Allen, Pam, NMENV

From: Maestas, Ricardo, NMENV
Sent: Wednesday, February 10, 2016 10:47 AM
To: Allen, Pam, NMENV
Subject: FW: VOC Questions
Attachments: CP-PROC-012-006 nonconform_and_nre.pdf; wp 12-vc.02.pdf

From: Chavez, Rick - RES [mailto:Rick.Chavez@wipp.ws]
Sent: Tuesday, September 01, 2015 8:44 AM
To: Maestas, Ricardo, NMENV
Cc: Basabilvazo, George - DOE; Stone, Anthony - FedNet; Urquidez, Ashley - RES; Salness, Rick - RES; Boatwright, Wesley - RES; Kehrman, Bob; Ganaway, David - RES
Subject: FW: VOC Questions

Ricardo:

Here are the requested documents per your email below.

Rick Chavez, Manager
URS Professional Solutions LLC - Regulatory Environmental Services
A Nuclear Waste Partership LLC Affiliate Company
Contractor to the U.S. Department of Energy
400-2 Cascades Avenue, Suite 203
Carlsbad, NM 88220
575-234-3225
575-706-5435

From: Maestas, Ricardo, NMENV [mailto:Ricardo.Maestas@state.nm.us]
Sent: Wednesday, August 26, 2015 1:14 PM
To: Basabilvazo, George - FedNet; Chavez, Rick - RES
Cc: Stone, Anthony - DOE; Maestas, Ricardo, NMENV
Subject: VOC Questions

Hello Rick, George,

Thank you for the current CEMRC procedures.
We see that the preface to OC-PLAN-001-005 also references the document CP-PROC-012, "Nonconformances and Non-Routine Events", which would be used if any of the methodology failed to pass QA requirements.
OC-PLAN-001-005 also references the document "Quality Assurance Project Plan for Volatile Organic Compound Monitoring", WP 12-VC.02, current revision. This looks like a WIPP procedure –and may be applicable.

Would you be able to send current versions of the following:

- CP-PROC-012
- WP 12-VC.02

We know that you are looking into providing some version of the SOW between NWP and CEMRC to better understand the detection limits in place. We appreciate this.

Also, after our TAPs evaluation discussion last week, Bob asked if the draft evaluation is enough to address the question and asked if I could send an email to George stating so.
I replied that I would discuss the evaluation with John and get back to you guys.
John has asked that we review the docs that we requested before briefing him on how our discussions went.
I have not yet discussed the TAPs evaluation with John.

Next week:
Cole, Steve and myself will be out Tuesday, Wednesday, and Thursday of next week, observing the LANL/CCP Audit.
We will all be in on Monday and Steve and I are out on Friday.

Let me know if you have any questions.
Thanks again!

Ricardo Maestas
Acting NMED WIPP Staff Manager
Hazardous Waste Bureau
2905 Rodeo Park Dr., Bldg 1
Santa Fe, New Mexico 87505
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505-476-6050

CARLSBAD ENVIRONMENTAL MONITORING & RESEARCH CENTER (CEMRC)

NONCONFORMANCES AND NON-ROUTINE EVENTS

CP-PROC-012-006-071202- _ _ _

Effective Date: November 12, 2013

CARLSBAD ENVIRONMENTAL MONITORING & RESEARCH CENTER

NEW MEXICO STATE UNIVERSITY
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NONCONFORMANCES AND NON-ROUTINE EVENTS

1.0 PURPOSE

This procedure states the responsibilities and describes the processes to identify, analyze, control, resolve, and document conditions adverse to quality. The purpose of documenting conditions adverse to quality is to provide a mechanism to track and correct deficiencies and to discern trends in failure modes.

2.0 SCOPE AND LIMITATIONS

This procedure identifies the responsibilities, interfaces and actions to be taken by all personnel with respect to conditions adverse to quality, including Nonconformances (NCRs) and Non-Routine Events (NREs), as required by the CEMRC Quality Assurance Plan. The provision for interim measures cited in this procedure derives from guidance contained in the Nuclear Regulatory Commission (NRC) Inspection Manual.

3.0 DEFINITIONS

Interim Measure – any action designed to minimize an adverse condition and/or mitigate its effects until permanent corrective action is implemented.

4.0 REFERENCES

CP-QAP-004, Current Revision, *Quality Assurance Plan*, Carlsbad Environmental Monitoring & Research Center.

Management Organization and Controls, Inspection Procedure 88005, NRC Inspection Manual, Nuclear Regulatory Commission, Issue Date 9/05/06.

5.0 PERSONNEL RESPONSIBILITIES

It is the responsibility of each staff member to meet all quality requirements and to report any condition or activity that may represent a condition adverse to quality. Notification should be made to the Laboratory Manager responsible for the area where the condition is observed. Employees are encouraged to suggest improvements for all processes. The Laboratory Manager will determine whether a condition adverse to quality exists and notify the Quality Assurance (QA) Manager. Together they will determine both the consequence level and the necessary corrective action(s). If there is disagreement between the Laboratory Manager and the QA Manager, the item of concern will be escalated to the CEMRC Director.

6.0 SAFETY

Not applicable

7.0 STOP WORK ORDER

When necessary and appropriate, the Laboratory Manager, QA Manager, or the Director may take action to mitigate potential environmental, safety, health, or programmatic impacts of the adverse condition by issuing a stop work order. All employees at CEMRC have the responsibility and the authority to stop work to mitigate imminent danger to personnel, the public, the environment or equipment. Imminent danger refers to the existence of a hazard that could result in death, serious injury, environmental impact or significant damage to equipment, and thus requires immediate action. All stop work orders must be documented by the originator on a Stop Work Order Form (Appendix A). The originator should request a Stop Work Order ID number from the QA Manager for this form. Restarting of work must have the concurrence of both the Laboratory Manager and the QA Manager. The QA Manager must verify and document the completion of all corrective actions prior to the release of the stop work order.

8.0 CONDITIONS ADVERSE TO QUALITY

A condition adverse to quality is defined as any item, service, or activity that does not conform to pre-established specifications or requirements related to materials, dimensions, configuration, operation, function, or content. Employees have the responsibility to immediately report conditions adverse to quality. Employees are encouraged to suggest improvements for all processes.

Examples of conditions adverse to quality include: the use of defective instruments, incorrect grade of reagents, sample mix-ups, loss of sample because of spillage, cross-contamination of samples, tracer or spike solutions not added, procedural violations, calculation errors discovered after the results are reported to the customer, performance checks not performed, equipment malfunction, etc. Conditions adverse to quality do not include: failure of routine QC checks that are handled in accordance with procedures or calculation errors that are discovered upon review and corrected before results are reported to the customer.

8.1 A Graded Approach

A graded approach is adopted to analyze, control, resolve and document conditions adverse to quality to ensure corrective actions employed are commensurate with the actual or potential impact of the condition. It ensures the greatest emphasis is placed on, and the proper resources are allocated to, items or processes that have the greatest effect on personnel, the environment, health, safety, performance, data, cost and schedule. The following guidelines and terms are used to grade conditions adverse to quality:

- Potential to create an environmental, health, or safety hazard
- Prospect to incur monetary loss due to damage, repair, or the need to repeat work
- Possibility of reducing the availability of a facility or equipment
- Potential for adversely affecting a program or project objective or in degrading data quality
- Potential to unfavorably impact the public's perception of the Center's mission

8.1.1 Grades of Conditions Adverse to Quality

A checklist (Appendix B) contains criteria used to determine a condition adverse to quality as a NRE or NCR. The highest Consequence Category checked regardless of the Risk Category will determine the designation for a condition adverse to quality.

Non-Routine Event (NRE) – Low Impact: An NRE is an observed lapse in a process, procedure or requirement. It is usually a single incident that does not have a significant impact on quality, operations, the environment, health and safety or reliability. This is the default level unless a higher level is selected. If the impact escalates beyond a Non-Routine Event, the condition is termed a Nonconformance.

Nonconformances (NCR) – An NCR is any item, service or activity that escalates beyond an NRE.

Nonconformances are further graded as:

- Grade A – High Impact: lack of an element, procedure or requirement that puts a process, system or program at jeopardy and could lead to a significant impact on quality, operations, the environment, health and safety or reliability. Potential exists for significant or catastrophic impact, both on and off CEMRC property or to the Center's mission or in cancellation of programs.

- Grade B – Moderate Impact: lack of an element, procedure or requirement that puts a process, system or program at jeopardy and could lead to a moderate impact on quality, operations, the environment, health and safety or reliability. Potential exists for significant impact on CEMRC property or delay in the Center's mission or programs.

The label on non-conforming items must be traceable to the NCR or NRE documentation. Results processed using out-of-compliance processes or system(s) shall be considered potentially deficient. Data that are discovered to be of impaired quality will be treated by initiating a condition adverse to quality, and graded appropriately. Procedural NCRs or NREs may be handled by providing additional training.

9.0 CORRECTIVE ACTIONS

Corrective actions are measures and actions taken to:

- Identify the root cause, rectify and preclude the repetition of conditions adverse to quality,

- Achieve permanent correction of an audit finding,

- Preclude the reoccurrence of a condition adverse to quality, or

- Rectify substandard elements of performance

10.0 ACTIONS REQUIRED TO DEAL WITH A CONDITION ADVERSE TO QUALITY

10.1 An employee identifies a situation, through observation or inquiry, in which requirements may not have been met for an item, service or process.

10.2 The employee must notify the responsible Laboratory Manager or designee that a potential condition adverse to quality exists.

10.3 The responsible Laboratory Manager or designee will determine if a condition adverse to quality has occurred.

10.3.1 When it is determined a condition adverse to quality has occurred, the Laboratory Manager must prevent the inadvertent use of the item or process, if applicable, and report the situation to the QA Manager.

10.3.2. If it is determined a condition adverse to quality has not occurred, the Laboratory Manager must document the decision in the form of a memo and maintain in his/her records. No further action is required. If the individual who reported the condition does not concur with the Laboratory Manager, he or she may report the situation to the QA Manager, and/or the Director.

10.4 Using the Graded Approach (Appendix B), the Laboratory Manager and the QA Manager determine the risk level associated with the condition and classify it as a NCR or a NRE. Further classification (as Grade A or B) of each NCR will be performed.

10.4.1 Non-Routine Event

A condition determined to be an NRE must be documented by the Laboratory Manager on an NRE Form (Appendix C). The QA Manager will provide a unique identification number for each NRE. Corrective action taken in the disposition of the NRE must be documented on the NRE Form; however, a root cause is not required.

All applicable areas of the NRE form must be filled in.

The Laboratory Manager may assign a staff member the responsibility for the implementation of corrective action; the assignment must be documented on the NRE Form.

Any corrective action taken in the disposition of deficient items through recommendations such as "use as is", "reject" or "repair", must be documented on the NRE Form. An item dispositioned as "repair", must be re-examined, re-inspected or re-tested prior to use to verify it meets acceptance using the original process and acceptance criteria.

Both the NRE Form and proposed corrective action must be completed within 30 days of the initiation of notice of a condition adverse to quality. A longer period may be provided if:

- The justification for and amount of time needed to complete corrective action are both clearly documented on the NRE Form.
- The interim measure(s) to address the adverse condition is (are) documented on the NRE Form pending completion of corrective action.

Upon completion and implementation of all corrective actions the Laboratory Manager must sign and date the NRE Form to close out the NRE. The Laboratory Manager must maintain a copy of the documentation and the original must be provided to the QA Manager.

Note: The Laboratory Manager should provide a copy of the completed NRE form to the client or sponsor, if applicable.

10.4.2 Nonconformances

A condition determined to be a NCR must be documented by the Laboratory Manager on a NCR Form (Appendix D). The QA Manager will provide a unique identification number for each NCR. The Laboratory Manager is responsible for the development of the corrective action(s) to be implemented to correct an NCR. The corrective action(s) taken and the root cause must be documented on the form.

All applicable areas of the NCR form must be filled in.

The Laboratory Manager may assign a staff member the responsibility for the implementation of corrective action; the assignment must be documented on the NCR form.

Any corrective action taken in the disposition of deficient items through recommendations such as "use as is", "reject" or "repair", must be documented on the NCR Form. An item dispositioned as "repair", must be re-examined, re-inspected or re-tested prior to use to verify it meets acceptance using the original process and acceptance criteria.

Both the NCR Form and proposed corrective action must be completed within 30 days of the initiation of notice of a condition adverse to quality. A longer period may be provided if:

- The justification for and amount of time needed to complete corrective action are both clearly documented on the NCR form.
- The interim measure(s) to mitigate the adverse condition is (are) documented on the NCR form pending completion of corrective action.

Upon completion and implementation of all corrective actions the Laboratory Manager must sign and date the NCR Form.

The QA Manager must monitor and track the implementation of corrective action for each NCR to verify that the condition has been satisfactorily resolved, the root cause has been determined and actions have been taken to preclude a recurrence of the problem. When satisfied that the corrective action(s) has been implemented and the NCR has been resolved, the QA Manager signs the NCR Form to close the NCR. The Laboratory Manager must maintain a copy of the documentation and the original must be provided to the QA Manager.

Note: A copy of the completed NCR Form should be provided by the QA Manager to the client or sponsor, if applicable.

The Laboratory Manager must review all NCR Forms on a semi-annual basis, if applicable, to determine if nonconformance trends exist. This review must be documented in the form of a report. The Laboratory Manager must maintain a copy and provide the original report to the QA Manager. The Laboratory Manager will document the trend analysis and corrective action to include the following information:

- Determine the events leading to the occurrences
- Develop an understanding of the technical and work activities associated with the condition
- Determine the extent to which similar problems exist within the Center
- Determine the effectiveness of corrective action taken
- Identify implications or impacts on work performed
- Determine whether stop work is appropriate
- Suggest actions that can be taken to preclude a recurrence

11.0 RECORDS

The following QA records, generated through implementation of this procedure, shall be prepared:

- Checklist for Grading Conditions Adverse to Quality
- Non-Routine Event Form (NRE)
- Nonconformance Report Form (NCR)
- Stop Work Order Form

12.0 QUALITY ASSURANCE

This procedure is in compliance with CP-QAP-004, *CEMRC Quality Assurance Plan.*

13.0 APPENDICES

Appendix A: Stop Work Order Form
Appendix B: Checklist for Grading Conditions Adverse to Quality
Appendix C: Non-Routine Event Report (NRE) form
Appendix D: Nonconformance Report (NCR) form

14.0 REVISION HISTORY

Revision #	Date	Description
0	07/12/02	Initial document.
1	12/17/04	Biennial review and revision.
2	01/10/07	Biennial review and revision.
3	01/14/09	Biennial review; changes in completion of NCRs and NREs; references updated.
4	01/14/11	Biennial review; minor reformatting and revision in procedure; reformatting of all appendices.
5	01/14/13	Incorporated Temp Dev; biennial review; minor reformatting and revision in procedure
6	11/12/13	Procedure Revision

APPENDIX A: STOP WORK ORDER FORM

Stop Work Order ID:	**Date of Stop Work:**	
Program/Laboratory:		
Originator Name:	**Originator Signature:**	**Date:**
Specific Activities Affected:		
Justification:		
Notification of Stop Work to applicable staff: **Name:** **Title:** **Signature:** **Date:**		
Justification of Work Restart/Corrective Action(s):		
Escalate to CEMRC Director? ☐Yes ☐No **Restart Verification:** _____ _____ **Responsible Manager** **Date** _____ _____ **QA Manager** **Date** **Additional comments, if necessary:**		

APPENDIX B: CHECKLIST FOR GRADING CONDITIONS ADVERSE TO QUALITY

RISK CATEGORY	CONSEQUENCE CATEGORY					
	Nonconformance Grade A High Impact		Nonconformance Grade B Moderate Impact		Non-Routine Event Low Impact	
Public Safety	Loss of life or serious injury; exposure to hazardous materials in excess of standards		Reportable accident		Minor non-reportable event	
Staff Safety	Loss of life or serious injury; exposure to hazardous materials in excess of standards		Reportable onsite work accident; exposure near acceptable limits		Minor event not resulting in a reportable accident	
Environmental Protection	Serious damage to the environment		Release of hazardous material exceeding established limits; Repairable damage		Unplanned release within established limits	
Compliance with Laws, Regulations, Contract Agreements	Noncompliance with laws or regulations with possible penalties		Minor technical or administrative violation(s)		Little or no adverse result	
Good Management Laboratory Practices	Not Applicable		Significant deviation from good practice		Minor deviation or slow implementation	
Center Mission/Programmatic Impact	Failure to meet critical milestone; could lead to Center shutdown; non-delivery of significant services; results in corrective action by sponsor		Failure to meet sponsor program commitments		Minor degradation in performance, cost, or schedule	
Laboratory Protection	Facility or equipment damage >$50k		Facility or equipment damage <$50k		Equipment damage or operations cost to $5k	
Public Perception	National press coverage; public demonstrations		Local press coverage; some public concern by special-interest groups		Little or no public concern	

Laboratory Manager Date

QA Manager Date

NRE/NCR Number

APPENDIX C: NON-ROUTINE EVENT FORM

Non-Routine Event ID:	**Date(s) of Non-Routine Event:**	
Program/Laboratory:		
Analyst Name:	**Analyst Signature:**	**Date:**

Nature of Non-Routine Event:

☐ Data Quality ☐ Equipment ☐ Supplies, Services ☐ Other: _____
☐ Procedural (list procedures):

Area(s) of Nonconformance (check all that apply):

☐ Sample Log-In	☐ Sample Prep.	☐ Sample Separation	☐ Materials
☐ Source Control	☐ Calibration	☐ QA/QC	☐ Data Review/Calc.
☐ Data Transfer	☐ Data Reporting	☐ Training	☐ Records
☐ Scheduling	☐ Other:		
☐ Specific process (specify):			

Description of Non-Routine Event (use additional sheets or attachments, if necessary):

Corrective Action(s) Proposed or Taken (use additional sheets or attachments, if necessary):

Person Responsible for Implementing Corrective Action(s): **By Date:**

Escalate to CEMRC Director: ☐ Yes ☐ No

Corrective Action(s) Implemented By: _____ _____
Signature Date

_____ _____
Responsible Manager Date

Additional comments, if necessary:

APPENDIX D: NONCONFORMANCE REPORT FORM

Nonconformance ID:	**Date(s) of Nonconformance:**	
Program/Laboratory:		
Analyst Name:	**Analyst Signature:**	**Date:**
Nonconformance Grade: ☐ A – High Impact ☐ B – Moderate Impact **Nature of Nonconformance or Complaint:** ☐ Data Quality ☐ Equipment ☐ Supplies, Services ☐ Other _____ ☐ Procedural (list procedures):	**Root Cause Identified:** ☐ Yes ☐ No **Please explain:**	

Area(s) of Nonconformance (check all that apply):

☐ Sample Log-In	☐ Sample Prep.	☐ Sample Separation	☐ Materials
☐ Source Control	☐ Calibration	☐ QA/QC	☐ Data Review/Calc.
☐ Data Transfer	☐ Data Reporting	☐ Training	☐ Records
☐ Scheduling	☐ Other:		
☐ Specific process (specify):			

Description of Nonconformance or Complaint (use additional sheets or attachments, if necessary):

Corrective Action(s) Proposed or Taken (use additional sheets or attachments, if necessary):

Quality Assurance Manager Concurs with Proposed Corrective Action(s): ☐ Yes ☐ No

_____ _____
Quality Assurance Manager **Date**

Person Responsible for Implementing Corrective Action(s): **By Date:**

Escalate to CEMRC Director: ☐ Yes ☐ No

Corrective Action(s) Implemented By: _____ _____
Signature **Date**

_____ _____ _____ _____
Quality Assurance Manager **Date** **Responsible Manager** **Date**

Additional comments, if necessary:

Working Copy

Effective Date: 01/22/13

WP 12-VC.02
Revision 13

Quality Assurance Project Plan for Volatile Organic Compound Monitoring

Cognizant Section: Environmental Monitoring & Hydrology

Approved By: Rick Salness

Nuclear Waste Partnership LLC

A URS-led partnership with B&W and AREVA

TABLE OF CONTENTS

CHANGE HISTORY SUMMARY

REVISION NUMBER	DATE ISSUED	DESCRIPTION OF CHANGES
10	07/15/10	• Changed Carbon Tetrachloride concentrations in Table 3
11	12/29/10	• Changed Carbon Tetrachloride in Table 3
12	05/09/11	• Updated Acronyms list to reflect changes in document. • 1.0 - changed reference doc "Quality Assurance...EPA" to SW-846 • -Modified wording throughout section and added new responsibility regarding "non-regulatory sampling." • 2.0 - Changed VOC Monitoring Program Services manager to EM&H manager. • -Added new responsibility for RCTs in 2.2.7 and Subcontract vendors in 2.2.9, modified wording throughout section. • 3.0 – New references – EPA QA/G-5, SW-846 8260B • 6.0 – New reference – 10-AD.01 • 7.0 – Modified requirements in sections 7.1, 7.2, and 7.4 • 9.0 – Added new requirements in 9.2.1, 9.2.3, 9.2.5, 9.2.6, 9.2.7, and 9.3.1 • 10.0 – Updated Table 2 and "Qualitative Accuracy" subsection • 11.0 – Deleted Table 3 • 16.0 – Added 4 new reference docs, deleted 4 no longer used • Added New attachments 1 & 2
13	1/22/13	• Provided clarification of program language, removed unnecessary detail and made editorial changes/corrections. • The major changes are: — Provided flexibility to add additional requested analytes to laboratory target analyte list and removed PASK in section 9.0. — Provided clarification on certified canister recall date in section 9.2.1. — Provided flexibility for using electronic records in section 15.0.

LIST OF TABLES

ACRONYMS AND ABBREVIATIONS

ANSI	American National Standards Institute
ARA	additional requested analyte
ASME	American Society of Mechanical Engineers
ASTM	ASTM International
BFB	bromofluorobenzene
BS/BSD	blank spike/blank spike duplicate
CAS#	Chemical Abstracts Service registry number
CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
CofC	chain-of-custody
DOE	U.S. Department of Energy
EM&H	Environmental Monitoring and Hydrology
EPA	U.S. Environmental Protection Agency
GC	gas chromatography
HWDU	hazardous waste disposal unit (panel)
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
MDL	method detection limit
MRL	method reporting limit
MS	mass spectrometry
M&TE	measurement & test equipment
NIST	National Institute of Standards and Technology
NMED	New Mexico Environment Department
NWP	Nuclear Waste Partnership LLC
Permit	Hazardous Waste Facility Permit, NM4890139088-TSDF
ppbv	parts per billion by volume
QA	quality assurance
QAPD	Quality Assurance Program Description
QAPjP	Quality Assurance Project Plan
QC	quality control

RCRA	Resource Conservation and Recovery Act
RCT	Radiological Control Technician
RPD	relative percent difference
SEC	Site Environmental Compliance
SOP	standard operating procedure
STP	standard temperature and pressure
TIC	tentatively identified compound
TRU	transuranic
VOC	volatile organic compound
WIPP	Waste Isolation Pilot Plant

1.0 INTRODUCTION [1, 2]

The U.S. Department of Energy (DOE) Carlsbad Field Office holds overall responsibility for the Waste Isolation Pilot Plant (WIPP) Project. The DOE is supported by Nuclear Waste Partnership LLC (NWP), the WIPP management and operating contractor; and by Sandia National Laboratories, the scientific advisor for the project.

This Quality Assurance Project Plan for Volatile Organic Compound Monitoring, or "QAPjP," (as described by the U.S. Environmental Protection Agency [EPA] in Chapter 1 of SW-846 [EPA, 1996]) has been prepared to document the measures that will be implemented by NWP for the DOE so that analytical data from monitoring of volatile organic compounds (VOCs) at WIPP will be of sufficient quality while complying with monitoring requirements described in the WIPP Hazardous Waste Facility Permit (Permit) (also known as "RCRA [Resource Conservation and Recovery Act] Permit"). Specifically, this plan describes the quality assurance (QA) program to be implemented and the quality control (QC) activities to be followed by NWP and its subcontractors during the course of equipment procurement, design, and installation, and air monitoring for VOCs during the waste disposal phase at WIPP.

QAPjPs are supporting documents required by the EPA for environmental monitoring and sampling programs conducted under the RCRA. Accordingly, this QAPjP addresses QA/QC activities for monitoring program elements. A brief description of the WIPP VOC Monitoring Program follows.

1.1 Waste Isolation Pilot Plant

WIPP is designed to receive, handle, and dispose of defense-generated transuranic (TRU) waste. This waste, generated by and currently stored at other DOE facilities, will be shipped to the WIPP. By definition, TRU waste contains radionuclides with an atomic number greater than 92, that of uranium (e.g., plutonium, americium, curium), a half-life greater than 20 years, and an alpha activity of 100 nanocuries per gram or greater. Some of the waste to be disposed of at WIPP is mixed TRU waste, which contains hazardous constituents regulated by the RCRA. The waste will be emplaced at WIPP in a deep, bedded salt formation approximately 2,150 feet (655 meters) below the land surface.

The design of the WIPP facility is characterized as a "room and pillar" arrangement, which allows containerized solids or solidified waste to be placed in the excavations. Equipment and personnel enter the underground facility through designated shafts. Each Underground Hazardous Waste Disposal Unit (Underground HWDU) consists of seven rooms and two access drifts. Each room is approximately 300 feet (91 meters) long, 33 feet (10 meters) wide, and 13 feet (4 meters) high. Access drifts connect the rooms and have the same cross-section.

1.2 VOC Monitoring Program

Measureable quantities of VOCs could be released from open and closed panels located at WIPP during the disposal phase of the project. The VOC Monitoring Program has been designed to monitor VOC emissions from the open and closed panels to assess compliance with the regulatory limits listed in the WIPP RCRA Permit. The VOC Monitoring Plan is responsive to requirements of 20.4.1.500 New Mexico Administrative Code, and addresses repository, disposal room, and ongoing disposal room monitoring of VOCs during the WIPP disposal phase. The technical basis for disposal room VOC monitoring is discussed in detail in the Technical Evaluation Report for Room-Based VOC monitoring (WRES, 2003).

The monitoring program will be capable of quantifying VOC concentrations in ambient mine air (i.e., Repository Monitoring) within all rooms of an active panel (i.e., disposal room monitoring), as well as for ongoing disposal room monitoring activities. Other media are not considered viable contaminant transport pathways during the WIPP operational time frame and are not addressed in this program. By the nature of WIPP operations, there is no credible mechanism for direct release of hazardous constituents to water or soil during the operational time frame.

This monitoring program will provide data for final panel closure system determination and will also allow for the detection of potentially rising concentrations from a safety standpoint.

Specific Permit elements prescribed for compliance monitoring may be modified as necessary for assessment purposes. Other air sampling events may be performed at various locations not indicated in the Permit. These samples may be collected at any accessible location in the underground or on the surface. The sample type for these samples will indicate "NR" for Non-Regulatory. For any sample type indicated as "NR," all sampling and analysis processes are exempt from specific elements of monitoring prescribed in the Permit.

2.0 VOC MONITORING PROGRAM ORGANIZATION

The overall structure of the VOC Monitoring Program and its interfaces with applicable departments are described in WP 13-1, *Nuclear Waste Partnership LLC Quality Assurance Program Description* (QAPD). Specific QC and operational responsibilities for the VOC Monitoring Program are assigned to individual groups as described in sections 2.1-2.2.

2.1 Manager, Quality Assurance Department

The NWP QA Department has the primary oversight responsibility for all aspects of the VOC Monitoring Program. The manager of this department is responsible for establishing, maintaining, and monitoring the overall NWP QA program. The manager

is responsible for establishing and implementing appropriate and effective corrective actions for reported conditions that are adverse to quality and regulatory compliance. NWP QA personnel receive technical direction from and are under the administrative control of the NWP QA manager. The NWP QA manager has the primary responsibility for verifying that personnel comply with and understand QA program objectives when conducting VOC monitoring activities. Additional responsibilities of the QA manager and the QA Department include:

- Developing and maintaining overall QA policy.
- Preparing or reviewing QA program and quality-related implementation plans, procedures, and instructions.
- Verifying that a management assessment of quality-related functions is performed on a periodic basis.
- Interfacing with VOC Monitoring Program personnel on quality-related matters.
- Planning and participating in audits and/or surveillance of quality-related activities.
- Maintaining liaison on quality matters with management and suppliers.
- Ensuring that necessary training, indoctrination, and qualification for QA personnel are provided.
- Participating in evaluation and approval of the disposition of nonconforming items, nonconformance reports, and requests for corrective actions.
- Ensuring that disagreements regarding quality problems and proposed solutions are resolved. If they cannot be resolved at the lowest level possible, they will be referred to a higher level of management for resolution.

2.2 Program Operations

The organizational responsibilities for specific aspects of program operations are described in sections 2.2.1-2.2.10.

2.2.1 Manager, Regulatory Environmental Services

The Regulatory and Environmental Services Manager has the responsibility of ensuring that VOC monitoring operations comply with applicable state and federal regulations. The Manager is also responsible for ensuring that all program reporting requirements are met.

2.2.2 Manager, Environmental Monitoring and Hydrology

The Environmental Monitoring and Hydrology (EM&H) manager is a Cognizant Manager responsible for implementing VOC monitoring activities, which includes the VOC Monitoring Program, required to ensure compliance with applicable federal and state environmental regulations. The Regulatory and Environmental Services Manager will designate the EM&H Manager. Specific VOC Monitoring Program duties of the EM&H Manager will include oversight of monitoring activities, coordination of performance activities between operations groups, control of program changes, and interface with regulatory agencies and the DOE.

The EM&H manager will ensure that trainees are closely supervised by qualified personnel when performing duties until training and qualification requirements are met.

2.2.3 Program Scientists

Program scientists are Cognizant Individuals (e.g., Environmental Scientists, Environmental Specialists) responsible for performance of the administration of the program. Primary duties include:

- Complying with this QAPjP.
- Implementing program changes.
- Coordinating laboratory activities for the VOC Monitoring Program.
- Communicating with the DOE, the New Mexico Environment Department, and the EPA with regard to this program.
- Preparing the VOC Monitoring Program semi-annual reports.
- Coordinating procurement of supplies and materials for this program.
- Preparing standard operating procedures (SOPs).
- Coordinating corrective actions.
- Verifying adequacy of the training program.
- Defining and initiating the sampling schedule.
- Facilitating laboratory performance audits.
- Requisitioning materials/equipment.

- Managing database and records and preparing data reports.
- Developing training materials for NWP personnel, as directed by management.
- Revising and updating training materials as program changes are developed and implemented.
- Developing and maintaining materials related to on-the-job training activities.

2.2.4 Field Technicians

Field sampling activities will be conducted by field technicians under the direction of the EM&H manager or Program Scientists. The field sampling staff will also be responsible for routine maintenance of VOC Monitoring Program equipment. Other duties of the field technicians include but are not limited to:

- Initiating sampling and removal of completed samples.
- Installation of sample lines.
- Troubleshooting of equipment malfunctions.
- Maintaining sample canister chain-of-custody.
- Completing field data forms.
- Maintaining sampling logbooks.
- Collecting duplicate samples on a minimum frequency of five (5) percent.
- Managing, handling, storing, and delivering/shipping samples to the laboratory.
- Identifying training needs to line management.
- Inputting data from analytical deliverables into evaluation software.
- Providing notification of conditions adverse to quality.

2.2.5 VOC Monitoring System Engineer

The VOC monitoring system Cognizant Engineer has the ultimate responsibility for the physical systems of the VOC monitoring program. This individual designs the VOC monitoring systems and controls the implementation of approved system modifications. Specific activities for this program include:

- Preparing detailed engineering design specifications.
- Requisitioning materials/equipment.
- Overseeing system construction.
- Approving action requests for VOC monitoring systems.
- Coordinating engineering change orders.
- Preparing work packages as needed.

2.2.6 Manager, Site Environmental Compliance

The Site Environmental Compliance (SEC) manager is responsible for ensuring compliance with applicable state and federal environmental regulations. The SEC manager ensures submittal of reports to the DOE and the NMED, as required by the Permit.

2.2.7 Manager, Radiological Control

The Radiological Control Manager is responsible for radiological surveys of the VOC monitoring systems and equipment. When possible radioactive contamination of samples or sampling systems exists, Radiological Control Technicians (RCTs), under the direction of the Radiological Control Manager, will perform radiological surveys on filter(s) associated with the VOC monitoring systems to determine equipment disposition. Results of these surveys will be documented and provided to EM&H. The RCTs will also be responsible for conducting canister and external contamination surveys for alpha and beta/gamma radiation, as applicable.

2.2.8 Manager, Subcontract Laboratory

The Subcontract Laboratory manager provides interface between program requirements and laboratory performance. The subcontract laboratory manager provides assistance to the EM&H manager and program technical personnel in establishing and complying with sample canister cleaning, certification, labeling, shipping, storage, and chain-of-custody procedures and analytical methods. The Subcontract Laboratory manager will establish laboratory and analytical procedures, including QA/QC procedures, and provides oversight for reporting of laboratory results.

2.2.9 Subcontract Vendor

The Subcontract Vendor has responsibility for VOC Sampler system maintenance and certification. The Subcontract Vendor is responsible for the following activities:

- Performing VOC Sampler cleaning and certification.
- Establishing equipment inventory.
- Developing on-site calibration procedures.
- Performing on-site equipment calibration.
- Preparing on-site calibration reports.
- Notifying program personnel regarding equipment calibration failures.
- Performing maintenance as required.
- Ensuring adequate sample integrity is maintained for certification samples until relinquished to the Subcontract Laboratory.

2.2.10 Manager, Technical Training

The Technical Training manager is responsible for identifying training needs associated with VOC monitoring programs and establishing related curriculums. Duties associated with this activity include:

- Maintaining training-related records.
- Providing EM&H personnel with training support during the qualification process.

3.0 QUALITY ASSURANCE PROGRAM

3.1 NWP Quality Assurance Program

The purpose of the NWP QA Program for WIPP is to establish policies to facilitate the compliance of regulatory requirements and to provide an internal means for control and review so that the work performed by NWP and its subcontractors meets or exceeds applicable requirements.

The NWP President & Project Manager is responsible for the overall direction of the NWP QA Program. A full-time professional QA staff is responsible for maintaining the QA Program and for verifying its implementation through methods that include periodic audits and surveillances.

3.2 NWP Quality Assurance Documents

The NWP QAPD and implementing procedures direct the quality-related activities at WIPP. The QAPD and implementing procedures define acceptable practices to be employed by NWP personnel and its subcontractors.

3.3 Quality Assurance Objectives for the VOC Monitoring Program

The VOC Monitoring Program will be performed in conformance with NWP QA Program requirements, DOE Orders and applicable federal (e.g., RCRA), state, and contract laws. The program objectives require the collection of quality data as follows:

- Scientific data will be of sufficient or greater quality to meet scientific and legal scrutiny.

- Data will be gathered or developed in accordance with procedures appropriate for the intended use of the data.

- Data will be of known and acceptable precision, accuracy, representativeness, completeness, traceability, and comparability as required by the project. Data quality requirements will be based on current standards established by the EPA for highly technical data.

- This QAPjP has been prepared in direct response to these goals using concepts contained in the following documents:

  — *EPA Requirements for Quality Assurance Project Plans*, EPA QA/R-5

  — *Guidance for Quality Assurance Project Plans*, EPA QA/G-5

  — Chapter 1.0 of EPA SW-846

  — WP 13-1, *Nuclear Waste Partnership LLC Quality Assurance Program Description*

Monitoring is to be performed using the concept of pressurized and subatmospheric sample collection in passivated stainless steel canisters described in the U.S. EPA Compendium Method TO-15, *Determination of Volatile Organic Compounds (VOCs) in Air Collected In Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)*, and the specifications in the WIPP RCRA Permit.

Laboratory analytical procedures have been developed based on the concepts contained in the following EPA documents:

- Compendium Method TO-15
- SW-846 8260B
- Contract Laboratory Program (CLP) document- *Volatile Organics Analysis of Ambient Air in Canisters* (Draft)

The analytical process developed specifically for samples collected at WIPP is presented in section 9.0 of this QAPjP.

3.4 Training and Indoctrination

A formal training program and documented indoctrination has been established for VOC monitoring personnel for this program. The training program was developed and implemented by VOC monitoring personnel with the support of Technical Training.

Training requirements are coordinated between the manager of Technical Training and the EM&H manager. Records generated by this training are maintained by Technical Training as quality records.

4.0 PROCUREMENT AND CONTROL OF SUBCONTRACTORS

The controls placed on subcontractor procurements of quality-related items and/or services will be based on the effect an item or service will have on program results (e.g., the design class or quality code assigned to an item or service). Procurement activities will be planned, documented, performed, and verified in accordance with the requirements of the QAPD.

To verify subcontractor conformance to program QA/QC requirements, NWP QA or its subcontractor will, as necessary, review subcontractor-prepared documentation and perform subcontractor evaluations, surveys, and audits. Subcontractors will provide access to their work areas and records for inspections and auditing. Audits of subcontractor project activities will be performed and documented as discussed in section 14.0 of this plan.

4.1 Acceptance of Item or Service

The QA Department, in conjunction with other departments, will establish methods for the acceptance of materials, equipment, and/or services in accordance with written detailed procedures. Methods for accepting material or equipment from a supplier may include source verification, receiving inspection, supplier certificate of conformance, post-installation test, or a combination thereof.

The method for accepting engineering and consulting services (installation, repair, overhaul, or maintenance work) will include any or all of the following:

- Technical verification of data produced.
- Surveillance, inspection, or audit of the activity.
- Review of objective evidence of conformance to the procurement document requirements (i.e., certifications).
- Review of qualifications and certifications of supporting personnel.

Receiving inspection will be performed in accordance with established procedures to verify proper physical characteristics, freedom from shipping damage, and cleanliness. The inspection will also verify conformance to specified requirements, considering source verification, audit activities, and the demonstrated quality performance of the supplier.

4.2 Control of Supplier Nonconformances

Supplier nonconformances will be controlled as described in section 13.0 of this plan. In addition, the supplier's QA Program shall include a nonconformance control system as required by the purchase order and/or contract.

5.0 PROCEDURES

All activities affecting the operation of the VOC Monitoring Program will be performed in accordance with documented and approved procedures. If the need arises to create or revise procedures, the procedures will be written or revised in accordance with the NWP QAPD and other applicable documents.

5.1 General Requirements

Procedures have been prepared to ensure that quality-related activities are performed under controlled conditions that include use of appropriate equipment, suitable environmental conditions, and appropriately trained personnel. These activities also comply with WIPP site safety standards and requirements as well as other safety-related documentation as required by the DOE or other governing agencies. Existing procedures, plans, and drawings contain defined acceptance criteria that verify the satisfactory accomplishment of quality-related activities.

Program-specific procedures are prepared as specified by the appropriate WIPP guidelines. The review and approval of procedures, as well as action requests for modifications and repairs, will follow established procedural guidance and published standards of the National Institute of Standards and Technology (NIST), ASTM

International (ASTM), the American National Standards Institute (ANSI), and the EPA where applicable.

5.2 Program Procedures

Program-specific procedures address individual work activities. Each procedure may include the following:

- Objective or the need for the procedure and goals of the activity.
- Scope of the activity.
- Work and/or test methods to be used and required sequential actions.
- Evaluation of data by authorized personnel.
- Technical definitions.
- Prerequisites and precautions.
- Required equipment to perform the activity.
- Calibration and performance requirements for equipment, as well as methods for recording specified data.
- Required education, training, experience, and/or certification of personnel.
- Subcontractor services and evaluation.
- Forms for the acquisition and recording of required data.
- Schedule and scope of inspections that must be completed before work continues.
- Data processing requirements - method for reduction of data and requirements for verification of the reduction process.
- Criteria for satisfactory completion.
- Corrective actions to be followed.
- Performance frequency for testing or monitoring.
- Required analyses, interpretations, judgments, and calculations.

- Documentation and reporting requirements - required documentation of equipment calibration, performance, data acquisition, data reduction, inspection, and analyses. Records will include date(s) of test(s) and actions taken in connection with any deviation noted.

- QA hold/witness points.

6.0 EQUIPMENT CALIBRATION/MAINTENANCE

Measurement and test equipment (M&TE) used in the field and laboratory will be controlled by a formal calibration program in accordance with the requirements of the NWP QAPD and applicable procedures and standards. Equipment calibration requirements for subcontractor-provided equipment are established by this QAPjP and by subcontractor SOPs. Control and calibration of installed plant equipment will conform with established requirements for equipment type, range, accuracy, and precision to provide data compatible with the specified requirements and desired results. Calibration of M&TE may be performed internally using primary reference standards or externally by laboratories, agencies, manufacturers, or other suppliers.

6.1 Responsibilities

The EM&H manager has the primary responsibility for the monitoring systems. It is the responsibility of the EM&H manager to provide the maintenance subcontractor with the information required for the development of calibration procedures for use in equipment calibration (e.g., vendor specifications, calibration frequencies). It is the responsibility of the maintenance subcontractor to develop calibration procedures and to calibrate the equipment. Procedures for equipment calibrated off-site are documented in the subcontractor QAPjPs and SOPs. The EM&H manager is responsible for ensuring that field equipment is submitted on time for calibration and that properly calibrated equipment is used in the field.

6.2 Off-Site Calibration Procedures

The calibration functions regarding the VOC canister samplers (mass flow controllers and gauges) will be performed by the subcontractor that cleans and certifies the VOC samplers. The calibration procedures for these types of equipment are documented by the subcontractor in its SOPs and QAPjPs, and must be approved by the cognizant engineer prior to use. Each VOC sampler mass flow controller, pressure gauge, and vacuum/pressure gauge will be calibrated/certified as a part of each VOC sampler cleaning and certification. Calibration of other M&TE used will be arranged through WIPP Metrology as described in WP 10-AD.01.
The cognizant engineer is responsible for specifying calibration requirements for all system-related instruments.

Calibration and control of M&TE will be managed in accordance with the QAPD.

6.3 Preventive Maintenance

Periodic preventive maintenance for critical sampling equipment will be performed during each cleaning and certification cycle and as needed. Maintenance of the VOC canister samplers and associated monitoring equipment will include, but not be limited to, replacement of damaged or malfunctioning parts, leak testing, and cleaning of samplers and associated equipment. Spare VOC Samplers are kept on hand to ensure that there are sufficient units to continue sampling in the unexpected event of instrument failure or quality concerns.

7.0 SAMPLING PROGRAM

Sampling activities, such as collection, packaging, handling, shipping, and sample storage, will be performed in accordance with approved procedures based on the concepts described in EPA Compendium Method TO-15.

The basic concepts of the method included in the sampling program are:

- Use of VOC canister samplers to produce pressurized samples in passivated stainless steel canisters.

- Use of air sampling equipment to produce subatmospheric samples in passivated stainless steel canisters.

7.1 Sampling Activities

The VOC Monitoring Program involves the collection of air samples in passivated stainless steel canisters. Air samples will be collected in these canisters in accordance with applicable WIPP procedures. Certified VOC canister samplers are programmed to collect time-weighted average/time-integrated six-hour air samples at multiple sampling locations for repository and disposal room VOC monitoring. Performance is described in the sampling SOP as pressurized sampling. Subatmospheric samples will be obtained for ongoing disposal room VOC monitoring in room 1 of a filled panel. A filled panel is an Underground HWDU no longer receiving waste for emplacement. Monthly sampling of filled panels is required unless an explosion-isolation wall is installed. Performance is described in the sampling SOP as subatmospheric short duration time-integrated sampling.

Sampling activities and data collection will be documented and records retained as described in section 15.0. Field operations staff will maintain records appropriate to the activities.

Any logs, data collection/recording tools, including photographs, will be identified with sufficient information to allow retention and retrieval. Photographs will be taken in

accordance with NWP procedures. Field data forms will be designed to meet program data and records retention requirements.

7.2 Sample Collection Procedures for VOC Sampling

Sample collection is described in the Permit and applicable sampling procedures. The Permit and VOC Monitoring Plan (WP 12-VC.01) define the location and frequency of sampling at WIPP to ensure effective representation of site conditions. Sampling station locations are shown in Figure 7-1 and Figure 7-2. Design information for VOC canister sampler is contained in engineering documentation.

Six-liter passivated stainless steel sample canisters will be used in the VOC monitoring process. These canisters will undergo rigorous cleaning and certification procedures prior to being used to obtain a sample. Cleaning and certification of canisters is described in section 9.2.1. The vacuum of certified clean canisters will be verified as adequate upon initiation of a sample cycle as described in sampling SOPs.

For pressurized VOC sampling, the specific air sampling units to be used at the stations are automated ambient air VOC canister samplers. The sampling systems use a diaphragm pump, an electronic mass flow controller, a vacuum/pressure gauge, a pumphead pressure gauge, a programmable smart relay, an elapsed time indicator, and two ports (allows for duplicate sampling) for connecting sample canisters. The samplers will be operated in a pressurized mode, and should yield sample volumes of approximately 12 liters. The sample is pumped into the passivated stainless-steel canisters by the sampling system, which regulates the rate and duration of the sampling event and the final canister pressure.

The pressurized sampling equipment will be certified clean prior to initial use. For continued use, recertification will be required for each individual sampler one year after being placed in service. Cleaning and certification of the sampling equipment will be performed by the on-site or contracted laboratory using zero air and humid calibration gas standard. The cleaning and certification procedure is derived from concepts contained in EPA Compendium Method TO-15.

Subatmospheric samples collected for hydrogen/methane monitoring of Room 1 of a filled panel may also be analyzed to monitor ongoing disposal room VOC concentrations. Sampling processes and sampling QA requirements are therefore identified in WP 12-VC.04.

As part of sampling system designs, air samples must first pass through two particulate filters. As described in sampling procedures, these filters may be counted by Radiological Control Technicians for contamination prior to removing the sample canister from the underground. If the filters or sample canisters are determined to be contaminated with TRU radioactive material, the Radiological Control Manager will be contacted to determine equipment disposition.

7.3 Sample Identification

Sample canisters will be marked with identification at the time of collection of the sample. Sample identification will include data items required by the VOC sampling procedures.

7.4 Sample Shipping and Storage

Samples for laboratory analysis will be collected and transferred to the subcontract laboratory accompanied by a chain-of-custody (CofC) record (example attachment 1) following CofC procedures as discussed in section 8.0. A Request for Analysis Form (example attachment 2) will be completed to identify the sample canister number(s), sample type, and analysis required to obtain analytical results. Samples will be delivered/shipped to the subcontract laboratory for analysis in accordance with established sample holding times and program schedule. No samples will be accepted by the receiving laboratory personnel unless they are properly labeled and custody maintained. Appropriate vacuum/pressure readings will be taken as prescribed in laboratory SOPs.

All samples will be maintained at ambient temperature from the time of collection until time of disposal at the analytical laboratory. Completed samples will generally be received at the laboratory weekly. Most canisters will be pressurized during the sampling process, and additional pressurization at the laboratory using dilution gases will not routinely be necessary for analyses of pressurized samples. Subatmospheric samples requiring VOC analysis will generally be received at the laboratory monthly for filled panels requiring ongoing monitoring. These samples will require some dilution. Some pressurized and subatmospheric samples will require serial dilutions when concentrations exceed the initial calibration range. Analysis involving dilutions will be reported with a dilution factor and nature of the dilution gas. Sample analysis results will be corrected for dilutions. Canister pressure or vacuum readings will be documented after sample receipt by the analytical lab to confirm that no significant changes in vacuum/pressure occurred during shipping and storage.

8.0 CHAIN-OF-CUSTODY

One of the significant considerations for laboratory analysis data is demonstration that collected samples were obtained from the locations stated and that they reached the laboratory without alteration. To satisfy this requirement, evidence of collection, shipment, laboratory receipt, and custody must be documented with a CofC record that demonstrates process activities through ultimate sample disposal.

A CofC record (example attachment 1) will be initiated by personnel after receiving clean certified canisters. Applicable WIPP procedures define the process.

9.0 VOC LABORATORY ANALYSIS

Laboratory activities will be performed in accordance with approved procedures and are based on the concepts described in EPA Compendium Method TO-15, EPA SW-846 8260B, and EPA CLP document.

Laboratory activities to be performed as part of this program involve five primary tasks:

- Cleaning and certification of sample canisters.
- Analysis of QC samples.
- Analysis of sample canisters.
- Analysis of VOC sampler cleaning and certification samples.
- Preparation of analytical reports.

Each of these activities is discussed later in this section. Target VOC analytes for the VOC Monitoring Program will include the compounds listed in table 2. Some non-targets may be included on the laboratory's target analyte list as additional requested analytes (ARA) to gain a better understanding of potential concentrations and associated risk. The analytical laboratory will be directed to calibrate for ARAs when requested, and classify and report other non-target VOCs as tentatively identified compounds (TICs), if tentative identification can be made as described in section 9.2.6.

Data quality objectives indicated in table 2 are derived from control criteria proposed by the EPA in the draft CLP document Volatile Organics Analysis of Ambient Air in Canisters.

Laboratory analysis will be performed under a formal QA program in accordance with documented and approved procedures by trained and qualified personnel in accordance with the defined QA program objectives for precision, accuracy, completeness, representativeness, comparability, traceability, and sensitivity. The QC activities implemented during this program will provide a basis for assessing the QA parameters.

Analytical testing will be controlled by a laboratory QA program (including, as appropriate, method certification, internal chain-of-custody, analysis of method blanks, laboratory duplicates, check standards, and internal standards). In addition, field QC samples (duplicates) will be collected and analyzed. Test performance, QC analyses, and results will be documented using data forms/formats defined in applicable procedures.

A Statement of Work has been submitted to the laboratory listing specific requirements of the analytical laboratory, including:

- Analytical parameters and methods.

- Sample canister cleaning and certification.

- Sampler cleaning and certification samples.
- Sample volumes and holding times.
- QC sample analysis.
- Laboratory reporting requirements.
- Providing applicable SOPs to NWP.
- Other requirements contained in this plan.

9.1 Initiation of Laboratory Analysis

Procedures established by NWP and the laboratory will be examined to determine that the appropriate chain-of-custody and sample management steps are in place and will adequately assure the integrity of samples and the program.

9.2 Laboratory Analytical Procedures

This subsection summarizes laboratory analytical procedures for analysis of VOCs collected in passivated canisters.

9.2.1 Sampler and Canister Cleaning and Certification

Both the VOC samplers used for pressurized VOC sampling and the sample canisters must undergo cleaning and certification procedures prior to initial use. The calibration functions of VOC samplers are certified as described in section 6.2. Sampling systems, including sample inlet lines, will be cleaned and leak checked and samplers will undergo a humid zero air certification to demonstrate that no target VOCs exist in the systems at concentrations ≥ 0.2 ppbv for each target VOC listed in table 2. Samplers not meeting this criterion but demonstrated to be free of contamination above the required MRL for repository VOC monitoring (see table 2) will be designated as a limited use sampler. Finally, the samplers will be tested with a humid calibration gas standard. Target compound recoveries between 90 and 110 percent are expected. For continued use, recertification will be required for each individual sampler one year after being placed in service. The responsibility of the laboratory is to process and analyze VOC sampler certification samples and provide the results to the Subcontract Vendor (section 2.2.9) and NWP. The Subcontract Vendor performs the cleaning and certification of the VOC samplers.

Before each use, canisters will be cleaned and certified by the laboratory (batch certification acceptable). A procedure describing this process will be provided by the subcontract analytical laboratory to NWP. This procedure can be based on cleaning concepts contained in EPA Compendium Method TO-15 and the Draft EPA CLP

document Volatile Organics Analysis of Ambient Air in Canisters or developed using in-house proprietary SOPs. Regardless of the process used for cleaning, the canisters will be leak tested, certified clean, and evacuated to < 0.05 mmHg (i.e., < 50 mtorr) before they are used for sampling. A batch of canisters will be certified clean if no target VOCs are detected in the representative canister at concentrations ≥ 0.2 ppbv for each target VOC listed in table 2. A recall date is assigned to cleaned and certified canisters as one year from the cleaning certification date. If a canister is not used for sampling before the recall date expires, the canister must be recertified before use for sampling.

9.2.2 Sample Management

Samples will arrive at the laboratory under CofC. The laboratory will receive custody of the samples and maintain controlled custody of the samples throughout the analysis. Samples must be maintained at ambient temperature until time of disposal at the laboratory.

9.2.3 Analytical Systems Requirements

The analytical system will consist of three major components. These components are presented below.

a. Sample Introduction System for Canisters

The sample introduction system will include heated components equipped with thermostats to minimize adsorption of VOCs. It may include a solid phase drying tube to remove moisture from the gas stream. One or more cryogenic traps may be used to focus and desorb trapped material. Transfer lines within the introduction unit will be heated so that VOCs are not actively adsorbed and tubing will be of a low dead-volume type. The introduction system will have an in-line mass flow controller or fixed volume loop for higher concentration samples. The introduction unit will be capable of introducing internal standards directly into the sample flow path.

b. Analyte Separation

Analyte separation will be achieved by Gas Chromatography (GC).

c. Detection System

Analyte detection will be performed by a mass spectrometer in the SCAN mode. The mass spectrometer and software capabilities must meet the following:

- Capable of scanning from 35 to 300 atomic mass units every one second or less in the SCAN mode.

- Utilize 70 volts (nominal) electron energy in the electron impact ionization mode.

- Produce a mass spectrum which meets all the instrument performance acceptance criteria when 50 nanograms (ng) or less of bromofluorobenzene (BFB), Chemical Abstracts Service registry number (CAS#) 460-00-4, is introduced to the analytical system

- Include a data system capable of continuous acquisition and storage of raw data on machine readable media.

- Have a computer algorithm for analyte quantitation and forward library searches.

9.2.4 Calibration Standards

Certified primary standards will be obtained from approved suppliers for the target VOCs as well as the internal standards and BFB. Secondary standards may be prepared from dilution of the primary standards. Alternatively, analytes that are gases at STP may be prepared in a static gas dilution bottle. For analytes that are liquids or solids at STP, a mixture may be made and loaded directly into a standard preparation cylinder. These standards will be checked against EPA audit cylinders or other reference materials to verify the accuracy of their concentrations. An audit accuracy of ≤30 %, as described in EPA Compendium Method TO-15, is required.

Laboratory procedures specify detailed requirements for preparation of standards and reagents, including requirements for grades of materials, equipment, and record keeping.

9.2.5 Calibration Procedures

Prior to the analysis of a sample, the GC/MS system must undergo tuning and a mass calibration check. Tuning acceptance is checked by introducing ≤ 50 ng of BFB into the analytical system.

The requirements for relative ion abundances (see table 1) must be met before analyses may proceed. BFB requirements must be met before initiation of an analytical run sequence and for each 24 hours of analytical system operation.

Table 1 – BFB Key Ions and Abundance Criteria

Mass	Ion Abundance Criteria
50	8 to 40 percent of mass 95
75	30 to 66 percent of mass 95
95	Base Peak, 100 percent Relative Abundance
96	5 to 9 percent of mass 95
173	<2 percent of mass 174
174	50 to 120 percent of mass 95
175	4 to 9 percent of mass 174
176	93 to 101 percent of mass 174
177	5 to 9 percent of mass 176

Calibration standards for the target VOCs in passivated canisters will be prepared and analyzed at a minimum of five concentrations. These concentrations should be within the linear range of the instrument; however, if some nonlinearity exists, concentrations may be determined through curve fitting or physical plotting of data. One standard concentration should be less than or equal to the required method reporting limit (MRL). Average Relative Response Factors (RRF) will be generated for each target compound. These response factors must meet the requirements listed in section 10.0. The method used for quantitation of the data must be reported with the analytical results. In addition, a single-point calibration check will be performed for each 24 hours of analytical system operation.

9.2.6 Library Searches

In every sample analyzed, a search of a library of mass spectra to attempt to tentatively identify non-target compounds with chromatographic peaks with area responses that are at least 10 percent of the area response of the relevant internal standard must be performed. Guidelines for making tentative identifications can be found in EPA Method SW-846 8260B. Tentatively Identified Compounds (TICs) will be reported as described in section 9.2.7. If identification cannot be made based on recommended guidelines, the non-target will be identified as "unknown."

9.2.7 Data Reporting

Target analyte concentrations will be quantified using the responses from the initial calibration. The average RRFs of the calibration standard used for quantitation will be reported with the analytical results. Non-target sample constituents identified by library searches will be reported as TICs, and concentration calculations will be based on a response factor of one. The average response factors of the calibration standard used for quantitation will be submitted with the results. Copies of spectra, with library search results (purity and fit), will be submitted with the data reports. A table listing the analytical run sequence with the corresponding internal standard area counts must be reported. Any nonconformances must be included with the reporting of the data.

Analytical laboratory data package contents and organization will be similar to requirements in the EPA CLP document. Raw and processed GC/MS data must be stored on magnetic tape or disk and maintained for the duration of this program.

9.3 Quality Control Testing

The specific project activities that will be performed for QC are presented in section 9.3.1.

9.3.1 Types and Frequencies of Quality Control Analysis

To ensure data quality, QC protocols and check sample analysis will be performed by the analytical laboratory. The QC checks performed by the laboratory are described in the following subsections.

a. Method Certification

An initial phase in the Analytical Laboratory Testing Program includes certification of the selected analytical methods. The certification procedure involves: (1) establishing an analytical procedure for method performance; (2) training analysts in proper equipment operation and method performance; (3) generating initial method performance data (e.g., calibration curves, method detection limit [MDL] studies); and (4) eliminating or minimizing determinate errors that may be due to analyst error or to the use of inadequate equipment, reagents, or gases. Neat compounds will be a standard grade of purity (>98.0 percent) or the purity will be reported prior to analysis. Standard gas mixture certifications will be verified.

b. Blank Analysis

Two different types of blanks will be used during the study.

Method Blank -- Method blanks will be analyzed to evaluate the cumulative potential of sample contaminants and interferences due to laboratory conditions and activities. A method blank will be prepared and analyzed for each 24 hours of analytical system operation. The main contaminant sources of the target analytes are dilution gases; carrier gases; system contaminants arising from tubing, valves, and other system components; residual contaminants from prior analysis (i.e., carryover); and solvent vapors in the laboratory.

Blank corrections are not performed for the sample analysis; therefore method blank results must be less than 0.5 ppbv for each target VOC listed in table 2 when EPA Compendium Method TO-15 analysis is performed. When analysis is performed based on concepts of EPA Method SW-846 8260B, method blank technical acceptance criteria will be as described in Chapter 1 of SW-846.

Certification Blanks -- Laboratory blanks will be analyzed routinely as part of the cleaning and certification processes applied to canisters and samplers to verify the effectiveness of these processes. Acceptance criteria are described in section 9.2.1.

c. Laboratory Control Sample Analysis

A laboratory control sample (LCS) or blank spike (BS) is an internal QC sample derived from a certified reference gas. The reference gas will contain the target VOCs at known concentrations and will be independent of instrument calibration gas standards (i.e., different vendor or same vendor, different lot #). Percent recovery for LCS analysis will be used to assess laboratory accuracy. LCSs will be analyzed for each sample batch at a frequency of 10 percent, or one per analytical lot, whichever is more frequent.

d. Duplicate Analysis

Laboratory duplicate analysis (i.e., duplicate injections) will be performed by the laboratory on single sample canisters. Laboratory duplicate analysis will be used to determine laboratory precision. Laboratory duplicates will be analyzed for each sample batch at a frequency of 10 percent, or one per analytical lot, whichever is more frequent.

Field duplicate samples (two canisters filled simultaneously) will be collected in the field at a frequency of at least 5 percent. The duplicate samples will be analyzed and the results will be used to assess field sampling precision.

Additional precision determination is made by performance of duplicate analysis for all LCSs in each analytical batch.

10.0 QUALITY ASSURANCE OBJECTIVES

The QA activities for the VOC monitoring programs will be conducted in accordance with the following EPA documents: Guidance for Quality Assurance Project Plans, EPA QA/G-5 (EPA, 2002), and the EPA Requirements for Quality Assurance Project Plans, EPA QA/R-5 (EPA, 2001). This section addresses the methods to be used to evaluate the effectiveness of the components of the measurement systems and how this evaluation will be used to define data quality. Definitions for the key objectives are presented in this section. Specific objectives for data quality are presented in table 2.

Table 2 – Quality Assurance Objectives for Accuracy, Precision, Sensitivity, and Completeness

Compound	Accuracy (Percent Recovery)	Precision (RPD)* Laboratory	Precision (RPD)* Field	Required MRL (ppbv)* Repository	Required MRL (ppbv)* Disposal Room	Completeness (Percent)
Carbon tetrachloride	60 to 140	≤25	≤35	2	500	≥95
Chlorobenzene	60 to 140	≤25	≤35	2	500	≥95
Chloroform	60 to 140	≤25	≤35	2	500	≥95
1,1-Dichloroethylene	60 to 140	≤25	≤35	5	500	≥95
1,2-Dichloroethane	60 to 140	≤25	≤35	2	500	≥95
Methylene Chloride	60 to 140	≤25	≤35	5	500	≥95
1,1,2,2-Tetrachloroethane	60 to 140	≤25	≤35	2	500	≥95
Toluene	60 to 140	≤25	≤35	5	500	≥95
1,1,1-Trichloroethane	60 to 140	≤25	≤35	5	500	≥95

* RPD - relative percent difference
ppbv - parts per billion by volume

- Precision will be defined and evaluated by the RPD between duplicate samples, including field duplicates, between laboratory duplicate samples, and between LCS and Laboratory Control Sample Duplicate (LCSD) recoveries, as follows:

$$RPD = \left(\frac{(|A - B|)}{(A + B)/2} \right) * 100$$

Where: A = Original sample result
B = Duplicate sample result
Note: vertical lines in the formula above indicate absolute value of A-B.

- Accuracy is measured and evaluated through the use of analytical standards, by analysis of method blanks, and by the recoveries of blank spikes (LCS/LCSD or BS/BSD). Because recovery standards cannot reliably be added to the sampling stream, overall system accuracy must be based on analytical instrument performance evaluation criteria. These criteria will include performance verification criteria for instrument calibrations, LCSs, LCSDs, and internal standard area responses. These criteria will constitute the verification of accuracy for the target analyte quantification (i.e., quantitative accuracy). Evaluation of standard ion abundance criteria for BFB will be used to evaluate the accuracy of the analytical system in the identification of target analytes, as well as the evaluation of unknown constituents (qualitative accuracy).

Quantitative accuracy is defined as:

Percent recovery = X / T x 100

Where,

T = True or reference value of the analyte being measured

X = Experimentally determined value of the analyte recovered from the standard

- Sensitivity is defined by the MRLs for the program. Attainment of MRLs will be verified by the performance of statistical MDL studies in accordance with 40 CFR Part 136 Appendix B. The MDL represents the minimum concentration that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero. An MDL study will be performed at least annually by the program analytical laboratory and after major changes in instrument configuration.

- Completeness is defined as the percentage of the ratio of the number of valid sample results received that meet data quality objectives (i.e., precision, accuracy) versus the total number of samples required to be collected. Completeness may be affected, for example, by sample loss or destruction during shipping, laboratory sample handling errors, inability to collect the required samples, or by rejection of analytical data during data validation. Completeness will be assessed by the following equation:

Percent complete = $\frac{D_r}{D_c} x100$

Where,

D_r = Number of samples for which valid results are reported
D_c = Number of collected samples

a. Evaluation of Laboratory Precision

Laboratory duplicates will be used for the evaluation of laboratory precision. Duplicate analysis will be performed on single sample canisters. Laboratory duplicate values will be evaluated through the use of control charts. The data quality objective for laboratory precision is ≤ 25 RPD for each set of duplicate analysis.

b. Evaluation of Field Precision

Duplicate canister samples will be taken in the field at a frequency of at least 5 percent and analyzed individually. The data quality objective for field precision is ≤ 35 RPD for each set of duplicate samples.

c. Evaluation of Laboratory Accuracy

Both quantitative and qualitative accuracy evaluations will be performed in the laboratory.

Quantitative Accuracy

Quantitative analytical accuracy will be evaluated through performance criteria based on average relative response factors (RRFs) generated during instrument calibration, analysis of LCSs/LCSDs. For the initial calibration, any single response factor for a particular target analyte, can differ by no more than 30 percent from the average of the initial calibration response factors. After the successful completion of the calibration, it is sufficient to analyze only a midpoint standard for every 24 hours of analytical system operation (i.e., continuing calibration). The RRFs of the midpoint standard must pass the ≤ 30 percent difference acceptance criterion for each target analyte before sample analysis may begin.

Percent recoveries for the target analytes will be calculated for each LCS and LCSD relative to the known reference concentrations. Objectives for percent recovery, listed in table 2, are based on accuracy criteria proposed by EPA for canister sampling programs. LCSs/LCSDs will be analyzed with each sample lot.

Internal standard areas will be monitored as a verification of stable instrument performance. In the absence of any unusual interferences, areas should not change by more than 40 percent over a 24-hour period. Deviations larger than 40 percent are an indication of a potential instrument malfunction. If an internal standard area in a given sample changes by more than 40 percent, the sample must be reanalyzed. If the 40 percent criterion is not achieved during the reanalysis, the instrument must undergo a performance check and the midpoint standard must be reanalyzed to verify proper operation.

Qualitative Accuracy

Qualitative accuracy in the identification of target analytes will be evaluated as follows:

a. Evaluation of Sensitivity

The MDL for each of the target analytes will be evaluated by the analytical laboratory before sampling begins. An MDL evaluation will be performed initially and at least

annually thereafter. MDL evaluations will be performed in accordance with 40 CFR Part 136 Appendix B.

The presence of aerosol salts in underground locations may affect the MDL of the samples taken in those areas. The sample canisters will be sufficiently protected with in-line filters to minimize aerosol particulate interference.

b. Completeness

The expected completeness objective (i.e., percentage of valid data obtained from the total planned) for this program is greater than or equal to 95 percent. Data completeness will be tracked and evaluated monthly.

c. Representativeness

The monitoring program has been designed to collect air samples that are representative of the media being sampled. Repository and disposal room VOC monitoring samples are programmed to collect for a six-hour duration. The sampling locations, as prescribed in the Permit, were selected to provide representative samples. For ongoing disposal room VOC monitoring, subatmospheric samples are collected from a steady stream of air being pulled from Room 1 of a filled panel at a set flow rate.

11.0 LABORATORY ANALYSIS DOCUMENTATION AND REPORTING

QA requirements for laboratory analysis documentation and reporting are described in sections 11.1-11.2.

11.1 Documentation

Laboratory analytical programs will systematically and uniformly document administrative and technical information. Necessary forms will be reviewed and approved by EM&H prior to initiating the analytical programs. Data forms will be completed during the analysis processes. Requested information will be addressed or designated as not applicable. This information will include, as appropriate:

- Program identification.
- Identification of reporting personnel.
- Analysis date.
- Identification number of calibrated equipment used.
- Identification and description of sample(s) analyzed.
- Analytical results.
- QC check results.
- Unusual conditions encountered.

Data evaluation will include the analysis results of method blanks, LCSs/LCSDs, duplicate samples, and instrument calibration. These data will be summarized appropriately and the results transmitted to the program files. Laboratory administrative forms, analytical raw data, QC raw data, computer printouts, internal logs, and check prints will be organized and maintained in accordance with the American Society of Mechanical Engineers (ASME), NQA-1-1989, or transmitted to the program files as required (section 15.0).

11.2 Laboratory Data Reporting

Designated laboratory personnel will review analytical results prior to external distribution. The reviewer will, as appropriate:

- Compare analyses performed to the requested analytical program.
- Review results for reasonableness.
- Review QC data results.
- Verify that required checking was properly performed.
- Review holding time requirements.

If the review indicates that data meet program quality requirements, the data will be released to the EM&H manager or other Cognizant Individuals as "final" information. At this point, proper disposal of applicable samples by the subcontract laboratory may commence.

12.0 DATA ANALYSIS AND REPORTING

Analytical data for the sampling program will be evaluated to calculate concentrations of target compounds attributed to Underground HWDUs. Results will be reported to the New Mexico Environment Department (and the DOE) in accordance with reporting requirements of the WIPP RCRA Permit.

Data analyses and reporting activities will be performed in a planned and controlled manner. Any changes to final analyses will be subject to the same level of control used for the originals. Performance responsibility rests with the EM&H manager.

12.1 Calculations

Documentation will be sufficient to permit a technically qualified individual to review and understand the calculations and to verify the results. Each calculation sheet will be signed and dated by the originator and the person who checked the calculation.

Calculations should, as appropriate, include a statement of calculation intent, description of methodology used, assumptions and their justifications, input data analyses (including computer types, program name and revision, inputs and outputs,

status of program verification, and the basis for application of the program), numerical calculations (including units), and results.

Verification of calculations will be performed by a technically qualified individual(s) other than the person(s) who performed the original work, or specified the method, or established the parameters to be used. Verification will be performed prior to release of the results of calculations in final reports, or the unverified information will be clearly identified and controlled. Evidence of verification will be documented.

12.2 Computer Software

The use of computer software for data management and validation will be controlled in accordance with the NWP QAPD.

12.3 Qualification of Data Management Personnel

Personnel performing test activities will have experience and receive the training necessary to provide a complete understanding of the program to be tested. Indoctrination to the technical objectives and requirements of the QA Program elements will be required.

12.4 Data Presentation

The results of analyses may be presented in figures and/or tables within the individual data packages.

12.5 Data Validation and Corrective Actions

This section of the QAPjP presents a discussion of data validation and corrective actions.

Data Validation

Data and records generated by field sampling personnel and laboratory reports will be reviewed for completeness and correctness. The criteria that will be used to validate data integrity are shown in table 2. Data points that do not meet program data quality criteria will be flagged and evaluated for corrective action.

The possibility exists that some data points may appear to be inconsistent with the normal range of data collected. Statistical tests will be used to identify outlying data points. Data so identified will be flagged for final disposition by the EM&H manager or other Cognizant Individuals. In addition, control charts will be maintained and evaluated to identify outlying precision and accuracy measurements based on historical performance.

Acceptable data for this monitoring program will meet stated precision and accuracy criteria. The QA objectives for precision, accuracy, and completeness as shown in table 2 can be achieved when established methods of analyses are used as proposed in this plan. The program data will be evaluated and QA objectives modified as necessary based on the results of the QC testing program.

Corrective Action

If the required completeness of valid data (≥ 95 percent) is not maintained, corrective action may be required. Corrective action for field sampling activities may include recertification and cleaning of samplers, reanalysis of samples, additional training of personnel, modification to field and laboratory procedures, and recalibration of test equipment.

Laboratory corrective actions may be required to maintain data quality. The laboratory continuing calibration criteria, as described in section 10.0, indicate that the response factor for the midpoint standard must be ≤ 30 percent difference from the mean response factor of the initial calibration. Differences greater than 30 percent will require recalibration of the instrument before samples can be analyzed.

If the internal standard areas in a sample change by more than 40 percent, the samples must be reanalyzed. If the 40 percent criterion is not achieved during the reanalysis, the instrument must undergo a performance check and the midpoint standard reanalyzed to verify proper operation. Deviations larger than 40 percent are an indication of a potential instrument malfunction.

The laboratory results for samples, duplicate analyses, LCSs, LCSDs, and blanks should routinely be within the QC limits. If results exceed control limits, the reason for the nonconformances and appropriate corrective action must be identified and implemented by the contract laboratory.

13.0 CONTROL OF NONCONFORMANCE ITEMS/CORRECTIVE ACTION

Control of nonconformance items is provided as specified in the QAPD. The responsibilities and specific requirements for initiating corrective actions after encountering conditions inconsistent with quality are defined in the QAPD.

14.0 QAULITY ASSURANCE AUDITS

The requirements and responsibilities of the NWP QA Audit Program are described in QAPD, section 3, Assessment Requirements. Internal VOC monitoring program audits and external supplier (e.g., analytical laboratories, equipment manufacturers) evaluations, surveys, or audits will be conducted by NWP as required to verify compliance with the established QA Program and to determine the effectiveness of program implementation. The QAPD also describes the required qualifications of lead

auditors and the individual audit responsibilities of NWP departments. The procedure establishing the methods and authority for conducting and tracking QA internal and external audits is given in the QAPD.

14.1 Auditor Training and Qualification

The training and qualification requirements for personnel participating in or conducting QA audits at WIPP are defined in QA procedures. Auditing personnel will be trained in accordance with these procedures.

14.2 Quality Assurance Surveillance

General QA surveillance of the monitoring program such as observation, evaluation, monitoring, and witnessing to verify conformance of items or activities will be conducted in accordance with the QAPD.

14.3 VOC Monitoring System Audits

Audits of WIPP site activities associated with the VOC Monitoring Program will be performed by NWP QA at or shortly after program startup and at least on an annual basis thereafter. These audits consist of, but are not limited to, on-site evaluation of the following:

- Sampling equipment condition and certification.
- Staff qualifications and training.
- Availability and implementation of procedures.
- Sample collection and handling protocols.
- Equipment calibration.
- Field data documentation completeness.
- Data reduction verification.
- Representativeness of samples and validity of data.
- Comparability and consistency of data.
- Identification of anomalous data.
- Adequacy of data validation procedures.
- Nonconformance control and corrective action.

Laboratory data will be reviewed as part of the annual WIPP site program audits. This review may include as appropriate:

- Assessment of completeness of laboratory analytical data and associated records.

- Evaluation of analytical data with respect to required sensitivity, accuracy, precision, and freedom from contamination.

- Indication of adequate equipment calibration.
- Identification and evaluation of nonconforming data.
- Consistency of reported data.

In addition to WIPP site program audits, audits may be performed, as needed, to evaluate the adequacy of the subcontractor's laboratory or other suppliers' QA programs and compliance with the requirements of this QAPjP.

14.4 Performance Audits

Performance audits or evaluations, as defined by EPA Requirements for Quality Assurance Project Plans (EPA, 2001), will be accomplished through the introduction of audit samples (laboratory blinds) into the analytical sampling stream. Blind audit canisters will be submitted to the program laboratory at least once during the sampling program. An audit accuracy of ≤ 30 %, as described in EPA Compendium Method TO-15, is required.

14.5 Quality Assurance Reports

The results of QA audits will be reported in accordance with the NWP QAPD. Audit reports will include identification of findings and/or observations, as well as an assessment of the effectiveness of the QA program elements reviewed. Corrective actions are the responsibility of the nonconforming organization and will be tracked by NWP QA through implementation and closure.

15.0 RECORDS ADMINISTRATION

The VOC Monitoring Program will require administration of record files (both laboratory and field data collection files). The records control systems will provide adequate control and retention for program-related information. Records administration, including QA records, will be conducted in accordance with applicable DOE, NWP, and WIPP requirements.

The NWP QAPD describes the requirements and responsibilities regarding identification, preparation, collection, storage, maintenance, disposition, and permanent storage of QA records. The WIPP Records Management Program and the QA Records management policy are applicable to all WIPP projects and project participants for the purpose of providing a WIPP project-wide records management system that coordinates the collection, maintenance, identification, and preservation of official WIPP records. Requirements specific to the management of QA records are defined in WP 15-RM, WIPP Records Management Program. Several of the monitoring program records are maintained as part of the RCRA operating record. VOC monitoring records are

maintained and dispositioned in accordance with the EM&H Records Inventory and Disposition Schedule.

Revisions to completed records (i.e., as a result of audits or data validation procedures) may be made only with the approval of the responsible program manager and in accordance with applicable QA procedures. Original and duplicate or backup records of project activities will be maintained at the WIPP site. Electronic records that cannot be altered by the user and capable of producing a paper copy shall be deemed to be a written record. Documentation will be available for inspection by internal and external auditors.

15.1 Records Validation

The EM&H manager shall be responsible for validation of these records prior to transmittal to Project Records Services. The activity of validation may be delegated.

REFERENCES	
DOCUMENT NUMBER AND TITLE	KEY STEP
40 CFR Part 136, "Guidelines Establishing Test Procedures for the Analysis of Pollutants"	
Hazardous Waste Facility Permit, Waste Isolation Pilot Plant, NM 4890139088-TSDF issued by the New Mexico Environment Department	**1**
U.S. Environmental Protection Agency, 1996. SW-846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* Third Edition. Office of Solid Waste and Emergency Response, Washington, D.C.	
U.S. Environmental Protection Agency, 1999. Compendium Method TO-15: *Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)* EPA-625/R-96/010b. Center for Environmental Research Information, Office of Research and Development, Cincinnati, OH, January 1999.	
U.S. Environmental Protection Agency, 1991. *Contract Laboratory Program Statement of Work, Volatile Organics Analysis of Ambient Air in Canisters(Draft),* EPA540/R-94-085, December 1991, Washington, D.C.	
U.S. Environmental Protection Agency. 2001. EPA QA/R-5, *EPA Requirements for Quality Assurance Project Plans,* March 2001, Washington, D.C.	
U.S. Environmental Protection Agency. 2002. EPA QA/G-5, *Guidance for Quality Assurance Project Plans*, December 2002, Washington, D.C.	
20.4.1.500 New Mexico Administrative Code (incorporating Title 40 *Code of Federal Regulations* §264.602 and §270.23[a][2]), "Adoption of 40 CFR Part 264"	
Washington Regulatory and Environmental Services, 2003, *Technical Evaluation Report for WIPP Room-Based VOC Monitoring*, December 2003	
WP 10-AD.01, *Metrology Program*	
WP 12-VC.01 *Volatile Organic Compound Monitoring Plan*	
WP 13-1, *Nuclear Waste Partnership LLC Quality Assurance Program Description*	**2**
WP 15-RM, *WIPP Records Management Program*	

Attachment 1 – Example of VOC Monitoring Program Chain-of-Custody Record

VOC Monitoring Program Chain-of-Custody Record

№ 18001

Sample Number _____ RFA Control No. _____

Canister Serial No. _____ Shipping Authorization No. _____

Cleaning Cert. Date: _____ Recall Date: _____

Storage Location: _____

Sample Location: _____

Sample Collection Date: _____

1. Received By: _____ (Signature or Initials) Date Time

Relinquished By: _____ (Signature or Initials) Date Time

2. Received By: _____ (Signature or Initials) Date Time

Relinquished By: _____ (Signature or Initials) Date Time

3. Received By: _____ (Signature or Initials) Date Time

Relinquished By: _____ (Signature or Initials) Date Time

4. Received By: _____ (Signature or Initials) Date Time

Relinquished By: _____ (Signature or Initials) Date Time

5. Received By: _____ (Signature or Initials) Date Time

Relinquished By: _____ (Signature or Initials) Date Time

6. Received By: _____ (Signature or Initials) Date Time

Relinquished By: _____ (Signature or Initials) Date Time

Performers responsible for data entry or step completion SHALL enter their printed names, signatures, and initials below.

NAME (print)	SIGNATURE	INITIALS

Remarks: _____

Signature completed below constitutes validation of this record and is found to be complete prior to delivery to analytical lab.

_____ Name (print) _____ Signature _____ Date

Nichols Printing, Inc.

WHITE COPY (Original) - To accompany samples

YELLOW COPY - VOC Monitoring Program

Attachment 2 – Example of Request for Analysis

Request For Analysis

Waste Isolation Pilot Plant

P.O. Box 2078

Carlsbad, NM 88221-2078

VOC Monitoring Program

Date Samples Shipped _____

Lab Destination _____

Laboratory Contact _____

Project Contact _____

Project Contact Phone No. _____

Purchase Order No. _____

Send Lab Report To _____

370 Louis Whitlock Rd.

Carlsbad, N.M. 88220

Sample No.	Serial No.	C-of-C No.	Sample Type	Sample Pressure = PSI Vacuum = in. Hg	Contract - Specific Testing	Special Instructions
				P / V		
				P / V		
				P / V		
				P / V		
				P / V		
				P / V		
				P / V		
				P / V		
				P / V		
				P / V		
				P / V		
				P / V		
				P / V		
				P / V		
				P / V		
				P / V		
				P / V		
				P / V		

TURNAROUND TIME REQUIRED: (Rush must be approved by appropriate Manager) NORMAL _____ RUSH _____ (Subject to rush surcharge) REVIEWED BY: _____

POSSIBLE HAZARD IDENTIFICATION: (Please indicate if sample(s) are hazardous materials and/or suspected to contain high levels of hazardous substances.) SIG. DATE

NONHAZARD _____ FLAMMABLE _____ SKIN IRRITANT _____ HIGHLY TOXIC _____ BIOLOGICAL _____ OTHER _____

SAMPLE DISPOSAL (Please indicate disposition of sample following analysis.) RETURN TO CLIENT _____ DISPOSAL BY LAB _____ (Please Specify)

FOR LAB USE ONLY

RECEIVED BY _____ DATE/TIME _____

Page 1 of 2 WHITE (Original) - To Accompany Samples YELLOW - VOC Monitoring Program