids and compressed gases
- Scale calibration QC check

In addition, the Permittees did not include requirements that the testing batch report must include information as to whether the container contained corrosive, explosive, or reactive wastes. Further, AK may or may not identify all of the required prohibited items; for example, sites often state that the presence of liquid is “possible” based on AK, but a definitive “yes or no” is not provided. The

Permittees must identify the source of authority for these proposed changes or delete these proposed revisions.