

**RESOURCE CONSERVATION AND
RECOVERY ACT FACILITY OPERATING
PERMIT
PARTS 1 THROUGH 8**

EPA ID No. NM5890110518

issued to the

U.S. DEPARTMENT OF ENERGY/SANDIA CORPORATION

for the

**SANDIA NATIONAL LABORATORIES
HAZARDOUS AND MIXED WASTE TREATMENT AND
STORAGE UNITS AND POST-CLOSURE CARE OF THE
CORRECTIVE ACTION MANAGEMENT UNIT**

located in

BERNALILLO COUNTY, NEW MEXICO

prepared by the

**NEW MEXICO ENVIRONMENT DEPARTMENT
HAZARDOUS WASTE BUREAU
2905 RODEO PARK DRIVE EAST, BUILDING 1
SANTA FE, NEW MEXICO 87505**

January 2015

Table of Contents

PERMIT PART 1	GENERAL PERMIT CONDITIONS.....	1
1.1	AUTHORITY.....	1
1.2	PERMITTEES AND PERMITTED ACTIVITY	1
1.2.1	Scope of Permit	1
1.3	PERMIT CITATIONS	2
1.4	EFFECT OF PERMIT.....	2
1.5	SEVERABILITY	2
1.6	DEFINITIONS	3
1.7	EFFECT OF INACCURACIES IN PERMIT APPLICATION.....	5
1.8	PERMIT ACTIONS.....	5
1.8.1	Duration of Permit.....	5
1.8.2	Permit Modification.....	6
1.8.3	Permit Suspension, Termination, and Revocation and Re-Issuance	6
1.8.4	Permit Re-Application	6
1.8.5	Continuation of Expiring Permit.....	6
1.9	DUTIES AND REQUIREMENTS	6
1.9.1	Duty to Comply	6
1.9.2	Transfer of Permit	7
1.9.3	Need to Halt or Reduce Activity Not a Defense.....	7
1.9.4	Duty to Mitigate	7
1.9.5	Proper Operation and Maintenance.....	7
1.9.6	Duty to Provide Information	7
1.9.7	Inspection and Entry	8
1.9.8	Representative Sampling	8
1.9.9	Duty to Report	8
1.9.9.1	Reporting Planned Changes	8
1.9.9.2	Reporting Anticipated Noncompliance.....	8
1.9.9.3	24 Hour and Subsequent Reporting.....	9
1.9.9.4	24 Hour Oral Report.....	9
1.9.9.5	Five Day Written Report.....	10
1.9.9.6	Reports Required by the Contingency Plan	10
1.9.9.7	Reports of Other Noncompliance	10
1.9.9.8	Manifest Discrepancy Report.....	10
1.9.9.9	Unmanifested Waste Report	10
1.9.9.10	Biennial Report	11
1.10	ADMISSIBILITY OF DATA	11

1.11	OTHER INFORMATION	11
1.12	SIGNATORY REQUIREMENT.....	11
1.13	COMPLIANCE SCHEDULES	11
1.14	SUBMITTAL OF REPORTS, NOTIFICATIONS, AND INFORMATION TO THE DEPARTMENT	11
1.14.1	Information Submittal.....	11
1.14.2	Approval of Submittals.....	12
1.14.3	Extension of Time	12
1.15	CONFIDENTIAL INFORMATION.....	12
1.16	RESERVED	13
1.17	INFORMATION REPOSITORY	13
1.17.1	Index of Information Repository	13
1.17.2	Notification of Repository Updates.....	14
1.17.2.1	Interested Persons List.....	14
1.18	COMMUNITY RELATIONS PLAN.....	14
1.19	DISPUTE RESOLUTION	15
1.19.1	Notice to the Department.....	15
1.19.2	Agreement or Disagreement between the Parties	15
1.19.3	Final Decision of the Secretary of the Department	15
1.19.4	Actions Not Affected By Dispute	15
1.20	REAL PROPERTY CONVEYANCE AND TRANSFER.....	15
1.20.1	Conveyance of Facility Property in Fee.....	16
1.20.1.1	Determination of Need for Further Action.....	16
1.20.1.2	Restricted Use	16
1.20.1.3	Enforceability against Subsequent Owners.....	17
1.20.1.4	EPA Institutional Controls Tracking System	17
1.20.2	Transfer of Facility Property to another Federal Agency	17
1.20.2.1	Notice and Meeting	18
1.20.2.2	Department's Determination.....	18
1.20.2.3	Contrary Land Use	18
PERMIT PART 2	GENERAL FACILITY REQUIREMENTS	19
2.1	DESIGN, CONSTRUCTION, MAINTENANCE, AND OPERATION OF THE FACILITY	19
2.2	WASTE SOURCES	19
2.2.1	Permitted Waste.....	19
2.2.2	Hazardous and Mixed Waste from Foreign Sources	19
2.2.3	Hazardous and Mixed Waste from Off-site Sources.....	19
2.2.4	Restrictions on PCB-Contaminated Waste	20

2.3	LAND DISPOSAL RESTRICTIONS	20
2.3.1	Prohibition on Dilution or Aggregation as a Substitute for Treatment.....	20
2.3.2	Documentation of Exclusion or Exemption.....	21
2.4	WASTE ANALYSIS	21
2.4.1	General Waste Characterization Requirements	21
2.4.2	Sampling and Analysis for Hazardous and Mixed Wastes	22
2.4.3	Acceptable Knowledge.....	23
2.4.4	Waste Characterization Review	23
2.4.5	Wastes Received from Off-Site.....	24
2.4.6	Treatment-Derived Waste	24
2.4.7	Procedures to Ensure Compliance with LDR Requirements	24
2.4.8	Characterization of Wastes Generated Through Treatment of Hazardous or Mixed Wastes for LDR Compliance.....	24
2.4.9	Waste Characterization for Compliance with RCRA Air Emission Requirements	25
2.5	WASTE MINIMIZATION PROGRAM.....	26
2.6	DUST SUPPRESSION.....	26
2.7	SECURITY.....	26
2.7.1	Barriers and Means to Control Entry	26
2.7.2	Warning Signs.....	27
2.8	GENERAL INSPECTION REQUIREMENTS.....	27
2.8.1	Inspection Schedule	27
2.8.2	Repair of Equipment and Structures	28
2.8.3	Inspection Logs and Records.....	28
2.9	PERSONNEL TRAINING	28
2.10	SPECIAL REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE	29
2.10.1	Ignitable and Reactive Waste Precautions	29
2.10.2	Incompatible Waste Precautions	30
2.10.3	Presence of Liquids in Containers.....	30
2.11	PREPAREDNESS AND PREVENTION	31
2.11.1	Required Equipment.....	31
2.11.2	Testing and Maintenance of Equipment	31
2.11.3	Access to Communications or Alarm System.....	31
2.12	HAZARDS PREVENTION	32
2.12.1	Preventing Hazards in Loading and Unloading.....	32
2.12.2	Preventing Runoff or Flooding.....	32
2.12.3	Preventing Contamination of Water Supplies	32
2.12.4	Mitigating Effects of Equipment Failure and Power Outages.....	32

2.12.5	Preventing Undue Exposure	33
2.12.6	Arrangements with Local Authorities	33
2.13	CONTINGENCY PLAN.....	33
2.13.1	Implementation of Contingency Plan	33
2.13.2	Distribution	33
2.13.3	Amendments to Plan	34
2.13.4	Emergency Coordinator	34
2.13.5	Required Emergency Procedures	34
2.13.5.1	Immediate Notifications	34
2.13.5.2	Hazard Assessment.....	35
2.13.5.3	Reporting Emergencies.....	35
2.13.5.4	Mitigative Measures	35
2.13.5.5	Monitoring	35
2.13.6	Post-Emergency Procedures	36
2.13.7	Need for Further Corrective Action.....	36
2.13.8	Notification and Record Keeping	36
2.14	RECORD KEEPING AND REPORTING	36
2.14.1	Manifest Systems.....	36
2.14.2	Operating Record	36
2.14.3	Availability of Facility Operating Record	38
2.14.4	Record Retention	38
	PERMIT PART 3 STORAGE OF HAZARDOUS AND MIXED WASTE.....	39
3.1	GENERAL CONDITIONS.....	39
3.1.1	Storage Prohibitions	39
3.2	CONDITION OF CONTAINERS.....	39
3.3	ACCEPTABLE STORAGE CONTAINERS.....	40
3.4	COMPATIBILITY OF WASTE WITH CONTAINERS.....	40
3.5	MANAGEMENT OF CONTAINERS	40
3.5.1	Storage Configuration and Required Aisle Space.....	40
3.5.2	Outdoor Storage.....	40
3.6	CONTAINMENT SYSTEMS.....	41
3.6.1	Containers with Free Liquids	41
3.6.2	Containers that do not Contain Free Liquids	42
3.7	INSPECTIONS	42
3.8	AIR EMISSIONS	42
	PERMIT PART 4 TREATMENT OF HAZARDOUS AND MIXED WASTES.....	43
4.1	GENERAL CONDITIONS.....	43
4.2	DEPARTMENT APPROVAL.....	44

4.3	CONTAINMENT SYSTEMS.....	44
4.4	PHYSICAL TREATMENT.....	44
4.5	MACROENCAPSULATION.....	45
4.6	STABILIZATION AND SOLIDIFICATION.....	45
4.7	WASTE TREATED BY CHEMICAL DEACTIVATION.....	46
4.8	WASTE TREATED BY THERMAL DEACTIVATION.....	46
4.9	WASTE TREATED BY AMALGAMATION.....	46
	PERMIT PART 5 TREATMENT BY OPEN BURNING.....	47
5.1	AUTHORIZATION OF THE THERMAL TREATMENT UNIT.....	47
5.2	WASTE PROHIBITED FROM TREATMENT AT THE TTU.....	47
5.3	MAXIMUM QUANTITY OF WASTE TO BE TREATED.....	48
5.4	PREVENTING EXPOSURE.....	48
5.5	OPERATING PROCEDURES.....	49
5.5.1	Pre-Burn Operations.....	49
5.5.2	Treatment Operations.....	49
5.5.2.1	General Requirements.....	49
5.5.2.2	Solid Items.....	50
5.5.2.3	Liquids.....	50
5.5.2.4	Hours of Operation.....	50
5.5.2.5	Weather Conditions.....	50
5.5.3	Post-Burn Operations.....	51
5.5.4	Management of Treatment Residues.....	52
5.5.5	Alternative Treatment Assessment.....	52
5.6	MAINTENANCE AND MITIGATION REQUIREMENTS.....	52
5.6.1	Accumulated Precipitation.....	52
5.6.2	Mitigation of Spills.....	52
5.6.3	Maintenance and Repair Activities.....	53
5.7	WASTE ANALYSIS PLAN.....	53
5.8	RUN-ON AND RUN-OFF CONTROLS.....	53
5.9	SOIL MONITORING REQUIREMENTS.....	53
5.9.1	Sampling and Analysis.....	53
5.9.2	Reporting of Sampling Results and Risk Assessment.....	54
5.9.3	References.....	54
	PERMIT PART 6 CLOSURE REQUIREMENTS.....	57
6.1	INTRODUCTION.....	57
6.2	CLOSURE PERFORMANCE STANDARDS.....	57

6.2.1	Criteria for Clean Closure	58
6.2.2	Inability to Achieve Clean Closure.....	58
6.3	CLOSURE PROCESS	58
6.3.1	Notification of Closure	58
6.3.2	Time Allowed for Closure.....	58
6.3.3	Closure Schedule.....	59
6.3.4	Removal of Waste	59
6.3.5	Records Review and Structural Assessment	59
6.3.5.1	Records Review	60
6.3.5.2	Structural Assessment.....	60
6.3.6	Decontamination and Removal of Structures and Equipment.....	61
6.3.6.1	Decontamination	61
6.3.6.2	Removal.....	61
6.3.7	Verification Sampling of Structures and Equipment	61
6.3.8	Sampling of Soil and Base Material	63
6.3.9	Removal of Contaminated Soil or Base Materials	64
6.3.10	Other Methods and Procedures.....	64
6.3.10.1	Wet-Wipe Samples.....	64
6.3.10.2	Soil Samples	65
6.3.10.3	Quality Assurance	66
6.4	CLOSURE PLANS	66
6.5	Sampling and Analysis Plans.....	66
6.6	AMENDMENT TO CLOSURE PLAN.....	67
6.7	Petition for a Variance to Clean Closure Criteria	67
6.8	Corrective Action	68
6.9	WASTE GENERATED DURING CLOSURE	68
6.10	CLOSURE REPORT AND CERTIFICATION	68
	PERMIT PART 7 POST-CLOSURE CARE	70
7.1	GENERAL PROVISIONS FOR POST-CLOSURE CARE.....	70
7.1.1	Post-Closure Plan.....	70
7.1.2	Amendment of the Post-Closure Plan	71
7.2	NOTICES, CERTIFICATIONS, AND RECORDS FOR POST-CLOSURE CARE	71
7.2.1	Notification Requirements	71
7.2.2	Record Requirements	71
7.2.3	Completion of Post-Closure Care Requirements	72
7.3	POST-CLOSURE CARE OF THE CAMU	72
	PERMIT PART 8 CORRECTIVE ACTION	73

8.1	CORRECTIVE ACTION REQUIREMENTS UNDER THE CONSENT ORDER	73
8.1.1	Integration with Consent Order	73
8.2	GENERAL REQUIREMENTS.....	74
8.2.1	Identification and Status of SWMUs, AOCs and Hazardous Waste Management Units.....	74
8.3	GENERAL CONDITIONS.....	74
8.3.1	Corrective Action Beyond the Facility Boundary	74
8.3.2	Off-Site Access	74
8.3.3	Newly Discovered Releases	75
8.3.4	Field Activities.....	75
8.3.5	Health and Safety Plans.....	75
8.3.6	Recordkeeping	76
8.4	CLEANUP LEVELS.....	76
8.4.1	Groundwater Cleanup Levels.....	76
8.4.2	Soil and Sediment.....	77
8.4.3	Soil Cleanup Levels.....	77
8.4.4	Soil Cleanup Levels for Polychlorinated Biphenyls	78
8.4.5	Surface Water Cleanup Levels	78
8.5	ECOLOGICAL RISK EVALUATION	78
8.6	VARIANCE FROM CLEAN-UP LEVELS	78
8.6.1	Water Quality Standards.....	78
8.6.2	Other Cleanup Levels	78
8.7	PERMIT MODIFICATION FOR CORRECTIVE ACTION COMPLETE	79
8.7.1	Long-term Monitoring and Maintenance of SWMUs and AOCs.....	79
8.8	CORRECTIVE ACTION PROCEDURES.....	80
8.8.1	Release Assessment	80
8.8.1.1	Release Assessment Report.....	80
8.8.1.2	Requirement to Proceed.....	80
8.8.2	Interim Measures	81
8.8.2.1	Department-Initiated Interim Measures	81
8.8.2.2	Permittee-Initiated Interim Measures	81
8.8.3	Emergency Interim Measures	81
8.8.4	IM Work Plan Requirements	82
8.8.4.1	Interim Measures Implementation.....	82
8.8.5	Corrective Action Investigations	82
8.8.5.1	Investigation Work Plan	82
8.8.5.2	Corrective Action Investigation Reports.....	83
8.8.5.3	Risk Assessment.....	84

8.8.6	Corrective Measures Evaluation	84
8.8.6.1	General	84
8.8.6.2	Corrective Measures Evaluation Report	84
8.8.6.3	Cleanup Standards.....	85
8.8.6.4	Remedy Evaluation Criteria.....	85
8.8.6.5	Approval of Corrective Measures Evaluation Report.....	87
8.8.6.6	Relationship to Corrective Action Requirements	87
8.8.6.7	Statement of Basis.....	87
8.8.7	Corrective Measures Implementation.....	88
8.8.7.1	General	88
8.8.7.2	Corrective Measures Implementation Plan	88
8.8.7.3	Health and Safety Plan.....	88
8.8.7.4	Progress Reports.....	88
8.8.8	Remedy Completion.....	89
8.8.8.1	Remedy Completion Report.....	89
8.8.9	Accelerated Clean-up Process	89
8.8.9.1	Accelerated Corrective Measures Work Plan.....	90
8.8.9.2	Accelerated Corrective Measures Implementation	90
8.8.10	Well Completion Report.....	91
8.9	APPROVAL OF SUBMITTALS.....	91
8.10	METHODS AND PROCEDURES	91
8.10.1	Standard Operating Procedures.....	91
8.10.2	Investigation, Sampling, and Analysis Methods	92
8.10.2.1	Introduction and Purpose	92
8.10.2.2	Field Exploration Activities	92
8.10.2.3	Sub-Surface Features/Utility Geophysical Surveys.....	92
8.10.2.4	Drilling and Soil, Rock, and Sediment Sampling.....	92
8.10.2.5	Sample Point and Structure Location Surveying.....	97
8.10.2.6	Subsurface Vapor-Phase Monitoring and Sampling.....	97
8.10.2.7	Groundwater Monitoring	98
8.10.2.8	Groundwater Sampling.....	99
8.10.2.9	Sample Handling	101
8.10.2.10	In-Situ Testing	102
8.10.2.11	Decontamination Procedures.....	102
8.10.2.12	Field Equipment Calibration Procedures.....	103
8.10.2.13	Collection and Management of Investigation Derived Waste.....	103
8.10.2.14	Documentation of Field Activities.....	103
8.10.3	Chemical Analyses	104
8.10.3.1	Laboratory QA/QC Requirements.....	105

8.10.3.2	Review of Field and Laboratory QA/QC Data.....	108
8.10.3.3	Blanks, Field Duplicates, Reporting Limits, and Holding Times.....	108
8.10.3.4	Representativeness and Comparability.....	109
8.10.3.5	Laboratory Reporting, Documentation, Data Reduction, and Corrective Action.....	110
8.10.4	Site-Specific Human Health Risk Assessment.....	110
8.10.4.1	Human Health Risk Assessment Methods.....	110
8.10.5	Site-Specific Ecological Risk Assessment Methods.....	113
8.10.6	Determination of Background.....	113
8.10.6.1	Comparing Site Data to Background.....	114
8.11	MONITORING WELL CONSTRUCTION REQUIREMENTS.....	114
8.11.1	Drilling Methods.....	114
8.11.1.1	Hollow-Stem Auger.....	115
8.11.1.2	Air Rotary/Air Down-The-Hole Hammer/ODEX.....	116
8.11.1.3	Water Rotary and Mud Rotary.....	117
8.11.1.4	Dual-Wall Reverse Circulation.....	117
8.11.1.5	Resonant Sonic.....	118
8.11.1.6	Cryogenic.....	118
8.11.2	Well Construction/Completion Methods.....	118
8.11.2.1	Well Construction Materials.....	118
8.11.2.2	Well Construction Techniques.....	119
8.11.2.3	Well Screen and Filter Pack Design.....	121
8.11.2.4	Annular Sealant.....	122
8.11.3	Well Development.....	123
8.11.4	Surface Completion.....	124
8.11.5	Well Abandonment.....	124
8.11.6	Documentation.....	125
8.12	REPORTING REQUIREMENTS.....	126
8.12.1	General.....	126
8.12.2	Investigation Work Plan.....	127
8.12.2.1	Title Page.....	127
8.12.2.2	Executive Summary (Abstract).....	127
8.12.2.3	Table of Contents.....	127
8.12.2.4	Introduction.....	127
8.12.2.5	Background.....	128
8.12.2.6	Site Conditions.....	128
8.12.2.7	Scope of Activities.....	128
8.12.2.8	Investigation Methods.....	129
8.12.2.9	Monitoring and Sampling Program.....	129
8.12.2.10	Schedule.....	129

8.12.2.11	Tables.....	129
8.12.2.12	Figures	130
8.12.2.13	Appendices	131
8.12.3	Investigation Report	131
8.12.3.1	Title Page.....	131
8.12.3.2	Executive Summary (Abstract)	131
8.12.3.3	Table of Contents	132
8.12.3.4	Introduction.....	132
8.12.3.5	Background.....	132
8.12.3.6	Scope of Activities	132
8.12.3.7	Field Investigation Results.....	132
8.12.3.8	Site Conditions.....	133
8.12.3.9	Exploratory Drilling or Excavation Investigations	133
8.12.3.10	Exploratory and Monitoring Well Boring Geophysical Logging.....	133
8.12.3.11	Subsurface Conditions	133
8.12.3.12	Monitoring Well Construction and Boring or Excavation Abandonment	134
8.12.3.13	Groundwater Conditions	134
8.12.3.14	Surface Water Conditions	134
8.12.3.15	Surface Air and Subsurface Vapor Conditions	134
8.12.3.16	Materials Testing Results	134
8.12.3.17	Pilot Testing Results	134
8.12.3.18	Regulatory Criteria	135
8.12.3.19	Site Contamination	135
8.12.3.20	Conclusions.....	137
8.12.3.21	Recommendations.....	138
8.12.3.22	Tables.....	138
8.12.3.23	Figures	139
8.12.3.24	Appendices.....	139
8.12.4	Periodic Monitoring Report	140
8.12.4.1	Title Page.....	141
8.12.4.2	Executive Summary (Abstract)	141
8.12.4.3	Table of Contents	141
8.12.4.4	Introduction.....	141
8.12.4.5	Scope of Activities	141
8.12.4.6	Regulatory Criteria.....	141
8.12.4.7	Monitoring Results.....	142
8.12.4.8	Analytical Data Results	142
8.12.4.9	Remediation System Monitoring.....	142
8.12.4.10	Summary	142

8.12.4.11	Tables.....	142
8.12.4.12	Figures	143
8.12.4.13	Appendices	144
8.12.5	Risk Assessment Report.....	144
8.12.5.1	Title Page.....	145
8.12.5.2	Executive Summary (Abstract)	145
8.12.5.3	Table of Contents	145
8.12.5.4	Introduction.....	145
8.12.5.5	Background.....	145
8.12.5.6	Site Description.....	145
8.12.5.7	Sampling Results.....	146
8.12.5.8	Conceptual Site Model	146
8.12.5.9	Risk Screening Levels	146
8.12.5.10	Risk Assessment Results	147
8.12.5.11	Conclusions and Recommendations.....	147
8.12.5.12	Tables.....	147
8.12.5.13	Figures	148
8.12.5.14	Appendices	148
8.12.6	Corrective Measures Evaluation Report.....	148
8.12.6.1	Title Page.....	149
8.12.6.2	Executive Summary (Abstract)	149
8.12.6.3	Table of Contents	149
8.12.6.4	Introduction.....	149
8.12.6.5	Background.....	149
8.12.6.6	Site Conditions.....	150
8.12.6.7	Potential Receptors.....	150
8.12.6.8	Regulatory Criteria.....	151
8.12.6.9	Identification of Corrective Measures Options.....	151
8.12.6.10	Evaluation of Corrective Measures Options.....	151
8.12.6.11	Selection of Preferred Corrective Measure.....	152
8.12.6.12	Design Criteria to Meet Cleanup Objectives	153
8.12.6.13	Schedule.....	153
8.12.6.14	Tables.....	153
8.12.6.15	Figures	154
8.12.6.16	Appendices.....	155