PART 8 - CORRECTIVE ACTION FOR SWMUS AND AOCS

8.1. APPLICABILITY

The conditions of this Part apply to all Solid Waste Management Units (**SWMUs**) and Areas of Concern (**AOCs**) identified in Permit Attachment K, Solid Waste Management Unit and Area of Concern Tables, any newly identified SWMUs and AOCs identified after the issuance of this Permit, and any releases of hazardous waste or hazardous constituents from SWMUs and AOCs.

8.2. CONTAMINATION BEYOND THE FACILITY BOUNDARY

The Permittees shall implement corrective action beyond the Facility boundary where necessary to protect human health and the environment, unless the Permittees demonstrate to the satisfaction of the Secretary that, despite the Permittees' best efforts, as determined by the Secretary, the Permittees were unable to obtain the necessary permission to undertake such actions. The Permittees are not relieved of all responsibility to cleanup a release that has migrated beyond the Facility boundary where off-site access is denied. On-site measures to address such releases will be determined on a case-by-case basis. [20.4.1.500 NMAC (incorporating 40 CFR §264.101(c))]

8.3. CORRECTIVE ACTION ALREADY COMPLETED

Any corrective action tasks required under this Part that the Permittees have already completed may be used to meet the requirements of this Part, in whole or in part, as determined by the Secretary. The Permittees may submit prior work to meet these requirements for the Secretary's approval.

8.4. NOTIFICATION AND ASSESSMENT FOR NEWLY IDENTIFIED SWMUS AND AOCS

The Permittees shall notify the Secretary in writing, within 15 calendar days of discovery, of any newly discovered SWMU or AOC. The notification shall include, at a minimum, the location of the newly discovered SWMU or AOC and all available information pertaining to the site history and nature of the release (e.g., media affected, hazardous waste or hazardous constituents released, magnitude of release). The Secretary may require the Permittees to submit a Release Assessment Report in accordance with Permit Section 8.6.1 to determine the status of the newly discovered SWMU or AOC. Alternatively, the Secretary may require an Investigation Work Plan for the newly discovered SWMU or AOC in accordance with Permit Section 8.8.1 without requiring a Release Assessment. If the Secretary determines that an Investigation Work Plan for a newly discovered SWMU or AOC is required, the Permittees shall modify this Permit to add the SWMU or AOC to Permit Attachment K, Solid Waste Management Unit and Area of Concern Tables, in accordance with 20.4.1.900 NMAC (incorporating 40 CFR §270.42).

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8.5. NOTIFICATION REQUIREMENTS FOR NEWLY DISCOVERED RELEASES FROM SWMUS OR AOCS

The Permittees shall notify the Secretary in writing, within 15 calendar days of discovery, of any newly discovered release(s) of hazardous waste or hazardous constituents from a SWMU or AOC that explains the location and circumstances of the release.

If the Secretary determines that investigation of the release is needed, the Permittees shall prepare and submit an Investigation Work Plan in accordance with Permit Section 8.8.1.

8.6. RELEASE ASSESSMENT

8.6.1. Release Assessment Report

If required by the Secretary, the Permittees shall submit a Release Assessment Report for newly discovered SWMUs or AOCs under this Permit Section. Any revisions to the Release Assessment Report required by the Secretary shall be submitted within 30 calendar days of receipt of the Secretary's comments on the Release Assessment Report.

The Release Assessment Report shall, at a minimum, include the following information:

1. Location of unit(s) on a topographic map of appropriate scale, as required under 20.4.1.900 NMAC (incorporating 40 CFR §270.14(b)(19));

2. Designation of type and function of unit(s);

3. General dimensions, capacities and structural description of unit(s) (supply any available plans/drawings);

4. Dates that the unit(s) was operated;

5. All available site history information;

6. Specifications of all wastes that have been managed at/in the unit(s) to the extent available. Include any available data on hazardous waste or hazardous constituents in the wastes; and

7. All available information pertaining to any release of hazardous waste or hazardous constituents from such unit(s) (to include ground water data, soil analyses, air, and surface water data).

8.6.2. Requirement to Proceed

The Secretary will review the Release Assessment Report to determine whether any further investigative action is required. The Secretary will notify the Permittees of the need for confirmatory sampling if necessary, or notify the Permittees that an Investigation Work Plan

DRAFT

is required in accordance with the requirements in Permit Section 8.8.1. The Secretary will notify the Permittees of any corrective action complete decision.

8.7. INTERIM MEASURES

8.7.1. Secretary-Initiated Interim Measures

Upon written notification by the Secretary, the Permittees shall prepare and submit an Interim Measures (**IM**) Work Plan at any SWMU or AOC where the Secretary determines that interim measures are necessary to minimize or prevent the migration of hazardous waste or hazardous constituents and limit actual or potential human and environmental exposure to hazardous waste or hazardous constituents while long term corrective action remedies are evaluated and implemented. The Permittees shall submit its IM Work Plan to the Secretary within 30 calendar days of the Secretary's notification, unless another time period is specified by the Secretary. Such interim measures may be conducted concurrently with any required corrective action. The Permittees shall prepare and submit IM Work Plans in accordance with the work plan format included in Permit Section 8.14.

8.7.2. Permittee-Initiated Interim Measures

The Permittees may initiate interim measures at a SWMU or AOC by notifying the Secretary, in writing, at least 30 calendar days prior to beginning the Interim Measures. The Secretary will approve the Permittee-initiated IM, conditionally approve the IM, or require submittal of an IM work plan for the Secretary's approval prior to implementation of the Interim Measure.

8.7.3. Emergency Interim Measures

The Permittees may determine, during implementation of site investigation activities, that emergency interim measures are necessary to address an immediate threat of harm to human health or the environment. The Permittees shall notify the Secretary within one business day of discovery of the facts giving rise to the threat, and shall propose emergency interim measures to address the threat. If the Secretary approves the emergency interim measures in writing, the Permittees may implement the proposed emergency interim measures without submitting an interim measures work plan. If circumstances arise resulting in an immediate threat to human health or the environment such that initiation of emergency interim measures are necessary prior to obtaining written approval from the Secretary, the Permittees shall notify the Secretary within one business day of taking the emergency interim measure. The notification shall contain a description of the emergency situation, the types and quantities of contaminants involved, the emergency interim measures taken, and contact information for the emergency coordinator who handled the situation. The notification shall also include a written statement justifying the need to take the emergency action without prior written approval from the Secretary. This requirement shall not be construed to conflict with 20.4.1.500 NMAC (incorporating 40 CFR §264.1(g)(8)) or 20.4.1.900 NMAC (incorporating 40 CFR §270.61).

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8.7.4. IM Work Plan Requirements

The IM Work Plan shall ensure that the interim measures are designed to mitigate any current or potential threat(s) to human health or the environment and is consistent with, and integrated into, any final corrective measures at the Facility. The IM Work Plan shall include the interim measures objectives, procedures for implementation (including any designs, plans, or specifications), and schedules for implementation.

8.7.5. Interim Measures Implementation

8.7.5.1. Implementation and Completion of Approved IM Work Plan

The Permittees shall implement interim measures required under Permit Section 8.7 in accordance with the Secretary-approved IM Work Plan. The Permittees shall complete interim measures within 180 calendar days of the start of implementation of the interim measure. The Permittees may submit a written request to the Secretary to extend the period for implementation of the interim measure. The request must provide justification for the extension and a proposed schedule for completion of the interim measure. The Secretary will notify the Permittees, in writing, of the approval or disapproval of the request within 30 calendar days of receipt of the IM implementation extension request.

8.7.5.2. Notification of Changes

The Permittees shall give notice to the Secretary as soon as possible of any planned changes, reductions or additions to the IM Work Plan required by the Secretary under Permit Section 8.7.1 or initiated by the Permittees in accordance with Permit Section 8.7.2.

8.7.6. Interim Measures Reports

The Permittees shall submit to the Secretary for review and approval, within 90 calendar days of completion of interim measures, an IM Report for each SWMU or AOC. The IM Report shall contain, at a minimum, the following information:

1. A description of interim measures implemented;

2. Summaries of results;

3. Summaries of all problems encountered during IM investigations;

4. Summaries of accomplishments and/or effectiveness of interim measures; and,

5. Copies of all relevant laboratory/monitoring data, maps, logs, and other related information.

DRAFT

8.8. CORRECTIVE ACTION INVESTIGATIONS

8.8.1. Investigation Work Plan

8.8.1.1. Investigation Work Plan Submittal

The Permittees shall submit to the Secretary Investigation Work Plans for the SWMUs and AOCs identified in Permit Attachment K, Solid Waste Management Unit and Area of Concern Tables.

8.8.1.2. Investigation Work Plan Requirements

Investigation Work Plans shall meet the requirements specified in Permit Section 8.14.1. Investigation Work Plans shall include schedules of implementation and completion of specific actions necessary to determine the nature and extent of contamination and the potential pathways of contaminant releases to the air, soil, surface water, and ground water. The Permittees shall provide sufficient justification and associated documentation that a release is not probable or has already been characterized if a unit or a media/pathway associated with a unit (ground water, surface water, soil, subsurface gas, or air) is not included in an Investigation Work Plan. Such deletions of a unit, medium, or pathway from the work plan(s) are subject to the approval of the Secretary. The Permittees shall provide sufficient written justification for any omissions or deviations from the minimum requirements specified in Permit Section 8.14.1. Such omissions or deviations are subject to the approval of the Secretary. In addition, Investigation Work Plans shall include all investigations necessary to ensure compliance with 20.4.1.500 NMAC (incorporating 40 CFR §264.101).

8.8.1.3. Historical Documents

The Permittees shall submit to the Secretary a summary of the historical information and assessment of potential contaminant releases relating to each SWMU or AOC in conjunction with the unit-specific Investigation Work Plan including complete, legible copies of all associated photographic imprints, maps, figures, drawings, tables, attachments, enclosures, appendices and other relevant supporting documentation.

8.8.2. Investigation Work Plan Implementation

The Permittees shall implement Investigation Work Plans as approved by the Secretary. The Permittees shall notify the Secretary at least 30 calendar days prior to any permit or corrective action-related field activity (e.g., drilling, sampling).

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8.8.3. Corrective Action Investigation Reports

The Permittees shall prepare and submit to the Secretary Investigation Reports for the investigations conducted in accordance with Investigation Work Plans submitted under Permit Section 8.8.1. The Permittees shall submit the Investigation Reports to the Secretary for review and approval in accordance with the schedules included in its approved Investigation Work Plans.

The Investigation Reports shall include an analysis and summary of all required investigations of SWMUs and AOCs. The summary shall describe the type and extent of contamination at each SWMU and AOC investigated, including sources and migration pathways, identify all hazardous waste or constituents present in all media, and describe actual or potential receptors. The Investigation Report shall also describe the extent of contamination (qualitative and quantitative) in relation to background levels of the area. If the Investigation Report concludes that further work is necessary, the report shall include a schedule for submission of a work plan for the next phase of investigation.

8.8.3.1. Cleanup Levels

The Investigation Reports shall identify the applicable cleanup levels in accordance with Permit Section 8.13 for each hazardous waste or hazardous constituent found at each SWMU and AOC. The Permittees shall propose in the Investigation Report or in a subsequent Risk Assessment or Corrective Measures Evaluation appropriate cleanup levels for those hazardous wastes or hazardous constituents without established cleanup levels based upon human and ecological risk.

8.8.3.2. Requirement to Proceed

Based upon the Secretary's review of the Investigation Report, the Secretary will notify the Permittees of the need for further investigative action, if necessary, and inform the Permittees, if not already notified, of the need for a Corrective Measures Study. The Secretary will notify the Permittees if corrective action is complete. If the Secretary determines that further investigation is necessary, the Secretary will require the Permittees to submit a work plan for approval that includes a proposed schedule for additional investigation(s).

8.9. RISK ASSESSMENT

The Permittees shall attain the cleanup goals outlined in Permit Section 8.13 including, as necessary, performance of risk analysis to establish alternate cleanup goals, at each site for which the Secretary determines, in the format included in Permit Section 8.14, that corrective measures are necessary. The Permittees shall submit to the Secretary for approval a Risk Assessment Report in accordance with this Permit Section for sites where risk analyses are conducted.

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8.10. CORRECTIVE MEASURES EVALUATION

8.10.1. General

the Secretary will require corrective measures at a SWMU or AOC if the Secretary determines, based on the Investigation Report and other relevant information available to the Secretary, that there has been a release of contaminants into the environment at the SWMU or AOC and that corrective action is necessary to protect human health or the environment from such a release. Upon making such a determination, the Secretary will notify the Permittees in writing. The Secretary will specify a date for the submittal of the necessary reports and evaluations in the written notification.

8.10.2. Corrective Measures Evaluation Report

Following written notification from the Secretary that a corrective measures evaluation is required, the Permittees shall submit to the Secretary for approval a Corrective Measures Evaluation Report. The Permittees shall follow the Corrective Measures Evaluation Report format outlined in Permit Section 8.14.5. The corrective measures evaluation shall evaluate potential remedial alternatives and shall recommend a preferred remedy that will be protective of human health and the environment and that will attain the appropriate cleanup goals. The Corrective Measures Evaluation Report shall, at a minimum, comply with Permit Section 8.14.5 and include the following:

1. A description of the location, status, and current use of the site;

2. A description of the history of site operations and the history of releases of contaminants;

3. A description of site surface conditions;

4. A description of site subsurface conditions;

5. A description of on- and off-site contamination in all affected media;

6. An identification and description of all sources of contaminants;

7. An identification and description of contaminant migration pathways;

8. An identification and description of potential receptors;

9. A description of cleanup standards or other applicable regulatory criteria;

10. An identification and description of a range of remedy alternatives;

11. Remedial alternative pilot or bench scale testing results;

12. A detailed evaluation and rating of each of the remedy alternatives, applying the criteria set forth in Permit Section 8.14.5.10;

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13. An identification of a proposed preferred remedy or remedies;

14. Design criteria of the selected remedy or remedies; and

15. A proposed schedule for implementation of the preferred remedy.

8.10.3. Cleanup Standards

The Permittees shall select corrective measures that are capable of achieving the cleanup standards and goals outlined in Permit Section 8.13 including, as applicable, approved alternate cleanup goals established by a risk assessment.

8.10.4. Remedy Evaluation Criteria

8.10.4.1. Threshold Criteria

The Permittees shall evaluate each of the remedy alternatives for the following threshold criteria. To be selected, the remedy alternative must:

1. Be protective of human health and the environment;

2. Attain media cleanup standards;

3. Control the source or sources of releases so as to reduce or eliminate, to the extent practicable, further releases of contaminants that may pose a threat to human health and the environment; and

4. Comply with applicable standards for management of wastes.

8.10.4.2. Remedial Alternative Evaluation Criteria

The Permittees shall evaluate each of the remedy alternatives for the factors described in this Permit Section. These factors shall be balanced in proposing a preferred alternative.

a. Long-term Reliability and Effectiveness

The remedy shall be evaluated for long-term reliability and effectiveness. This factor includes consideration of the magnitude of risks that will remain after implementation of the remedy; the extent of long-term monitoring, or other management that will be required after implementation of the remedy; the uncertainties associated with leaving contaminants in place; and the potential for failure of the remedy. Permittees shall give preference to a remedy that reduces risks with little long-term management, and that has proven effective under similar conditions.

b. Reduction of Toxicity, Mobility, or Volume

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The remedy shall be evaluated for its reduction in the toxicity, mobility, and volume of contaminants. Permittees shall give preference to remedy that uses treatment to more completely and permanently reduce the toxicity, mobility, and volume of contaminants.

c. Short-term Effectiveness

The remedy shall be evaluated for its short-term effectiveness. This factor includes consideration of the short-term reduction in existing risks that the remedy would achieve; the time needed to achieve that reduction; and the short-term risks that might be posed to the community, workers, and the environment during implementation of the remedy. The Permittees shall give preference to a remedy that quickly reduces short-term risks, without creating significant additional risks.

d. Implementability

The remedy shall be evaluated for its implementability or the difficulty of implementing the remedy. This factor includes consideration of installation and construction difficulties; operation and maintenance difficulties; difficulties with cleanup technology; permitting and approvals; and the availability of necessary equipment, services, expertise, and storage and disposal capacity. Permittees shall give preference to a remedy that can be implemented quickly and easily, and poses fewer and lesser difficulties.

e. Cost

The remedy shall be evaluated for its cost. This factor includes a consideration of both capital costs, and operation and maintenance costs. Capital costs shall include, without limitation, construction and installation costs; equipment costs; land development costs; and indirect costs including engineering costs, legal fees, permitting fees, startup and shakedown costs, and contingency allowances. Operation and maintenance costs shall include, without limitation, operating labor and materials costs; maintenance labor and materials costs; replacement costs; utilities; monitoring and reporting costs; administrative costs; indirect costs; and contingency allowances. All costs shall be calculated based on their net present value. Permittees shall give preference to a remedy that is less costly, but does not sacrifice protection of health and the environment.

DRAFT

8.10.5. Approval of Corrective Measures Evaluation Report

Subject to the procedures in Permit Section 1.10.2, if the Secretary disapproves the Corrective Measures Evaluation Report, the Secretary will notify the Permittees in writing of the Corrective Measures Evaluation Report's deficiencies and specify a due date for submission of a revised Corrective Measures Evaluation Report. Upon receipt of such notification of disapproval, the Permittees shall submit to the Secretary, within the specified time, a revised Corrective Measures Evaluation Report that corrects the deficiencies. If the Secretary approves the Corrective Measures Evaluation Report, the Secretary will notify the Permittees in writing.

8.10.6. Relationship to Corrective Action Requirements

The Corrective Measures Evaluation shall serve as a Corrective Measures Study for the purposes of RCRA compliance. *See* 55 Fed. Reg. 30875-77 (July 27, 1990) (proposed 20.4.1.500 NMAC (incorporating 40 CFR §264.520-264.524).

8.10.7. Statement of Basis

Upon approval of the Corrective Measures Evaluation Report, the Secretary will select a remedy or remedies for the SWMU or AOC. The Secretary may choose a different remedy from that recommended by the Permittees. The Secretary will issue a Statement of Basis for selection of the remedy, and will receive public comment on the remedy. The public comment period will extend for at least 45 days from the date of the public notice of the Statement of Basis. The Secretary will provide an opportunity for a public hearing on the remedy, at which all interested persons will be given a reasonable chance to submit data, views or arguments orally or in writing and to examine witnesses testifying at the hearing. The comment period will automatically be extended to the close of the public hearing. The public hearing will follow the hearing requirements specified in 20.4.1.901.F NMAC. The Secretary will select a final remedy and issue a response to public comments to all commenters, after the end of the public comment period. In selecting a remedy, the Secretary will follow the public participation requirements applicable to remedy selection specified in 20.4.1.900 NMAC (incorporating 40 CFR §270.41) and 20.4.1.901 NMAC.

The administrative record for the Facility will be made available to the public for review at the Secretary's offices in Santa Fe, New Mexico. All significant written and signed comments, including emailed comments, will be considered by the Secretary prior to approving a final remedy or remedies.

The Secretary's decision on the final remedy or remedies shall follow the requirements specified in 20.4.1.901 NMAC, Secretary's Decision. The Secretary will issue a response to public comments at the time of the Secretary's final decision.

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8.11. CORRECTIVE MEASURES IMPLEMENTATION

8.11.1. General

The Permittees shall implement the final remedy selected by the Secretary.

8.11.2. Corrective Measures Implementation Plan

Within 90 days after the Secretary's selection of a final remedy, or as otherwise specified by the schedule contained in the approved Corrective Measure Evaluation Report or as specified by a schedule required by the Secretary in the written approval notification, the Permittees shall submit to the Secretary for approval a Corrective Measures Implementation Plan outlining the design, construction, operation, maintenance, and performance monitoring for the selected remedy, and a schedule for its implementation. The implementation plan shall be submitted to the Secretary for review in accordance with the procedures in Permit Section 1.10. The Corrective Measures Implementation Plan shall, at a minimum, include the following elements:

1. A description of the selected final remedy;

2. A description of the cleanup goals and remediation system objectives;

3. An identification and description of the qualifications of all persons, consultants, and contractors that will be implementing the remedy;

4. Detailed engineering design drawings and systems specifications for all elements of the remedy signed and stamped by a registered New Mexico professional engineer;

5. A construction work plan;

6. An operation and maintenance plan;

7. The results of any remedy pilot tests;

8. A plan for monitoring the performance of the remedy, including sampling and laboratory analysis of all affected media;

9. A waste management plan;

10. A proposed schedule for submission to the Secretary of periodic progress reports; and

11. A proposed schedule for implementation of the remedy.

DRAFT

8.11.3. Health and Safety Plan

The Permittees shall conduct all activities in accordance with a site-specific or Facility-wide Health and Safety Plan during all construction, operation, maintenance, and monitoring activities conducted during corrective measures implementation.

8.11.4. Progress Reports

The Permittees shall submit progress reports to the Secretary in accordance with the schedule approved in the Corrective Measures Implementation Plan. The progress reports shall, at a minimum, include the following information:

1. A description of the remedy work completed during the reporting period;

2. A summary of problems, potential problems, or delays encountered during the reporting period;

3. A description of actions taken to eliminate or mitigate the problems, potential problems, or delays;

4. A discussion of the remedy work projected for the next reporting period, including all sampling events;

5. Copies of the results of all monitoring, including sampling and analysis, and other data generated during the reporting period; and

6. Copies of all waste disposal records generated during the reporting period.

8.11.5. Remedy Completion

8.11.5.1. Remedy Completion Report

Within 90 days after completion of remedy, the Permittees shall submit to the Secretary a Remedy Completion Report. The report shall, at a minimum, include the following items:

1. A summary of the work completed;

2. A statement, signed by a registered professional engineer, that the remedy has been completed in accordance with the Secretary approved work plan for the remedy;

3. As-built drawings and specifications signed and stamped by a registered New Mexico professional engineer;

4. Copies of the results of all monitoring, including sampling and analysis, and other data generated during the remedy implementation, if not already submitted in a progress report;

5. Copies of all waste disposal records, if not already submitted in a progress report; and

6. A certification, signed by a responsible official of facility, stating: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

8.12. ACCELERATED CLEANUP PROCESS

If the Permittees identify a corrective action or measure that, if implemented voluntarily, will reduce risks to human health and the environment to levels acceptable to the Secretary, will reduce cost and/or will achieve cleanup of a SWMU or AOC ahead of schedule, the Permittees may implement the corrective measure as provided in this Permit Section, in lieu of the process established in Permit Sections 8.7 through 8.11. The accelerated cleanup process shall be used at sites to implement presumptive remedies at small-scale and relatively simple sites where groundwater contamination is not a component of the accelerated cleanup, where the remedy is considered to be the final remedy for the site, and where the field work will be accomplished within 180 days of the commencement of field activities.

The Permittees shall notify the Secretary of the planned accelerated corrective action or measure a minimum of 30 days prior to the commencement of any accelerated field activity. The notification shall include the submittal of the Plan if not already submitted to the Secretary.

8.12.1. Accelerated Corrective Measures Work Plan

The proposed accelerated cleanup will be documented in an Accelerated Corrective Measure Work Plan, which shall include:

1. A description of the proposed remedial action, including details of the unit or activity that is subject to the requirements of this Permit;

2. An explanation of how the proposed cleanup action is consistent with the overall corrective action objectives and requirements of this Permit,

3. The methods and procedures for characterization and remediation sample collection and analyses, and

4. A schedule for implementation and reporting on the proposed cleanup action.

The Permittees shall obtain the Secretary's approval of an Accelerated Corrective Measures Work Plan prior to implementation. The Permittees shall prepare the Work Plan in general accordance with the requirements of Permit Section 8.14. The Permittees shall include an implementation schedule in the revised Accelerated Corrective Measures Work Plan.

8.12.2. Accelerated Corrective Measures Implementation

Upon approval by the Secretary, the Permittees shall implement the accelerated corrective measures in accordance with the approved Accelerated Corrective Measures Work Plan. Within 90 days of completion of the accelerated corrective measures, the Permittees shall submit to the Secretary for approval a Remedy Completion Report in a format approved by the Department in accordance with Permit Section 8.14. If upon review, the Secretary determines that applicable cleanup levels were not achieved during corrective measures implementation or that there were deficiencies in the accelerated corrective measures implementation or reporting, the Secretary will notify the Permittees in writing.

8.13. CLEANUP LEVELS

The Permittees shall attain the cleanup levels specified below when implementing the closure and corrective action requirements of this Permit.

8.13.1. Ground Water Cleanup Levels

The Permittees shall attain the following cleanup levels for all hazardous waste and hazardous constituents in ground water:

1. For any contaminant for which the Environmental Protection Agency (**EPA**) has adopted a maximum contaminant level (**MCL**) for drinking water under 40 CFR parts 141 and 143, the MCL shall be the cleanup level;

2. For any contaminant for which the New Mexico Water Quality Control Commission (**WQCC**) has adopted numeric standards for ground water listed in 20.6.2.3103 NMAC, the ground water standard shall be the cleanup level; and

3. For any contaminant that the WQCC has identified as a toxic pollutant listed in 20.6.2.7.WW NMAC, the level approved by the New Mexico Environment Department (**NMED**) under paragraph 2 or 3 below shall be the cleanup level.

For any contaminant for which more than one of the cleanup levels set forth in subparagraphs 1, 2, and 3 above would apply, the lowest (or otherwise most protective) level shall be the applicable cleanup level.

If a cleanup level under Item 1 above does not exist for a carcinogenic hazardous waste or hazardous constituent, then the Permittees shall use the most recent version of the EPA *Regional Screening Levels for Chemical Contaminants at Superfund Sites* (**RSLs**) for tap water and a target excess cancer risk level of 10^{-5} to develop a proposed cleanup level for NMED approval. The Permittees may use other scientific or regulatory information

currently available to the public to develop and propose a cleanup level for NMED approval provided that the level is lower (or otherwise more protective) than the RSL.

If a cleanup level under Item 1 above does not exist for a noncarcinogenic hazardous waste or hazardous constituent, then the Permittees shall use the most recent version of the EPA RSLs for tap water and a Hazard Index (**HI**) of one (1.0) to develop a proposed cleanup level for NMED approval. The Permittees may use other scientific or regulatory information currently available to the public to develop and propose a cleanup level for NMED approval provided that the level is lower (or otherwise more protective) than the RSL.

If perchlorate is detected at concentrations at or greater than 4 µg/L and no ground water standard or MCL has been adopted by the Environmental Improvement Board, WQCC, or EPA, then the Permittees shall use the cleanup goal with a HI of 1.0 to develop the proposed cleanup level for use in their site investigation or corrective measure evaluation.

8.13.2. Soil Cleanup Levels

The Permittees shall attain the following cleanup levels for hazardous waste and hazardous constituents in soil:

1. For all individual contaminants for which NMED has specified a soil screening level in NMED's *Technical Background Document for Development of Soil Screening Levels*, the residential or industrial land use scenario cleanup level shall be the screening level specified in the most recent version of that document. The method for determining cleanup levels for sites with multiple contaminants shall follow NMED's *Technical Background Document for Development of Soil Screening Levels (as updated)* and items 2 and 3 below, as applicable;

2. The Permittees shall propose a soil cleanup level for PCBs based on NMED's Position Paper Risk-based Remediation of Polychlorinated Biphenyls at RCRA Corrective Action Sites (March 2000 as updated); and

3. If NMED soil screening level has not been established for a hazardous waste or hazardous constituent, the Permittees shall propose for NMED approval, a cleanup level based on the most recent version of the EPA Region VI HHMSSL (based on a HI of one (1.0) for compounds designated as "n" (noncarcinogen effects), "max" (maximum concentration), and "sat" (soil saturation concentration), or ten times the EPA Region VI HHMSSL for compounds designated "c" (carcinogen effects) (i.e. a target excess cancer risk level of 10^{-5}).

8.13.3. Land Use Determination

All soil cleanup levels shall be based on a residential land use scenario unless NMED determines that an alternate land use is appropriate (e.g. subsistence farming, cultural, or industrial). The Permittees may only propose an alternate land use with less stringent cleanup levels (e.g. industrial) if NMED or EPA can legally and practicably enforce the institutional controls limiting the land use. If an alternate land use for which NMED or EPA

has not established soil cleanup levels is determined to be the current and reasonably foreseeable future land use, then the Permittees may propose cleanup levels based on a risk assessment using a target excess cancer risk level of 10^{-5} for carcinogenic hazardous waste or hazardous constituent or, for noncarcinogenic hazardous waste or hazardous constituent, a HI of one (1.0).

8.13.4. Surface Water Cleanup Levels

The Permittees shall comply with the surface water quality standards outlined in the Clean Water Act (33 U.S.C. §§1251 to 1387), the New Mexico WQCC Regulations (20.6.2 NMAC), the State of New Mexico Standards for Interstate and Intrastate Surface Waters (20.6.4 NMAC) and the procedures for alternative abatement standards (20.6.2.4103 NMAC).

8.13.5. Ecological Risk Cleanup Levels

The Permittees shall derive cleanup levels for each hazardous waste and hazardous constituent for each ecological zone at the Facility using the methodology in NMED's *Guidance for Assessing Ecological Risks Posed by Chemicals: Screening–Level Ecological Risk Assessment*. If the ecological risk evaluation indicates that a lower cleanup level for a hazardous waste or hazardous constituent in ground water, soil, or surface water is necessary to protect environmental receptors, NMED may establish cleanup levels based on ecological risk for hazardous waste or hazardous constituents in ground water, soil, or surface water that are lower than levels that are solely protective of human health.

8.13.6. Background Concentrations

If the naturally occurring (background) concentration of a hazardous waste or hazardous constituent in ground water, soil, or surface water exceeds the standards specified above, then the cleanup level shall be the background concentration. To use background concentration as a cleanup level, the Permittees must obtain a written background determination from NMED.

8.13.7. Variance from Cleanup Levels

The Permittees may seek a variance from a cleanup level for soil or ground water as follows:

8.13.7.1. WQCC Standards

The Permittees may seek a technical infeasibility determination or alternative abatement standard from a WQCC standard in accordance with 20.6.2.4103.E or F NMAC.

8.13.7.2. Soil Standards and Non-WQCC Ground Water Standards

The Permittees may seek a variance from any cleanup level for soil or for ground water (other than a WQCC standard) by submitting a written

request to NMED for a determination that attainment of the cleanup level is technically infeasible or otherwise impracticable due to conflict with other environmental laws or requirements for the preservation of cultural resources. If based on technical infeasibility, the request shall include a demonstration of technical or physical impossibility of attaining the cleanup level using potential corrective action remedies. If based on conflict with other environmental laws or requirements for the preservation of cultural resources, the request shall include documentation showing that Permittees have attempted to resolve the conflict or mitigate the impact on cultural or natural resources and shall explain why mitigating measures cannot resolve the conflict or adequately protect the cultural or natural resource (e.g. consultation and a determination of incidental taking or reasonable and prudent measures to minimize the impact under 16 U.S.C. §1536). All requests shall include a discussion of the effectiveness of potential corrective action remedies, whether the proposed variance will allow a present or future hazard to public health or the environment, and any other information required by the NMED. In addition, the request shall propose alternate cleanup levels for NMED approval, based on the effectiveness of potential corrective action remedies and a site-specific risk assessment based on NMED's guidance, *Technical Background Document for Development of Soil Screening Levels* (August 2009, as updated), *Assessing Human Health Risks Posed by Chemicals: Screening Level Risk Assessment* (March 2000), and *Guidance for Assessing Ecological Risks Posed by Chemicals: Screening-Level Ecological Risk Assessment* (July 2008, as updated).

8.14. REPORTING REQUIREMENTS

The purpose of this Permit Section is to provide the reporting requirements and report formats for corrective action activities at all SWMUs, AOCs, and permitted units required under this Permit. This Attachment is not intended to provide reporting requirements for every potential corrective action conducted at the facility; therefore, the formats for all types of reports are not presented below. The described formats include the general reporting requirements and formats for site-specific investigation work plans, investigation reports, periodic monitoring reports, risk assessment reports, and corrective measures evaluations. The Permittees shall generally consider the reports to be the equivalents of RCRA Facility Investigation (**RFI**) work plans, RFI reports, periodic monitoring reports, risk assessments, Corrective Measures Study (**CMS**) plans, and CMS reports, for the purposes of RCRA compliance. The Permittees shall include detailed, site-specific requirements in all SWMU, AOC, permitted unit and facility-wide investigation work plans, investigation reports, monitoring reports, and corrective measures evaluations. All plans and reports shall be prepared with technical and regulatory input from NMED. All work plans, reports and other documents shall be submitted to NMED in the form of two paper copies and one copy in electronic or other format acceptable to NMED. The Permittees shall submit maps and figures in a format specified by NMED (e.g., *shp, *dwg).

The reporting requirements listed in this Attachment do not include all sections that may be necessary to complete each type of report listed and may include sections that are not relevant for a specific site action. The Permittees or NMED may determine that additional sections may be needed to address additional site-specific issues or information collected during corrective action or monitoring activities not listed below. However, the Permittees must submit variations of the general report format and the formats for reports not listed in this Attachment in outline form to NMED for approval prior to submittal of the reports. All work plans and reports are subject to the requirements in Permit Part 8, *Corrective Action for SWMUs and AOCs*. NMED will approve or disapprove, in writing, the proposed report outline within 90 days of receipt of the outline. If NMED disapproves the report outline, NMED will notify the Permittees, in writing, of the outline's deficiencies and will specify a date for submittal of a revised report outline. All reports submitted by the Permittees shall follow the general approach and limitations for data presentation described in this Attachment

8.14.1. Investigation Work Plan

The Permittees shall prepare work plans subject to the requirements of Permit Part 8 for site investigations or corrective action activities at the facility using the general outline below. The minimum requirements for describing proposed activities within each section are included. All research, locations, depths and methods of exploration, field procedures, analytical results, data collection methods, and schedules shall be included in each work plan. In general, interpretation of data acquired during previous investigations shall be presented only in the background sections of the work plans. The other text sections of the work plans shall be reserved for presentation of anticipated site-specific activities and procedures relevant to the project. The general work plan outline is described below.

8.14.1.1. Title Page

The title page shall include the type of document; facility name; area designation; SWMU or AOC name, site, and any other unit name; and the submittal date. A signature block providing spaces for the name and title of the responsible facility representative shall be provided on the title page in accordance with 20.4.1.900 NMAC (incorporating 40 CFR §270.11(d)(1)).

8.14.1.2. Executive Summary (Abstract)

The executive summary or abstract shall provide a brief summary of the purpose and scope of the investigation to be conducted at the subject site. The facility, SWMU or AOC name, site name, any other unit name, location, and area designation shall be included in the executive summary.

8.14.1.3. Table of Contents

The table of contents shall list all text sections, tables, figures, and appendices or attachments included in the work plan. The corresponding

page numbers for the titles of each section of the work plan shall be included in the table of contents.

8.14.1.4. Introduction

The introduction shall include the facility name, area designation, unit location, and unit status (e.g., closed, corrective action). General information on the current site usage and status shall be included in this section. A brief description of the purpose of the investigation and the type of site investigation to be conducted shall be provided in this section.

8.14.1.5. Background

The background section shall describe relevant background information. This section shall briefly summarize historical site uses by the U.S. Government and any other entity, including the locations of current and former site structures and features. A labeled figure shall be included in the document showing the locations of current and former site structures and features. The locations of pertinent subsurface features such as pipelines, underground tanks, utility lines, and other subsurface structures shall be included in the background summary and labeled on the figure, unless none exist.

This section shall identify potential receptors, including groundwater, and include a brief summary of the type and characteristics of all waste and all contaminants managed or released at the site, the known and possible sources of contamination, the history of releases or discharges of contamination, and the known extent of contamination. This section shall include brief summaries of results of previous investigations, if conducted, including references to pertinent figures, data summary tables, and text in previous reports. At a minimum, detections of contaminants encountered during previous investigations shall be presented in table format, with an accompanying figure showing sample locations. References to previous reports shall include page, table, and figure numbers for referenced information. Summary data tables and site plans showing relevant investigation locations shall be included in the Tables and Figures sections of the document, respectively.

8.14.1.6. Site Conditions

a. Surface Conditions

A section on surface conditions shall provide a brief detailed description of current site topography, features and structures including a description of topographic drainages, man-made drainages, vegetation, erosional features, and basins. It shall also include a detailed description of current site usage and any current

operations at the site. In addition, descriptions of features located in surrounding sites that may have an impact on the subject site regarding sediment transport, surface water runoff, or contaminant fate and transport shall be included in this section.

b. Subsurface Conditions

A section on subsurface conditions shall provide a brief, detailed description of the site conditions observed during previous subsurface investigations, including relevant soil horizons, stratigraphy, presence of groundwater, and other relevant information. A site plan showing the locations of all borings and excavations advanced during previous investigations shall be included in the Figures section of the work plan. A brief description of the anticipated stratigraphic units that may be encountered during the investigation may be included in this subsection if no previous investigations have been conducted at the site.

8.14.1.7. Scope of Activities

A section on the scope of activities shall briefly describe a list of all anticipated activities to be performed during the investigation including background information research, health and safety requirements that may affect or limit the completion of tasks, drilling, test pit or other excavations, well construction, field data collection, survey data collection, chemical analytical testing, aquifer testing, remediation system pilot tests, and investigation-derived waste (**IDW**) storage and disposal.

8.14.1.8. Investigation Methods

A section on investigation methods shall provide a description of all anticipated locations and methods for conducting the activities to be performed during the investigation. This section shall include research methods, health and safety practices that may affect the completion of tasks, drilling methods, test pit or other excavation methods, sampling intervals and methods, well construction methods, field data collection methods, geophysical and land survey methods, field screening methods, chemical analytical testing, materials testing, aquifer testing, pilot tests, and other proposed investigation and testing methods. This information may also be summarized in table format, if appropriate.

8.14.1.9. Monitoring and Sampling

A section on monitoring and sampling shall provide a description of the groundwater, ambient air, subsurface vapor, remediation system,

engineering controls, and other monitoring and sampling programs currently being implemented at the site.

8.14.1.10. Schedule

A section shall set forth the anticipated schedule for completion of field investigation, pilot testing, and monitoring and sampling activities. In addition, this section shall set forth a schedule for submittal of reports and data to NMED including a schedule for submitting all status reports and preliminary data.

8.14.1.11. Tables

The following summary tables may be included in the investigation work plans, if previous investigations have been conducted at the site. Data presented in the tables shall include information on dates of data collection, analytical methods, detection limits, and significant data quality exceptions. The analytical data tables shall include only detected analytes and data quality exceptions that could potentially mask detections.

1. Summaries of regulatory criteria, background, and applicable cleanup levels (may be included in the analytical data tables instead of as separate tables).

2. Summaries of historical field survey location data.

3. Summaries of historical field screening and field parameter measurements of soil, rock, sediments, groundwater, surface water, and air quality data.

4. Summaries of historical soil, rock, or sediment laboratory analytical data shall include the analytical methods, detection limits, and significant data quality exceptions that could influence interpretation of the data.

5. Summaries of historical groundwater elevation and depth to groundwater data. The table shall include the monitoring well depths, the screened intervals in each well, and the dates and times measurements were taken.

6. Summaries of historical groundwater laboratory analytical data. The analytical data tables shall include the analytical methods, detection limits, and significant data quality exceptions that could influence interpretation of the data.

DRAFT

7. Summary of historical surface water laboratory analytical data. The analytical data tables shall include the analytical methods, detection limits, and significant data quality exceptions that could influence interpretation of the data.

8. Summary of historical air sample screening and chemical analytical data. The data tables shall include the screening instruments used, laboratory analytical methods, detection limits, and significant data quality exceptions that could influence interpretation of the data.

9. Summary of historical pilot or other test data, if applicable, including units of measurement and types of instruments used to obtain measurements.

8.14.1.12. Figures

The following figures shall be included with each investigation work plan for each site, including presentation of data where previous investigations have been conducted. All figures must include an accurate bar scale and a north arrow. An explanation shall be included on each figure for all abbreviations, symbols, acronyms, and qualifiers. All maps shall contain a date of preparation.

1. A vicinity map showing topography and the general location of the site relative to surrounding features and properties.

2. A site plan that presents pertinent site features and structures, underground utilities, well locations, and remediation system locations and details. Off-site well locations and other relevant features shall be included on the site plan, if appropriate. Additional site plans may be required to present the locations of relevant off-site well locations, structures, and features.

3. Figures showing historical and proposed soil boring or excavation locations and sampling locations.

4. Figures presenting historical soil sample field screening and laboratory analytical data if applicable.

5. Figures presenting the locations of all existing and proposed borings and vapor monitoring well locations.

6. Figures showing all existing and proposed wells and piezometers, presenting historical groundwater elevation data, and indicating groundwater flow directions.

DRAFT

7. Figures presenting historical groundwater laboratory analytical data, if applicable. The chemical analytical data corresponding to each sampling location can be presented in tabular form on the figure or as an isoconcentration map.

8. Figures presenting historical and proposed surface water sample locations and field measurement data, if applicable.

9. Figures presenting historical surface water laboratory analytical data, if applicable.

10. Figures showing historical and proposed air or vapor sampling locations and presenting historical air quality data, if applicable.

11. Figures presenting historical pilot and other testing locations and data, where applicable, including site plans and graphic data presentation.

12. Figures presenting geologic cross-sections, based on outcrop and borehole data acquired during previous investigations, if applicable.

8.14.1.13. Appendices

A description of IDW management shall be included as an appendix to the investigation work plan. The results of historical investigations required in this Permit shall be submitted with the investigation work plan as a separate document. Additional appendices may be necessary to present additional data or documentation not listed above.

8.14.2. Investigation Report

The Permittees shall prepare investigation reports at the facility using the general outline below. The Investigation Report shall be the reporting mechanism for presenting the results of completed Investigation Work Plans. This section describes the minimum requirements for reporting on site investigations. All data collected during each site investigation event in the reporting period shall be included in the reports. In general, interpretation of data shall be presented only in the background, conclusions and recommendations sections of the reports. The other text sections of the reports shall be reserved for presentation of facts and data without interpretation or qualifications. The general report outline is provided below.

8.14.2.1. Title Page

The title page shall include the type of document; facility name; area designation; SWMU or AOC name, site, and any other unit name; and the submittal date. A signature block providing spaces for the name and title of the responsible facility representatives shall be provided on the title

DRAFT

page in accordance with 20.4.1.900 NMAC (incorporating 40 CFR §270.11(d)(1)).

8.14.2.2. Executive Summary (Abstract)

The executive summary or abstract shall provide a brief summary of the purpose, scope, and results of the investigation; site names; location; and area designation. In addition, this section shall include a brief summary of conclusions included in the Report based on the investigation data collected and recommendations for future investigation, monitoring, remedial action or site closure.

8.14.2.3. Table of Contents

The table of contents shall list all text sections, subsections, tables, figures, and appendices or attachments included in the report. The corresponding page numbers for the titles of each section of the report shall be included in the table of contents.

8.14.2.4. Introduction

The introduction section shall include the facility name, area designation, unit location, and unit status (e.g., closed, corrective action). General information on the site usage and status shall be included in this section. A brief description of the purpose of the investigation, the type of site investigation conducted, and the type of results presented in the report also shall be provided in this section.

8.14.2.5. Background

The background section shall describe relevant background information. This section shall briefly summarize historical site uses by the U.S. Government and any other entity, including the locations of current and former site structures and features. A labeled figure shall be included in the document showing the locations of current and former site structures and features. The locations of any subsurface features such as pipelines, underground tanks, utility lines, and other subsurface structures shall be included in the background summary and labeled on the figure, as appropriate. In addition, this section shall include a brief summary of the possible sources of contamination, the history of releases or discharges of contamination, the known extent of contamination, and a general summary of the results of previous investigations including references to previous reports. The references to previous reports shall include page, table, and figure numbers for referenced information. A site plan, showing relevant investigation locations, and summary data tables shall be included in the Figures and Tables sections of the document, respectively.

8.14.2.6. Scope of Activities

A section on the scope of activities shall briefly describe all activities performed during the investigation event including background information research, implemented health and safety measures that affected or limited the completion of tasks, drilling, test pit or other excavation methods, well construction methods, field data collection, survey data collection, chemical analytical testing, aquifer testing, remediation system pilot tests, and IDW storage or disposal.

8.14.2.7. Field Investigation Results

A section shall provide a summary of the procedures used and the results of all field investigation activities conducted at the site including the dates that investigation activities were conducted, the type and purpose of field investigation activities performed, field screening measurements, logging and sampling results, pilot test results, construction details, and conditions observed. Field observations or conditions that altered the planned work or may have influenced the results of sampling, testing, and logging shall be reported in this section. The following sections shall be included.

a. Surface Conditions

A section on surface conditions shall describe current site topography, features, and structures including topographic drainages, man-made drainages, vegetation, and erosional features. It shall also include a description of current site uses and any operations at the site. In addition, descriptions of features located in surrounding sites that may have an impact on the subject site regarding sediment transport, surface water runoff, or contaminant transport shall be included in this subsection.

b. Exploratory Drilling or Excavation Investigations

A section shall describe the locations, methods, and depths of subsurface explorations. The description shall include the types of equipment used, the logging procedures, the soil or rock classification system used to describe the observed materials, exploration equipment decontamination procedures, and conditions encountered that may have affected or limited the investigation.

A description of the site conditions observed during subsurface investigation activities shall be included in this section, including soil horizon and stratigraphic information. Site plans showing the locations of all borings and excavations shall be included in the

DRAFT

Figures Section of the report. Boring and test pit logs for all exploratory borings and test pits shall be presented in an appendix or attachment to the report.

c. Exploratory and Monitoring Well Boring Geophysical Logging

A section shall describe the methods, dates of measurement, depth intervals measured, and the results of geophysical logging. The relative merits and limitations of each geophysical logging method employed shall be discussed, along with any field conditions or instrument malfunctions that occurred that may have affected the results of the geophysical logging.

d. Subsurface Conditions

A section on subsurface conditions shall describe known subsurface lithology and structures, based on observations made during the current and previous subsurface investigations, including interpretation of geophysical logs and as-built drawings of man-made structures. A description of any known locations of pipelines and utility lines and observed geologic structures shall also be included in this section. A site plan showing boring and excavation locations and the locations of the site's above- and below-ground structures shall be included in the Figures section of the report. In addition, cross-sections shall be constructed, if appropriate, to provide additional visual presentation of site or regional subsurface conditions.

e. Monitoring Well construction and Boring or Excavation Abandonment

A section shall describe the methods and details of monitoring well construction and the methods used to abandon or backfill exploratory borings and excavations. The description shall include the dates of well construction, boring abandonment, or excavation backfilling. In addition, well construction diagrams shall be included in an appendix or attachment with the associated boring logs for monitoring well borings. The Permittees may submit well abandonment reports as an appendix to the investigation report.

f. Groundwater Conditions

A section shall describe groundwater conditions observed beneath the subject site and relate local groundwater conditions to regional groundwater conditions. A description of the depths to water, aquifer thickness, and groundwater flow directions shall be included in this section for alluvial groundwater, shallow perched

DRAFT

groundwater, intermediate perched groundwater, and regional groundwater, as appropriate to the investigation. Figures showing well locations, surrounding area, and groundwater elevations and flow directions for each hydrologic zone shall be included in the Figures section of the report.

g. Surface Water Conditions

A section shall describe surface water conditions and include a description of surface water runoff, drainage, surface water sediment transport, and contaminant transport in surface water as suspended load and as a dissolved phase in surface water via natural and man-made drainages, if applicable. A description of contaminant fate and transport shall be included, if appropriate.

h. Surface Air and Subsurface Vapor Conditions

A section shall describe surface air and subsurface vapor monitoring and sampling methods used during the site investigation. It shall also describe observations made during the site investigation regarding subsurface flow pathways and the subsurface air-flow regime.

i. Materials Testing Results

A section shall discuss the materials testing results, such as core permeability testing, grain size analysis, or other materials testing results. Sample collection methods, locations, and depths shall also be included. Corresponding summary tables shall be included in the Tables section of the report.

j. Pilot Testing Results

A section shall discuss the results of any pilot tests. Pilot tests are typically conducted after initial subsurface investigations are completed and the need for additional investigation or remediation has been evaluated. Pilot tests, including aquifer tests and remediation system pilot tests, shall be addressed through separate work plans and pilot test reports. The format for pilot test work plans and reports shall be approved by NMED prior to submittal.

8.14.2.8. Regulatory Criteria

A section shall set forth the cleanup standards, risk-based screening levels, and risk-based cleanup goals for each pertinent medium at the subject site. The appropriate cleanup levels for each site shall be included if site-specific levels have been established at separate facility sites or

DRAFT

units. A table summarizing the applicable cleanup standards or levels or inclusion of applicable cleanup standards or levels in the data tables shall be included as part of the document. The risk assessment, if conducted, shall be presented in a separate document or in an appendix to this report. If cleanup or screening levels calculated in a NMED-approved risk evaluation are employed, the risk evaluation document shall be referenced and shall include pertinent page numbers for referenced information.

8.14.2.9. Site Contamination

A section shall provide a description of sampling intervals and methods for detection of surface and subsurface contamination in soils, rock, sediments, groundwater, and surface water, and as vapor-phase contamination. Only factual information shall be included in this section. Interpretation of the data shall be reserved for the summary and conclusions sections of the report. Tables summarizing all sampling, testing, and screening results for detected contaminants shall be prepared in a format approved by NMED. The tables shall be presented in the Tables Section of the report.

a. Soil, Rock, and Sediment Sampling

A section shall describe the sampling of soil, rock, and sediment. It shall include the dates, locations and methods of sample collection; sampling intervals; sample logging methods; screening sample selection methods; and laboratory sample selection methods including the collection depths for samples submitted for laboratory analyses. A site plan showing the sample locations shall be included in the Figures Section of the report.

b. Soil, Rock, and Sediment Sampling Field Screening Results

A section shall describe the field screening methods used during the investigation and the field screening results. Field screening results also shall be presented in summary tables in the Tables section of the document. The limitations of field screening instrumentation and any conditions that influenced the results of field screening shall be discussed in this section.

c. Soil, Rock, and Sediment Sampling Analytical Results

A section shall summarize the results of laboratory analysis for soil, rock, and sediment samples. It shall also describe the analytical methods used and provide a comparison of the analytical results to background levels, cleanup standards, or established cleanup levels for the site. The laboratory results also

DRAFT

shall be presented in summary tables in the Tables section of the document. Field conditions and sample collection methods that could potentially affect the analytical results shall be described in this section. If appropriate, soil analytical data shall be presented with sample locations on a site plan and included in the Figures section of the report.

d. Groundwater Sampling

A section on groundwater sampling shall describe the dates, locations, depths, and methods of sample collection; methods for sample logging; and methods for screening and laboratory sample selection. A map showing all site and surrounding area well locations shall be included in the Figures section of the report.

e. Groundwater General Chemistry

A section on the general groundwater chemistry shall describe the results of measurement of field purging parameters and field analytical measurements. Field parameter measurements and field analytical results also shall be presented in summary tables in the Tables section of the document. The limitations of field measurement instrumentation and any conditions that may have influenced the results of field screening shall be discussed in this section. As determined by the Permittees and NMED, relevant water chemistry concentrations shall be presented as data tables or as isoconcentration contours on a map included in the Figures section of the report.

f. Groundwater Chemical Analytical Results

A section shall summarize the results of groundwater chemical analyses. It shall describe the groundwater chemical analytical methods and analytical results. It shall also provide a comparison of the data to cleanup standards or established cleanup levels for the site. The rationale or purpose for altering or modifying the groundwater sampling program outlined in the site investigation work plan shall also be provided in this section. Field conditions shall be described in this section that may have affected the analytical results during sample collection. Tables summarizing the groundwater laboratory, field, and field sample QA/QC chemical analytical data; applicable cleanup levels; and modifications to the groundwater sampling program shall be provided in the Tables Section of the report. Relevant contaminant concentrations shall be presented as individual analyte

DRAFT

concentrations, data tables, or as isoconcentration contours on a map included in the Figures Section of the report.

g. Surface Water Sampling

A section shall describe the surface water sampling and shall include the dates, times, locations, depths, and methods of sample collection. It shall also describe methods for sample logging, sample-screening methods, and laboratory sample selection methods. A map showing all surface-water sampling locations shall be included in the Figures section of the report.

h. Surface Water General Chemistry

A section on the surface water general chemistry shall describe the results of measurement of field parameters and field analytical measurements. Field parameter measurements and field analytical results also shall be presented in summary tables in the Tables section of the document. The limitations of field measurement instrumentation and any conditions that influenced the results of field screening shall be discussed in this section. Relevant water chemistry concentrations shall be presented as data tables on a map included in the Figures section of the report.

i. Surface Water Chemical Analytical Results

A section shall summarize the results of surface water chemical analyses. It shall describe the analytical methods and analytical results, and provide a comparison of the data to the cleanup standards or established background or cleanup levels for the site. The rationale or purpose for altering or modifying the surface-water sampling program outlined in the site investigation work plan also shall be provided in this section. Field conditions that may have affected the analytical results during sample collection shall be described in this section. Tables summarizing the surface water laboratory, field, and analytical field sample QA/QC analytical data; applicable cleanup levels; and modifications to the surface-water sampling program shall be provided in the Tables section of the report. Relevant contaminant concentrations shall be presented as individual analyte concentrations or as data tables on a map included in the Figures section of the report.

j. Air and Subsurface Vapor Sampling

A section shall describe the air and subsurface vapor sampling. It shall describe the dates, locations, depths or elevations above ground surface, methods of sample collection, methods for sample

DRAFT

logging, and methods for laboratory sample selection. A map showing all air sampling locations shall be provided in the Figures section of the report.

k. Air and Subsurface Vapor Field Screening Results

A section shall describe the air and subsurface vapor field screening results. It shall describe the field screening methods used for ambient air and subsurface vapors during the investigation. Field screening results shall also be presented in summary tables in the Tables section of the report. The locations of ambient air and subsurface vapor screening sample collection shall be presented on a site plan included in the Figures section of the report. The limitations of field screening instrumentation and any conditions that influenced the results of field screening shall be discussed in this section.

l. Air and subsurface Vapor Laboratory Analytical Results

A section shall describe the results of air and subsurface vapor laboratory analysis. It shall describe the air sampling laboratory analytical methods and analytical results, and provide a comparison of the data to emissions standards or established cleanup or emissions levels for the site. The rationale or purpose for altering or modifying the air monitoring or sampling program outlined in the site investigation work plan also shall be provided in this section. Field conditions that may have affected the analytical results during sample collection shall be described in this section. Tables summarizing the air sample laboratory, field, and analytical field sample QA/QC data; applicable cleanup levels or emissions standards; and modifications to the air sampling program shall be provided in the Tables section of the report. Relevant contaminant concentrations shall be presented as individual analyte concentrations, data tables, or as isoconcentration contours on a map included in the Figures section of the report.

8.14.2.10. Conclusions

A section shall provide a brief summary of the investigation activities and a discussion of the conclusions of the investigation conducted at the site. In addition, this section shall provide a comparison of the results to applicable cleanup or screening levels, and to relevant historical investigation results and analytical data. Potential receptors, including groundwater, shall be identified and discussed. An explanation shall be provided with regard to data gaps. A risk assessment may be included as

DRAFT

an appendix to the investigation report; however, the risk assessment shall be presented in the Risk Assessment format described in Permit Section 8.14.4. References to the risk assessment shall be presented only in the summary and conclusions sections of the Investigation Report.

8.14.2.11. Recommendations

A section shall discuss the need for further investigation, corrective measures, risk assessment and monitoring, or recommendations for corrective action completed, based on the conclusions provided in the Conclusions section. It shall include explanations regarding additional sampling, monitoring, and site closure. A corresponding schedule for further action regarding the site shall also be provided. No action recommendations shall include the anticipated schedule for submittal of a petition for a permit modification.

8.14.2.12. Tables

A section shall provide the following summary tables as applicable. With prior approval from NMED, the Permittees may combine one or more of the tables. Data presented in the tables shall include the current data, dates of data collection, analytical methods, detection limits, and significant data quality exceptions. The summary analytical data tables shall include only detected analytes and data quality exceptions that could potentially mask detections.

1. Tables summarizing regulatory criteria, background levels, and applicable cleanup levels (this information may be included in the analytical data tables instead of as separate tables).

2. Tables summarizing field survey location data. Separate tables shall be prepared for well locations and individual medium sampling locations except where the locations are the same for more than one medium.

3. Tables summarizing field screening and field parameter measurements of soil, rock, sediments, groundwater, surface water, and air quality data.

4. A table summarizing soil, rock, and/or sediment laboratory analytical data. It shall include the analytical methods, detection limits, and significant data quality exceptions that would influence interpretation of the data.

5. A table summarizing the groundwater elevations and depths to groundwater. The table shall include the monitoring well depths and the screened intervals in each well.

DRAFT

6. A table summarizing the groundwater laboratory analytical data. The analytical data tables shall include the analytical methods, detection limits, and significant data quality exceptions that would influence interpretation of the data.

7. A table summarizing the surface water laboratory analytical data. The analytical data tables shall include the analytical methods, detection limits, and significant data quality exceptions that would influence interpretation of the data.

8. A table summarizing the air sample screening and laboratory analytical data. The data tables shall include the screening instruments used, laboratory analytical methods, detection limits, and significant data quality exceptions that would influence interpretation of the data.

9. Tables summarizing the pilot test data, if applicable, including units of measurement and types of instruments used to obtain measurements.

10. A table summarizing any materials test data.

8.14.2.13. Figures

A section shall provide the following figures as applicable. All figures shall include an accurate bar scale and a north arrow. An explanation shall be provided on each figure for all abbreviations, symbols, acronyms, and qualifiers. All maps shall have a date.

1. A vicinity map showing topography and the general location of the subject site relative to surrounding features and properties.

2. A site plan that presents any pertinent site features and structures, underground utilities, well locations, and remediation system location(s) and details. Off-site well locations and other relevant features shall be included on the site plan. Additional site plans may be required to present the locations of relevant off-site well locations, structures and features.

3. Figures showing boring or excavation locations and sampling locations.

4. Figures presenting soil sample field screening and laboratory analytical data.

5. Figures displaying the locations of all newly installed and existing wells and borings.

DRAFT

6. Figures presenting monitoring well and piezometer locations, groundwater elevation data, and groundwater flow directions.

7. Figures presenting groundwater laboratory analytical data, including any past data requested by NMED. The laboratory analytical data corresponding to each sampling location may be presented in table form on the figure or as an isoconcentration map.

8. Figures presenting surface water sample locations and field measurement data including any past data requested by NMED.

9. Figures presenting surface water laboratory analytical data including any past data requested by NMED. The laboratory analytical data corresponding to each sampling location may be presented in table form on the figure.

10. Figures showing air sampling locations and presenting air quality. The field screening or laboratory analytical data corresponding to each sampling location may be presented in table form on the figure or as an isoconcentration map.

11. Figures presenting geologic cross-sections based on outcrop and borehole data.

12. Figures presenting pilot test locations and data, where applicable, including site plans or graphic data presentation.

8.14.2.14. Appendices

Each investigation report shall include the following appendices. Additional appendices may be necessary to present data or documentation not listed below.

a. Field Methods

An appendix shall provide detailed descriptions of the methods used to acquire field measurements of each medium that was surveyed or tested during the investigation. This appendix shall include exploratory drilling or excavation methods, the methods and types of instruments used to obtain field screening, field analytical or field parameter measurements, instrument calibration procedures, sampling methods for each medium investigated, decontamination procedures, sample handling procedures, documentation procedures, and a description of field conditions that affected procedural or sample testing results. Methods of measuring and sampling during pilot tests shall be reported in this

appendix, if applicable. Geophysical logging methods shall be discussed in a separate section of this appendix. IDW storage and disposal methods shall also be discussed in this appendix. Copies of IDW disposal documentation shall be provided in a separate appendix.

b. Boring/Test Pit Logs and Well Construction Diagrams

An appendix shall provide boring logs, test pit logs, or other excavation logs, and well construction details. In addition, a key to symbols and a soil or rock classification system shall be included in this appendix. Geophysical logs shall be provided in a separate section of this appendix.

c. Analytical Programs

An appendix shall discuss the analytical methods, a summary of data quality objectives, and the data quality review procedures. A summary of data quality exceptions and their effect on the acceptability of the field and laboratory analytical data with regard to the investigation and the site status shall be included in this appendix along with references to the case narratives provided in the laboratory reports.

d. Analytical Reports

An appendix shall provide the contract laboratory final analytical data reports generated for the investigation. The reports shall include all chain-of-custody records and Level II QA/QC results provided by the laboratory. The final laboratory reports and data tables shall be provided electronically in a format approved by NMED. Paper copies (or electronically scanned in PDF format) of all chain-of-custody records shall be provided with the reports.

e. Other Appendices

Other appendices containing additional information shall be included as required by NMED or as otherwise appropriate.

8.14.3. Periodic Monitoring Report

The Permittees shall use the following guidance for preparing periodic monitoring reports. The reports shall present the reporting of periodic groundwater, surface water, vapor, and remediation system monitoring at the facility. The following sections provide a general outline for monitoring reports, and also provide the minimum requirements for reporting for specific facility sites, areas, and regional monitoring. All data collected during each monitoring and sampling event in the reporting period shall be included in the reports. In

DRAFT

general, interpretation of data shall be presented only in the background, conclusions, and recommendations sections of the reports. The other text sections of the reports shall be reserved for presentation of facts and data without interpretation or qualifications.

8.14.3.1. Title Page

The title page shall include the type of document; facility name; area designation; SWMU or AOC name, site, watershed, and any other unit name; and the submittal date. A signature block providing spaces for the name and title of the responsible facility representatives shall be provided on the title page in accordance with 20.4.1.900 NMAC (incorporating 40 CFR §270.11(d)(1)).

8.14.3.2. Executive Summary (Abstract)

The executive summary or abstract shall provide a brief summary of the purpose, scope, and results of the monitoring conducted at the subject site during the reporting period. The area (e.g., Plume-front, facility-wide) SWMU, AOC and site name, location, and/or area designation shall be included in the executive summary. In addition, this section shall include a brief summary of conclusions based on the monitoring data collected.

8.14.3.3. Table of Contents

The table of contents shall list all text sections, subsections, tables, figures, and appendices or attachments included in the report. The corresponding page numbers for the titles of each section of the report shall be included in the table of contents.

8.14.3.4. Introduction

The introduction section shall include the facility name, area designation physical area and/or, unit location, and unit status as applicable (e.g. closed, corrective action). General information on the site usage and status shall be included in this section. A brief description of the purpose of the monitoring, type of monitoring conducted, and the type of results presented in the report also shall be provided in this section.

8.14.3.5. Scope of Activities

A section on the scope of activities shall briefly describe all activities performed during the monitoring event or reporting period including field data collection, analytical testing, remediation system monitoring, if applicable, and purge/decontamination water storage and disposal.

DRAFT

8.14.3.6. Regulatory Criteria

A section on regulatory criteria shall provide information regarding applicable cleanup standards, risk-based screening levels and risk-based cleanup goals for the subject site. A separate table summarizing the applicable screening levels or standards or inclusion of the applicable cleanup standards or screening levels in the data tables can be substituted for this section. The appropriate cleanup or screening levels for each site shall be included, if site-specific levels have been established at separate sites. Risk-based evaluation procedures, if used to calculate cleanup or screening levels, must either be included as an attachment or referenced. The specific document and page numbers must be included for all referenced materials.

8.14.3.7. Monitoring Results

A section shall provide a summary of the results of monitoring conducted at the site. This section shall include the dates and times that monitoring was conducted, the measured depths to groundwater, directions of groundwater flow, field air and water quality measurements, contaminant surveys, static pressures, field measurements, and a comparison to previous monitoring results. Field observations or conditions that may influence the results of monitoring shall be reported in this section. Tables summarizing vapor-monitoring parameters, groundwater elevations, depths to groundwater measurements, and other field measurements can be substituted for this section. The tables shall include all information required in Permit Section 8.14.3.11.

8.14.3.8. Analytical Data Results

A section shall discuss the results of the chemical analyses. It shall provide the dates of sampling, the analytical methods, and the analytical results. It shall also provide a comparison of the data to previous results and to background levels, cleanup standards, or established cleanup levels for the site. The rationale or purpose for altering or modifying the monitoring and sampling program shall be provided in this section. A table summarizing the laboratory analytical data, QA/QC data, applicable cleanup levels, and modifications to the sampling program can be substituted for this section. The tables shall include all information required in Permit Section 8.14.3.11.

8.14.3.9. Remediation System Monitoring

A section shall discuss the remediation system monitoring. It shall summarize the remediation system's capabilities and performance. It shall also provide monitoring data, treatment system discharge sampling

requirements, and system influent and effluent sample analytical results. The dates of operation, system failures, and modifications made to the remediation system during the reporting period shall also be included in this section. A summary table may be substituted for this section. The tables shall include all information required in Permit Section 8.14.3.11.

8.14.3.10. Summary

A summary section shall provide a discussion and conclusions of the monitoring conducted at the site. In addition, this section shall provide a comparison of the results to applicable cleanup levels, and to relevant historical monitoring and laboratory analytical data. An explanation shall be provided with regard to data gaps. A discussion of remediation system performance, monitoring results, modifications, if applicable, and compliance with discharge requirements shall be provided in this section. Recommendations and explanations regarding future monitoring, remedial actions, or site closure, if applicable, shall also be included in this section.

8.14.3.11. Tables

A section shall provide the following summary tables for the media sampled. With prior approval from NMED, the Permittees may combine one or more of the tables. Data presented in the tables shall include the current sampling and monitoring data plus data from the three previous monitoring events or, if data from less than three monitoring events is available, data acquired during previous investigations. Remediation system monitoring data also shall be presented. The dates of data collection shall be included in the tables. Summary tables may be substituted for portions of the text. The analytical data tables shall include only detected analytes and data quality exceptions that could potentially mask detections.

1. A table summarizing the regulatory criteria (a Regulatory Criteria text section may be substituted for this table or the applicable cleanup levels may be included in the analytical data tables).

2. A table summarizing groundwater elevations and depths to groundwater data. The table shall include the monitoring well depths, the screened intervals in each well, and the dates and times of measurements.

3. A table summarizing field measurements of surface water quality data.

DRAFT

4. A table summarizing field measurements of vapor monitoring data (must include historical vapor monitoring data as described above).

5. A table summarizing field measurements of groundwater quality data (must include historical water quality data as described above).

6. A table summarizing vapor sample analytical data (must include historical vapor sample analytical data as described above).

7. A table summarizing surface water analytical data (must include historical surface water analytical data as described above).

8. A table summarizing groundwater analytical data (must include historical groundwater analytical data as described above).

9. A table summarizing remediation system monitoring data, if applicable

8.14.3.12. Figures

The section shall include the following figures. All figures shall include an accurate bar scale and a north arrow. An explanation shall be provided on each figure for all abbreviations, symbols, acronyms, and qualifiers. All figures shall have a date.

1. A vicinity map showing topography and the general location of the subject site relative to surrounding features or properties.

2. A site plan that presents pertinent site features and structures, well and piezometer locations, and remediation system location(s) and features. Off-site well locations and pertinent features shall be included on the site plan, if practical. Additional site plans may be required to present the locations of relevant off-site well locations, structures, and features.

3. Figures presenting the locations of piezometer, monitoring and other well locations, groundwater elevation data, and groundwater flow directions.

4. Figures presenting groundwater analytical data for the current monitoring event. The analytical data corresponding to each sampling location may be presented as individual concentrations or in table form on the figure or as an isoconcentration map.

DRAFT

5. Figures presenting surface water sampling locations and analytical data for the current monitoring period if applicable.

6. Figures presenting vapor sampling locations and analytical data for the current monitoring event if applicable. The analytical data corresponding to each sampling location may be presented as individual concentrations or in table form on the figure or as an isoconcentration map.

7. Figures presenting geologic cross-sections based on outcrop and borehole data, if applicable.

8.14.3.13. Appendices

Each monitoring report shall include the following appendices. Additional appendices may be necessary to present data or documentation not listed below.

a. Field Methods

An appendix shall include the methods used to acquire field measurements of groundwater elevations, vapor and water quality data, and vapor, surface water and groundwater samples. It shall include the methods and types of instruments used to measure depths to water, air or headspace parameters, flow measurements, and water quality parameters. In addition, decontamination, well purging techniques, well sampling techniques, and sample handling procedures shall be provided in this appendix. Methods of measuring and sampling remediation systems shall be reported in this appendix, if applicable. Purge and decontamination water storage and disposal methods shall also be presented in this appendix. Copies of purge and decontamination water disposal documentation shall be provided in a separate appendix, if applicable.

b. Analytical Programs

An appendix shall discuss the analytical program. It shall include the analytical methods, a summary of data quality objectives, and data quality review procedures. A summary of data quality exceptions and their effect on the acceptability of the analytical data with regard to the monitoring event and the site status shall be included in this appendix along with references to case narratives provided in the laboratory reports.

c. Analytical Reports

DRAFT

An appendix shall provide the analytical reports and shall include the contract laboratory final chemical analytical data reports generated during this reporting period. The reports must include all chain-of-custody records and Level II QA/QC results provided by the laboratory. The laboratory final reports and data tables shall be provided electronically in a format approved by NMED. Paper copies (or electronically scanned in PDF format) of all chain-of-custody records shall be provided with the reports.

8.14.4. Risk Assessment Report

The Permittees shall prepare risk assessment reports for sites requiring corrective action at the facility using the format listed below. This section provides a general outline for risk assessments and also lists the minimum requirements for describing risk assessment elements. In general, interpretation of data shall be presented only in the Background, Conceptual Site Model, and Conclusions and Recommendations Sections of the reports. The other text sections of the Risk Assessment report shall be reserved for presentation of sampling results from all investigations, conceptual and mathematical elements of the risk assessment, and presentations of toxicity information and screening values used in the risk assessment. Permit Section 8.14.4.8 and subsequent sections should be presented in separate sections for the human health and ecological risk assessments, but the general risk assessment outline applicable to both sections is provided below.

8.14.4.1. Title Page

The title page shall include the type of document; facility name; area designation; SWMU or AOC name, site, and any other unit name; and the submittal date. A signature block providing spaces for the name and title of the responsible facility representative shall be provided on the title page in accordance with 20.4.1.900 NMAC (incorporating 40 CFR §270.11(d)(1)).

8.14.4.2. Executive Summary (Abstract)

The executive summary or abstract section shall provide a brief summary of the purpose and scope of the risk assessment of the subject site. The Executive Summary shall also briefly summarize the conclusions of the risk assessment. The facility, SWMU, AOC, and site names; location; and area designation shall be included in the executive summary.

8.14.4.3. Table of Contents

The table of contents shall list all text sections, subsections, tables, figures, and appendices or attachments included in the risk assessment. The corresponding page numbers for the titles of each unit of the report shall be included in the table of contents.

DRAFT

8.14.4.4. Introduction

The introduction section shall include the facility name, area designation, unit location, and unit status (e.g., closed, corrective action). General information on the current site usage and status shall be included in this section.

8.14.4.5. Background

The background section shall describe relevant background information. This section shall briefly summarize historical site uses by the U.S. Government and any other entity, including the locations of current and former site structures and features. A labeled figure shall be included in the document showing the locations of current and former site structures and features.

a. Site Description

A section shall describe current site topography, features and structures including topographic drainages, man-made drainages, erosional features, current site uses, and other data relevant to assessing risk at the site. Depth to groundwater and direction of groundwater flow shall be included in this section. The presence and location of surface water bodies such as any springs or wetlands shall be noted in this section. Photographs of the site may be incorporated into this section. Ecological features of the site shall be described here, including type and amount of vegetative cover, observed and expected wildlife receptors, and level of disturbance of the site. A topographical map of the site and vicinity of the site showing habitat types, boundaries of each habitat, and any surface water features shall be included in the Figures section of the document.

b. Sampling Results

A section shall discuss the results of the sampling at the site. It shall include a description of the history of releases of contaminants, the known and possible sources of contamination, and the vertical and lateral extent of contamination present in each medium. This section shall include summaries of sampling results of all investigations including site plans (included in the Figures section of the report) showing locations of detected contaminants. This section shall reference pertinent figures, data summary tables, and references in previous reports. References to previous reports shall include page, table, and figure numbers for referenced information. Summaries of sampling data shall include

DRAFT

for each constituent: the maximum value detected, the detection limit, the 95 percent upper confidence level (**UCL**) of the mean value detected (if applicable to the data set), and whether the 95 percent UCL of the mean was calculated based on a normal or lognormal distribution. Background values used for comparison to inorganic constituents at the site shall be presented here. The table of background values should appear in the Tables section of the document and include actual values used as well as the origin of the values (e.g. facility-wide, UCL, upper tolerance level (**UTL**)). This section shall also include a discussion of how "non-detect" sample results were handled in the averaging of data.

8.14.4.6. Conceptual Site Model

A section shall present the conceptual site model. It shall include information on the expected fate and transport of contaminants detected at the site. This section shall provide a list of all sources of contamination at the site. Sources that are no longer considered to be ongoing but represent the point of origination for contaminants transported to other locations shall be included. The discussion of fate and transport shall address potential migration of each contaminant in each medium, potential breakdown products and their migration, and anticipated pathways of exposure for human or ecological receptors. Diagrammatic representations of the conceptual site model shall appear in the Figures section of the document.

For human health risk assessments, the conceptual site model shall include the current and reasonably foreseeable future land use and residential land use for all risk assessments. All values for exposure parameters and the source of those values shall be included in table format and presented in the Tables section of the document.

Conceptual site models presented for ecological risk assessments shall identify assessment endpoints and measurement receptors for the site. The discussion of the model shall explain how the measurement receptors for the site are protective of the wildlife receptors identified by the Permittees in the Site Description section (see Permit Section 8.14.4.5.a).

8.14.4.7. Risk Screening Levels

A section shall present the actual screening values used for each contaminant for comparison to all human health and ecological risk screening levels. NMED's Soil Screening Levels (**SSLs**) for residential and industrial soil shall be used to screen soil for human health using EPA's *Assessment Guidance for Superfund (RAGS), Volume I, Part A, 1989* as updated. For those contaminants not appearing on NMED's SSL

table, the EPA Region 6 soil screening value adjusted to meet NMED's risk goal of 10^{-5} for total risk for carcinogens shall be used to screen the site for human health risks. Screening for ecological risk shall be conducted using EPA's ECO-SSLs, or derive a screening level using the methodology in NMED's *Guidance for Assessing Ecological Risks Posed by Chemicals: Screening–Level Ecological Risk Assessment*. If no valid toxicological studies exist for a particular receptor or contaminant, the contaminant/receptor combination shall be addressed using qualitative methods. If a NMED approved site-specific risk scenario is used for the human health risk assessment, this section shall include all toxicity information and exposure assessment equations used for the site-specific scenario as well as the sources for that information. Other regulatory levels applicable to screening the site, such as drinking water MCLs, shall also be included in this section.

8.14.4.8. Risk Assessment Results

A section shall present all risk values, hazard quotients (**HQs**), and HIs for human health based on current and reasonably foreseeable future land use. Where the current or reasonably foreseeable future land use is not residential, risk values, HQs, and HIs for a residential land use scenario shall also be calculated and reported. The residential scenario shall be used for comparison purposes only, unless the land use becomes residential. This section shall also present the HQ and HI for each contaminant for each ecological receptor.

a. Uncertainty Analysis

A section shall include discussion of qualitative, semi-quantitative, and quantitative uncertainty in the risk assessment and estimate the potential impact of the various uncertainties.

8.14.4.9. Conclusions and Recommendations

A section shall include the interpretation of the results of the risk assessment and any recommendations for future disposition of the site. This section may include additional information and considerations that the Permittees believe are relevant to the analysis of the site.

8.14.4.10. Tables

A section shall provide the following summary tables, as appropriate. With prior approval from NMED, the Permittees may combine one or more of the tables. Data presented in the summary tables shall include information on detection limits and significant data quality exceptions. The analytical data tables shall include only detected analytes and data quality exceptions that could potentially mask detections.

1. A table presenting background values used for comparison to inorganic constituents at the site. The table shall include actual values used as well as the origin of the values (facility-wide, UCL, UTL, or maximum).

2. A table summarizing sampling data shall include, for each constituent, all detected values above background, the maximum value detected, the 95 percent UCL of the mean value detected (if applicable to the data set), and whether that 95 percent UCL of the mean was calculated based on a normal or lognormal distribution.

3. A table of all screening values used and the sources of those values.

4. A table presenting all risk values, HQs, and HIs under current and reasonably foreseeable future land use for human health.

5. If residential use is not a current or reasonably foreseeable future land use, a table presenting all risk values, HQs, and HIs under a residential land use scenario for human health shall be included for comparison purposes.

6. A table presenting the HQ and HI for each contaminant for each ecological receptor.

7. A table presenting values for exposure parameters and the source of the values.

8.14.4.11. Figures

A section shall present the following figures for each site, as appropriate. With prior approval from NMED, the Permittees may combine one or more of the figures. All figures shall include an accurate bar scale and a north arrow. An explanation shall be provided on each figure for all abbreviations, symbols, acronyms, and qualifiers.

1. A vicinity map showing topography and the general location of the subject site relative to surrounding features or properties.

2. For human health risk assessments, a site plan that presents pertinent site features and structures, underground utilities, well locations, and remediation system location(s) and its details. Off-site well locations and other relevant features shall be included on the site plan if practical. Additional site plans may be required to present the locations of relevant off-site well locations, structures, and features.

DRAFT

3. For ecological risk assessments, a topographical map of the site and vicinity of the site showing habitat types, boundaries of each habitat, and any surface water features.

4. Conceptual site model diagrams for both human health and ecological risk assessments.

8.14.4.12. Appendices

Each risk assessment report shall include appendices containing supporting data. Appendices may include the results of statistical analyses of data sets and comparisons of data, full sets of results of all sampling investigations at the site, or other data as appropriate.

8.14.5. Corrective Measures Evaluation Report

The Permittees shall prepare corrective measures evaluations for sites requiring corrective measures using the format listed below. This section provides a general outline for corrective measures evaluations and also lists the minimum requirements for describing corrective measures when preparing these documents. All investigation summaries, site condition descriptions, corrective action goals, corrective action options, remedial options selection criteria, and schedules shall be included in the corrective measures evaluations. In general, interpretation of historical investigation data and discussions of prior interim activities shall be presented only in the background sections of the corrective measures evaluations. At a minimum, detections of contaminants encountered during previous site investigations shall be presented in the corrective measures evaluations in table format with an accompanying site plan showing sample locations. The other text sections of the corrective measures evaluations shall be reserved for presentation of corrective action-related information regarding anticipated or potential site-specific corrective action options and methods relevant to the project. The general corrective measures evaluation outline is provided below.

8.14.5.1. Title Page

The title page shall include the type of document; facility name; area designation; SWMU or AOC name, site, and any other unit name; and the submittal date. A signature block providing spaces for the name and title of the responsible facility representative shall be provided on the title page in accordance with 20.4.1.900 NMAC (incorporating 40 CFR §270.11(d)(1)).

8.14.5.2. Executive Summary (Abstract)

This executive summary or abstract shall provide a brief summary of the purpose and scope of the corrective measures evaluation to be conducted at the subject site. The executive summary or abstract shall also briefly summarize the conclusions of the evaluation. The SWMU, AOC, and site

names, location, and area designation shall be included in the executive summary.

8.14.5.3. Table of Contents

The table of contents shall list all text sections, subsections, tables, figures, and appendices or attachments included in the corrective measures evaluation. The corresponding page numbers for the titles of each section of the report shall be included in the table of contents.

8.14.5.4. Introduction

The Introduction section shall include the facility name, area designation, site location, and site status (e.g. closed, corrective action). General information on the current site usage and status shall be included in this section. A brief description of the purpose of the corrective measures evaluation and the corrective action objectives for the project also shall be provided in this section.

8.14.5.5. Background

The Background section shall describe the relevant background information. This section shall briefly summarize historical site uses by the U.S. Government and any other entity, including the locations of current and former site structures and features. A labeled figure shall be included in the document showing the locations of current and former site structures and features. The locations of any subsurface features such as pipelines, underground tanks, utility lines, and other subsurface structures shall be included in this section and labeled on the site plan, as appropriate.

This section shall include contaminant and waste characteristics, a brief summary of the history of contaminant releases, known and possible sources of contamination, and the vertical and lateral extent of contamination present in each medium. This section shall include brief summaries of results of previous investigations, including references to pertinent figures, data summary tables, and text in previous reports. References to previous reports shall include page, table, and figure numbers for referenced information. Summary tables and site plans showing relevant investigation locations shall be referenced and included in the Tables and Figures sections of the document, respectively.

8.14.5.6. Site Conditions

a. Surface Conditions

DRAFT

A section on surface conditions shall describe current and historic site topography, features, and structures, including a description of topographic drainages, man-made drainages, vegetation, and erosional features. It shall also include a description of current uses of the site and any current operations at the site. This section shall also include a description of those features that could potentially influence corrective action option selection or implementation such as archeological sites, wetlands, or other features that may affect remedial activities. In addition, descriptions of features located in surrounding sites that may have an effect on the subject site regarding sediment transport, surface water runoff or contaminant transport shall be included in this section. A site plan displaying the locations of all pertinent surface features and structures shall be included in the Figures section of the corrective measures evaluation.

b. Subsurface Conditions

A section on subsurface conditions shall describe the site conditions observed during previous subsurface investigations. It shall include relevant soil horizon and stratigraphic information, groundwater conditions, fracture data, and subsurface vapor information. A site plan displaying the locations of all borings and excavations advanced during previous investigations shall be included in the Figures section of the corrective measures evaluation. A brief description of the stratigraphic units anticipated to be present beneath the site may be included in this section if stratigraphic information is not available from previous investigations conducted at the site.

8.14.5.7. Potential Receptors

a. Sources

A section shall provide a list of all sources of contamination at the subject site where corrective measures are to be considered or required. Sources that are no longer considered to be releasing contaminants at the site, but may be the point of origination for contaminants transported to other locations, shall be included in this section.

b. Pathways

A section shall describe potential migration pathways that could result in either acute or chronic exposures to contaminants. It shall include such pathways as utility trenches, paleochannels, surface

DRAFT

exposures, surface drainages, stratigraphic units, fractures, structures, and other features. The migration pathways for each contaminant and each relevant medium should be tied to the potential receptors for each pathway. A discussion of contaminant characteristics relating to fate and transport of contaminants through each pathway shall also be included in this section.

c. Receptors

A section shall provide a listing and description of all anticipated potential receptors that could possibly be affected by the contamination present at the site. Potential receptors shall include human and ecological receptors, groundwater, and other features such as pathways that could divert or accelerate the transport of contamination to human receptors, ecological receptors, and groundwater.

8.14.5.8. Regulatory Criteria

A section shall set forth the applicable cleanup standards, risk-based screening levels, and risk-based cleanup goals for each pertinent medium at the subject site. The appropriate cleanup levels for each site shall be included, if site-specific levels have been established at separate sites or units. A table summarizing the applicable cleanup standards or levels, or inclusion of applicable cleanup standards or levels in the summary data tables shall be included in the Tables section of the document. The risk assessment shall be presented in a separate document or in an appendix to this report. If cleanup or screening levels calculated in a risk evaluation are employed, the risk evaluation document shall be referenced including pertinent page numbers for referenced information.

8.14.5.9. Identification of Corrective Measures Options

A section shall identify and describe potential corrective measures for source, pathway, and receptor controls. Corrective measures options shall include the range of available options including, but not limited to, a no action alternative, institutional controls, engineering controls, in-situ and on-site remediation alternatives, complete removal, and any combination of alternatives that would potentially achieve cleanup goals.

8.14.5.10. Evaluation of Corrective Measures Options

A section shall provide an evaluation of the corrective measures options identified in Permit Section 8.14.5.9. The evaluation shall be based on the applicability, technical feasibility, effectiveness, implementability, impacts to human health and the environment, and cost of each option. A table summarizing the corrective measures alternatives and the criteria

listed below shall be included in the Tables section of this document. The general basis for evaluation of corrective measures options is defined below.

a. Applicability

Applicability addresses the overall suitability for the corrective action option for containment or remediation of the contaminants in the subject medium for protection of human health and the environment.

b. Technical Practicability

Technical practicability describes the uncertainty in designing, constructing, and operating a specific remedial alternative. The description shall include an evaluation of historical applications of the remedial alternative including performance, reliability, and minimization of hazards.

c. Effectiveness

Effectiveness assesses the ability of the corrective measure to mitigate the measured or potential impact of contamination in a medium under the current and projected site conditions. The assessment also shall include the anticipated duration for the technology to attain regulatory compliance. In general, all corrective measures described above will have the ability to mitigate the impacts of contamination at the site, but not all remedial options will be equally effective at achieving the desired cleanup goals to the degree and within the same time frame as other options. Each remedy shall be evaluated for both short-term and long-term effectiveness.

d. Implementability

Implementability characterizes the degree of difficulty involved during the installation, construction, and operation of the corrective measure. Operation and maintenance of the alternative shall be addressed in this section.

e. Human Health and Ecological Protectiveness

This category evaluates the short-term (remedy installation-related) and long-term (remedy operation-related) hazards to human health and the environment of implementing the corrective measure. The assessment shall include whether the technology

DRAFT

will create a hazard or increase existing hazards and the possible methods of hazard reduction.

f. Cost

This section shall discuss the anticipated cost of implementing the corrective measure. The costs shall be divided into: 1) capital costs associated with construction, installation, pilot testing, evaluation, permitting, and reporting of the effectiveness of the alternative; and 2) continuing costs associated with operating, maintaining, monitoring, testing, and reporting on the use and effectiveness of the technology.

8.14.5.11. Selection of Preferred Corrective Measure

The Permittees shall propose the preferred corrective measure(s) at the site and provide a justification for the selection in this section. The proposal shall be based upon the ability of the remedial alternative to: 1) achieve cleanup objectives in a timely manner; 2) protect human and ecological receptors; 3) control or eliminate the sources of contamination; 4) control migration of released contaminants; and 5) manage remediation waste in accordance with State and Federal regulations. The justification shall include the supporting rationale for the remedy selection, based on the factors listed in Permit Section 8.14.5.10 and a discussion of short- and long-term objectives for the site. The benefits and possible hazards of each potential corrective measure alternative shall be included in this section.

8.14.5.12. Design Criteria to Meet Cleanup Objectives

The Permittees shall present descriptions of the preliminary design for the selected corrective measures in this section. The description shall include appropriate preliminary plans and specifications to effectively illustrate the technology and the anticipated implementation of the remedial option at the subject area. The preliminary design shall include a discussion of the design life of the alternative and provide engineering calculations for proposed remediation systems.

8.14.5.13. Schedule

A section shall set forth a proposed schedule for completion of remedy-related activities such as bench tests, pilot tests, construction, installation, remedial excavation, cap construction, installation of monitoring points, and other remedial actions. The anticipated duration of corrective action operations and the schedule for conducting monitoring and sampling activities shall also be presented. In addition, this section shall provide a

DRAFT

schedule for submittal of reports and data to NMED, including a schedule for submitting all status reports and preliminary data.

8.14.5.14. Tables

A section shall present the following summary tables, as appropriate. With prior approval of NMED, the Permittees may combine one or more of the tables. Data presented in the summary tables shall include information on dates of sample collection, analytical methods, detection limits, and significant data quality exceptions. The analytical data tables shall include only detected analytes and data quality exceptions that could potentially mask detections.

1. A table summarizing regulatory criteria, background, and/or the applicable cleanup standards.

2. A table summarizing historical field survey location data.

3. Tables summarizing historical field screening and field parameter measurements of soil, rock, sediments, groundwater, surface water, and air quality data.

4. Tables summarizing historical soil, rock, or sediment laboratory analytical data. The summary tables shall include the analytical methods, detection limits, and significant data quality exceptions that would influence interpretation of the data.

5. A table summarizing historical groundwater elevation and depth to groundwater data. The table shall include the monitoring well depths and the screened intervals in each well.

6. Tables summarizing historical groundwater laboratory analytical data. The analytical data tables shall include the analytical methods, detection limits, and significant data quality exceptions that would influence interpretation of the data.

7. Tables summarizing historical surface water laboratory analytical data if applicable. The analytical data tables shall include the analytical methods, detection limits, and significant data quality exceptions that would influence interpretation of the data.

8. Tables summarizing historical air sample screening and analytical data. The data tables shall include the screening instruments used, laboratory analytical methods, detection limits, and significant data quality exceptions that would influence interpretation of the data.

DRAFT

9. Tables summarizing historical pilot or other test data, if applicable, including units of measurement and types of instruments used to obtain measurements.

10. A table summarizing the corrective measures alternatives and evaluation criteria.

11. A table presenting the schedule for installation, construction, implementation, and reporting of selected corrective measures.

8.14.5.15. Figures

A section shall present the following figures for each site, as appropriate. All figures must include an accurate bar scale and a north arrow. An explanation shall be provided on each figure for all abbreviations, symbols, acronyms, and qualifiers. All figures shall have a date.

1. A vicinity map showing topography and the general location of the subject site relative to surrounding features or properties.

2. A unit site plan that presents pertinent site features and structures, underground utilities, well locations, and remediation system locations and details. Off-site well locations and other relevant features shall be included on the site plan if practical. Additional site plans may be required to present the locations of relevant off-site well locations, structures, and features.

3. Figures showing historical soil boring or excavation locations and sampling locations.

4. Figures presenting historical soil sample field screening and laboratory analytical data, if appropriate.

5. Figures showing all existing wells including vapor monitoring wells and piezometers. The figures shall present historical groundwater elevation data and indicate groundwater flow directions.

6. Figures presenting historical groundwater laboratory analytical data including past data, if applicable. The analytical data corresponding to each sampling location may be presented as individual concentrations, in table form on the figure or as an isoconcentration map.

7. Figures presenting historical surface water sample locations and analytical data including past data, if applicable. The laboratory analytical data corresponding to each sampling location may be

DRAFT

presented as individual concentrations or in table form on the figure.

8. Figures presenting historical air sampling locations and presenting air quality data. The field screening or laboratory analytical data corresponding to each sampling location may be presented as individual concentrations, in table form on the figure or as an isoconcentration map.

9. Figures presenting historical pilot or other test locations and data, where applicable, including site plans or graphic data presentation.

10. Figures presenting geologic cross-sections based on outcrop and borehole data, if applicable.

11. Figures presenting the locations of existing and proposed remediation systems.

12. Figures presenting existing remedial system design and construction details.

13. Figures presenting preliminary design and construction details for preferred corrective measures.

8.14.5.16. Appendices

Each corrective measures evaluation shall include, as appropriate, as an appendix, the management plan for waste, including investigation derived waste, generated as a result of construction, installation, or operation of remedial systems or activities conducted. Each corrective measures evaluation shall include additional appendices presenting relevant additional data, such as pilot or other test or investigation data, remediation system design specifications, system performance data, or cost analyses as necessary.

8.15. REFERENCES

U.S. Environmental Protection Agency (EPA), *Regional Screening Levels for Chemical Contaminants at Superfund Sites*, http://epa-prgs.ornl.gov/chemicals/index.shtml

U.S. Environmental Protection Agency (EPA) 1989, *Risk Assessment Guidance for Superfund (RAGS), Volume I, Part A, 1989*, http://www.epa.gov/oswer/riskassessment/ragsa/

New Mexico Environment Department (NMED) 2000, *Assessing Human Health Risks Posed by Chemicals: Screening Level Risk Assessment*. Santa Fe, New Mexico.

DRAFT

NMED 2008, *Guidance for Assessing Ecological Risks Posed by Chemicals: Screening–Level Ecological Risk Assessment*. Santa Fe, New Mexico.

NMED 2009, Technical Background Document for Development of Soil Screening Levels. Santa Fe, New Mexico.

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