

Item 2

Class 2 Permit Modification Request

Active Room Ventilation Flow Rate

**Waste Isolation Pilot Plant
Carlsbad, New Mexico**

WIPP Permit Number - NM4890139088-TSDF

February 2016

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Acronyms and Abbreviations

CFR	Code of Federal Regulations
CMRO	Central Monitoring Room Operator
DOE	U.S. Department of Energy
IDLH	Immediately Dangerous to Life or Health
LEL	lower explosive limit
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
Permit	WIPP Hazardous Waste Facility Permit
PMR	Permit Modification Request
PPE	personal protective equipment
ppmv	parts per million by volume
scfm	standard cubic feet per minute
VOC	volatile organic compound
WIPP	Waste Isolation Pilot Plant

Overview of the Permit Modification Request

This document contains a Class 2 Permit Modification Request (**PMR**) for the Waste Isolation Pilot Plant (**WIPP**) Hazardous Waste Facility Permit (**Permit**) Number NM4890139088-TSDF.

This PMR is being submitted by the U.S. Department of Energy (**DOE**) and Nuclear Waste Partnership LLC, collectively referred to as the Permittees, in accordance with the Permit, Part 1, Section 1.3.1 (20.4.1.900 New Mexico Administrative Code (**NMAC**) incorporating Title 40 of the Code of Federal Regulations (**CFR**) §270.42(b)). The modification provides for the following changes:

- Provides the Permittees the ability to take compensatory measures in situations where the active room ventilation rate of 35,000 standard cubic feet per minute (**scfm**) cannot be met during waste disposal operations when workers are present. Compensatory measures will be prescribed in standard operating procedures and may include, but are not limited to, the following: the use of personal protective equipment (**PPE**) for respiratory protection or the adjustment of the volatile organic compound (**VOC**) immediately dangerous to life or health (**IDLH**)-based action levels in the Permit, Section 4.6.3.2., in direct proportion to the actual flow rate that is less than 35,000 scfm. Compensatory measures implemented at the WIPP facility will be recorded in the WIPP facility log, which is maintained by the Central Monitoring Room Operator (**CMRO**) and reported to the New Mexico Environment Department in the annual Mine Ventilation Rate Monitoring Report required by Permit Attachment O.
- Provides the Permittees the ability to propose an alternative remedial action plan to the Secretary in lieu of closing the active room if the requirements of Permit Part 4, Section 4.6.3.3. cannot be met.
- Removes the minimum air velocity value of 60 ft (18 m) per minute in Permit Attachment A2 because it is not related to the environmental performance standard for maintaining a minimum active room ventilation flow rate of 35,000 scfm during waste disposal operations when workers are present.

The Permittees are proposing changes to the following Permit Part and Attachments:

- Revise Part 4, – Geologic Repository Disposal, Section 4.5.3.2. – Ventilation
- Revise Part 4, – Geologic Repository Disposal, Section 4.6.3.3. – Remedial Action
- Revise Attachment A2 – Geologic Repository, Section A2-2a(3), Subsurface Structures, Underground Ventilation System Description
- Revise Attachment O – WIPP Mine Ventilation Rate Monitoring Plan, Section O-1, Definitions
- Revise Attachment O – WIPP Mine Ventilation Rate Monitoring Plan, Section O-2, Objective
- Revise Attachment O – WIPP Mine Ventilation Rate Monitoring Plan, Section O-3, Design and Procedures

- Revise Attachment O – WIPP Mine Ventilation Rate Monitoring Plan, Section O-3a(1), Test and Balance Process
- Revise Attachment O – WIPP Mine Ventilation Rate Monitoring Plan, Section O-3b(1), Monitoring Total Mine Airflow
- Revise Attachment O – WIPP Mine Ventilation Rate Monitoring Plan, Section O-3c(1), Verification of Active Room Minimum Airflow
- Revise Attachment O – WIPP Mine Ventilation Rate Monitoring Plan, Section O-5a, Reporting

These changes do not reduce the ability of the Permittees to provide continued protection to human health and the environment.

The requested modification to the Permit and related supporting documents are provided in this PMR. The proposed modification to the text of the Permit has been identified using red text and double underline and a ~~strikeout~~ font for deleted information. All direct quotations are indicated by italicized text. The following information specifically addresses how compliance has been achieved with the Permit, Part 1, Section 1.3.1, for submission of this Class 2 PMR.

1. **20.4.1.900 NMAC (incorporating 40 CFR 270.42(b)(1)(i)) requires the applicant to describe the exact change to be made to the permit conditions and supporting documents referenced by the Permit.**

The Permit requires a minimum active room ventilation flow rate of 35,000 scfm in each active room when waste disposal is taking place and workers are present in the room. The 35,000 scfm was used as an assumption in calculating the 8-hour time weighted average to quantify exposure levels for the underground waste worker to VOCs in the event of a roof fall in an adjacent filled room¹. The New Mexico Environment Department (**NMED**) acknowledged that the Permittees could protect the underground waste workers from IDLH exposures resulting from a roof fall through the use of PPE, such as a self-contained breathing apparatus. However, because the Permittees did not propose the use of such equipment, the NMED imposed the 35,000 scfm minimum active room ventilation flow rate as a condition in the Permit².

The environmental performance standard for the underground waste worker (who is routinely in the vicinity of disposed waste during waste emplacement) was based on a scenario that included the possibility of a roof fall in the room adjacent to the active room. The scenario evaluated an acute exposure of VOCs to the underground waste worker. The scenario assumed the roof fall in the adjacent filled room would force VOCs present in the headspace void volume of the filled room into the active room. This would subject the underground waste worker in the active room to an acute dose, thereby jeopardizing the worker's health. An acute

¹ Waste Isolation Pilot Plant, Resource Conservation and Recovery Act Part B Permit Application. Appendix D9 Exposure Assessment for Protection of the Atmosphere, Attachment 1 Examination of Roof Collapse Scenario. DOE/WIPP 91-005. Revision 6.

² New Mexico Environment Department's Direct Testimony Regarding Regulatory Process and Imposed Conditions. Volatile Organic Compound Concentration Limits. II. Analysis, D. Response to Comments, 1. Roof Fall. HRM 98-04(P). 1999.

dose was defined as a concentration equal to the lesser of the IDLH value or the lower explosive limit (**LEL**) for flammable VOCs.

In order to set a concentration limit for the filled room that is protective of the underground waste worker in the active room, a calculation was performed. The calculation identified the starting concentration in the adjacent filled room. This concentration would subject the waste worker in the active room to the IDLH during a roof fall if 35,000 scfm were available. For example, in order to achieve an IDLH concentration of 200 ppmv for carbon tetrachloride in the active room, the starting concentration in the adjacent filled room would have to be 9,625 parts per million by volume (**ppmv**).

If the measured concentration of carbon tetrachloride in the adjacent filled room is 9,625 ppmv and a roof fall occurred in the adjacent filled room with 35,000 scfm of ventilation flow available in the active room, then the waste worker would be exposed to 200 ppmv of carbon tetrachloride. Hence the concentration of concern (limit) in the Permit, Table 4.4.1 for carbon tetrachloride of 9,625 ppmv is listed for 35,000 scfm.

For flammable VOCs, consideration was given to the concentration in the adjacent filled room that equaled the LEL. It should be noted that the limits related to the LEL do not depend on the roof fall scenario or the 35,000 scfm ventilation flow rate. Action must be taken if the LEL is approached in the adjacent filled room in accordance with the Permit.

Because there is a direct (i.e., linear) relationship between ventilation flow rate and the concentrations of concern in Table 4.4.1 for VOCs that are not flammable or have an IDLH-related value less than the LEL, a flow rate less than 35,000 scfm could be used to determine a different action level. The corresponding analyte action level would be adjusted to a value equal to the ratio of the lower flow rate to 35,000 scfm multiplied by the existing values in Table 4.4.1. For example, if the available ventilation flow rate in the active room was only 30,000 scfm, then the new action level for carbon tetrachloride would be as follows:

$$(30,000 \text{ scfm} / 35,000 \text{ scfm}) * (9,625 \text{ ppmv}) = 8,250 \text{ ppmv}$$

In this scenario, the Permittees will monitor and take actions based on this lower limit. Technical Report³, *Compensatory Measures for Ventilation Flow Rate Less Than 35,000 scfm*, provides additional examples of calculated VOC room-based action levels based on a reduced active room ventilation flow rate.

The standard operating procedure that the Permittees will put in place to monitor flow rates and address the adjusted action levels will verify that for flammable VOCs, the adjusted concentration action level is the lesser of the IDLH value or the LEL value. In the event that the adjusted concentration action level based upon the IDLH value is less than the concentration action level based on the LEL value, then the IDLH based action level will be used for that flammable analyte.

The Permit requires that the Permittees take action in the event the levels in Table 4.6.3.2 are exceeded. In particular, if the 90 percent level is needed, the active room must be closed; however, there may be alternative actions that can be taken, such as increasing ventilation flow

³ RES 16:106; Compensatory Measures for Ventilation Flow Rate Less Than 35,000 scfm; Technical Report, 2016.

rates or requiring PPE that would be equally effective in protecting workers. The Permittees are proposing language that gives them the flexibility to propose alternative actions to the Secretary for approval prior to the action levels being reached.

Finally, this PMR also includes a change to remove the minimum air velocity value of 60 ft (18 m) per minute in Permit Attachment A2 because it is unrelated to the environmental performance standard for maintaining a minimum active room ventilation flow rate of 35,000 scfm during waste disposal operations when workers are present, and it is inconsistent with the measures proposed in this PMR.

Proposed text changes are included in Appendix A and Appendix B of this PMR. Appendix A provides a detailed list of changes by Permit section and Appendix B provides the proposed redline/strikeout to the existing Permit language. The following is the list of the appendices to this PMR:

- Appendix A, Table of Changes, describes each change that is being proposed.
- Appendix B, Proposed Revised Permit Text, identifies the changes to the permit text in redline strikeout.

2. 20.4.1.900 NMAC (incorporating 40 CFR 270.42(b)(1)(ii)), requires the applicant to identify that the modification is a Class 2 modification.

This PMR is classified as a Class 2 modification for the reason indicated below:

20.4.1.900 NMAC incorporating 40 CFR 270.42, Appendix I, Item A. "General Permit Provisions, 4. Changes in the frequency of or procedures for monitoring, reporting, sampling, or maintenance activities by the permittee: b. Other changes...2"

This PMR proposes to change the procedure for monitoring and reporting the minimum active room ventilation flow rate in an active room when waste disposal is taking place and workers are present in the room. The current procedure for monitoring is based on achieving a minimum active room ventilation flow rate of 35,000 scfm. The 35,000 scfm provides a sufficient dilution factor as to protect the underground worker from exceeding the IDLH limits for known analytes. While operating at 35,000 scfm, no organic vapor respiratory protection for workers is needed.

If the minimum active room ventilation flow rate of 35,000 scfm cannot be met, the revised procedure for monitoring will specify that a compensatory measure shall be taken during waste disposal operations when workers are present in each active room. Compensatory measures will be prescribed in standard operating procedures.

Compensatory measures implemented at the WIPP facility will be recorded in the WIPP facility log, which is maintained by the CMRO and reporting requirements are being revised to assure the NMED is notified annually when compensatory measures are used. This proposed change does not reduce the ability of the Permittees to provide continued protection to human health and the environment. It provides an equivalent level of protection (and in some cases, is more protective) to what is currently practiced.

3. 20.4.1.900 NMAC (incorporating 40 CFR 270.42(b)(1)(iii)), requires the applicant to explain why the modification is needed.

The current minimum ventilation flow rate in an active room when waste disposal is taking place and workers are present is 35,000 scfm, which allows the current concentrations of concern limits listed in the Permit, Section 4.4.1, to be met. The 35,000 scfm provides a sufficient dilution factor as to protect the underground worker from exceeding the IDLH limits for known analytes. While operating at 35,000 scfm, no compensatory measures, such as respiratory protection for workers are needed.

The WIPP ventilation system, while operating in filtration mode, currently supplies approximately 60,000 scfm to the underground repository. It has been determined that it is not possible to achieve 35,000 scfm in an active waste disposal room while operating in filtration mode with 60,000 scfm. It is expected that the ventilation flow rate in Panel 7, Room 6, could range from approximately 22,000 scfm up to 32,000 scfm by reconfiguring various bulkheads and regulators, and/or adding additional curtains in the underground. With the Interim Ventilation System, approximately 106,000 scfm of air flow is expected to be supplied to the underground. Because the Interim Ventilation System has not been tested under all expected mining conditions there may be situations where 35,000 scfm is not achievable in an active waste disposal room while personnel are present.

If an active room ventilation flow rate of 35,000 scfm cannot be met, a compensatory measure to protect waste handling personnel shall be taken during waste disposal operations when workers are present. Compensatory measures will be prescribed in standard operating procedures and may include, but are not limited to, the following: the use of PPE for respiratory protection or the reduction of the IDLH-related VOC action levels in the Permit, Section 4.6.3.2., in direct proportion to the actual flow rate that is less than 35,000 scfm. Compensatory measures implemented at the WIPP facility will be recorded in the WIPP facility log, which is maintained by the CMRO. The permittees are also proposing to add a reporting requirement to Attachment O to include a tabulation of instances of when compensatory measure were implemented and the nature of the compensatory measure used.

This allows the Permittees to continue waste disposal operations during off-normal conditions, and maintenance activities. Maintenance activities may include change-out of high-efficiency particulate air filters at a determined frequency. During filter change-outs, 35,000 scfm may be unavailable to the active room.

The Permittees proposal for use of alternative remedial actions is based on several factors. First, that the Permittees can exert control over employees to ensure they are not exposed to acute exposures to VOCs. This means that instead of closing portions of the repository, it may be more appropriate to increase ventilation to the affected areas. Second, the Permittees may be able to remediate the situation by requiring PPE be worn and/or monitoring increased in the affected areas. The Permit text changes provide for the submittal, NMED approval, and implementation of the alternative remedial actions.

Removal of the 60 feet per minute (fpm) minimum air velocity is needed in order to implement the proposals in this Permit at lower flow rates. The 60 scfm specification is a design value used in the System Design Description with no basis in the Permit, current standards, or regulations. It is not used as a protective measure since operating procedures require establishing the presence of minimum breathable air conditions prior to allowing workers to enter, and the Permit provides protection for waste workers who are emplacing TRU mixed

waste in an active disposal room. Furthermore, this text is descriptive text and needs to be deleted to avoid conflict and possible confusion with the 35,000 scfm minimum flow rate requirement in the Permit.

This modification is needed to prevent disruption of waste emplacement activities and to ensure protection of underground workers in situations where 35,000 scfm is not available in the active disposal room during waste disposal operations or at times when more appropriate alternative remedial actions can be used to mitigate hazardous situations in an adjacent room.

4. **20.4.1.900 NMAC (incorporating 40 CFR 270.42 (b)(1)(iv)), requires the applicant to provide the applicable information required by 40 CFR 270.13 through 270.21, 270.62 and 270.63.**

The regulatory crosswalk describes those portions of the WIPP Permit that are affected by this PMR. Where applicable, regulatory citations in this modification reference Title 20, Chapter 4, Part 1, NMAC, revised March 9, 2009, incorporating 40 CFR Parts 264 and 270. 40 CFR §§270.16 through 270.21, 270.62, and 270.63 are not applicable at WIPP. Consequently, they are not listed in the regulatory crosswalk table.

5. **20.4.1.900 NMAC (incorporating 40 CFR 270.11(d)(1) and 40 CFR 270.30(k)), requires that any person signing under paragraph a and b must certify the document in accordance with 20.4.1.900 NMAC.**

The transmittal letter for this PMR contains the signed certification statement in accordance with Permit Part 1, Section 1.9.

Regulatory Crosswalk

Regulatory Citation(s) 20.4.1.900 NMAC (incorporating 40 CFR Part 270)	Regulatory Citation(s) 20.4.1.500 NMAC (incorporating 40 CFR Part 264)	Description of Requirement	Added or Clarified Information		
			Section of the WIPP Permit	Yes	No
§270.13		Contents of Part A permit application	Attachment B, Part A		✓
§270.14(b)(1)		General facility description	Attachment A		✓
§270.14(b)(2)	§264.13(a)	Chemical and physical analyses	Attachment C		✓
§270.14(b)(3)	§264.13(b)	Development and implementation of waste analysis plan	Attachment C		✓
	§264.13(c)	Off-site waste analysis requirements	Attachment C		✓
§270.14(b)(4)	§264.14(a-c)	Security procedures and equipment	Part 2.6		✓
§270.14(b)(5)	§264.15(a-d)	General inspection requirements	Attachment E		✓
	§264.174	Container inspections	Attachment E		✓
§270.23(a)(2)	§264.602	Miscellaneous units inspections	Attachment E		✓
§270.14(b)(6)		Request for waiver from preparedness and prevention requirements of Part 264 Subpart C	NA		✓
§270.14(b)(7)	264 Subpart D	Contingency plan requirements	Attachment D		✓
	§264.51	Contingency plan design and implementation	Attachment D		✓
	§264.52 (a) & (c-f)	Contingency plan content	Attachment D		✓
	§264.53	Contingency plan copies	Attachment D		✓
	§264.54	Contingency plan amendment	Attachment D		✓
	§264.55	Emergency coordinator	Attachment D		✓
	§264.56	Emergency procedures	Attachment D		✓
§270.14(b)(8)		Description of procedures, structures or equipment for:	Part 2.10		✓
§270.14(b)(8) (i)		Prevention of hazards in unloading operations (e.g., ramps and special forklifts)	Part 2.10		✓
§270.14(b)(8) (ii)		Runoff or flood prevention (e.g., berms, trenches, and dikes)	Part 2.10		✓
§270.14(b)(8) (iii)		Prevention of contamination of water supplies	Part 2.10		✓
§270.14(b)(8) (iv)		Mitigation of effects of equipment failure and power outages	Part 2.10		✓
§270.14(b)(8) (v)		Prevention of undue exposure of personnel (e.g., personal protective equipment)	Part 2.10		✓
§270.14(b)(8) (vi) §270.23(a)(2)	§264.601	Prevention of releases to the atmosphere	Part Part 4 Attachment A2 Attachment N		✓
	264 Subpart C	Preparedness and Prevention	Part 2.10		✓
	§264.31	Design and operation of facility	Part 2.10		✓
	§264.32	Required equipment	Part 2.10 Attachment D		✓
	§264.33	Testing and maintenance of equipment	Attachment E		✓
	§264.34	Access to communication/alarm system	Part 2.10		✓

Regulatory Citation(s) 20.4.1.900 NMAC (incorporating 40 CFR Part 270)	Regulatory Citation(s) 20.4.1.500 NMAC (incorporating 40 CFR Part 264)	Description of Requirement	Added or Clarified Information		
			Section of the WIPP Permit	Yes	No
	§264.35	Required aisle space	Part 2.10		✓
	§264.37	Arrangements with local authorities	Attachment D		✓
§270.14(b)(9)	§264.17(a-c)	Prevention of accidental ignition or reaction of ignitable, reactive, or incompatible wastes	Part 2.10		✓
§270.14(b)(10)		Traffic pattern, volume, and controls, for example: Identification of turn lanes Identification of traffic/stacking lanes, if appropriate Description of access road surface Description of access road load-bearing capacity Identification of traffic controls	Attachment A4		✓
§270.14(b)(11)(i) and (ii)	§264.18(a)	Seismic standard applicability and requirements	Part B, Rev. 6 Chapter B		✓
§270.14(b)(11)(iii-v)	§264.18(b)	100-year floodplain standard	Part B, Rev. 6 Chapter B		✓
	§264.18(c)	Other location standards	Part B, Rev. 6 Chapter B		✓
§270.14(b)(12)	§264.16(a-e)	Personnel training program	Part 2 Attachment F		✓
§270.14(b)(13)	264 Subpart G	Closure and post-closure plans	Attachment G & H		✓
§270.14(b)(13)	§264.111	Closure performance standard	Attachment G		✓
§270.14(b)(13)	§264.112(a), (b)	Written content of closure plan	Attachment G		✓
§270.14(b)(13)	§264.112(c)	Amendment of closure plan	Attachment G		✓
§270.14(b)(13)	§264.112(d)	Notification of partial and final closure	Attachment G		✓
§270.14(b)(13)	§264.112(e)	Removal of wastes and decontamination/dismantling of equipment	Attachment G		✓
§270.14(b)(13)	§264.113	Time allowed for closure	Attachment G		✓
§270.14(b)(13)	§264.114	Disposal/decontamination	Attachment G		✓
§270.14(b)(13)	§264.115	Certification of closure	Attachment G		✓
§270.14(b)(13)	§264.116	Survey plat	Attachment G		✓
§270.14(b)(13)	§264.117	Post-closure care and use of property	Attachment H		✓
§270.14(b)(13)	§264.118	Post-closure plan; amendment of plan	Attachment H		✓
§270.14(b)(13)	§264.178	Closure/containers	Attachment G		✓
§270.14(b)(13)	§264.601	Environmental performance standards-Miscellaneous units	Attachment G		✓
§270.14(b)(13)	§264.603	Post-closure care	Attachment G		✓
§270.14(b)(14)	§264.119	Post-closure notices	Attachment H		✓
§270.14(b)(15)	§264.142	Closure cost estimate	NA		✓
	§264.143	Financial assurance	NA		✓
§270.14(b)(16)	§264.144	Post-closure cost estimate	NA		✓
	§264.145	Post-closure care financial assurance	NA		✓

Regulatory Citation(s) 20.4.1.900 NMAC (incorporating 40 CFR Part 270)	Regulatory Citation(s) 20.4.1.500 NMAC (incorporating 40 CFR Part 264)	Description of Requirement	Added or Clarified Information		
			Section of the WIPP Permit	Yes	No
§270.14(b)(17)	§264.147	Liability insurance	NA		✓
§270.14(b)(18)	§264.149-150	Proof of financial coverage	NA		✓
§270.14(b)(19)(i), (vi), (vii), and (x)		Topographic map requirements Map scale and date Map orientation Legal boundaries Buildings Treatment, storage, and disposal operations Run-on/run-off control systems Fire control facilities	Attachment B Part A		✓
§270.14(b)(19)(ii)	§264.18(b)	100-year floodplain	Attachment B Part A		✓
§270.14(b)(19)(iii)		Surface waters	Attachment B Part A		✓
§270.14(b)(19)(iv)		Surrounding Land use	Attachment B Part A		✓
§270.14(b)(19)(v)		Wind rose	Attachment B Part A		✓
§270.14(b)(19)(viii)	§264.14(b)	Access controls	Attachment B Part A		✓
§270.14(b)(19)(ix)		Injection and withdrawal wells	Attachment B Part A		✓
§270.14(b)(19)(xi)		Drainage on flood control barriers	Attachment B Part A		✓
§270.14(b)(19)(xii)		Location of operational units	Attachment B Part A		✓
§270.14(b)(20)		Other federal laws Wild and Scenic Rivers Act National Historic Preservation Act Endangered Species Act Coastal Zone Management Act Fish and Wildlife Coordination Act Executive Orders	Attachment B Part A		✓
§270.15	§264 Subpart I	Containers	Attachment A1		✓
	§264.171	Condition of containers	Attachment A1		✓
	§264.172	Compatibility of waste with containers	Attachment A1		✓
	§264.173	Management of containers	Attachment A1		✓
	§264.174	Inspections	Attachment E Attachment A1		✓
§270.15(a)	§264.175	Containment systems	Attachment A1		✓
§270.15(c)	§264.176	Special requirements for ignitable or reactive waste	Part 2		✓
§270.15(d)	§264.177	Special requirements for incompatible wastes	Part 2		✓
	§264.178	Closure	Attachment G		✓
§270.15(e)	§264.179	Air emission standards	Part 4 Attachment N		✓

Regulatory Citation(s) 20.4.1.900 NMAC (incorporating 40 CFR Part 270)	Regulatory Citation(s) 20.4.1.500 NMAC (incorporating 40 CFR Part 264)	Description of Requirement	Added or Clarified Information		
			Section of the WIPP Permit	Yes	No
§270.23	264 Subpart X	Miscellaneous units	Attachment A2 Attachment O	✓	
§270.23(a)	§264.601	Detailed unit description	Attachment A2 Attachment O	✓	
§270.23(b)	§264.601	Hydrologic, geologic, and meteorologic assessments	Part 5 Attachment L		✓
§270.23(c)	§264.601	Potential exposure pathways	Part 4 Attachment A2 Attachment N		✓
§270.23(d)		Demonstration of treatment effectiveness	NA		✓
	§264.602	Monitoring, analysis, inspection, response, reporting, and corrective action	Part 2 Part 4 Part 5 Attachment A2 Attachment N Attachment O	✓	
	§264.603	Post-closure care	Attachment H Attachment H1		✓
	264 Subpart E	Manifest system, record keeping, and reporting	Part 2 Attachment C		✓

**Appendix A
Table of Changes**

Table of Changes

Affected Permit Section	Explanation of Change
Part 4, Section 4.5.3.2, Ventilation	<p>Added the acronym "(scfm)" after standard ft³/min in first paragraph.</p> <p>Replaced "standard ft³/min" with "scfm" after 35,000 in first paragraph.</p> <p>Added "If an active room ventilation rate of 35,000 scfm cannot be met, a compensatory measure shall be taken during waste disposal operations when workers are present. Compensatory measures will be prescribed in standard operating procedures and may include, but are not limited to, the following: the use of personal protective equipment (PPE) for respiratory protection or the adjustment of the immediately dangerous to life or health-related VOC action levels in the Permit, Section 4.6.3.2., in direct proportion to the actual flow rate that is less than 35,000 scfm. Compensatory measures implemented at the WIPP facility will be recorded in the WIPP facility log, which is maintained by the Central Monitoring Room Operator (CMRO) and reported to the New Mexico Environment Department in the annual Mine Ventilation Rate Monitoring Report required by Permit Attachment O." to the end of the paragraph.</p>
Part 4, Section 4.6.3.3, Remedial Action	<p>Added "Alternatively, prior to reaching these action levels, the Permittees may propose an alternative remedial action plan to the Secretary. The Permittees may implement such plans in lieu of closing and abandoning the active room only after approval by the Secretary." To the end of the paragraph.</p>
Attachment A2, Section A2-2a(3), Subsurface Structures under Underground Ventilation Description	<p>Deleted "and to exceed a minimum air velocity of 60 ft (18 m) per minute" in the third paragraph.</p> <p>Added "If an active room ventilation rate of 35,000 scfm cannot be met, a compensatory measure shall be taken during waste disposal operations when workers are present. Compensatory measures will be prescribed in standard operating procedures and may include, but are not limited to, the following: the use of personal protective equipment (PPE) for respiratory protection or the adjustment of the immediately dangerous to life or health (IDLH)-related VOC action levels in the Permit, Section 4.6.3.2., in direct proportion to the actual flow rate that is less than 35,000 scfm. Compensatory measures implemented at the WIPP facility will be recorded in the WIPP facility log, which is maintained by the Central Monitoring Room Operator (CMRO) and reported to the New Mexico Environment Department in the annual Mine Ventilation Rate Monitoring Report required by Permit Attachment O." to the end of the third paragraph.</p> <p>Added "If an active room ventilation rate of 35,000 scfm cannot be met, a compensatory measure shall be taken during waste disposal operations when workers are present. Compensatory measures will be prescribed in standard operating procedures and may include, but are not limited to, the following: the use of PPE for respiratory protection or the adjustment of the IDLH-related VOC action levels in the Permit, Section 4.6.3.2., in direct proportion to the actual flow rate that is less than 35,000 scfm. Compensatory measures implemented at the WIPP facility will be recorded in the WIPP facility log, which is maintained by the CMRO and reported to the New Mexico Environment Department in the annual Mine Ventilation Rate Monitoring Report required by Permit Attachment O." to last paragraph.</p>
Attachment O, Section O-1, Definitions	<p>Replaced "If the required ventilation rate in an active room when waste disposal is taking place cannot be achieved or cannot be supported due to operational needs, access is restricted by the use of barriers, signs and postings, or individuals stationed at the entrance to the active disposal room when ventilation rates are below 35,000 scfm." with "If an active room ventilation rate of 35,000 scfm cannot be met, a compensatory measure shall be taken during waste disposal operations when workers are present. Compensatory measures will be prescribed in standard operating procedures and may include, but are not limited to, the following: the use of personal protective equipment (PPE) for respiratory protection or the adjustment of the immediately dangerous to life or health (IDLH)-related volatile organic compound (VOC) action levels in the Permit, Section 4.6.3.2., in direct proportion to the actual flow rate that is less than 35,000 scfm. Compensatory measures implemented at the WIPP facility will be recorded in the WIPP facility log, which is maintained by the Central Monitoring Room Operator (CMRO) and reported to the New Mexico Environment Department in the annual Mine Ventilation Rate Monitoring Report required by Permit Attachment O." In fifth paragraph.</p>
Attachment O, Section O-2, Objective	<p>Added "If an active room ventilation rate of 35,000 scfm cannot be met, a compensatory measure shall be taken during waste disposal operations when workers are present. Compensatory measures will be prescribed in standard operating procedures and may include, but are not limited to, the following: the use of PPE for respiratory protection or the adjustment of the IDLH-related VOC action levels in the Permit, Section 4.6.3.2., in direct proportion to the actual flow rate that is less than 35,000 scfm. Compensatory measures implemented at the WIPP facility will be recorded in the WIPP facility log, which is maintained by the CMRO and reported to the New Mexico Environment Department in the annual Mine Ventilation Rate Monitoring Report required by Permit Attachment O." as the third bullet of the bulleted list.</p>
Attachment O, Section O-3, Design and Procedures	<p>Added "If an active room ventilation rate of 35,000 scfm cannot be met, a compensatory measure shall be taken during waste disposal operations when workers are present. Compensatory measures will be prescribed in standard operating procedures and may include, but are not limited</p>

Affected Permit Section	Explanation of Change
	to, the following: the use of PPE for respiratory protection or the adjustment of the IDLH-related VOC action levels in the Permit, Section 4.6.3.2., in direct proportion to the actual flow rate that is less than 35,000 scfm. Compensatory measures implemented at the WIPP facility will be recorded in the WIPP facility log, which is maintained by the CMRO and reported to the New Mexico Environment Department in the annual Mine Ventilation Rate Monitoring Report required by Permit Attachment O." as the fourth bullet of the bulleted list.
Attachment O, Section O-3a(1), Test and Balance Process	Replaced "airflow of 35,000 scfm" with "ventilation rate" and added "in accordance with Permit Part 4, Section 4.5.3.2." in first paragraph after bullets. Replaced "operations" with "operational" in last paragraph.
Attachment O, Section O-3b(1), Monitoring Total Mine Airflow	Deleted "Central Monitoring Room Operator's (" and ") for the CMRO acronym because the acronym is now defined in Section O-1.
Attachment O, Section O-3c(1), Verification of Active Room Minimum Airflow	Added "If an active room ventilation rate of 35,000 scfm cannot be met, a compensatory measure shall be taken during waste disposal operations when workers are present. Compensatory measures will be prescribed in standard operating procedures and may include, but are not limited to, the following: the use of PPE for respiratory protection or the adjustment of the IDLH-related VOC action levels in the Permit, Section 4.6.3.2., in direct proportion to the actual flow rate that is less than 35,000 scfm. Compensatory measures implemented at the WIPP facility will be recorded in the WIPP facility log, which is maintained by the CMRO and reported to the New Mexico Environment Department in the annual Mine Ventilation Rate Monitoring Report required by Permit Attachment O." to paragraph.
Attachment O, Section O-5a, Reporting	Added the requirement to report annually the compensatory measures put in place when waste handling is underway at flow rates less than 35,000 scfm.

Appendix B
Proposed Revised Permit Text

Proposed Revised Permit Text:

4.5.3.2 Ventilation

The Permittees shall maintain a minimum active room ventilation rate of 35,000 standard ft³/min (scfm) in each active room when waste disposal is taking place and workers are present in the room, as specified in Permit Attachment A2, Section A2-2a(3), “Subsurface Structures (Underground Ventilation System Description),” and as required by 20.4.1.500 NMAC (incorporating 40 CFR §264.601(c)).

If an active room ventilation rate of 35,000 scfm cannot be met, a compensatory measure shall be taken during waste disposal operations when workers are present. Compensatory measures will be prescribed in standard operating procedures and may include, but are not limited to, the following: the use of personal protective equipment (PPE) for respiratory protection or the adjustment of the immediately dangerous to life or health-related VOC action levels in the Permit, Section 4.6.3.2., in direct proportion to the actual flow rate that is less than 35,000 scfm. Compensatory measures implemented at the WIPP facility will be recorded in the WIPP facility log, which is maintained by the Central Monitoring Room Operator (CMRO) and reported to the New Mexico Environment Department in the annual Mine Ventilation Rate Monitoring Report required by Permit Attachment O.

4.6.3.3 Remedial Action

Upon receiving validated analytical results that indicate one or more of the VOCs specified in Table 4.4.1 in any of the closed rooms in an active panel has reached the “50% Action Level” in Table 4.6.3.2, the sampling frequency for such closed rooms will increase to once per week. The once per week sampling will continue either until the concentrations in the closed room(s) fall below the “50% Action Level” in Table 4.6.3.2, or until closure of Room 1 of the panel, whichever occurs first. If one or more of the VOCs in Table 4.4.1 in the active open room or immediately adjacent closed room reaches the “95% Action Level” in Table 4.6.3.2, another sample will be taken to confirm the existence of such a condition. If the second sample confirms that one or more of VOCs in the immediately adjacent closed room have reached the “95% Action Level” in Table 4.6.3.2, the active open room will be abandoned, ventilation barriers will be installed as specified in Permit Section 4.5.3.3, waste emplacement will proceed in the next open room, and monitoring of the subject closed room will continue at a frequency of once per week until commencement of panel closure. Alternatively, prior to reaching these action levels, the Permittees may propose an alternative remedial action plan to the

Secretary. The Permittees may implement such plans in lieu of closing and abandoning the active room only after approval by the Secretary.

A2-2a(3) Subsurface Structures

Underground Hazardous Waste Disposal Units (HWDUs)

Underground Facilities Ventilation System

Underground Ventilation System Description

The underground ventilation system consists of centrifugal exhaust fans, two identical High Efficiency Particulate Air (**HEPA**)-filter assemblies arranged in parallel, isolation dampers, a filter bypass arrangement, two skid-mounted HEPA-filter assemblies arranged in parallel, and associated ductwork. The fans, connected by the ductwork to the underground exhaust shaft so that they can independently draw air through the Exhaust Shaft, are divided into three groups. One group consists of three main exhaust fans, two of which are utilized to provide the nominal air flow of 425,000 standard ft³ per minute (**scfm**) throughout the WIPP facility underground during normal (unfiltered) operation. One main fan may be operated in the alternate mode to provide 260,000 scfm underground ventilation flow. These fans are located near the Exhaust Shaft. The second group consists of three filtration fans, and each can provide 60,000 scfm of air flow. These fans, located at the Exhaust Filter Building, can be operated in the filtration mode, where exhaust is diverted through HEPA filters, or in the reduced or minimum ventilation mode, where air is not drawn through the HEPA filters. The third group consists of two skid-mounted filtration fans and HEPA-filter assemblies, each of which can provide approximately 23,000 scfm of air flow. The skid-mounted filtration fan and HEPA-filter assemblies, referred to as the Interim Ventilation System (**IVS**) located south of the Exhaust Filter Building, are only operated in filtration mode, where exhaust is diverted through HEPA filters.

The underground mine ventilation is designed to supply sufficient quantities of air to all areas of the repository. During normal operating mode (simultaneous mining and waste emplacement operations), approximately 140,000 actual ft³ (3,962 m³) per min can be supplied to the panel area. This quantity is necessary in order to support the level of activity and the pieces of diesel equipment that are expected to be in operation.

At any given time during waste emplacement activities, there may be significant activities in multiple rooms in a panel. For example, one room may be receiving CH TRU mixed waste containers, another room may be receiving RH TRU mixed waste canisters, and the drilling of RH TRU mixed waste emplacement boreholes may be occurring in another room. The remaining rooms in a panel will either be completely filled with waste; be idle, awaiting waste handling operations; or being prepared for waste receipt. A minimum ventilation rate of 35,000 ft³ (990 m³) per minute will be maintained in each active room when waste disposal is taking place and workers are present in the room. This quantity of air is required to support the numbers and types of diesel equipment that are expected to be in operation in the area, and to support the underground personnel working in that area, and to exceed a minimum air velocity of 60 ft (18 m) per minute. The remainder of the air is needed in order to account for air leakage through inactive rooms. If an active room ventilation rate of 35,000 scfm cannot be met, a compensatory measure shall be taken during waste disposal operations when workers are present. Compensatory measures will be prescribed in standard operating procedures and may include, but are not limited to, the following: the use of personal protective equipment (PPE) for respiratory protection or the adjustment of the immediately dangerous to life or health (IDLH)-related VOC action levels in the Permit, Section 4.6.3.2., in direct proportion to the actual flow rate that is less than 35,000 scfm. Compensatory measures implemented at the WIPP facility will be recorded in the WIPP facility log, which is maintained by the Central Monitoring Room

Operator (CMRO) and reported to the New Mexico Environment Department in the annual Mine Ventilation Rate Monitoring Report required by Permit Attachment O.

Air will be routed into a panel from the intake side. Air is routed through the individual rooms within a panel using any of the following flow control devices: underground bulkheads, brattice cloth barricades, bulkheads with doors or air regulators. Bulkheads are constructed by erecting framing of rectangular steel tubing and screwing galvanized sheet metal to the framing. Bulkhead members use telescoping extensions that are attached to framing and the salt which adjust to creep. Flexible flashing attached to the bulkhead on one side and the salt on the other completes the seal of the ventilation. Where controlled airflow is required, a louver-style damper or a slide-gate (sliding panel) regulator is installed on the bulkhead. Personnel access is available through most bulkheads, and vehicular access is possible through selected bulkheads. Vehicle roll-up doors in the panel areas are not equipped with warning bells or strobe lights since these doors are to be used for limited periodic maintenance activities in the return air path. Flow is also controlled using brattice cloth barricades. These consist of chain link fence that is bolted to the salt or attached to a structural member and covered with brattice cloth; and are used in instances where the only flow control requirement is to block the air. A brattice cloth air barricade is shown in Figure A2-11. Ventilation will be maintained only in all active rooms within a panel until waste emplacement activities are completed and the panel-closure system is installed. The air will be routed simultaneously through all the active rooms within the panel. The filled rooms will be isolated from the ventilation system, while the active rooms that are actively being filled will receive a minimum of 35,000 scfm of air when workers are present to assure worker safety. If an active room ventilation rate of 35,000 scfm cannot be met, a compensatory measure shall be taken during waste disposal operations when workers are present. Compensatory measures will be prescribed in standard operating procedures and may include, but are not limited to, the following: the use of PPE for respiratory protection or the adjustment of the IDLH-related VOC action levels in the Permit, Section 4.6.3.2., in direct proportion to the actual flow rate that is less than 35,000 scfm. Compensatory measures implemented at the WIPP facility will be recorded in the WIPP facility log, which is maintained by the CMRO and reported to the New Mexico Environment Department in the annual Mine Ventilation Rate Monitoring Report required by Permit Attachment O. After all rooms within a panel are filled, the panel will be closed using a closure system described Permit Attachment G and Permit Attachment G1.

O-1 Definitions

Compliance with the mine ventilation requirements set forth in Permit Part 4 and Permit Attachment A2 requires the use and definition of the following terms:

Actual cubic feet per minute (**acfm**): The volume of air passing a fixed point in an excavation, normally determined as the product of the cross section of the excavation and the mean velocity of the air.

Standard cubic feet per minute (**scfm**): The actual cubic feet per minute passing a fixed point adjusted to standard conditions. In the Imperial measurement system, the standard condition for pressure is 14.7 pounds per square inch (**psi**) (sea level) and the standard condition for temperature is 492 degrees Rankine (freezing point of water or 32 degrees Fahrenheit). The greatest difference between acfm and scfm occurs in the summer when the pressure at the repository horizon is about 14.2 psi and the temperature is about 560 degrees Rankine (100 degrees Fahrenheit). Then

$$1 \text{ scfm} \times (560/492) \times (14.7/14.2) = 1.2 \text{ acfm}$$

A reasonably conservative conversion factor, therefore, is 1.2. Using this factor, 35,000 scfm is very nearly 35,000 x 1.2 or 42,000 acfm.

~~Restricted Access: If the required ventilation rate in an active room when waste disposal is taking place cannot be achieved or cannot be supported due to operational needs, access is restricted by the use of barriers, signs and postings, or individuals stationed at the entrance to the active disposal room when ventilation rates are below 35,000 scfm. If an active room ventilation rate of 35,000 scfm cannot be met, a compensatory measure shall be taken during waste disposal operations when workers are present. Compensatory measures will be prescribed in standard operating procedures and may include, but are not limited to, the following: the use of personal protective equipment (PPE) for respiratory protection or the adjustment of the immediately dangerous to life or health (IDLH)-related volatile organic compound (VOC) action levels in the Permit, Section 4.6.3.2., in direct proportion to the actual flow rate that is less than 35,000 scfm. Compensatory measures implemented at the WIPP facility will be recorded in the WIPP facility log, which is maintained by the Central Monitoring Room Operator (CMRO) and reported to the New Mexico Environment Department in the annual Mine Ventilation Rate Monitoring Report required by Permit Attachment O. Note: As provided in O-3c(2) entry to restricted access active rooms for the purpose of establishing normal ventilation is allowed.~~

Shift: Those work shifts when there is normal access to the Waste Isolation Pilot Plant (**WIPP**) underground.

Worker: Anyone who has normal access to the WIPP underground.

O-2 Objective

The objective of this plan is to describe how the ventilation requirements in the Permit will be met. This plan achieves this objective and documents the process by which the Permittees demonstrate compliance with the ventilation requirements by:

- Maintaining a minimum of 35,000 scfm of air through the active rooms when waste disposal is taking place and when workers are present in the rooms
- If an active room ventilation rate of 35,000 scfm cannot be met, a compensatory measure shall be taken during waste disposal operations when workers are present. Compensatory measures will be prescribed in standard operating procedures and may include, but are not limited to, the following: the use of PPE for respiratory protection or the adjustment of the IDLH-related VOC action levels in the Permit, Section 4.6.3.2., in direct proportion to the actual flow rate that is less than 35,000 scfm. Compensatory measures implemented at the WIPP facility will be recorded in the WIPP facility log, which is maintained by the CMRO and reported to the New Mexico Environment Department in the annual Mine Ventilation Rate Monitoring Report required by Permit Attachment O.

This plan contains the following elements: Objective; Design and Procedures; Equipment Calibration and Maintenance; Reporting and Record Keeping; Quality Assurance.

O-3 Design and Procedures

This section describes the four basic processes that make up the mine ventilation rate monitoring plan:

- Test and Balance, a periodic re-verification of the satisfactory performance of the entire underground ventilation system and associated components
- Monitoring of active room(s) to ensure a minimum flow of 35,000 scfm whenever waste disposal is taking place and workers are present in the room
- If an active room ventilation rate of 35,000 scfm cannot be met, a compensatory measure shall be taken during waste disposal operations when workers are present. Compensatory measures will be prescribed in standard operating procedures and may include, but are not limited to, the following: the use of PPE for respiratory protection or the adjustment of the IDLH-related VOC action levels in the Permit, Section 4.6.3.2., in direct proportion to the actual flow rate that is less than 35,000 scfm. Compensatory measures implemented at the WIPP facility will be recorded in the WIPP facility log, which is maintained by the CMRO and reported to the New Mexico Environment Department in the annual Mine Ventilation Rate Monitoring Report required by Permit Attachment O.
- Quarterly verification of the total mine airflow

O-3a Test and Balance

O-3a(1) Test and Balance Process

The WIPP ventilation system and the underground ventilation modes of operation are described in Permit Application A2-2a(3). The Permittees shall verify underground ventilation system performance by conducting a periodic Test and Balance. The Test and Balance is a comprehensive series of measurements and adjustments designed to ensure that the system is operating within acceptable design parameters. The Test and Balance is an appropriate method of verifying system flow because it provides consistent results based on good engineering practices. The testing of underground ventilation systems is described in McPherson, 1993. Once completed, the Test and Balance data become the baseline for underground ventilation system operation until the next Test and Balance is performed.

The "Test" portion of the process shall involve measuring the pressure drop and air quantity of every underground entry excluding alcoves or other dead end drifts. In addition, the tests shall verify resistance curves for each of the main regulators, measure shaft resistance, and measure main fan pressure and quantity. This is done at the highest achievable airflow to facilitate accurate measurements. From these measurements the frictional resistance of the system is determined.

Pressure shall be measured using the gage and tube method, which measures the pressure drop between two points using a calibrated pressure recording device and pitot tubes. Pressure drops across the shafts shall be measured by either calibrated barometers at the top and bottom of shafts or the gage and tube method. Airflow shall be measured using a calibrated vane anemometer to take a full entry traverse between system junctions. Fan pressure shall be measured using a calibrated pressure recording device and pitot tube to determine both static and velocity pressure components.

Multiple measurements shall be taken at each field location to ensure accurate results. Consecutive field values must fall within $\pm 5\%$ to be acceptable. These data shall be verified during the testing process by checking that:

- the sum of airflows entering and leaving a junction is equal to zero; and,
- the sum of pressure drops around any closed loop is equal to zero.

Once the measurements are taken, data shall be used to calculate the resistance of every underground drift, as well as shafts and regulators using Atkinson's Square Law

$$P=R \times Q^2$$

where the pressure drop of an entry (P) is equal to a resistance (R) times the square of the quantity of air flowing (Q) through the circuit.

The "Balance" portion of the process shall involve adjusting the settings of the system fans and regulators to achieve the desired airflow distribution in all parts of the facility for each mode of operation. Particular emphasis shall be given to the active disposal room(s) in the Waste Disposal Circuit to ensure that a minimum airflow of 35,000 scfm ventilation rate is achieved in accordance with Permit Part 4, Section 4.5.3.2. The system baseline settings for the current Balance shall be established from the previous Test and Balance. Adjustments shall then be

made to account for changes in system resistance due to excavation convergence due to salt creep, approved system modifications, or operational changes.

The Permittees shall use a commercially available ventilation simulator to process Test and Balance field data. The simulator uses the Hardy-Cross Iteration Method (McPherson, 1993) to reduce field data into a balanced ventilation network, including the appropriate regulator settings necessary to achieve proper airflow distribution for the various operating modes. Once balanced, the same simulator shall be used to evaluate changes such as future repository development and potential system modification before they are implemented.

The Test and Balance process culminates in a final report which is retained on site. Following receipt of the Test and Balance Report, the Permittees shall revise the WIPP surface and underground ventilation system procedures to incorporate any required changes to the ventilation system configuration. The Test and Balance data shall be used to adjust the operating range of fan controls, waste tower pressure, auxiliary air intake tunnel regulator settings, underground regulator settings, and door configurations. The model data and procedure changes shall be used to establish normal configuration settings to achieve the desired airflow in the underground. These settings shall then be modified by operations personnel throughout the year to compensate for system fluctuations caused by seasonal changes in psychrometric properties, and to meet specific ~~operations~~ operational needs. This ensures that the facility is operated at the design airflow rate for each ventilation mode.

O-3b Total Mine Airflow

O-3b(1) Monitoring Total Mine Airflow

The Permittees shall use ~~Central Monitoring Room Operator's (CMRO)~~ the CMRO Log to monitor total mine airflow. Run-times for the various modes of operation shall be entered into the CMRO Log. For example, if the CMRO Log indicates that the ventilation system was configured for Alternate Mode (one main fan) at 8:00 am, and that this configuration was maintained until 11:30 am, a total of 3.5 hours of run-time in Alternate Mode would be recorded. Run times are recorded to the nearest quarter hour. The CMRO shall record each time when the ventilation system configuration is changed, including periods when there is no ventilation.

O-3c Active Room Minimum Airflow

O-3c(1) Verification of Active Room Minimum Airflow

Whenever workers are present, the Permittees shall verify the minimum airflow through active room(s) when waste disposal is taking place of 35,000 scfm at the start of each shift, any time there is an operational mode change, or if there is a change in the ventilation system configuration. If an active room ventilation rate of 35,000 scfm cannot be met, a compensatory measure shall be taken during waste disposal operations when workers are present. Compensatory measures will be prescribed in standard operating procedures and may include, but are not limited to, the following: the use of PPE for respiratory protection or the adjustment of the IDLH-related VOC action levels in the Permit, Section 4.6.3.2., in direct proportion to the actual flow rate that is less than 35,000 scfm. Compensatory measures implemented at the WIPP facility will be recorded in the WIPP facility log, which is maintained by the CMRO and reported to the New Mexico Environment Department in the annual Mine Ventilation Rate Monitoring Report required by Permit Attachment O.

O-5 Reporting and Recordkeeping

O-5a Reporting

The Permittees shall submit an annual report to NMED presenting the results of the data and analysis of the Mine Ventilation Rate Monitoring Plan. In the years that the Test and Balance is performed, the Permittees will provide a summary of the results in the annual report.

The Permittees shall evaluate compliance with the minimum ventilation rate for an active room specified in Permit Section 4.5.3.2. on a monthly basis. The Permittees shall report to the Secretary in the annual report specified in Permit Section 4.6.4.2. whenever the evaluation of the mine ventilation monitoring program data identifies that the ventilation rate specified in Permit Section 4.5.3.2. has not been achieved and will identify the compensatory measures as described in Permit Part 4, Section 4.5.3.2. used to allow waste handling activities to proceed when the ventilation rate is not achieved.