9/1/90 PNM

SCOPE OF WORK FOR THE CORRECTIVE MEASURE IMPLEMENTATION (CMI) AT PERSON GENERATING STATION PUBLIC SERVICE COMPANY ALBUQUERQUE, NEW MEXICO

PURPOSE

The purpose of this Corrective Measure Implementation (CMI) program is to design, construct, operate, maintain, and monitor the performance of the corrective measure or measures selected to protect human health and the environment. PNM will furnish all personnel, materials, and services necessary for the implementation of the corrective measure or measures.

SCOPE

The Corrective Measure Implementation program consists of four tasks;

Task XI: Corrective Measure Implementation Program Plan

- A. Program Management Plan
- B. Community Relations Plan

Task XII: Corrective Measure Design

- A. Design Plans and Specifications
- B. Operation and Maintenance Plan
- C. Cost Estimate
- D. Project Schedule
- E. Construction Quality Assurance Objectives
- F. Health and Safety Plan
- G. Design Phases

Task XIII: Corrective Measure Construction

- A. Responsibility and Authority
- B. Construction Quality Assurance Personnel Qualifications
- C. Inspection Activities
- D. Sampling Requirements

E. Documentation

Task XIV: Reports

A. Progress

B. Draft

C. Final

Task XI: CORRECTIVE MEASURE IMPLEMENTATION PROGRAM PLAN

PNM shall prepare a Corrective Measure Implementation Program Plan. This program will include the development and implementation of several plans, which require concurrent preparation. It may be necessary to revise plans as the work is performed to focus efforts on a particular problem. The Program Plan includes the following:

A. Program Management Plan

PNM shall prepare a Program Management Plan which will document the overall management strategy for performing the design, construction, operation, maintenance and monitoring of corrective measure(s). The plan shall document the responsibility and authority of all organizations and key personnel involved with the implementation. The Program Management Plan will also include a description of qualifications of key personnel directing the Corrective Measure Implementation Program, including contractor personnel.

B. Community Relations Plan

PNM shall revise the Community Relations Plan to include any changes in the level of concern of information needs to the community during design and construction activities.

1. Specific activities which must be conducted during the design stage are the following:

   a. Revise the site Community Relations Plan to reflect knowledge of citizen concerns and involvement at this stage of the process; and

   b. Prepare and distribute a public notice and an updated fact sheet at the completion of engineering design.

2. Specific activities to be conducted during the construction stage could be the following: Depending on citizen interest at the site at this

point in the corrective action process, community relations activities could range from group meetings to fact sheets on the technical status.

TASK XII: CORRECTIVE MEASURE DESIGN

PNM shall prepare final construction plans and specifications to implement the corrective measure(s) at the site as defined in the Corrective Measure Study.

A. Design Plans and Specifications

PNM shall develop clear and comprehensive design plans and specifications which include but are not limited to the following:

1. Discussion of the design strategy and the design basis, including:

   a. Compliance with all applicable or relevant environmental and public health standards; and

   b. Minimization of environmental and public impacts.

2. Discussion of the technical factors of importance including:

   a. Use of currently accepted environmental control measures and technology;

   b. The constructability of the design; and

   c. Use of currently acceptable construction practices and techniques.

3. Description of assumptions made and detailed justification of these assumptions;

4. Discussion of the possible sources of error and references to possible operation and maintenance problems;

5. Detailed drawings of the proposed design including;

   a. Qualitative flow sheets; and

   b. Quantitative flow sheets.

6. Tables listing equipment and specifications;

7. Tables giving material and energy balances;

8. Appendices including;

   a. Sample calculations (one example presented and explained clearly for significant or unique design calculations);

   b. Derivation of equations essential to understanding the report; and

   c. Results of laboratory and/or field tests.

B. Operation and Maintenance Plan

PNM shall prepare an Operation and Maintenance Plan to cover both implementation and long term maintenance of the corrective measure. The plan shall be composed of the following elements:

1. Description of normal operation and maintenance (O&M);

   a. Description of tasks for operation;

   b. Description of tasks for maintenance;

   c. Description of prescribed treatment or operation conditions; and

   d. Schedule showing frequency of each O&M task.

2. Description of potential operating problems;

   a. Description and analysis of potential operation problems;

   b. Sources of information regarding problems; and

   c. Common and/or anticipated remedies.

3. Description of routine monitoring and laboratory testing;

   a. Description of monitoring tasks;

   b. Description of required laboratory tests and their interpretation;

   c. Required QA/QC; and

   d. Schedule of monitoring frequency and date, if

appropriate, when monitoring may cease.

4. Description of alternate O&M;

   a. Should systems fail, alternate procedures to prevent undue hazard; and

   b. Analysis of vulnerability and additional resource requirements should a failure occur.

5. Safety Plan;

   a. Description of precautions, of necessary equipment, etc., for site personnel; and

   b. Safety tasks required in event of systems failure.

6. Description of equipment; and

   a. Equipment identification;

   b. Installation of monitoring components;

   c. Maintenance of site equipment; and

   d. Replacement schedule for equipment and installed components.

7. Records and reporting mechanisms required.

   a. Daily operating logs;

   b. Laboratory records;

   c. Records for operating costs;

   d. Mechanism for reporting emergencies;

   e. Personnel and maintenance records; and

   f. Monthly/annual reports to State agencies.

An initial Draft Operation and Maintenance Plan shall be submitted simultaneously with the Prefinal Design Document submission and the Final Operation and Maintenance Plan with the Final Design Documents.

C. Cost Estimate

PNM shall develop cost estimates for the purpose of assuring that the site has the financial resources

necessary to construct and implement the corrective measure. The cost estimate developed in the Corrective Measure Study shall be refined to reflect the more detailed/accurate design plans and specifications being developed. The cost estimate shall include both capital and operation and maintenance costs. An initial Draft Cost Estimate shall be submitted simultaneously with the Prefinal Design Document submission and the Final Cost Estimate with the Final Design Document.

D. Project Schedule

PNM shall develop a detailed Project Schedule for construction and implementation of the corrective measure(s) which identifies timing for initiation and completion of all critical path tasks. PNM shall specifically identify dates for completion of the project and major interim milestones which shall be enforceable by the terms of this Permit. An initial Draft Project Schedule shall be submitted simultaneously with the Prefinal Design Document submission and the Final Project Schedule with the Final Design Document.

E. Construction Quality Assurance Objectives

PNM shall identify and document the objectives and framework for the development of a construction quality assurance program including, but not limited to the following: responsibility and authority; personnel qualifications; inspection activities; sampling requirements; and documentation.

F. Health and Safety Plan

PNM shall modify the Health and Safety Plan developed for the RSI to address the activities to be performed at the site to implement the corrective measure(s). Because PNM is responsible for site safety, EID will not approve this plan, but reserves the right to disapprove it and require modifications.

G. Design Phases

The design of the corrective measure(s) should include the phases outlined below.

1. Preliminary design

PNM shall submit the Preliminary design when the design effort is approximately 30% complete. At this stage PNM shall have field verified the existing conditions of the site. The preliminary

design shall reflect a level of effort such that the technical requirements of the project have been addressed and outlined so that they may be reviewed to determine if the final design will provide an operable and usable corrective measure. Supporting data and documentation shall be provided with the design documents defining the functional aspects of the program. The preliminary construction drawings by PNM shall reflect organization and clarity. The scope of the technical specifications shall be outlined in a manner reflecting the final specifications. PNM shall include with the preliminary submission design calculations reflecting the same percentage of completion as the designs they support.

2. Intermediate design

Complex project design may necessitate review of the design documents between the preliminary and the prefinal/final design. At the discretion of the Agency, a design review may be required at 60% completion of the project. The intermediate design submittal should include the same elements as the prefinal design.

3. Correlating plans and specifications

General correlation between drawings and technical specifications, is a basic requirement of any set of working construction plans and specifications. Before submitting the project specifications, PNM shall:

a. Coordinate and cross-check the specifications and drawings; and

b. Complete the proofing of the edited specifications and required cross-checking of all drawings and specifications.

These activities shall be completed prior to the 95% prefinal submittal to the Agency.

4. Equipment start-up and operator training

PNM shall prepare, and include in the technical specifications governing treatment systems, contractor requirements for providing: appropriate service visits by experienced personnel to supervise the installation, adjustment, startup and operation of the treatment systems; and training covering

appropriate operational procedures once the startup has been successfully accomplished.

5. Additional studies

Corrective Measure Implementation may require additional studies to supplement the available technical data. At the direction of the Agency for any such studies required, PNM shall furnish all services, including field work as required, materials, supplies, plant, labor, equipment, investigations, studies, and superintendence. Sufficient sampling, testing and analysis shall be performed to optimize the required treatment and/or disposal operations and systems. There shall be an initial meeting of all principal personnel involved in the development of the program. The purpose will be to discuss objectives, resources, communication channels, role of personnel involved and orientation of the site, etc. The interim report shall present the results of the testing with the recommended treatment or disposal system (including options). A review conference shall be scheduled after the interim report has been reviewed by all interested parties. The final report of the testing shall include all data taken during the testing and a summary of the results of the studies.

6. Prefinal and final design

PNM shall submit the prefinal/final design documents in two parts. The first submission shall be at 95% completion of design (i.e., prefinal). After approval of the prefinal submission, PNM shall execute the required revisions and submit the final documents 100% complete with reproducible drawings and specifications.

The prefinal design submittal shall consist of the Design Plans and Specifications, Draft Operation and Maintenance Plan, Draft Cost Estimate, Draft Quality Assurance Plan and the Draft Health and Safety Plan, and Draft Project Schedule.

The final design submittal shall consist of the Final Design Plans and Specifications (100% complete), PNM's Final Cost Estimate, the Final Operation and Maintenance Plan, Final Quality Assurance Plan, Final Project Schedule, and Final Health and Safety Plan. The quality of the design documents should be such that PNM would be able to include them in a bid package and invite contractors

to submit bids for the construction project.

TASK XIII: CORRECTIVE MEASURE CONSTRUCTION

Following EID approval of the final design, PNM shall develop and implement a construction quality assurance (CQA) program to ensure, with a reasonable degree of certainty, that the completed corrective measure(s) meets or exceeds all design criteria, plans, and specifications. The CQA plan is a site specific document which must be submitted to EID for approval prior to the start of construction. At a minimum, the CQA plan should include the elements which are summarized below. Upon EID approval of the CQA Plan, PNM shall construct and implement the corrective measure(s) in accordance with the approved design, schedule, and the CQA Plan. PNM shall also implement all elements of the approved Operation and Maintenance Plan.

A. Responsibility and Authority

The responsibility and authority of all organizations (i.e., technical consultants, construction firms, etc.) and key personnel involved in the construction of the corrective measure shall be described fully in the CQA Plan. PNM must identify a CQA officer and the necessary supporting inspection staff.

B. Construction Quality Assurance Personnel Qualifications

The qualifications of the CQA officer and supporting inspection personnel shall be presented in the CQA plan to demonstrate that they possess the training and experience necessary to fulfill their identified responsibilities.

C. Inspection Activities

The observations and tests that will be used to monitor the construction and/or installation of the components of the corrective measure(s) shall be summarized in the CQA Plan. The CQA Plan shall include the scope and frequency of each type of inspection. Inspections shall verify compliance with all environmental requirements and include, but not be limited to air quality and emissions monitoring records, waste disposal records (e.g., RCRA transportation manifests), etc. The inspection should also ensure compliance with all health and safety procedures. In addition to oversight inspections, PNM shall conduct the following activities:

1. Preconstruction inspection and meeting

PNM shall conduct a preconstruction inspection and meeting with EID to:

a. Review methods for documenting and reporting inspection data;

b. Review methods for distributing and storing documents and reports;

c. Review work area security and safety protocol;

d. Discuss any appropriate modifications of the construction quality assurance plan to ensure that site-specific considerations are addressed; and

e. Conduct a site walk-around to verify that the design criteria, plans and specifications are understood and to review material and equipment storage locations.

The preconstruction inspection and meeting shall be documented by a designated person and a report shall be transmitted to all parties within 30 days.

2. Prefinal inspection

Upon preliminary project completion PNM shall notify EID for the purposes of conducting a prefinal inspection. The prefinal inspection will consist of a walk-through inspection of the entire project site. The inspection is to determine whether the project is complete and consistent with the contract documents and the EID approved corrective measure. Any outstanding construction items discovered during the inspection will be identified and noted. Additionally, treatment equipment will be operationally tested by PNM. PNM will certify that the equipment has performed to meet the purpose and intent of the specifications. Retesting will be completed where deficiencies are revealed. The prefinal inspection report should outline the outstanding construction items, actions required to resolve items, completion dates for these items, and date for final inspection.

3. Final inspection

Upon completion of any outstanding construction items, PNM shall notify EID for the purposes of conducting a final inspection. The final inspection will consist of a walk-through inspection of the

project site. The prefinal inspection report will be used as a checklist with the final inspection focusing on the outstanding construction items identified in the prefinal inspection. Confirmation shall be made that outstanding items have been resolved.

D. Sampling Requirements

The sampling activities, sample size, sample locations, frequency of testing, acceptance and rejection criteria, and plans for correcting problems as addressed in the project specifications should be presented in the CQA Plan.

E. Documentation

Reporting requirements for CQA activities shall be described in detail in the CQA Plan. This should include such items as daily summary reports, inspection data sheets, problem identification and corrective measure reports, design acceptance reports, and final documentation. Provisions for the final storage of all records also should be presented in the CQA Plan.

TASK XIV: REPORTS

PNM shall prepare plans, specifications, and reports as set forth in Tasks XI through XIV to document the design, construction, operation, maintenance, and monitoring of the corrective measure(s). The documentation shall include, but not be limited to the following:

A. Progress

The Permittee shall at a minimum provide the EID with signed, monthly progress reports during the design and construction phases and semi-annual progress reports for operation and maintenance activities containing:

1. A description and estimate of the percentage of the CMI completed;

2. Summaries of all findings and data;

3. Summaries of all changes made in the CMI during the reporting period;

4. Summaries of all contacts with representatives of the local community, public interest groups, or State government during the reporting period;

5. Summaries of all problems or potential problems encountered during the reporting period;

6. Actions being taken to rectify problems;

7. Changes in personnel associated with corrective measures during the reporting period;

8. Projected work for the next reporting period; and

9. Copies of daily reports, inspection reports, laboratory/monitoring data, etc.

B. Draft

1. PNM shall submit a draft Corrective Measure Implementation Program Plan as outlined in Task XI;

2. PNM shall submit draft Construction Plans and Specifications, Design Reports, Cost Estimates, Project Schedules, Operation and Maintenance Plan, and Study Reports as outlined in Task XII;

3. PNM shall submit a draft Construction Quality Assurance Program Plan and Documentation as outlined in Task XIII; and

4. At the "completion" of the construction of the project, PNM shall submit a Corrective Measure Implementation Report to the Agency. The Report shall document that the project is consistent with the design specifications, and that the corrective measure is performing adequately. The Report shall include, but not be limited to the following elements:

   a. Synopsis of the corrective measure and certification of the design and construction;

   b. Explanation of any modifications to the plans and why these were necessary for the project;

   c. Listing of the criteria, established before the corrective measure was initiated, for judging the functioning of the corrective measure and also explaining any modification to these criteria;

   d. Results of site monitoring, indicating that the corrective measure will meet or exceed the performance criteria; and

e. Explanation of the operation and maintenance (including monitoring) to be undertaken at the site.

This report should include all of the daily inspection summary reports, inspection summary reports, inspection data sheets, problem identification and corrective measure reports, block evaluation reports, photographic reporting data sheets, design engineers' acceptance reports, deviations from design and material specifications (with justifying documentation) and as-built drawings.

C. Final

PNM shall finalize the Corrective Measure Implementation Program Plan, Construction Plans and Specifications, Design Reports, Operation and Maintenance Plan, Project Schedule, Study Reports, Construction QA Program Plan/Documentation, Cost Estimates, Additional Studies Report and the Corrective Measure Implementation Report incorporating comments received on draft submissions.

Submission Summary

A summary of the information reporting requirements contained in the Corrective Measure Implementation Scope of Work is present below:

Site Submission	Due Date
Draft CMI Program Plans (Task XI)	Concurrent with Final CMS Report
Final Program Plans (Task XI)	15 days after EID comment on Draft Program Plans
Design Phases (Task XII.A and G)	
- Preliminary Design (30% completion)	120 days after
- Intermediate Design (60% completion)	submittal of Final
* - Prefinal Design (95% completion)	Program Plan
** - Final Design (100% completion) (Tasks XII. B through G)	30 days after EID approval of Prefinal Design

Site Submission	Due Date
- Draft Submittals	Concurrent with Prefinal Design
- Final Submittals	Concurrent with Final Design
Additional Studies: Interim Report (Task XII.G.5)	(DATE ESTABLISHED PRIOR TO FINAL DESIGN)
Additional Studies: Final Report (Task XII.G.5)	15 days after EID comment on Interim Report
Draft Construction Quality Assurance Plan (Task XIII)	60 days after EID approves Final Design
Final Construction Quality Assurance Plan (Task XIII)	15 days after EID approves Draft Construction Quality Assurance (CQA) Plan
Construction of Corrective Measures (Task XIII)	15 days after EID approves Final CQA Plan
Preconstruction Inspection/Meeting Report (Task XIII)	30 days after Pre-construction Inspection/Meeting
Prefinal Inspection Report (Task XIII)	15 days after Prefinal Inspection
Final Inspection Report (Task XIII)	15 days after Final Inspection
Draft CMI Report (Task XIV)	Upon completion of construction phase
Final CMI Report (Task XIV)	15 days after EID comment on Draft CMI Report
Progress Reports during the Design and Construction Phases (Tasks XI through XIII)	Monthly
Progress Reports during Operation and Maintenance Phase (Task XIII)	Semi-annual

Site Submission	Due Date

* The Prefinal Design (95% completion) includes the following:

Draft Design Plans and Specifications
Draft Operation and Maintenance Plan
Draft Cost Estimate
Draft Project Schedule
Draft Quality Assurance Plan
Draft Health and Safety Plan
(Tasks XIII.A through G)

** The Final Design (100% completion) includes the following:

Final Design Plans and Specifications
Final Operation and Maintenance Plan
Final Cost Estimate
Final Project Schedule
Final Quality Assurance Plan
Final Health and Safety Plan
(Tasks XIII.A through G)

TABLE 1

MAXIMUM CONCENTRATION LIMITS (MCL)

PARAMETER	U.S. EPA EXISTING MCL (8-90)	
Inorganics		
Arsenic	0.05	ppm
Barium	1.0	ppm
Cadmium	0.01	ppm
Chloride	250	ppm
Chromium	0.05	ppm
Copper	1.0	ppm
Fluoride	4.0	ppm
Gross Alpha	15.	pCi/L
Gross Beta	50.	pCi/L
Iron	0.3	ppm
Lead	0.05	ppm
Manganese	0.05	ppm
Mercury	0.002	ppm
Nitrate	10.	ppm
pH	6.5-8.5	pH units
Radium (Total,226,228)	5.	pCi/L
Selenium	0.01	ppm
Silver	0.05	ppm
Sulfate	250.	ppm
TDS	500	ppm
Zinc	5.	ppm
Benzenes		
Benzene	5.	ppb
p-Dichlorobenzene	75.	ppb
Trihalomethanes	100.	ppb
Carbon Tetrachloride	5.	ppb
1,2-Dichloroethane (EDC)	5.	ppb
1,1,1-Trichloroethane (TCA)	200.	ppb
Ethenes (Ethylenes)		
Vinyl Chloride	2.	ppb
1,1-Dichloroethylene	7.	ppb
Trichloroethylene (TCE)	5.	ppb
Other Pesticides		
2,4-D	100.	ppb
Endrin	0.2	ppb
Lindane	4.	ppb
Methoxychlor	100.	ppb
Toxaphene	5.	ppb
2,4,5-TP (Silvex)	10.	ppb

TABLE 2

CALCULATIONS OF ACTION LEVELS OR CLEAN-UP LEVELS IN GROUNDWATER BASED ON MOST RECENT EPA GUIDANCE (8-90)

The equation for a carcinogenic constituent is:

$$C_w = (R * W * LT)/(CSF * I * A * ED)$$

Where:

- C_w = Action level in groundwater (mg/L)
- R = Assumed risk level (dimensionless) (10^{-6} for class A & B carcinogens; 10^{-5} for class C carcinogens)
- W = 70 kg adult, assumed body weight
- LT = 70 years, assumed lifetime
- CSF = Carcinogenic slope factor $(mg/kg/day)^{-1}$ (call EPA for the most recent CSF)
- I = 2 L/day, intake assumption for adult
- A = 1, absorption factor (assumed to be 1, units are dimensionless)
- ED = 70 years, assumed exposure duration

The equation for a systemic toxicant constituent is:

$$C_w = (RfD * W)/(I * A)$$

Where:

- C_w = Action level in groundwater (mg/L)
- RfD = Reference Dose (mg/kg/day) (call EPA for the most recent RfD)
- W = 70 kg adult, assumed body weight
- I = 2 L/day, intake assumption for adult
- A = 1, absorption factor (assumed to be 1, units are dimensionless)